

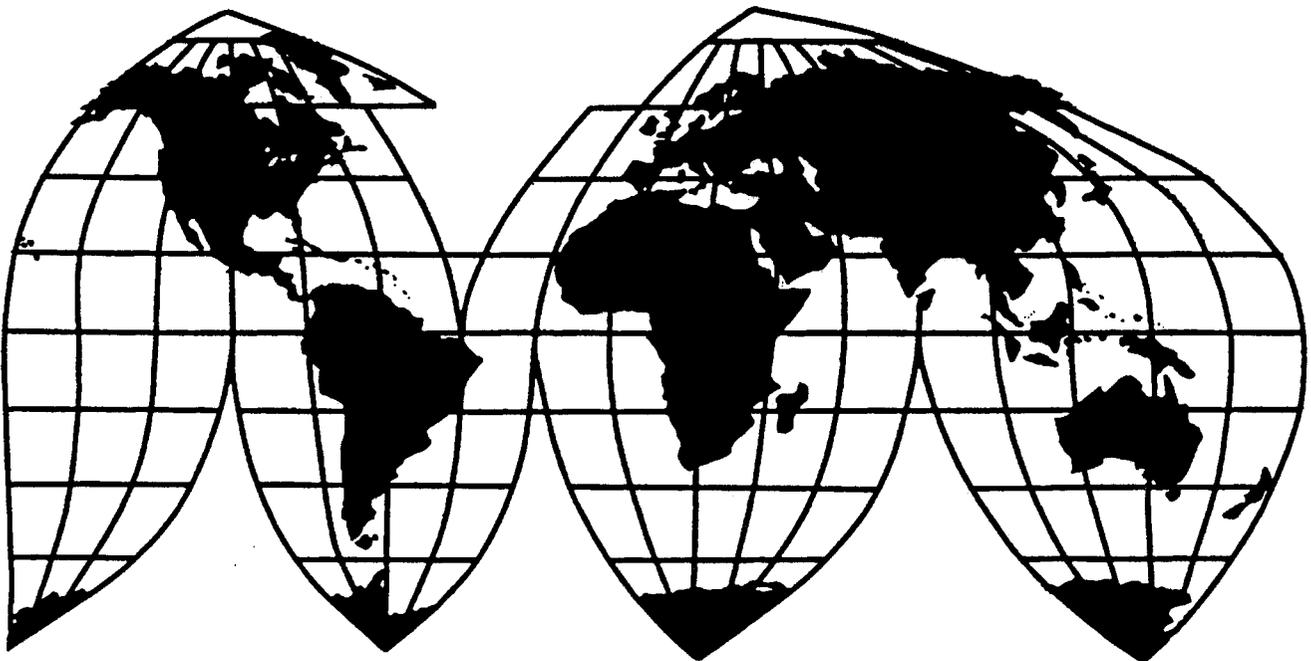
*In the Matter of*  
**Certain Removable Electronic Cards and  
Electronic Card Reader Devices and  
Products Containing the Same**

Investigation No. 337-TA-396

Publication 3123

August 1998

**U.S. International Trade Commission**



Washington, DC 20436

# **U.S. International Trade Commission**

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United States International Trade Commission  
Washington, DC 20436**

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*In the Matter of*  
**Certain Removable Electronic Cards and  
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UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436

In the Matter of

CERTAIN REMOVABLE ELECTRONIC  
CARDS AND ELECTRONIC CARD  
READER DEVICES AND PRODUCTS  
CONTAINING SAME

Inv. No. 337-TA-396

**NOTICE OF FINAL DETERMINATION**

**AGENCY:** U.S. International Trade Commission

**ACTION:** Notice

**SUMMARY:** Notice is hereby given that the U.S. International Trade Commission has determined to find no violation of section 337 of the Tariff Act of 1930 in the above-captioned investigation.

**FOR FURTHER INFORMATION CONTACT:** Michael Diehl, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-205-3095.

**SUPPLEMENTAL INFORMATION:**

The Commission instituted this investigation on April 2, 1997, on the basis of a complaint filed by Innovatron S.A. ("Innovatron"). 62 Fed. Reg. 15728. The complaint, as subsequently amended, named two respondents -- Thomson Multimedia, S.A. and Thomson Consumer Electronics, Inc.

In its complaint, Innovatron alleged that respondents violated section 337 by importing into the United States, and selling after importation, television receivers and receiver access cards that infringe claim 8 of Innovatron's U.S. Letters Patent 4,404,464 (the "`464 patent"). The presiding administrative law judge ("ALJ") held an evidentiary hearing from September 29 to October 7, 1997.

On March 24, 1998, the ALJ issued his final ID finding a violation of section 337. He found that claim 8 of the `464 patent was not invalid due to anticipation or obviousness, that there have been importations and sales after importation of the accused devices, and that the accused devices can be used to practice the method patented in claim 8 of the `464 patent. He also found that respondents actively induced infringement of claim 8 of the `464 patent and that they contributorily infringed that claim as well. Finally, the ALJ found that there is a domestic industry with respect to the `464 patent.

On April 6, 1998, the Commission investigative attorney and the Thomson respondents filed petitions for review of the ALJ's final ID. Complainant Innovatron filed a response in opposition to the petitions. The Commission determined to review the bulk of the ID and directed the parties to file

written responses addressing certain question posed in the Commission's notice of review, and the issues of remedy, the public interest, and bonding. In accordance with the Commission's directions, the parties filed initial briefs on June 11, 1998, and reply briefs on June 18, 1998.

Having examined the record in this investigation, including the ID, the review briefs, and the responses thereto, the Commission determined that there is no violation of section 337. More specifically, the Commission modified the ALJ's construction of claim 8 of the '464 patent, and found the claim as properly construed to be valid but not infringed by users of the accused imported products. The Commission found further that the domestic industry requirement is not met in this investigation.

This action is taken under the authority of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) and sections 210.42-.45 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.42-.45).

Copies of the public version of the ID, the Commission's order and opinion, and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810. General information concerning the Commission may also be obtained by accessing its Internet server (<http://www.usitc.gov>).

By order of the Commission



Donna R. Koehnke  
Secretary

Issued: July 20, 1998

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436

In the Matter of

CERTAIN REMOVABLE ELECTRONIC  
CARDS AND ELECTRONIC CARD  
READER DEVICES AND PRODUCTS  
CONTAINING SAME

Inv. No. 337-TA-396

ORDER

The Commission instituted this investigation on April 2, 1997, on the basis of a complaint filed by Innovatron S.A. ("Innovatron"). 62 Fed. Reg. 15728. The complaint, as subsequently amended, named two respondents -- Thomson Multimedia, S.A. and Thomson Consumer Electronics, Inc.

In its complaint, Innovatron alleged that respondents violated section 337 by importing into the United States, and selling after importation, television receivers and receiver access cards that infringe claim 8 of Innovatron's U.S. Letters Patent 4,404,464 (the "`464 patent"). The presiding administrative law judge ("ALJ") held an evidentiary hearing from September 29 to October 7, 1997.

On March 24, 1998, the ALJ issued his final ID finding a violation of section 337. He found that claim 8 of the `464 patent was not invalid due to anticipation or obviousness, that there have been importations and sales after importation of the accused devices, and that the accused devices can be used to practice the method patented in claim 8 of the `464 patent. He also found that respondents actively induced infringement of claim 8 of the `464 patent and that they contributorily infringed that claim as well. Finally, the ALJ found that there is a domestic industry with respect to the `464 patent.

On April 6, 1998, the Commission investigative attorney and the Thomson respondents filed petitions for review of the ALJ's final ID. Complainant

Innovatron filed a response in opposition to the petitions. The Commission determined to review the bulk of the ID and directed the parties to file written responses addressing certain questions posed in the Commission's notice of review, and the issues or remedy, the public interest, and bonding. In accordance with the Commission's directions, the parties filed initial briefs on June 11, 1998, and reply briefs on June 18, 1998.

Having examined the record in this investigation, including the ID, the review briefs, and the responses thereto, it is hereby ORDERED THAT:

1. The investigation is terminated with a finding of no violation of section 337 of the Tariff Act of 1930.
2. The claim construction of claim 8 of the `464 patent is modified as set forth in the Commission's opinion to be issued.
3. The Commission finds that claim 8 of the `464 patent is valid.
4. The Commission finds that use of the accused imported products does not infringe the method claimed in claim 8 of the `464 patent.
5. The Commission finds that complainant Innovatron has not established a domestic industry with respect to the `464 patent.
6. The Secretary shall serve copies of this Order, and the forthcoming Commission opinion in support thereof, on the parties of record and on the Department of Health and Human Services, the Department of Justice, and the Federal Trade Commission, and publish notice thereof in the *Federal Register*.

By order of the Commission.



Donna R. Koehnke  
Secretary

Issued: **July 20, 1998**

**PUBLIC VERSION**

**UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436**

**In the Matter of**

**CERTAIN REMOVABLE ELECTRONIC  
CARDS AND ELECTRONIC CARD  
READER DEVICES AND PRODUCTS  
CONTAINING SAME**

**Inv. No. 337-TA-396**

**COMMISSION OPINION**

This section 337 investigation is before the Commission for final resolution of the violation issues under review, and, in the event that the Commission finds a violation of section 337, for determinations on remedy, the public interest, and bonding.

**I. BACKGROUND**

The Commission instituted this patent-based section 337 investigation on April 2, 1997, based on a complaint filed by Innovatron S.A. ("Innovatron"), alleging that respondents Thomson Multimedia, S.A. and Thomson Consumer Electronics, Inc. (collectively "Thomson") violated section 337 of the Tariff Act of 1930 by importing and selling digital satellite system receivers and receiver access cards (collectively, the "DSS" or the "DSS products") that allow end users in the United States to infringe claim 8 of Innovatron's U.S. Letters Patent 4,404,464 (the "'464 patent").

Claim 8 describes a method for establishing electrical contact between a removable card and the card reader device into which the card is inserted.<sup>1 2</sup> Innovatron alleged that end users of Thomson's DSS products in the United States directly infringe claim 8, and that Thomson has both actively induced such direct infringement and contributorily infringed claim 8. Innovatron also alleged that a domestic industry exists in the United States that relates to the method of claim 8.

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<sup>1</sup> Claim 8 refers to a "removable article" rather than a card, and to an "electric device" rather than a card reader. We use the words "card" and "card reader," however, in the interest of clarity.

<sup>2</sup> Claim 8 of the '464 patent depends from independent claim 1, and thus incorporates all of the limitations of claim 1.

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The presiding administrative law judge (“ALJ”) held an evidentiary hearing from September 29 to October 7, 1997. On March 24, 1998, the ALJ issued an initial determination (“ID”), in which he found a violation of section 337. In the ID, the ALJ addressed various issues of claim construction, determined that claim 8 was not invalid, and found that users of the DSS products infringed claim 8 by practicing the claimed method. The ALJ also found that Thomson induced infringement by end users in the United States and that Thomson contributorily infringed claim 8. Finally, the ALJ found that a domestic industry exists with regard to claim 8.

On April 6, 1998, Thomson petitioned for review of the ALJ’s claim construction and nearly all of the rest of the ALJ’s findings. The Commission investigative attorney (“IA”) also petitioned for review, alleging that the ALJ’s claim construction was erroneous and resulted in clear errors in the ALJ’s findings regarding infringement. Innovatron and the IA subsequently filed responses to the petitions.

On May 29, 1998, the Commission notified the parties that it had determined to review the bulk of the ID, including the issues of claim construction, infringement, and domestic industry. The Commission notified the parties that it had determined not to review the ALJ’s determination that 35 U.S.C. § 112, paragraph 6 does not apply to claim 8 and his denial of several motions by Thomson. The Commission’s notice of review included eight questions, which the parties were requested to address. The notice also invited the parties and members of the public to submit comments on the issues of remedy, the public interest, and bonding.

Having considered the parties’ written submissions and the evidence of record, we determine to: (1) modify the ALJ’s construction of claim 8 of the ‘464 patent in several significant respects; (2) find that an industry does not exist in the United States that relates to claim 8 as properly construed; (3) find that claim 8 as properly construed is not invalid; and (4) find that end users of the DSS products in the United States do not directly infringe claim 8 as properly construed. Thus, we have determined that Thomson has not violated section 337.

## II. VIOLATION ISSUES

### A. The Proper Construction of Claim 8 of the ‘464 Patent

In their petitions for review, Thomson and the IA argued that the ALJ’s construction of claim 8 was erroneous in several respects. Claim 8, and claim 1 from which claim 8 depends, read as follows:

Claim 8            Method as defined by claim 1 wherein said step of *testing* said corresponding contact surfaces for said existence of correct electrical contact comprises: performing *predetermined operations* which provide a

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*predetermined expected response* from the removable article upon the existence of correct alignment and electrical contact; and comparing the actual response of said removable article with the predetermined expected response.<sup>3</sup>

### Claim 1

Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric device, which cooperates with said removable article, said removable article having electrically conductive terminals and said electric device having conductor elements, both said electrically conductive terminals and said conductor elements having *corresponding contact surfaces*, the method comprising the steps of:

(a) *bringing*, respectively, said corresponding contact surfaces of said electrically conductive terminals into *contacting relationship* with said corresponding contact surfaces of said conductor elements;

(b) *testing* said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces; and

(c) *displacing* said corresponding contact surfaces relatively, *in a direction tangential to said corresponding contact surfaces* if said testing determines non-alignment and non-existence of correct electrical contact, and *stopping* the relative displacement of corresponding contact surfaces *when* said testing determines said alignment and existence of correct electrical contact.<sup>4</sup>

In summary form, the method of claim 8 consists of the following three steps: (a) the “bringing” step, in which the contact surfaces of the removable card and the card reader device are brought into a “contacting relationship;” (b) the “testing” step, in which correct alignment and electrical contact of the corresponding contact surfaces is tested, and where the test is performed by the card reader prompting the card to give a response and then comparing the response received with the expected response; and (c) if the testing determines that correct alignment and electrical contact does not exist, the card is displaced “in a direction tangential to the corresponding contact surfaces” and then stopped when testing determines correct alignment and electrical contact. The parties’ arguments and our findings with regard to the construction of the

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<sup>3</sup> ‘464 patent, col. 10, ll. 51-59 (emphasis added).

<sup>4</sup> ‘464 patent, col. 9, l. 54 to col. 10, l. 10 (emphasis added).

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disputed claim limitations are presented below on a limitation-by-limitation basis.<sup>5</sup>

1. Whether claim 8 requires that all the electrical contacts of the card and the reader device be brought into physical contact and tested for correct electrical contact

The preamble to claim 8 states that the claimed method is one for electrically connecting a removable card with a card reader. It states further that the card has “electrically conductive terminals” (“card terminals”) and that the card reader has “conductor elements” (“card reader elements”). It also provides that both the card terminals and card reader elements have “corresponding contact surfaces.” These card terminals, card reader elements, and corresponding contact surfaces are also referenced in steps (a) (“bringing”) and (b) (“testing”) of claim 8.

Before the ALJ, Thomson argued that the claim must be construed to require that all of the card terminals be brought into contact with all of the card reader elements, and that all of the corresponding card terminals and card reader elements be tested for correct alignment and electrical contact. Innovatron, on the other hand, argued that the claim requires only that more than one card terminal and more than one card reader element be brought into contact and tested, but not necessarily that all card terminals and card reader elements be brought into contact and tested.

The ALJ found nothing in the claim indicating that all of the card terminals and card reader elements must be brought into contact and tested. He found that the plural terms “terminals” and “elements” in the claim indicate only that more than one of such terminals and elements must be brought into contact and tested, but not that all such terminals and elements be brought into contact and tested. ID at 32, 34-37, 48.

Likewise, the ALJ found nothing in the prosecution history of claim 8 to indicate that all card terminals and card reader elements must be brought into contact and tested. Thomson had argued that a change to the preamble during prosecution indicated that all terminals and elements must be brought into contact and tested. Before the preamble matured into the form in which it ultimately issued, an earlier version described a method to electrically connect a card having “at least one terminal” (rather than “terminals” as stated in the issued preamble) to a card reader having “at least one conductor element” (instead of “conductor elements” as provided in the issued preamble). The earlier version of the preamble also indicated that “both said at least one

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<sup>5</sup> The petitions for review did not challenge various aspects of the ALJ’s claim construction, including his construction of the phrases “method for electrically connecting a removable article” and “cooperates with said removable article” from the preamble, and his construction that claim 8 requires an express test for proper alignment and correct electrical contact. Accordingly, the petitioners have waived their right to challenge those aspects of the ID, as has Innovatron, which did not petition for review of the ID. 19 CFR § 210.43(b)(2) & (4).

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terminal and said at least one conductor elements hav[e] corresponding contact surfaces.” Thomson argued that the change from the “at least one” terminal or element to the plural “terminals” and “elements” indicated that all such terminals and elements must be brought into contact.

The ALJ found that the change to the preamble did not indicate that bringing into contact and testing was required for all terminals and elements, because the change was made to correct a grammatical error. He stated that, under the prior version of the preamble, if there was only a single card terminal and a single card reader element, they would have only a single corresponding contact surface. Therefore, according to the ALJ, the change in the preamble was made not to indicate that all terminals and elements must be brought into contact and tested, but rather, as noted, to correct a grammatical error.

In its petition for review, Thomson maintained that the claim requires the bringing into contact and testing of all the card terminals and card reader elements, and that the prior version of the preamble contained no grammatical error. It argued that even in the case of a single terminal and a single element, each has a contact surface. Thus, use of the plural term “corresponding contact surfaces” in the phrase “both said at least one terminal and said at least one conductor elements having corresponding contact surfaces” is grammatically correct. Thomson also argued that the use of the plural, absent any “numerically limiting language,” indicates that all terminals and elements must be brought into contact and tested.

We agree with Thomson that the use of the plural “corresponding contact surfaces” in the prior version of the preamble is grammatically correct. Nevertheless, we find no error in the ALJ’s construction of the claim. Whether or not a prior version of the preamble contained a grammatical error, we agree with the ALJ that no language in the claim requires that all the card terminals and card reader elements be brought into contact and tested. We also agree with the ALJ that the use of the plural form indicates “more than one” but does not necessarily mean “all.” If the inventor had intended to require that all terminals and elements be brought into contact and tested, then we believe he would have used the word “all” or otherwise unambiguously indicated that intent. We agree with the ALJ that claim 8 should be construed broadly enough so that it would cover a method of electrically connecting a card to a card reader device even if the card has an optional terminal for which electrical connection is not necessary to practice the claimed method.

With regard to the amendment to the preamble during prosecution, we are not persuaded that replacing the phrase “at least one terminal” with “terminals” and the phrase “at least one conductor elements” with “conductor elements” indicates that all card terminals and card reader elements must be brought into contact and tested. Prior to the change, the preamble indicated that the card could have one or more terminals, and that the card reader could have one or more conductor elements. After the amendment, the preamble indicates that the card can have two or

## PUBLIC VERSION

more terminals, and that the card reader can have two or more conductor elements. It does not follow, however, that a change from one or more terminals and elements to two or more terminals or elements somehow indicates all terminals and elements. Thus, although we do not agree with the ALJ regarding the existence of a grammatical error, we do agree that the claim does not require that all terminals and elements be brought into contact and tested. Accordingly, we adopt the ALJ's construction for the reasons given above and in the ID, with the exception of the ALJ's analysis of the alleged grammatical error.

### 2. When the "bringing" of step (a) is complete

Before the ALJ, the parties disputed the meaning of the term "contacting relationship" as it appears in step (a) of claim 8. Step (a) provides that this part of the method consists of:

bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into *contacting relationship* with said corresponding contact surfaces of said conductor elements . . . .

The parties did not dispute that the bringing of step (a) is complete when a contacting relationship exists, but they disagreed on the proper construction of "contacting relationship."

Thomson and the IA argued in their petitions for review that a contacting relationship is established, and the bringing step is therefore complete, at the instant that any portion of the contact surfaces of the card terminals touch any portion of the contact surfaces of the card reader elements. Innovatron argued that a contacting relationship is not established until the card terminals and card reader elements are brought into a position expected to be favorable to electrical contact.

The ALJ found that a "contacting relationship" is established not at the instant of first physical contact, but instead when the card terminals and card reader elements reach a position favorable for making contact, that is, when they are roughly centered with regard to each other.

We agree with the ALJ's construction that a contacting relationship is not established at the instant of physical contact between the terminals and conductor elements, however, we disagree with one aspect of the ALJ's analysis of this limitation. The patent's description of the preferred embodiment provides in relevant part that:

The drive system of the card is then started . . . . The card advances and the contact surfaces face one another . . . then approach . . . until they touch . . . . *If the card has not attained its maximal front position . . . it continues to advance.* If the electrical contact is correct . . . the motor stops . . . and a wait of 0.05 seconds is counted . . . . If, at the end of the 0.05 second wait, the electric contact is incorrect, the motor starts up again . . .

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[and] the card *continues to advance* . . . . If . . . the drawer . . . has attained its maximal rearward position, . . . the direction of rotation of the motor is reversed [and] [t]he card begins to retract.<sup>6</sup>

The ALJ, relying on the first italicized phrase quoted above, found that the description of the preferred embodiment indicates that the card continues to advance into the connector apparatus until it reaches its maximal front position. We believe that that conclusion is erroneous because, as argued by Thomson and the IA, the second italicized phrase indicates that the card may *continue* to advance even after the first test for electrical contact. Reading the first phrase more closely reveals that, if the card has not already attained its maximal front position, it will continue to advance.<sup>7</sup> Accordingly, we believe that the ALJ erroneously found that a contacting relationship is established in the preferred embodiment only when the card advances to the maximal front position.

More broadly, however, we agree with the ALJ that the description of the preferred embodiment indicates that the card advances even after the contact surfaces come into physical contact. The specification states that the corresponding contact surfaces approach each other “until they touch,” and that the card may “continue to advance” prior to any mention of testing. If the card continues to advance after first physical contact prior to testing, then a contacting relationship is established in the preferred embodiment after first physical contact. Reading claim 8 in view of the specification, we therefore agree with the ALJ that the contacting relationship described in step (a) of claim 8 is not established at the instant there is physical contact.<sup>8</sup>

Similarly, we find no error in the ALJ’s interpretation of “contacting relationship” as referring to a position favorable to contact. We agree that one of ordinary skill in the art would understand the bringing step to end with a position that allows a good chance of electrical contact. Thomson and the IA may have misinterpreted the ALJ’s construction of the term. They attack the ALJ’s construction as erroneous based on language in the ID referring to the “position most favorable for making contact,” claiming, among other things, that such a construction would render superfluous the subsequent displacing step. Read in context, however, we believe that the

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<sup>6</sup> ‘464 patent, col. 7, ll. 38-59.

<sup>7</sup> The passage is somewhat confusing because it refers to the motion in question from two different perspectives. It refers both to the *card’s* “maximal front position” and also to the *drawer’s* (the moveable platform inside the connector apparatus on which the card rests) “maximal rearward position,” which are in fact the same position. It is clear, however, that the direction of the motor is not reversed until after the card (and drawer) reach this position.

<sup>8</sup> See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (“Claims must be read in view of the specification of which they are a part.”).

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ALJ used the phrase “position most favorable for making contact” in summarizing the testimony of a witness rather than in explaining his construction. ID at 40. When indicating his own construction, the ALJ referred to the position as “favorable,” not “most favorable.” *Compare* ID at 40 to 44. Indicative of the ID’s true meaning, the ALJ described the bringing step as having the “goal of achieving the position most favorable for working . . .” ID at 41. Additionally, the ALJ expressly acknowledged that, even after a contacting relationship has been achieved, “one is not certain whether there is electrical contact; that must be tested for later.” ID at 40. Accordingly, we adopt the ALJ’s construction of contacting relationship, and therefore the time at which the bringing of step (a) is complete, for the reasons given above and in the ID, with the exception already noted. We also adopt the ALJ’s construction of when the testing step begins, which is after the bringing step ends. *See* ID at 48.

3. The “predetermined operations” and “a predetermined expected response” limitations

Claim 8 indicates that the testing of the corresponding contact surfaces for correct electrical contact in step (b) is comprised of :

performing predetermined operations which provide a predetermined expected response from the removable [card] upon the existence of correct alignment and electrical contact, and comparing the actual response received with the predetermined expected response.

The ALJ construed the word “predetermined” in the phrase “predetermined operations” to mean “those operations that are established at the time of the design of the system and that do not change over time.” ID at 47. He also construed “expected” in the phrase “predetermined expected response” to mean that the response “does not change over time and it . . . is the response that the card produces.” *Id.*

After receiving the petitions for review, we asked the parties to comment on alternative constructions of the terms, *viz.*, that “predetermined” means “to determine, decide, or establish in advance,” and that “expected” means “predicted.”

*“predetermined”*

On review of the parties’ comments and the record evidence, we disagree with the ALJ’s construction that the word “predetermined” in the phrase “predetermined operations” means operations that are established at the time of design and that do not change over time. We find nothing in the specification or the claim that indicates that predetermined operations must be established at the time of design. Contrary to Innovatron’s assertion, expert testimony that “predetermined” means determined at design and incapable of being changed is not the only

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record evidence on the issue. Other expert testimony on the record indicates that the predetermined operations need to be established prior to the test, but does not indicate that they must be established at the time of design.<sup>9</sup> Moreover, the Commission is not bound to accept a witness's testimony regarding the meaning of a claim term.<sup>10</sup>

In the absence of a definition of the term in the patent, we believe “predetermined” should be construed to have its ordinary dictionary definition. The ordinary meaning of “predetermine” is “to determine, decide, or decree beforehand.” Webster's New World Dictionary, 1061, Third College Edition (1988). “Predetermine” is also defined as “[t]o determine or decide in advance.” The American Heritage Dictionary, 540, Office Edition (1983). Accordingly, we construe “predetermined” to mean determined or decided in advance.

We find no support in the patent for Innovatron's contention that the operations must be determined in advance of the first testing. That construction would introduce a limitation not indicated by the claim or the patent specification. Instead, we construe the claim to require only that the operation be determined in advance of the test performed, not necessarily the first test performed.

### *“expected”*

We also disagree with the ALJ's construction that “expected” means “not changing over time.” We find no indication in the patent that expected should be construed other than in accordance with its ordinary dictionary meaning. The ordinary meaning of “expected” is “to look for as likely to occur or appear.” Webster's New World Dictionary, 478. The word is also defined generally as meaning “predicted.” Roget's Thesaurus (Robert A. Dutch ed. 1969). “Expected” is explained further to “impl[y] a considerable degree of confidence that a particular event will happen.” Webster's New World Dictionary, 478. Taking these definitions together, we construe “expected” in the phrase “a predetermined expected response” to mean a response that is predicted to occur.

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<sup>9</sup> Bove Tr. at 904.

<sup>10</sup> *See Vitronics Corp. v. Conception, Inc.*, 90 F.3d 1576, 1585 (Fed. Cir. 1996) (“[Expert testimony] may only be relied upon if the patent documents, taken as a whole, are insufficient to enable the court to construe the disputed claim terms. Such instances will rarely, if ever, occur. . . . Even in those rare instances, prior art documents and dictionaries, although to a lesser extent, are more objective and reliable . . . [and] are preferred over opinion testimony . . .”).

## PUBLIC VERSION

4. The “displacing . . . in a direction tangential to said corresponding contact surfaces” limitation
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Step (c) provides as follows:

(c) *displacing* said corresponding contact surfaces relatively, *in a direction tangential to said corresponding contact surfaces* if said testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

The ALJ construed this language to “require[] that the contact surfaces of the [card’s] terminals and the [card reader’s] conductors be moved in relation to each other such that the area of contact between them *decreases*.” ID at 53 (emphasis added). Displacing requires movement, according to the ALJ, but not continuous or motor-driven movement. ID at 54.

The ALJ did not address the meaning of the phrase “in a direction tangential to the corresponding contact surfaces” in his discussion of claim construction, although he stated in his infringement analysis that “[r]emoval and reinsertion of the [DSS] smart card constitutes displacement of the ‘corresponding contact surfaces’ as called for in claim 8.” See ID at 53-56 (discussing the ALJ’s construction of the displacing limitation) and at 102 (addressing infringement). Thus, although the ALJ did not indicate precisely how he construed the tangential displacement limitation, we know that he construed it broadly enough to cover removing and reinserting the card.

We disagree with the ALJ’s construction that “displacing” means that the corresponding contact surfaces are moved such that the area of contact decreases. The ALJ’s interpretation appears to be grounded in his finding, discussed previously, that in the bringing step the removable card advances to its maximal front position inside the reader device. Thus, the ALJ appears to have concluded that any displacement thereafter must be in the opposite direction. As noted above, however, we believe that the ALJ’s conclusion that the removable card necessarily advances to its maximal front position in the bringing step is erroneous. In the preferred embodiment, as also discussed above, the removable card may, after the completion of the bringing step, continue to advance into the card reader device.<sup>11</sup> Additionally, after reaching its maximal front position, the card returns in the opposite direction, and may ultimately make several

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<sup>11</sup> ‘464 patent, col. 7, l. 50.

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passes back and forth in search of proper alignment and electrical contact.<sup>12</sup> Thus, in displacing, the area of contact between the contact surfaces alternatively increases and decreases. The ALJ's construction whereby the area only decreases is therefore erroneous.

We also disagree with the ALJ's construction in another respect. In his discussion of claim construction, the ALJ did not specify whether the displacing must occur while the corresponding contact surfaces are in constant contact, or whether it can also occur by taking the corresponding contact surfaces out of contact, displacing them, and then bringing them back into contact. ID at 53-55. In his infringement analysis, however, the ALJ indicated that displacing encompasses the second type of motion. As indicated previously, the ALJ indicated that “[r]emoval and reinsertion of the [DSS] smart card constitutes displacement of the ‘corresponding contact surfaces’ as called for in claim 8.”<sup>13</sup>

We disagree that the “in a direction tangential” limitation encompasses a displacing motion in which the corresponding contact surfaces are separated before displacing and then brought back into contact. To be sure, the meaning of the phrase “in a direction tangential to said corresponding contact surfaces” is difficult to construe in isolation. As indicated by the parties, the ‘464 patent does not define the term “tangential.” Even considering the dictionary definition of tangent (“a line, curve, or surface touching, but not intersecting another line, curve, or surface”), the phrase’s meaning is not readily apparent. The American Heritage Dictionary, 695. This is so in part because the thing as to which the direction is tangential (“the corresponding contact surfaces”) is not well defined. It is not clear, for example, whether the direction is tangential to the area of contact between the corresponding contact surfaces, or whether the direction can be tangential to the contact surfaces in some other way.

The meaning of the phrase is clear, however, when it is considered in the context of the rest of claim 8. The displacement in a “direction tangential” in step (c) of claim 8 begins only after the bringing of the corresponding contact surfaces into a contacting relationship in step (a). Thus, the displacing begins while the corresponding contact surfaces are in physical contact.

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<sup>12</sup> ‘464 patent, col. 7, l. 50 to col. 8, l. 11. *See also* ‘464 patent at col. 2, ll. 6-8 (indicating that displacement occurs in oscillating movements around a midpoint).

<sup>13</sup> ID at 102. The ALJ also stated the following in the findings of fact:

The act of “displacing said corresponding surfaces relatively, in a direction tangential to said corresponding contact surfaces” requires that the contact surfaces of the removable [card’s] terminals and the [card reader’s] conductors be moved in relation to each other such that the area of contact between them moves.

ID at 148, Finding of Fact 51.

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Also, there is no mention in claim 8 of the separation of the corresponding contact surfaces or of the bringing them back into contact before again testing for proper alignment and correct electrical contact. Instead, step (c) expressly limits displacing to “a” (*i.e.*, a *single*) “direction tangential to the corresponding contact surfaces . . . .” The separation, displacement, and re-bringing of the corresponding contact surfaces would involve displacement in various directions, including some not tangential. The bringing of step (a), for example, which is described in the specification as “relatively displacing the contact surfaces of the conductors towards each other, along a direction having at least one component normal to their surface . . . ,” is not contemplated by the “displacing . . . in a direction tangential” of step (c).<sup>14</sup> Thus, we believe that in “a direction tangential” cannot mean movement that takes the corresponding contact surfaces out of contact and then back into contact.

In addition, we disagree with Innovatron that the ALJ’s construction is supported by the following portion of the specification:

displacing in an oscillatory or alternating and relative fashion the two contact surfaces, around a median point, in a direction tangential to their surface, at least as long as these surfaces are in contact. This oscillatory movement can be carried out while the two contact surfaces are constantly in contact *and it may equally be carried out by successive passes, i.e., by a repetition of the contacting process.*<sup>15</sup>

Innovatron contends that the quotation indicates that displacing in a “direction tangential” can include a repetition of the bringing step. As noted above, however, claim 8 indicates that displacing in a direction tangential occurs after the bringing into a contacting relationship is complete, and contains no mention of ending the contacting relationship prior to displacing in a direction tangential, or of repeating the bringing step after displacing and prior to testing. In fact, it appears to us that the portion of the specification upon which Innovatron bases its argument is not relevant to claim 8, but rather to claim 5 of the ‘464 patent, a claim which is not at issue in this investigation. Unlike claim 8, claim 5 expressly involves the repetition of bringing in coordination with displacing.

For the reasons given above, we construe “displacing . . . in a direction tangential to said corresponding contact surfaces” to mean that the contact surfaces are moved relative to each other in any direction provided that they remain in contact.

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<sup>14</sup> See ‘464 patent at col. 1, ll. 60-62.

<sup>15</sup> ‘464 patent, col. 2, ll. 6-13 (emphasis added).

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### 5. The “stopping . . . when” limitation

The “stopping . . . when” limitation appears in step (c) of claim 8:

(c) displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

The ALJ found “stopping”:

to refer to the fact that the removable article . . . should be displaced and tested again if proper electrical contact is not achieved, and further that displacement should stop when proper electrical contact is established as indicated through testing.

ID at 55. He found that the claim language contains no express or implied limitation regarding the method of stopping, and that it can be done mechanically or manually. *Id.* The ALJ also found that the claim language contains no requirement that displacement be stopped instantaneously, or almost instantaneously, upon the detection of proper alignment and good electrical contact. ID at 56. The specification describes instantaneous stopping, but only as an option, he found. *Id.*

The ALJ’s construction was based in part on his finding that the claim specification indicates that stopping can be performed manually. Before discussing our construction of the “stopping . . . when” limitation, we address the subsidiary issue of whether the specification indeed discloses manual stopping.

The portion of the specification that the ALJ found to disclose manual stopping consists of three consecutive paragraphs. The paragraphs follow the detailed description of the preferred embodiment, and give examples of other possible embodiments of the patented method. On review, we asked the parties to provide comment on the disputed paragraphs, which provide as follows:

In the embodiment of the invention described with reference to the figures, the card and the connection mechanism are activated by an electric motor. In other embodiments, it may be activated differently, in particular the displacement of the card and of the drawer can be due to the carrier of the card who introduces it. In this latter case, the relative movements of the contact surfaces will be essentially guided by guiding means, particularly ramps.

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In a like fashion, the translationally movable drawer may be replaced by a jointed shutter which is rotationally and translationally movable (in the same fashion as introduction mechanisms for magnetic cassettes in tape readers).

Furthermore, the card, the drawer and the support of the connection cross-bar can be arranged on the frame such that the whole cross-bar and the card is instantaneously immobilized with respect to one another as soon as the contact is correct. The inertia of the manual or mechanic driving mechanisms will thus result in the displacement of both the cross-bar and the card without modifying the position of the zones in contact with one another. Such a solution makes possible, notably in the absence of a motor, to manually introduce the card without having to be concerned with the instant when the contact is correctly established.<sup>16</sup>

Having considered the disputed paragraphs from the claim specification and the arguments of the parties, we find that the specification does not indicate that stopping can be performed manually. Innovatron contended that manual stopping is described in the first disputed paragraph because stopping “goes hand-in-hand” with displacing. Manual stopping, however, presupposes a display element to inform the user that the corresponding contact surfaces are in proper electrical contact. The first paragraph describes no such display.

We believe that the failure to describe a display element of some kind, or otherwise indicate how the user would know to perform stopping, is significant. The three paragraphs of the specification at issue describe possible alternative arrangements to practice the patent. The first paragraph expressly indicates that displacing can be performed manually, the second paragraph discloses that a jointed shutter structure can be used to receive the card instead of a translationally movable drawer, and the third paragraph indicates that the card can be immobilized relative to the connection cross bar rather than by halting the displacing motor. Thus, the paragraphs describe with specificity the various alternative arrangements possible to practice the various limitations of the patent. The failure to indicate a structure necessary to practice a particular arrangement (such as a display element or other means of indicating that the user should stop displacing) indicates that such alternative arrangement is not contemplated in the specification.

Moreover, we find it significant that the inventor expressly indicated that *displacing* can be performed manually, but did not expressly indicate that *stopping* can also be performed manually. Because the inventor indicated that one limitation of the method can be performed manually, his failure to indicate that another limitation can be performed manually strongly suggests that it cannot.

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<sup>16</sup> ‘464 patent, col. 8, ll. 12-37.

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Our finding that the three paragraphs do not disclose manual stopping is further supported by the description of the alternative arrangement for stopping described in the third paragraph. That paragraph expressly states that the arrangement is particularly suited to manual displacement because it allows the user to not be concerned with the “instant” in which contact is achieved. This indicates that the inventor recognized that manual displacement presented a problem because stopping could not be performed rapidly enough to prevent the corresponding contact surfaces from moving out of contact. To solve that problem, the inventor disclosed a method to achieve instantaneous stopping “notably, in the absence of a motor . . . .”<sup>17</sup>

For the foregoing reasons, we find that the specification does not teach that stopping can be performed manually. As indicated previously, however, the question of whether the specification teaches that stopping can be performed manually is subsidiary to the larger question of how properly to construe the “stopping . . . when” limitation.

As indicated previously, step (c) of claim 8 provides for “*stopping* the relative displacement of the corresponding contact surfaces *when* said testing determines said alignment and existence of correct electrical contact.” The issue before the Commission on review was whether “stopping . . . when” should be construed, as Innovatron argued, to encompass stopping that does not occur when testing indicates correct alignment and electrical contact, or whether, as Thomson and the IA argued, to mean stopping that occurs as a result of a positive test for electrical contact and is instantaneous or nearly instantaneous such that the relative displacing is halted before the corresponding contact surfaces are moved from a position of correct alignment and electrical contact to a position out of such alignment and contact.

We construe the phrase “stopping . . . when” to mean stopping that occurs as a result of a positive test for correct alignment and electrical contact, and that is instantaneous or nearly instantaneous such that relative displacing is halted before the corresponding contact surfaces are moved from a position of proper alignment and correct electrical contact to a position out of such alignment and contact. We disagree with Innovatron’s contention that the word “when” as used in the “stopping . . . when” limitation in step (c) means “if,” and therefore does not have a temporal connotation. The gist of Innovatron’s contention is that we should construe “stopping . . . when” to have a non-temporal meaning, such as “stopping . . . if,” rather than construe it to have a temporal meaning, such as “stopping . . . as soon as.” Although Innovatron is correct that the word “when” can have a temporal (*e.g.*, “as soon as”) or a non-temporal (“if”) connotation, we find that only the temporal connotation of the word is reasonable in this investigation, as indicated by the context of the language of claim 8 and the specification. Under the non-temporal construction reached by the ALJ and urged by Innovatron, displacing would be performed in a series of separate and discrete movements (such as by nudging or jiggling the card). *See* ID at 55. After the corresponding contact surfaces come to rest, as a result of one of these movements, in a

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<sup>17</sup> ‘464 patent, col 8., ll. 34-35.

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position of correct alignment and electrical contact, “stopping” would occur by the discontinuation of further intermittent movements. *Id.* Under this construction, the corresponding contact surfaces can move into and back out of proper alignment and correct electrical contact any number of times before displacing is finally stopped. This is because there is no means of halting ongoing displacing when the corresponding contact surfaces come into proper alignment and electrical contact. The discontinuation of further movements would instead occur when, as a result of an intermittent movement, the corresponding contact surfaces happen to come to rest in a position of correct alignment and electrical contact.

A non-temporal construction of the word “when” is not supported by the claim or the specification. The only stopping described in the claim comes as a result of a determination of correct alignment and electrical contact (“and stopping the relative displacement . . . when said testing determines said alignment and existence of correct electrical contact”). The claim does not also describe other random stopping as a result of intermittent movements.

Moreover, the non-temporal construction of “when” is at odds with two stated purposes of the patent, *viz.*, to “facilitate the rapid placement in contact . . . [and] to limit the wearing down of the contact surfaces to only that which is absolutely necessary.”<sup>18</sup> Displacing by a series of separate and random movements, which would achieve proper alignment and electrical contact only when the corresponding contact surfaces by chance come to rest in the proper position, is not consistent with the rapid placement in contact and the prevention of unnecessary wearing down of the contact surfaces. Thus, the construction of the ALJ is not affirmatively indicated in the claim (because the claim indicates stopping only as a result of a test determination that there is proper alignment and electrical contact) and is also at odds with two express purposes of the patented invention.

A non-temporal construction of the word “when” is disfavored for another reason. The ALJ found, and Innovatron urged the Commission to find, that “stopping . . . when” should be construed as “stopping . . . if.” However, the patentee used the word “if” in step (c) (“displacing . . . *if* said testing determines non-alignment and non-existence of correct electrical contact . . . .” (emphasis added)). The patentee’s use of the non-temporal word “if” in the same step strongly suggests that his use of the normally temporal word “when” in regard to stopping was purposive, and thus intended to connote a temporal meaning.

Finally, Innovatron mistakenly cites *Pall Corporation* for the proposition that a change in the scope of a claim made during prosecution should be disregarded in construing the claim if the change is not made in order to overcome an examiner’s rejection based on the prior art. However, *Pall Corporation* addresses the effect of the prosecution history on a patentee’s ability

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<sup>18</sup> ‘464 patent, col. 2, ll. 22-29.

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to claim infringement under the doctrine of equivalents, not claim construction.<sup>19</sup>

Accordingly, we construe the “stopping . . . when” limitation to mean stopping that occurs as a result of a positive test for correct alignment and electrical contact, and that is instantaneous or nearly instantaneous, such that relative displacing is halted before the corresponding contact surfaces are moved from a position of proper alignment and correct electrical contact to a position out of such alignment and electrical contact.<sup>20</sup>

### **B. Domestic Industry**

The importation or sale of articles that infringe a valid and enforceable United States patent constitutes a violation of section 337 “only if an industry in the United States, relating to the articles protected by the patent . . . exists or is in the process of being established.” 19 U.S.C. § 1337(a)(2). Thus, before considering the validity of claim 8 of the ‘464 patent and possible infringement of it, we address whether the required domestic industry exists or is in the process of being established.

Proceeding under a claim construction that we have found to be incorrect in certain respects, the ALJ found that the domestic industry requirement is satisfied. For the reasons provided below, however, we find that a domestic industry does not exist in relation to claim 8 of the patent as that claim is properly construed.

The domestic industry requirement of section 337 comprises a “technical” prong and an “economic” prong. The technical prong is satisfied if “an industry in the United States, relating to the articles protected by the patent . . . exists or is in the process of being established.”<sup>21</sup> The economic prong is satisfied if there is:

- (A) significant investment in plant and equipment;
- (B) significant employment of labor or capital; or

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<sup>19</sup> See *Pall Corporation v. Micron Separations, Inc.*, 66 F.3d 1211, 1219-20 (Fed. Cir. 1995) and *Mannesman Demag Corp. v. Engineered Metal Products*, 793 F.2d 1279, 1284-85 (Fed. Cir. 1986).

<sup>20</sup> As noted previously, we have generally used the terms “removable card” or “card” instead of “removable article” and the term “card reader” instead of “electric device.” To avoid ambiguity, however, when setting forth our construction of a claim limitation containing such terms, we use the original terms “removable article” and “electric device.”

<sup>21</sup> 19 U.S.C. § 1337(a)(2).

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- (C) substantial investment in [the patent's] exploitation, including engineering, research and development, or licensing.

In this investigation, the parties do not dispute that the economic prong is satisfied. With respect to the technical prong, the parties have raised the following three issues: (1) whether Innovatron's U.S. licensee, Gemplus, practices the patented method in the production of microprocessor cards; (2) whether the cards manufactured by Gemplus can be used in connection with a card reader to practice the patented method and, if they can, whether such manufacture and use is sufficient to satisfy the technical prong; and (3) whether there must be competition between the accused DSS and the microprocessor cards manufactured by Gemplus in order to satisfy the domestic industry requirement. We discuss each issue in turn below.

1. Whether Gemplus practices the patented method in the testing and quality control of microprocessor cards

Innovatron argues that Gemplus practices the patented method in its use of the [CONFIDENTIAL] and the GCR500 machine, which perform testing and quality control operations during the manufacture of Gemplus' microprocessor cards in the United States.

The [CONFIDENTIAL] tests the cards to determine whether the memory cell of the card's microprocessor functions properly. ID at 123. After the microprocessor card is fed into the [ C ] the machine [

CONFIDENTIAL

C ] If any of three tests detects an error, [ CONFIDENTIAL ] and the tests are repeated. *Id.* [

]<sup>22</sup> [

CONFIDENTIAL

] In addition to the tests performed by the [CONFIDENTIAL] others tests are performed by the GCR500 machine. After the cards are tested and initialized by the [ C ] a [ C ] of the cards are manually inserted into the GCR500 machine for further testing for the purpose of quality control. ID at 129-130. [

CONFIDENTIAL

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<sup>22</sup> [

CONFIDENTIAL ]

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If the GCR500 receives the expected value, further quality control tests are performed. ID at 131. ]

We find that Gemplus does not practice the patented method in the use of either the [ C ] or the GCR500. Neither machine practices the “displacing . . . in a direction tangential” or “stopping . . . when” claim limitations. As discussed in section II.A above, “displacing . . . in a direction tangential is properly construed to mean that the corresponding contact surfaces are moved relative to each other in any direction provided that they remain in contact. In the [

C ] upon a failed test, [ CONFIDENTIAL

] This movement does not practice “displacing . . . in a direction tangential” because the contact surfaces do not remain in contact while it is done. Nor does the stopping of the [ C ] occur as a result of a positive test of correct alignment and electrical contact, as required by claim 8. Instead, it is predetermined that after [

CONFIDENTIAL

] In fact, because the movement occurs while the card and the [ C ] of the [ C ] are not in contact, such movement cannot be stopped as a result of a determination of proper electrical contact.

In the GCR500, upon a failed test, the card is manually removed and reinserted. This action fails to practice the “displacing . . . in a direction tangential” claim limitation because the contact surfaces of the microprocessor card and the GCR500 do not remain in contact during removal and reinsertion. Removal and reinsertion also fails to practice the “stopping . . . when” limitation because the motion of the card is not stopped as a result of a positive test for correct alignment and electrical contact.<sup>23</sup> Accordingly, we determine that Gemplus does not practice the patented method in the testing and/or quality control of its microprocessor cards in the United States.

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<sup>23</sup> Similar to the GCR500, removal and reinsertion also occurs in the operation of the accused imported DSS products. Innovatron presented various alternative arguments contending that the “displacing . . . in a direction tangential” and “stopping . . . when” limitations are practiced in the removal and reinsertion of the DSS access cards. To the extent that Innovatron asserts the same arguments with regard to the removal and reinsertion of the microprocessor card in the GCR500, we disagree for the same reasons that removal and reinsertion of DSS access cards fails to practice the limitations. See section II.D.3 below. In addition, [ CONFIDENTIAL

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2. Whether the cards manufactured by Gemplus are used in connection with a reader device to practice the patented method, and, if they are, whether such manufacture and use satisfy the technical prong

As a result of an argument advanced by the IA on review, we asked the parties to comment on whether the cards manufactured by Gemplus are used in connection with a reader device to practice the patented method, and, if they are, whether such manufacture and use satisfy the technical prong.

We do not see that the record supports the IA's contention that the microprocessor cards manufactured by Gemplus are used by U.S. consumers in connection with a reader device to practice the patented method. The record contains little information regarding how the Gemplus cards are used, or whether that use practices each of the limitations of the method patented in claim 8. We disagree with the IA's assertion to the contrary for several reasons. First, the IA stated that his contention is based on the assumption that the ALJ's claim construction applies. For the reasons given previously, the ALJ's claim construction must be modified in certain significant respects. Second, the IA stated that his contention that purchasers of Gemplus access cards will use them to practice the patented method was supported by the fact that the patented method was used (as the IA also assumes) in the testing and quality control of the cards. We have determined, however, that Gemplus does not practice the patented method in the testing and quality control of its microprocessor cards. Moreover, it does not necessarily follow that an article produced using a patented method will necessarily itself be used in practicing that method.

3. Whether the imported articles must compete with the articles produced by Gemplus in order to satisfy the domestic industry requirement

Thomson argued that the cards produced by Gemplus do not compete with the accused imported articles and that, absent such competition, the action brought under section 337 against the DSS products is not on behalf of a U.S. industry, as required by section 337. Thomson also submitted that the domestic industry requirement must be interpreted in light of the purposes of section 337, which purpose is to benefit a domestic industry involved in a dispute involving imported products. Thomson argued that Gemplus is not involved in a trade dispute involving Thomson's imported products, and that no relief can be issued that would benefit Gemplus because of the lack of competition between Gemplus' cards and Thomson's accused imported products.

We disagree. The legislative history of the 1988 amendments to section 337 makes clear that the injury requirement was removed for patent-based cases. H.R. Rep. No. 100-40, Part I, at 156 (1987). Nowhere, in fact, does the legislative history indicate that the domestic industry must produce a product that directly competes with the imported product. We find that Thomson's arguments based on the alleged purposes of the statute do not outweigh the clear intent of

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Congress as expressed in the legislative history to the 1988 amendments.

### 4. Conclusion

We find that the technical prong of the domestic industry requirement is not satisfied in this investigation. As indicated above, Innovatron has failed to demonstrate that Gemplus practices the patented method in the testing and quality control of its microprocessor cards, or that its microprocessor cards are used in the United States in connection with other articles to practice the patented method.<sup>24</sup> The failure to satisfy the domestic industry requirement precludes a finding that Thomson violated section 337. Although the Commission can base its determination on a single issue, we also render decisions in this investigation on the validity of claim 8 of the '464 patent and whether it is infringed.<sup>25</sup>

### C. **Validity**

The ALJ determined that the '464 patent was not invalid, finding that it was not anticipated or rendered obvious by the prior art. In their petitions for review, neither Thomson nor the IA argued that the ALJ's validity analysis was erroneous.<sup>26</sup> On review, we asked the parties whether the patent would be invalid if it were construed as indicated in section II.A above. Each of the parties agreed that the patent would not be invalid if construed as indicated above. In particular, Innovatron argued that the proposed construction was generally narrower than that of the ALJ, and thus could not render the '464 patent invalid as anticipated or obvious. Based on the ALJ's analysis of the prior art and for the reasons given above, we determine that the '464 patent as construed above is not invalid.

### D. **Infringement**

Infringement of a claim can be shown by evidence of direct infringement, induced

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<sup>24</sup> Because we find that it has not been demonstrated that Gemplus' microprocessor cards are used in the United States in connection with other articles to practice the patented method, we do not reach the issue of whether such use is sufficient to satisfy the technical prong of the domestic industry requirement.

<sup>25</sup> See *Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) and *Coleco Industries Inc. v. United States International Trade Commission*, 573 F.2d 1247, 1252 (CCPA 1978) (indicating that the Commission has discretion whether to address more than one dispositive issue).

<sup>26</sup> Thomson did, however, argue that the ALJ construed the patent differently for purposes of his validity and infringement analyses.

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infringement, or contributory infringement. Induced and contributory infringement cannot, however, exist unless there is also direct infringement. Innovatron argued that Thomson induced infringement of claim 8 and contributorily infringed that claim, and that users in the United States of Thomson's DSS products committed direct infringement. We first examine whether DSS users directly infringe claim 8 because, if they do not, then Thomson cannot have induced infringement of claim 8 or contributorily infringed that claim. The party alleging infringement has the burden of proving infringement by a preponderance of the evidence.<sup>27</sup> The question of infringement of a properly interpreted claim is one of fact.<sup>28</sup>

Proceeding under a claim construction that, as indicated above, we have found to be erroneous in certain significant respects, the ALJ found that DSS end users in the United States practiced every limitation of claim 8 and therefore directly infringed it. He found each of the limitations to be literally infringed, although he found that the "predetermined expected response" limitation could in the alternative be found to be infringed under the doctrine of equivalents. ID at 97 n.42. There is infringement under the doctrine of equivalents if the differences between the claimed method and the accused method are insubstantial.<sup>29</sup>

After reviewing the petitions for review and the responses thereto, we asked the parties to comment on whether end users of DSS products in the United States directly infringed claim 8 as construed above. The parties' comments centered on the "testing" limitation of step (b) and the "displacing . . . in a direction tangential" and "stopping . . . when" limitations of step (c).<sup>30</sup> We discuss below whether the DSS products infringe claim 8 on a limitation-by-limitation basis. For those limitations not discussed below, we adopt the infringement findings of the ALJ.<sup>31</sup>

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<sup>27</sup> *Environtech Corp. v. Al George, Inc.*, 730 F.2d 753, 758 (Fed. Cir. 1984); *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1361 (Fed. Cir. 1983).

<sup>28</sup> *Mannesman Demag Corp. v. Engineered Metal Prods. Co.*, 793 F.2d 1279, 1282 (Fed. Cir. 1986).

<sup>29</sup> *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 137 L.Ed.2d 146, 161 (1997).

<sup>30</sup> Thomson also presented argument regarding whether there is infringement of the step (a) "bringing" limitation. We have not considered this argument, however, because Thomson failed to preserve the issue in its petition for review. (If we had modified the ALJ's construction of the bringing limitation, however, we would have allowed all parties to comment on whether, under such a modified construction of the limitation, there is direct infringement.)

<sup>31</sup> Although we generally adopt the infringement findings and analysis of the ALJ concerning those limitations not discussed here, that adoption does not extend to any finding or analysis that  
(continued...)

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### 1. The “express” test limitation

The ALJ construed the testing limitation of step (b) to require a test that is expressly for the purpose of determining proper alignment and correct electrical contact. In distinguishing several prior art references, the ALJ found that a test of whether the device operates properly is not an express test for proper alignment and correct electrical contact, because such alignment and electrical contact can only be inferred from the proper operation of the device. We agree with and adopt the ALJ’s construction of this limitation, which was not challenged in the petitions for review.

The ALJ found that after an access card is inserted into a DSS receiver, the receiver sends a “reset” signal conforming to an internationally recognized standard to the card. ID at 95. The signal is sent in the form of binary computer characters with values of “0 ” or “1.” Kuc Tr. at 219-222. After receiving the reset signal, the card provides an “answer-to-reset” (“ATR”) signal, also conforming to an internationally recognized standard, and also in the form of a string of binary computer characters. ID at 96. The receiver then analyzes the ATR string. ID at 97. The ALJ found that, although the ATR sequence specified by the international standard is not a test for correct alignment and electrical contact, it functions as such in the DSS. ID at 96. Specifically, the ALJ found that the first character of the ATR, the TS character, acts as a test of correct electrical contact. *Id.*

Having considered the arguments and the evidence of record, we find that Innovatron has not demonstrated by a preponderance of the evidence that the DSS involves an express test for proper alignment and correct electrical contact. We do not agree with Innovatron’s contention that the DSS receiver practices such an express test by reading the TS character received from the access card. To the contrary, the record indicates that the purpose of the test of the TS character is to indicate whether the card communicates according to the direct or inverse convention. RX at 8, Kuc Tr. at 219-221. *See* ID at 99-100 & n.45. Although it can be inferred from the receipt of the TS character that correct electrical connection is established, the possibility of such an inference does not make the test of the TS character into an express test for correct electrical connection.

Moreover, the test alleged by Innovatron to constitute an express test for electrical contact involves more than just the TS character. Claim 8 indicates that a failed test is the event that initiates displacing and that a positive test is the event that triggers the stopping of displacing.

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<sup>31</sup> (...continued)  
is inconsistent with this opinion.

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In the DSS, by contrast, displacing<sup>32</sup> is commenced by the user after viewing the on-screen message “Please insert valid Access Card.” The message “Please insert valid Access Card” does not expressly indicate that the DSS receiver and access card are not in proper alignment and electrical contact. To the contrary, the message indicates that the inserted card is not valid. The fact that the test in the DSS generates the message that the access card is invalid indicates that the test is not expressly for determining alignment and electrical contact. The way in which the DSS indicates to the end user that displacing should be stopped also indicates that the DSS does not involve an express test for alignment and correct electrical contact. In the DSS, displacement is stopped<sup>33</sup> by the user after seeing that the DSS is functioning properly. As indicated above, the ALJ found, and we agree, that a test for proper functioning is not an express testing for alignment and electrical contact.

Based on the foregoing, we find that the DSS does not practice an express test for proper alignment and correct electrical contact. Although the failure to practice a single limitation of a claim establishes non-infringement, we will proceed to analyze whether the DSS practices the other disputed claim limitations.

2. The “predetermined operations” and “predetermined expected response” limitations

As indicated above, we have construed “predetermined” to mean “determined or decided in advance of the test in question” and “expected” to mean “predicted to occur.” Innovatron argued that the DSS practices the “predetermined operations” and “predetermined expected response” limitations of step (b). It noted that the constructions of the terms proposed by the Commission in its notice of review (which are not substantially different from those indicated in section II.A above) are broader than those adopted by the ALJ, and that therefore the ALJ’s findings that the DSS practices them is, under the Commission’s proposed construction, only strengthened.

Thomson argued that the test performed by the DSS does not involve a “predetermined expected response.” It contended that the removable card responds to the predetermined operations by transmitting a series of characters constituting the ATR string. Because the ATR string varies, Thomson argued, it does not constitute a predetermined expected response. Thomson also contended that even if what is considered to be the test is not the entire ATR

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<sup>32</sup> For purposes of this analysis only, we assume that a DSS user can practice “displacing” by the removal and reinsertion, or the jiggling, of the DSS access card, as advocated by Innovatron. Below we address whether such actions in fact practice the displacing limitation of step (c).

<sup>33</sup> For purposes of this analysis, we assume that a DSS user can practice stopping manually. We address below whether a DSS user can in fact practice stopping manually.

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string, but rather the subpart known as the TS character, then there are still two different possible responses. Because the DSS receiver does not know which response it will receive from the access card, Thomson asserted, the response cannot be “expected.”

We find that the “predetermined operations” and “a predetermined expected response” limitations of claim 8 are practiced in the DSS. Predetermined operations are performed when the card reader transmits the reset signal to the card. This operation is predetermined because it is determined, decided, or established in advance of the test. The predetermined expected response is practiced when the card transmits the TS character in response to the reset signal. The TS character is determined during the design of the DSS, and all DSS access cards generate a TS character with a value of “3F” in response to the test. Thus, the response is also “expected” or “predicted to occur.” Accordingly, we find that the accused DSS practices a test involving the “predetermined operations” and “a predetermined expected response” limitations of claim 8.

3. The “displacing . . . in a direction tangential to the corresponding contact surfaces” and “stopping . . . when” limitations

As indicated previously, we have construed the “displacing . . . in a direction tangential to said corresponding contact surfaces” limitation to mean that the corresponding contact surfaces are moved in any direction provided that they remain in contact. We have construed the “stopping . . . when” limitation to mean stopping that occurs as a result of a positive test for correct alignment and electrical contact, and that is instantaneous or nearly instantaneous such that the relative displacing is halted before the corresponding contact surfaces are moved from a position of proper alignment and correct electrical contact to a position out of such alignment and contact. The parties presented argument regarding whether the DSS practices these limitations as properly construed.

Having considered the arguments of the parties and the record evidence, we find that users of the DSS practice neither the “displacing . . . in a direction tangential” nor the “stopping . . . when” limitations. Innovatron advanced several arguments that the DSS practices these limitations, none of which we find persuasive. Innovatron argued first that the DSS practices these limitations when users remove and reinsert their access cards. Innovatron in effect argues that removal and reinsertion practices the displacing in a direction tangential limitation whether removal and reinsertion is construed as a single act or is construed to consist of various acts (removal of the card, the card residing outside the DSS reader, and the reinsertion of the card). We do not agree that removal and reinsertion practices the displacing in a direction tangential limitation or the stopping limitation under either interpretation.

If the removal and reinsertion of the access card is considered to be a single act, then during this act the access card is completely removed from the DSS receiver such that the corresponding contact surfaces are no longer in contact. Thus, removal and reinsertion does not

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practice the displacement “in a direction tangential” limitation, which, as properly construed, requires that the contact surfaces remain in contact during displacement.

In addition, it has not been proved by a preponderance of the evidence that the act of removal and reinsertion results in the card being in a different position after reinsertion than it was before removal. To the contrary, the record indicates that the DSS access cards are designed to stop in the same fully inserted position. Bove Tr. at 960-963 and ID at 175 (Finding of Fact 185), 177 (Finding of Fact 197). Thus, it has not been demonstrated that removal and reinsertion results in any overall displacement at all. In fact, the evidence of record strongly suggests that DSS customers are instructed to remove and reinsert access cards for the purpose of cleaning the contacts rather than the purpose of achieving relative displacement. ID at 102-04, 169-187 (Findings of Fact 144, 154, 171, 194, 229-231, 233-235, 236, and 262-263) (in some cases, the card was removed to determine whether it was warped -- ID at 184, 187 (Findings of Fact 246-247 and 265-266)).

We also find that the overall process of removal and reinsertion of DSS access cards fails to practice the “stopping . . . when” limitation. “[S]topping . . . when” is properly construed as stopping that occurs as a result of a positive test for correct alignment and electrical contact, that is instantaneous or nearly instantaneous such that relative displacing is halted before the corresponding contact surfaces are moved from a position of proper alignment and correct electrical contact to a position out of such alignment and contact. Assuming for purposes of argument that removal and reinsertion practices displacing (which we believe it does not for the reasons given above), such displacing is not stopped when proper electrical contact is established. In removal and reinsertion, stopping occurs in the DSS when the card is fully inserted into the receiver. Thus, in the DSS stopping does not occur in response to a determination of proper contact, nor is the “stopping” instantaneous or near instantaneous such that contacts in a position of correct alignment and electrical contact are prevented from moving out of such alignment and electrical contact. Stopping instead occurs as a result of the card becoming fully inserted. We find, therefore, that removal and reinsertion of the access card therefore does not practice the “stopping . . . when” limitation of claim 8, as it is properly construed.

Moreover, we find that the act of removal and reinsertion cannot practice the “displacing . . . if” and “stopping . . . when” limitations of step (c) of claim 8 because that act constitutes a repetition of the “bringing” of step (a). Claim 8 provides that in the bringing action of step (a), the corresponding contact surfaces of the card and the electric device are brought into a contacting relationship. The testing of step (b) then follows. If the test indicates that the corresponding contact surfaces are not in proper electrical contact, then step (c) of claim 8 indicates that the card is displaced in a direction tangential and that such displacement is stopped when correct electrical contact is determined. Thus, whereas steps (a) and (b) of claim 8 teach that the card is brought into contact with the receiver and then tested, step (c) teaches the distinct act of displacing the card if proper contact does not exist and stopping that displacing when

## PUBLIC VERSION

proper contact is determined. In the DSS, however, after a failed test in step (b), steps (a) and (b) are simply repeated by removal and reinsertion of the access card. There is no distinct act of displacing and stopping, as required by step (c). To find that removal and reinsertion also practices step (c) is to find that step (c) and its limitations add nothing to the patented method. We therefore conclude that while the removal and reinsertion of the card may practice steps (a) and (b), such removal and reinsertion does not practice step (c).

Innovatron urged in the alternative that the DSS practices the step (c) limitations, not in the entire process of removal and reinserting, but in the initial part of removing the card and the latter part of reinserting it. Specifically, Innovatron contended that there is displacing in a direction tangential during these parts of removal and reinsertion. It argued further that the limitations can be practiced even if unrelated intervening actions occur (such as removal of the card).

As described above, however, we find that the repeated insertion and removal of the card is fully described by steps (a) (bringing) and (b) (testing) of claim 8. It is possible that in some literal sense the initial part of removing and the part of latter reinserting involve some minimal degree of displacing in a direction tangential. However, any such displacing is incidental to removing and bringing, and thus does not practice the displacing taught in step (c). As noted above, step (c) teaches displacing that is distinct from the actions taught in steps (a) and (b). Therefore, any displacing that may occur in performing steps (a) and (b) does not practice displacing in step (c).

Even if the initial part of removing and the latter part of reinserting are considered to be displacing in a direction tangential, such actions do not practice the “stopping . . . when” limitation of the step (c). On removal, the “displacing” proceeds uninterrupted until the card is removed from the DSS receiver. Thus, no stopping of any kind occurs in removal, let alone stopping that is instantaneous or near instantaneous such that the contact surfaces are not moved out of a position of proper alignment and correct electrical contact. On reinsertion, stopping occurs only when the card is fully inserted. As described above, this stopping does not practice “stopping . . . when,” as that limitation is properly construed.

Innovatron argued finally that the step (c) limitations are practiced in the DSS when customers “jiggle” or “flick” the already inserted cards. However, jiggling or flicking involves the very problem that the patented method was intended to eliminate. Two stated purposes of the claim are to facilitate rapid placement in electrical contact and to limit wear of the contact surfaces to that which is absolutely necessary. Innovatron argued nevertheless that jiggling practices the stopping limitation because the specification discloses that stopping can be performed manually. As indicated above in our discussion of claim construction, however, we do not agree that the specification discloses manual stopping.

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We also disagree with Innovatron that the record indicates that a person jiggling the card can practice instantaneous or nearly instantaneous stopping such that the corresponding contact surfaces are halted before moving back out of proper alignment and proper contact. The specification discloses two arrangements to achieve stopping that, based on the record, is more rapid than a human being can perform. In the first, power to the motor that drives displacement is cut off. The specification indicates that after power is cut there is a wait of 50 milliseconds (one-twentieth of a second) before testing is performed, to allow the card to come to rest. In the other arrangement, the card and the connection cross card are immobilized with respect to each other “immediately” upon a test that determines that good contact is achieved. In fact, the specification indicates that this arrangement is particularly useful in the event of manual displacement so that the user need not be concerned with the “instant” that good contact occurs.

Innovatron has argued that the evidence of record indicates that a human being can react within the 50 milliseconds indicated in the specification. We do not agree. Thomson’s expert witness (Dr. Bove) testified that a human being could not perform stopping due to a combination of reaction time and possible failure to pay attention to the proper cues. Innovatron’s expert witness (Dr. Kuc) did not testify as to whether a person can halt a hand motion within 50 milliseconds, although he recalled experiments in the past indicating that a person can speak within about 50 milliseconds after seeing a light. The experiment was not entered into evidence, however, and in any event involved a different human reaction than the reaction at issue in this investigation (speaking in response to a light instead of stopping a hand motion in response to seeing television programming).

Moreover, Innovatron has not established by a preponderance of the evidence that stopping displacing within 50 milliseconds, even if a human being can react that rapidly, is sufficiently rapid to prevent the contact surfaces from moving out of proper contact and alignment in the DSS. Although 50 milliseconds is sufficiently rapid to stop the card in the preferred embodiment described in the patent specification, it is not necessarily sufficiently rapid in the DSS. Differences between the preferred embodiment and the DSS in the speed of displacement and the size or length of the contact surfaces could make the time required in the DSS shorter or longer than that required in the preferred embodiment. Thus, even if the record indicated that a human being can halt a hand motion within 50 milliseconds, the same does not establish that a person can stop jiggling the DSS card rapidly enough to prevent the corresponding contact surfaces from moving out of contact of correct alignment and electrical contact. As the party alleging infringement, Innovatron bore the burden of establishing these facts by a preponderance of the evidence.

Our conclusion is not affected by the possibility that jiggling may ultimately result in the card coming to rest in a position of proper alignment and correct electrical contact, at which time the user would presumably decide to stop jiggling. To practice “stopping . . . when,” as properly construed, the displacement must be halted before the contact surfaces move back out of

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alignment. With jiggling, the contact surfaces may move into and back out of alignment multiple times before the motion by chance causes the card to come to rest in a position of proper alignment. As indicated above, jiggling involves the very problem that the patented method was intended to solve.

#### 4. Conclusion

In sum, end users of the DSS products do not practice the following three limitations of claim 8: (1) the express test limitation, (2) the “displacing . . . in a direction tangential to the corresponding contact surfaces” limitation, and (3) the “stopping . . . when” limitation.<sup>34</sup> Accordingly, we find that use of the DSS in the United States does not directly infringe claim 8 of the ‘464 patent. In the absence of direct infringement, Thomson cannot be found to have induced infringement of, or contributorily infringed, claim 8. As indicated above, we also find that the domestic industry requirement is not met in this investigation. Having determined that Thomson has not violated section 337, there is no need for us to address the issues of remedy, the public interest, and bonding during the Presidential review period.

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<sup>34</sup> Our analysis pertains to literal infringement. Innovatron, which as the party alleging infringement bears the burden of proof, did not argue that the DSS infringes under the doctrine of equivalents.



PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

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In the Matter of )  
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CERTAIN REMOVABLE ELECTRONIC CARDS )  
AND ELECTRONIC CARD READER DEVICES ) Investigation No. 337-TA-396  
AND PRODUCTS CONTAINING THE SAME )  
\_\_\_\_\_ )

INITIAL DETERMINATION

Administrative Law Judge Sidney Harris

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PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

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In the Matter of	)	
	)	
CERTAIN REMOVABLE ELECTRONIC CARDS	)	
AND ELECTRONIC CARD READER DEVICES	)	Investigation No. 337-TA-396
AND PRODUCTS CONTAINING THE SAME	)	
_____	)	

INITIAL DETERMINATION

Administrative Law Judge Sidney Harris

Pursuant to the Notice of Investigation, 62 Fed. Reg. 15728 (1997), this is the administrative law judge's Initial Determination in the Matter of Certain Removable Electronic Cards and Electronic Card Reader Devices and Products Containing Same, United States International Trade Commission Investigation No. 337-TA-396. 19 C.F.R. § 210.42(a).

The administrative law judge hereby determines that a violation of section 337 of the Tariff Act of 1930, as amended, has been found in the importation and the sale within the United States after importation of certain removable electronic cards and electronic card reader devices and products containing same by reason of infringement of claim 8 of United States Letters Patent 4,404,464.



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## I. BACKGROUND

### A. Procedural History

By publication in the Federal Register on April 2, 1997, this investigation was instituted pursuant to an Order of the United States International Trade Commission which issued on March 27, 1997, after consideration of a complaint filed on February 11, 1997, on behalf of Innovatron S.A. ("Innovatron" or "complainant"), 1 rue Danton, Paris, France 75006. See 62 Fed. Reg. 15728 (1997); 19 C.F.R. § 210.10(b).

The Commission's Order required that pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, an investigation be instituted to determine whether there is a violation of 19 U.S.C. § 1337(a)(1)(B) in the importation into the United States, the sale for importation, or sale within the United States after importation of certain removable electronic cards or electronic card reader devices or products containing same by reason of infringement of claim 8 of U.S. Letter Patent 4,404,464 ("464 patent"), and whether there exists an industry in the United States as required by subsection (a)(2) of section 337. 62 Fed. Reg. 15728 (1997).

The Commission named Innovatron as the complainant, and the following companies as respondents:

Thomson Multimedia, S.A.  
9 place des Vosges,  
Paris La Défense Cedex, France

Thomson Consumer Electronics, Inc.  
10330 North Meridian Street  
Indianapolis, IN 46290.

Kent R. Stevens, Esq. of the Office of Unfair Import

Investigations ("OUII") was designated as the Commission Investigative Attorney.<sup>1</sup>

On April 23, 1997, a preliminary conference was held at which Innovatron, Thomson Multimedia, S.A. and Thomson Consumer Electronics, Inc. (collectively, "Thomson" or "respondents"), and OUII were represented.

Innovatron, Thomson and OUII remain the only parties in this investigation.<sup>2</sup>

The hearing in this investigation commenced on September 29, 1997, and concluded on October 7, 1997. All parties were represented at the hearing. Post-hearing briefs, and proposed findings of fact and conclusions of law, as well as replies thereto, were subsequently filed by all parties.

Certain legal issues were raised during the hearing as to which written motions were filed after the hearing. These motions are ruled upon below.

On October 23, 1997, complainant filed a motion to strike and exclude certain evidence and testimony relating to a Texas Instruments ("TI") calculator that respondents assert as prior art against the

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<sup>1</sup> On March 24, 1998, Juan S. Cockburn, Esq. was designated as the Commission Investigative Attorney. See Notice of Change of Commission Investigative Attorney.

<sup>2</sup> No jurisdictional challenge was made in this investigation. The administrative law judge finds that the Commission has personal jurisdiction over the parties and subject matter jurisdiction over this investigation. See FF 1-4, 8-12.

'464 patent. Motion Docket No. 396-58.

On October 29, 1997, respondents filed their opposition to the motion to strike, which included a "motion to substitute pages" (which does not appear to have been filed or docketed as a separate motion).

On November 5, 1997, as provided for during the hearing, complainant filed a reply concerning its motion to strike. The filing also contained an opposition to the aforementioned motion of respondents to substitute pages.

Complainant argues that the TI calculator and manuals relied upon by respondents at the hearing, and the testimony of respondents' expert relating thereto, should be stricken because neither the calculator nor the manuals constitute prior art.

Having considered the arguments of the parties, the administrative law judge has determined not to strike the evidence (including testimony) offered by respondents at the hearing concerning the TI calculator and manuals. However, questions concerning whether or not the TI calculator and manuals offered into evidence by respondents may be considered prior art under applicable law are addressed in this initial determination within the context of the patent validity issues.

Respondents' motion to substitute pages is in essence a request to replace calculator manuals relied upon at the hearing with other documents which were published earlier. Respondents argue that there are no differences between the substitutes and the corresponding pages

already in the record.<sup>3</sup>

However, the new exhibits (RX 68 Substituted and RX 69 Substituted) prepared by respondents are hundreds of pages long. Complainant would be prejudiced by admission of the substitute exhibits without an opportunity to examine them closely, and to have the opportunity at the hearing to conduct cross-examination thereon.

Accordingly, complainant's Motion No. 396-58 is DENIED, and respondents' motion to substitute pages (i.e., for the admission of substitute versions of RX 68 and RX 69) is also denied.

On October 23, 1997, respondents filed a motion to admit certain deposition testimony of Gemplus Corp. Motion Docket No. 396-59.

On October 29, 1997, complainant filed its opposition to respondents' motion.

Respondents request admission of the deposition of two Gemplus employees, Serge Barthélémy and Roman Eude. Gemplus is the domestic licensee under the patent-in-suit upon which complainant relies for satisfaction of the domestic industry requirement of section 337.

Respondents seek to have the depositions admitted as admissions under the rationale of Federal Rule of Evidence 801(d)(2)(D). Respondents argue that in order for the Gemplus depositions to be admitted: "Gemplus must be found to be the agent of Innovatron, its

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<sup>3</sup> During the hearing, respondents' expert testified that one of the 1979 manuals relied upon (RX 69) was "substantially identical" to a 1977 version that he possessed but which was not brought to the hearing. Bove Tr. 1171-1172.

statements must concern the subject matter of the agency, and the statements must have been made during the existence of the agency." Respondents' Mot. at 3. In the alternative, it is argued under the rationale of Rule 801(d)(2)(C) that Gemplus was authorized to speak on behalf of complainant Innovatron. Id. at 6.

The administrative law judge does not find that it has been demonstrated that a principal/agent relationship exists between Innovatron and Gemplus. However, the administrative law judge does find at least an implied authorization on Innovatron's part for Gemplus to speak on behalf of Innovatron with respect the domestic industry issue.

Innovatron relied upon a declaration of Gemplus' Mr. Barthélémy in order to have this investigation instituted. In effect, Gemplus was speaking to the Commission on Innovatron's behalf. That act alone virtually insured that Gemplus, through Mr. Barthélémy or another witness, would be deposed in this investigation, and that the deposition would be treated like that of a party.

Furthermore, during the investigation Innovatron relied upon Gemplus witnesses to prove a material element of their case, i.e., domestic industry.<sup>4</sup>

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<sup>4</sup> Innovatron brought Gemplus to this investigation for a particular purpose; and the two companies acted in concert. Thus, the circumstances involving the Gemplus fact witnesses, including the filing of the Gemplus affidavit in support of the complaint, is similar to the use of an expert witness who is expected to provide

(continued...)

Complainant Innovatron argues that respondents could have called Messrs. Barthélémy and Eude as witnesses at the hearing, and need not rely upon their depositions. Yet, given Innovatron's reliance on testimony provided by Gemplus to fulfill Innovatron's statutory and evidentiary requirements, including Innovatron's adoption of Gemplus' affidavit and testimonial evidence, it would be unfair to prevent respondents from taking advantage of evidentiary vehicles afforded to one taking discovery of a party-opponent.<sup>5</sup>

Consequently, under 19 C.F.R. § 210.28(h)(2),<sup>6</sup> or alternatively § 210.28(h)(3)(v),<sup>7</sup> the Barthélémy and Eude depositions are admitted into evidence.

Accordingly, Motion No. 396-59 is GRANTED.

Any motions not previously ruled upon are hereby denied.

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<sup>4</sup> (...continued)

evidence in his affidavit or during the trial, and whose deposition may therefore be taken and admitted into evidence. See Collins v. Wayne Corp., 621 F.2d 777, 782 (5th Cir. 1980); Dean v. Watson, No. 93 C 1846 (N.D. Ill. Nov. 16, 1995) (1995 WL 692020).

<sup>5</sup> In addition, there is no specific indication of the unreliability of the deposition testimony of either witness. There is no indication that Innovatron disavows any of the testimony given by Gemplus in connection with this investigation.

<sup>6</sup> Commission Rule 210.28(h)(2) provides that "[t]he deposition of a party may be used by an adverse party for any purpose."

<sup>7</sup> Commission Rule 210.28(h)(3)(v) provides for a situation in which it is found "[u]pon application and notice, that such exceptional circumstances exist as to make it desirable in the interest of justice and with due regard to the importance of presenting oral testimony of witnesses at a hearing, to allow the deposition to be used."

This Initial Determination is based on the entire record of this proceeding. Proposed findings not herein adopted, either in form or in substance, are rejected as not being supported by the evidence or as involving immaterial matters.

The findings of fact include references to supporting evidentiary items in the record. Such references are intended to serve as guides to the depositions, exhibits, and hearing testimony supporting the findings of fact; they do not necessarily represent complete summaries of the evidence supporting each finding. Some findings of fact are contained only in the opinion.

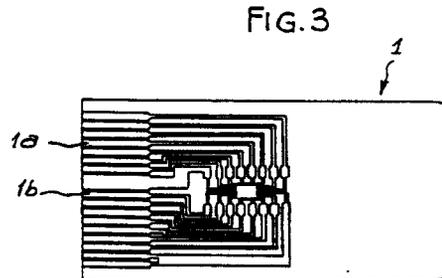
The following abbreviations may be used in this Initial Determination:

CX	-	Complainant's Exhibit
CSX	-	Complainant's Supplemental Exhibit
CPX	-	Complainant's Physical Exhibit
RX	-	Respondents' Exhibit
RPX	-	Respondents' Physical Exhibit
SX	-	Commission Investigative Staff ("OUII") Exhibit
FF	-	Finding of Fact
PFF	-	Proposed FF (CPFF, RPF, or SPFF)
PRFF	-	Proposed Reply FF
Dep.	-	Deposition
Tr.	-	Transcript.

## B. Technological Background

The smart card is a plastic card that is often roughly the size of a credit card which contains an integrated circuit. The integrated circuit is connected to contact pads on the surface of the card, and when the card is inserted into a reader, these surfaces make contact with a connector. The pins in the card reader are often elongated wires that have a little dip in them to allow a particular contacting surface to exist when the pins are in contact with the card. FF 5-6.

Reproduced below is an example of a smart card from the '464 patent (CX 1), showing the pads which are designed for contact with the pins of the reader:



The pads and pins need not make contact on the edge of the smart card as illustrated in the above Figure from the '464 patent. Indeed, the pads on the smart card may be placed in a pattern of rows on the bottom surface of the card, as for example, in accordance with

international standards which state where pads are to be located. See Kuc Tr. 196-197; CPX 10.

When inventor Roland Moreno filed the application for the '464 patent, smart cards did not exist in their present form. Consequently, there were no international standards concerning features such as the size of the smart card, the location of the contacts on the card, or the function of the contacts. Moreno Tr. 23-25. However today, international standards are set by a committee, and are referred to by their ISO specification number. The ISO standards assist in the task of making sure that smart cards can operate in equipment produced by different manufacturers. Naujokas Tr. 772-777. For example, ISO 7816-2 covers some of the physical parameters necessary for card alignment, such as the location, minimum size, and also the assignment of contacts or pads for specific uses. See RX 56; Kuc Tr. 193, 197; Bove Tr. 946; LeDuc Tr. 73. ISO 7816-3 includes operating procedures for the smart cards such as communications protocols, including the answer-to-reset sequence which includes the TS character, which in modern-day cards plays an important role in the patented process. See RX 58; Kuc Tr. 162.

Smart cards are often used in connection with encrypted information. For example, in a system such as the accused DSS system, encrypted television programming is received from satellite transmissions, and the bits of programming information are still encrypted as they exit the DSS tuner. In order to be decrypted the



F.2d 1202, 1206 (Fed. Cir. 1992), cert. denied, 506 U.S. 1053, 113 S.Ct. 976 (1993). Consequently, claim 8 must be properly construed before proceeding to the infringement analysis. Furthermore, as is often the case in patent-based investigations, proper construction of the asserted patent claim or claims is important to deciding other issues such as respondents' patent validity defenses and the question of whether complainant's activities and investments satisfy the domestic industry requirement of section 337.

The construction of patent claims is a matter of law. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff'd, 116 S.Ct. 1384 (1996); Tandon Corp. v. Int'l Trade Comm'n, 831 F.2d 1017, 1021 (Fed. Cir. 1987).

All elements of a patent claim are material, with no single part of a claim being more important or "essential" than another. Markman, 52 F.3d at 988.

"Claims must be read in view of the specification, of which they are a part." Markman, 52 F.3d at 979 (quoting Autogiro Co. v. United States, 384 F.2d 391, 197 (Ct. Cl. 1967)). The specification may serve as a sort of dictionary which explains the invention and may define terms used in the claims. 52 F.3d at 979. In fact, it has often been said that "a patentee is free to be his own lexicographer." Id. at 980 (quoting Autogiro, 384 F.2d at 397). However, "any special definition given to a word must be clearly defined in the specification." 52 F.3d at 980 (citing Intellicall, Inc. v.

Phonometrics, Inc., 952 F.2d 1384, 1388 (Fed. Cir. 1992)).

In considering the claims in view of the specification, it must be remembered that "[t]he written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of the claims." Markman, 52 F.3d at 980.

To construe claim language, one "should also consider the patent's prosecution history, if it is in evidence." Id. Indeed, the prosecution history (or "file wrapper") "is of primary importance in understanding the claims." Id. Although the prosecution history should be used to understand the language of the claims, like the specification, it cannot enlarge, diminish or vary the claims.

Markman, 52 F.3d at 980 (quoting Goodyear Dental Vulcanite, 102 U.S. 222, 227 (1880)). The prosecution history "limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution." Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed. Cir. 1995).

Extrinsic evidence may also be used to construe patent claims. Such evidence "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." Markman, 52 F.3d at 980. Extrinsic evidence may, for example, help to explain scientific principles, technical terms, or the state of the art at the time of the invention. Id. Furthermore, "[e]xpert testimony, including evidence of how those skilled in the art would interpret the claims,

may also be used." Markman, 52 F.2d at 979 (quoting Fonar Corp. v. Johnson & Johnson, 821 F.2d 627, 631 (Fed. Cir. 1987)). See also SmithKline Diagnostics, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 882 (Fed. Cir. 1988) ("Moreover, claims should be construed as one of ordinary skill in the art would construe them.").

A "court may, in its discretion, receive extrinsic evidence in order 'to aid the court in coming to a correct conclusion' as to the 'true meaning of the language employed' in the patent." Markman, 52 F.3d at 979 (quoting Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 546 (1871)). A trial judge has sole discretion to decide whether or not he needs, or desires, an expert's assistance to understand a patent. Markman, 52 F.3d at 981 (quoting Seattle Box Co. v. Industrial Crating & Packing, Inc., 731 F.2d 818, 826 (Fed. Cir. 1984)). Extrinsic evidence is to be used to understand the patent, not to vary or contradict the terms of the claims. 52 F.3d at 981. Extrinsic evidence "may be necessary to inform the court about the language in which the patent is written. But this evidence is not for the purpose of clarifying ambiguity in claim terminology." Id. at 986.

**B. Claims 1 and 8 of the '464 Patent**

Claim 8 of the '464 patent is the only claim asserted in this investigation, and depends from claim 1. Claim 1 and claim 8 are as follows:

1. Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric device, which cooperates

with said removable article, said removable article having electrically conductive terminals and said electric device having conductor elements, both said electrically conductive terminals and said conductor elements having corresponding contact surfaces, the method comprising the steps of:

(a) bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into contacting relationship with said corresponding contact surfaces of said conductor elements;

(b) testing said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces; and

(c) displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

8. Method as defined by claim 1 wherein said step of testing said corresponding contact surfaces for said existence of correct electrical contact comprises: performing predetermined operations which provide a predetermined expected response from the removable article upon the existence of correct alignment and electrical contact; and comparing the actual response of said removable article with the predetermined expected response.

CX 1 ('464 Patent) at col. 9, line 54 through col. 10, line 10; col. 10, lines 51-59.

As a dependent claim, claim 8 includes all of the limitations of

claim 1. Furthermore, claim 8 adds limitations to step (b), or the "testing" step, of claim 1. Thus, in their briefing, the parties combined their arguments concerning claim 1 and claim 8. A similar format is used in the following claim construction analysis.

**1. The Preamble of Claim 1.**

Claim preambles are construed in a manner that is consistent with the principles of claim construction applied to all other claim language, which are (1) that the language of the claim defines the scope of the protected inventions; and (2) that claims are to be construed in light of the specification. Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 619-20 (Fed. Cir. 1995).

A question often arises as to whether or not language contained in a claim preamble should be deemed to be among the limitations of the claim. The Court of Appeals for the Federal Circuit has held that "a claim preamble has the import that the claim as a whole suggests for it." Id. at 620. The Federal Circuit, quoting Kropa v. Robie, 187 F.2d 150, 152 (C.C.P.A. 1951), has stated as follows:

[T]he preamble has been denied the effect of a limitation where ... the claim or [interference] count apart from the introductory clause completely defined the subject matter [of the invention], and the preamble merely stated a purpose or intended use of that subject matter. On the other hand, in those ... cases where the preamble to the claim or count was expressly or by necessary implication given the effect of a limitation, the introductory phrase was deemed essential to point out the invention defined by the claim or count. In the

latter class of cases, the preamble was considered necessary to give life, meaning and vitality to the claims or counts.

Bell Communications, 55 F.3d at 620-21 (footnote omitted).

In its main brief, complainant cites Gerber Garment Tech. Inc. v. Lectra Sys., Inc., 916 F.2d 683, 688-89 (Fed. Cir. 1990), to argue without qualification that "[s]tatements in a preamble give meaning to the claim and define the invention." Complainant's Post-Hearing Br. at 7. In its reply, complainant, again citing Gerber Garment, criticizes respondents for arguing that the preamble of claim 1 (from which claim 8 depends) "merely explains 'the purpose of subsequent steps' and 'is not a separate limitation.'" Complainant's Reply Br. at 1 ("[R]espondents' argument 'ignores the preamble's legal significance of giving meaning to and defining an invention.>").

Complainant proposes, based on Gerber Garment, that a preamble must be read to define the claimed invention. It also appears that complainant argues that a preamble cannot be read merely to contain a statement of the claim's purpose. If that position were correct, then the Federal Circuit's opinion in Gerber Garment would stand in contradiction to the opinion of the Federal Circuit's predecessor court in Kropa as well as in contradiction to the Federal Circuit's own opinion in Bell Communications, both of which are quoted above. However, a reading of the Gerber Garment opinion shows that it is in accordance with the opinions in Kropa and Bell Communications.

In Gerber Garment, it was found that a cutting blade, recited in

the claim preamble and "referenced repeatedly in the body of the claim," constituted a claim limitation. 916 F.2d at 689. Yet, the cutting blade was not construed as a claim limitation merely because of its appearance in the claim preamble. The Federal Circuit explained its standards for evaluating the claim preamble, as follows:

That "a tool in the form of a cutting blade" appears in the preamble of claim 15 is not determinative of whether it is a claim limitation. See *Corning Glass Works v. Suitomo, Inc.* 868 F.2d 1251, 1257 9 USPQ2d 1962, 1966 (Fed.Cir.1989). Where words in the preamble "are necessary to give meaning to the claim and properly define the invention," they are deemed limitations of the claim. *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 896, 221 USPQ 669, 675 (Fed.Cir.), cert. denied, 469 U.S. 857, 105 S.Ct. 187, 83 L.Ed.2d 120 (1984); see *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 866, 226 USPQ 90, 92 (Fed.Cir.1985).

The cutting blade is "necessary to give meaning" to claims 15 and 16 and "properly define the invention." *Perkin-Elmer*, 732 F.2d at 896, 221 USPQ at 675.

Id. at 688-89.

Thus, each claim preamble must be analyzed individually to determine whether or not it adds any claim limitations.

In this case, each of the parties argues that the preamble of independent claim 1 should be construed to define or narrow the application of the claim to some extent. However, there is a dispute as to which portions of the preamble are to be construed as claim limitations, and as to the meaning to be ascribed to the disputed claim language contained in the preamble.

The preamble of claim 1 is lengthy and detailed, relative to the body of the claim. For the reasons which follow, the administrative law judge finds that the preamble of claim 1 states a general purpose for the claim, and also sets forth certain prerequisites or limitations upon the claimed method. In particular, the preamble specifies the type of removable article and electric device which must be used in the claimed method. The administrative law judge does not find, however, that the preamble includes all of the limitations proposed by the parties in the post-hearing briefing.

The meaning of several portions of the preamble of claim 1 are in dispute. Each disputed portion is discussed below in the order in which it appears in the text.

**"Method for electrically connecting a removable article...."**

Complainant argues that this phrase signifies that a removable article is connected to an electric device so that the card and the device function as intended, and that the steps of claim 8 (depending from claim 1) are performed as part of the process of electrically connecting the article and device. It is argued that claim 8 is not performed after the article and device have already been connected or during the normal operation of the device (once the article has been properly installed). Complainant's Post-Hearing Br. at 7.

Respondents argue that the phrase "method for electrically connecting" explains the purpose of the steps to follow, which is to

bring about an electrical connection between two elements, and that although not all the steps of claim 8 (depending from claim 1) are performed after alignment and electrical contact is achieved, the claim language does not prohibit some of the steps from occurring at other points in time during normal operation. Respondents' Comments on Complainant's Findings at 15.

The administrative law judge reads this introductory phrase of the preamble as a general statement about one purpose of the claim, which is to make an electrical connection between a removable article (having at least one electric circuit) and an electric device.

Obviously, a purpose of deliberately making an electrical connection between the removable article and the electric device is to enable the removable article and the electric device to function together. Otherwise no electrical connection would need to be established. In that sense, complainant is correct in stating that a "method of electrically connecting" is the process of making the connection so the devices can function as intended. See, e.g., CPFF 180.

In the expert testimony relied upon by complainant, Dr. Kuc testified that "method for electrically connecting" means that there are two things that are to be connected, and "[y]ou want to end up in a condition where they operate, so 'electrically connecting' means that you are going to bring one device in electrically operating -- in a condition such that they operate. This is the process of making the

connection so that it can then do the things it's intended to do."

Kuc Tr. 164-165.

Dr. Kuc's testimony may be in accordance with the proper construction of the preamble. Yet the administrative law judge is aware that phrases such as "intended functions" or devices "functioning as intended" are given particular meaning in the parties' briefs having to do with the functions performed by the electrical device during normal operation. However, the phrase "method for electrically connecting" does not address questions as to which functions of the electrical device must be enabled by electrical connection of the device with the removable article. Nor does the specification, in its general discussion or in its discussion of the preferred embodiment, contain any language which causes this portion of the claim to limit the functions the electrical device might be capable of performing without electrical connection to the removable article.

In its discussion of the preferred embodiment, the specification contains a lengthy discussion of dangers posed by the counterfeiting or simulated operation of certain types of credit cards, as well as ways in which the claimed invention might be applied to detect and thwart counterfeiting or simulated operation. See CX 1 ('464 Patent) at col. 8, line 38 through col. 9, line 46. That discussion shows that steps may be taken to ensure that the electrical device performs the functions of accessing financial accounts and making payments only

when a genuine credit card is used.

The aforementioned discussion might appear to support complainant's argument that the electrical device must not perform its so-called "intended function" except in conjunction with the removable article, which is in this case a genuine credit card. However, there are at least two reasons why this part of the specification fails to give the preamble of independent claim 1 the meaning that complainant would ascribe to it.

First, this portion of the specification, while strongly emphasizing the requirement that a genuine credit card be used, does not restrict the electrical device with respect to operations that are independent of the credit card. The emphasis is only on making sure that when a card or other article is inserted that the electrical device verifies that the card is not counterfeit. Other operations which might be performed by the electrical device are irrelevant to the problem of making sure that the electrical device does not exchange data with a counterfeit credit card or in response to the simulated operation of a genuine credit card.

Second, neither claim 1 nor its dependent claim 8 covers the method or apparatus described in this portion of the specification. The specification at this point describes electrical devices whose physical construction minimizes the risk of counterfeit or simulated operations, as well as means for testing the electric power consumption of cards which are inserted into the electrical devices

and for testing the response time of the cards. There are no corresponding means or other elements contained in claims 1 and 8. It is not permissible to read such elements or claim limitations into the phrase "method of electrically connecting" in the preamble and thus into either claim 1 or claim 8. See Markman, 52 F.3d at 980.

A similar issue raised by complainant of the limiting effect that the claim preamble may have on the relationship between the removable article and the electrical device is the matter of timing. Specifically, the question is raised as to whether claim 8 (depending from claim 1) is restricted so that the claimed steps cannot be performed after the article and device have been connected or during the normal operation of the device.

Such a limitation is not expressly stated in the claim preamble.

Of course, electrical connection between the removable article and the electric device must be established in advance of any function that relies upon electrical connection with the removable article. For example, in the preferred embodiment drawn to the use of a particular kind of credit card and the temporary exchange of information between the credit card and a transfer device, it is clear that electric connection must be established between the credit card and the transfer device before the exchange of information will take place. See CX 1 ('464 Patent) at col. 3, lines 29-48. This is a matter of simple logic. However, the administrative law judge does not see in the claim preamble any limitation restricting the

application of the claimed method to electrical devices and cards that carry out all the claimed elements before operation of the device.

On this topic, Dr. Kuc testified as follows:

Q Is it your understanding that prior to the intended operation of an electric device, one has to successfully complete each of the steps in claim 8?

A Yes. The steps have to be completed. Then we can say that the device is properly connected.

Kuc Tr. 165.

Dr. Kuc is correct that in order to make a proper electrical connection under the claimed invention, each of the claimed steps must be completed. However, the question that was posed to Dr. Kuc suggests that under the claimed invention, the so-called "intended operation" of the electrical device cannot take place until each of the claimed steps is first performed. As stated above, the claim addresses only those functions that the removable article and electrical device are to perform once an electrical connection is established between them.

For example, with respect to the preferred embodiment, an electrical connection must be made between the credit card and the transfer device before the intended exchange of information can take place. However, there is no suggestion that if the transfer device is capable of performing other functions that do not depend on the credit card, that the transfer device is then incapable of practicing the

claimed invention on the occasions when it does in fact carry out the claimed steps in order to assure electrical connection with the credit card. The specification and the claims are simply silent as to what, if anything, the transfer device might be used for when it does not use the claimed method to connect to a credit card. Consequently, it cannot be found that such a limitation exists.

**"[C]ooperates with said removable article...."**

Complainant argues that this phrase "means that both the removable article and electric device are necessary in that they must be present and appropriately connected for the electric device to perform its intended function." Complainant's Post-Hearing Br. at 8. It is argued that "cooperate" as defined in a dictionary means to "work together toward the accomplishment of a common task." CPFF 188 (citing Kuc Tr. 285).

Complainant proposes that:

A person of ordinary skill in the art understands the term "cooperates" to mean that both the electric device and the removable article have to be present for the system to operate as intended. The electric device will not work without the removable article, and the removable article needs the electric device, in order to perform the functions that are intended. In other words, both the electric device and the removable article are necessary.

CPFF 187 (citing Kuc Tr. 165-166).<sup>8</sup>

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<sup>8</sup> Dr. Kuc testified on direct examination, as follows:

(continued...)

Respondents argue that "cooperate" must be accorded its plain meaning, and that in the preamble it means that the electric device and removable article work together in a common operation involving both. Respondents dispute complainant's argument that the electric

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<sup>8</sup> (...continued)

Q The next term that we see is highlighted is the term "cooperates"; is that correct?

A Yes.

Q What does that mean to a person of ordinary skill in the art?

A It means that both devices have to be present for the system to operate as intended.

Q Excuse me. When you say "both devices," what devices are you referring to?

A We're talking about an electric device and a removable article. And so the electric device will not work without the removable article and the removable article needs the electric device in order to perform the functions that are intended.

Q You say that the word "cooperate" implies that without the cooperation of the electric device will not work; is that your view?

A Yes, it is.

Q How do you come to that conclusion using the word "cooperate"?

A Well, if you -- the previous phrase talks about connecting things and so if you connect something with another thing, it works. So we have this additional phrase, which cooperates, so it must mean that it has this additional feature that both are necessary.

device and the removable article will not work without each other, and are thus mutually and inseparably interdependent. Respondents' Post-Hearing Br. at 7-8.

OUII adopts that view that "cooperates" means to act or work together with one another for a common purpose, but rejects the argument that the word implies that the electric device will not work at all without the removable article. OUII Post-Hearing Br. at 9-10.

The parties are in agreement that the term "cooperates" as found in the claim preamble should be accorded its ordinary meaning. Indeed, the term must be accorded its ordinary meaning because the specification provides no clear definition of any special meaning.<sup>9</sup> See Markman, 52 F.3d at 980.

Complainant relies on both the dictionary definition of the term as well as its expert's understanding of what the term would mean to one of ordinary skill in the art. Neither complainant nor any other party perceives any discrepancies between the meaning of the term

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<sup>9</sup> In referring to the relationship between the removable article and the electric device, the specification of the '464 patent uses the term "cooperates" in its ordinary sense without any special definition. For example, the specification refers to card reader devices as "devices adapted to cooperate with the cards." See CX 1 ('464 Patent) at col. 8, line 66; col. 9, line 21. The specification also refers to the readers as "cooperating devices." See Id. at col. 9, line 32. In a more general sense, without specific reference to the relationship between the removable card and the electric device, the specification uses the word "cooperate" in an ordinary manner. See Id. at col. 9, line 32; col. 3, line 62 through col. 4, line 23 (with reference to the mechanical components of the "transfer device" in the preferred embodiment which uses a credit card).

based on its dictionary definition (i.e., how the term is commonly used in a variety of non-technical and technical situations) and the way in which the term would be understood by one working in the relevant technical field. Furthermore, the administrative law judge finds that there is no evidence of record showing that the meaning ascribed to the term "cooperate" by one of ordinary skill in the art would differ from the term's common meaning.<sup>10</sup>

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<sup>10</sup> Although much of the testimony at the hearing was presented in terms of the understanding of one of ordinary skill in the art, and much of the briefing addresses that point as well, it appears that no party has provided a succinct and explicit explanation of, or finding on, what the relevant art is and what knowledge one of ordinary skill would have possessed in the relevant time frame. However, certain facts are clear from the record.

Complainant offered Dr. Kuc as an expert in smart cards, interfacing, digital circuitry, and generally the electronics and contact problems dealing with smart cards. Kuc Tr. 153-155. Respondents offered Dr. Bove as an expert in the general fields of digital electronics and data communications, including electronic interfaces. Bove Tr. 889.

Furthermore, when testifying about one of ordinary skill in the art, Dr. Kuc referred to one designing a circuit. Kuc Tr. 171-172. Similarly, Dr. Bove, testified with respect to an electrical engineer who was trying to find a solution to a problem, and would examine a fairly broad range of disciplines in order to do so. Bove Tr. 1007.

Based on these facts, as well as additional testimony and evidence received at the hearing, the administrative law judge concludes that the '464 patent is directed toward one designing a circuit, likely an electrical engineer, who is knowledgeable about digital electronics and electronic interfaces.

The record does not appear to contain an estimate of the educational background of one of ordinary skill in the art. However, it appears that at least in the late 1970's (in which the '464 priority occurred), one might gain at least the level of ordinary skill in the aforementioned art through experience with electrical engineering and particularly experience with digital circuitry as it existed at the time. There is no evidence that an advanced degree in electronics or engineering was required. In fact the inventor, Mr.

(continued...)

"Cooperate" is defined as follows:

1: to act or work with another or others to a common end : operate jointly (marines and navy men *cooperated* in the attack) (the police force always ~s with the fire department) 2: to act together : produce an effect jointly (heavy rains and rapid thaws *cooperated* to bring disastrous floods) 3: to associate with another or others for mutual often economic benefit (many nations *cooperated* in the trade agreement) **syn** see UNITE

Webster's Third New World International Dictionary 501

(1976) ("Webster's").

Based on the ordinary meaning of the word "cooperate," it is found that the claimed method must be carried out with a removable article and an electrical device that act together to a common end. They may also be said to "operate jointly" or to "unite" to a common end. For example, in the preferred embodiment, the access card and the transfer device act together to accomplish the temporary exchange of information needed for financial transactions.

However, there is nothing in the ordinary usage of the word "cooperate," or in its dictionary definition, to suggest that those persons or things that cooperate with one other are prohibited from acting independently or acting to any end that is not common. For example, to expand upon the illustration provided in the dictionary,

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<sup>10</sup> (...continued)

Moreno, had no formal educational background in the art when he filed his patent application. Furthermore, Dr. Bove, who has personal knowledge of the level of ordinary skill at that time, had yet to pursue his own formal higher education. See Moreno Tr. 14; Bove Tr. 888-889; CX 1 ('464 Patent) (1978 priority date).

the marines and the navy act together in certain attacks, yet they are thereby in no way restricted from acting independently in other attacks or in other activities.<sup>11</sup>

Similarly with respect to the claim language at issue, there is no doubt that the claim preamble describes a method in which the removable article and the electric device cooperate for a common end or purpose. However, there is nothing in the claim language that limits the removable article or the electrical device to only that end. There is nothing that limits the operation of the electrical device in situations when no electrical connection is sought between the removable article and the electric device.

**"[C]orresponding contact surfaces...."**

Respondents argue that this portion of the claim preamble requires that each contact surface on the removable article must be connected with each corresponding contact surface of the electric device.<sup>12</sup> Respondents' Post-Hearing Br. at 4; Respondents' Reply Br. at 8-9.

Complainant argues that the claim, and particularly the preamble, does not place an "all contacts" limitation on the claim. Complainant

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<sup>11</sup> Respondents propose another illustration that is scientific or technical in nature, which is that a modem and a computer may be said to "cooperate" with each other, although a computer can be used without a modem. See Respondents' Post-Hearing Br. at 8 n.1.

<sup>12</sup> It appears OUII agrees with respondents that connection with all contacts is required although not necessarily based on the claim preamble.

does, however, argue that more than one contact surface is required by the claim, including the claim preamble. Complainant's Post-Hearing Br. at 8; Complainant's Reply Br. at 1-2.

The claim preamble requires that the removable article have electrically conductive terminals and that the electric device have conductor elements. The claim preamble also requires that both the electrically conductive terminals and the conductor elements have corresponding contact surfaces. The plain language therefore requires that contact be possible between all terminals and all conductor elements. That fact does not appear to be in dispute. The question is whether an electrical connection must exist between each terminal and contact surface.

The administrative law judge finds nothing in the plain text of the claim preamble to require that electrical connection occur between each terminal and its corresponding contact surface in order to carry out the claimed method. Respondents argue that it is only logical that "corresponding contact surfaces" means that each contact surface on the removable article must be connected with each corresponding contact surface on the electrical device. See Respondents' Reply Br. at 8. However, the plain language of the preamble itself does not clearly require electrical contact between the card and the devices at each contact surface. It contains no limitation about how the circuitry on the card must function, and whether all contacts must always be used. The administrative law judge does not find it

appropriate to read a claim limitation into the preamble where none is stated.

Respondents' arguments concerning this portion of the preamble are not limited to the plain language of the text. Respondents argue that the prosecution history of the preamble confirms the importance of connecting each contact surface. In particular, respondents rely on the fact that the terms "electrically conductive terminals" (in the plural) and "conductor elements" (in the plural) were substituted for the language "at least one terminal" and "at least one conductor element." Thus, it is argued that, at first claim 8 would have required testing of something less than all contacts, yet once the claim language was amended to require "terminals" and "elements," with no other numerically limiting language, the "all contacts" requirement was created. See Respondents' Post Hearing Br. at 8-9; RPF 197-199.

Complainant argues that the change to the initial claim language, which was not in response to any objection by the Examiner at the Patent and Trademark Office ("PTO"), was made to correct a grammatical error, and that it did not add a claim limitation. See Complainant's Reply at 2.

As set forth in a May 4, 1981 Office Action response, application claim 19, which matured and issued as claim 1, stated in part, as follows:

Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric apparatus, which

cooperates with said removable article, said removable article having at least one terminal and said electric apparatus having at least one conductor element, both said at least one terminal and said at least one conductor elements having corresponding contact surfaces ....

CSX 25 at II00124.

That language allowed a situation in which there was only one terminal and one conductor element yet there were also "corresponding contact surfaces." Obviously, if there was only one terminal and one conductor, there could not be contact surfaces (plural). Therefore, a change in the claim language had to be made for grammatical reasons.

What is relevant in deciding the issue presented is that rather than changing the claim language to replace the phrase "corresponding contact surfaces" with a phrase that would allow only one surface, the applicant chose instead to remove the language that allowed there to be only one terminal and one conductor element. The applicant substituted language indicating that there are to be more than one terminal and more than one corresponding conductor element. So, clearly the invention is properly understood to require the use of a removable article with more than one terminal and an electrical device with more than one conductor element. However, this amendment to the claim language, while informative about the structure of the requisite removable article and device, says nothing about whether the claimed invention requires and/or tests for electrical connection at all contact surfaces. If that limitation is contained in the claims it is

not found in the preamble of independent claim 1.

Indeed, questions concerning whether electrical connection must exist at all contact surfaces is also relevant to steps contained within the body of the claim, and will therefore be addressed in the discussion of those steps.

**2. Step (a): "Bringing ...."**

Step (a) in the body of independent claim 1 of the '464 patent is concerned with the use of the contact surfaces required by the preamble, and provides as follows:

(a) bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into contacting relationship with said corresponding contact surfaces of said conductor elements....

There is no limitation in the claim language as to how the "bringing ... into contacting relationship" is to be accomplished. This aspect of the claim should be read broadly, especially given the fact that the specification teaches that the contacting relationship may be brought about by a system that relies on an electric motor, on a non-electric mechanism, or manually by a person inserting a card. See, e.g., CX 1 ('464 Patent) at col. 8, lines 12-25.

There are, however, two areas of dispute among the parties with respect to this first, so-called "bringing" step. One dispute is similar to an issue raised by respondents in connection with the preamble; it concerns the question of whether all contact surfaces must be brought into a contacting relationship. The other dispute

concerns when the bringing step ends. Each of these disputes is addressed separately below.

Respondents argue that step (a) of claim 1 requires that each contact surface on each side must be brought together so that all corresponding contact surfaces on the removable article are touching the corresponding surfaces of the device. Respondents base their argument on the claim language, specification and prosecution history. See Respondents' Post-Hearing Br. at 9; Respondents' Reply Br. at 4.

Complainant argues that this step should not be construed to mean all corresponding contact surfaces. Complainant argues that "said corresponding contact surfaces" simply refers back to the initial occurrence of the term in the preamble. Complainant's Post-Hearing Br. at 9.

As discussed above in connection with the preamble, it is known from the plain language of the claim and from the prosecution history that there must be more than one contact between a terminal and a conductor. However, the fact that there must be more than one contact, according to step (a), does not mean that all the contacting surfaces must be brought into a contacting relationship.

The plain language of step (a), the "bringing" step, indicates that all of the surfaces required by the preamble must be brought into a contacting relationship. The term "said" is used in an unqualified manner to refer to the contact surfaces required by the claim preamble.

In their main brief, respondents rely on the specification, and one portion in particular, on the issue of whether all contact surfaces must be brought into a contacting relationship. Respondents' Post-Hearing Br. at 4 (citing RPF 213-214). The specification provides in pertinent part, as follows:

In a general fashion, whatever the nature of the electric or electronic circuits which are used in the card, it is possible to test for the proper electrical contact indicating the existence of correct alignment and electrical contact by making the card carry out predetermined operations for which it is known which response predetermined it must furnish (the test must be chosen in a fashion so as to operate all the electrical contacts).

CX 1 ('464 Patent) at col. 7, lines 12-20 (emphasis added).

That portion of the specification pertains to the "testing" step (b) rather than the "bringing" step (a), yet it may shed light on the "bringing" step because the testing of the connection between a terminal and a conductor cannot of course occur without the contact surfaces having been brought into a contacting relationship.

Respondents' expert testified that to one of ordinary skill in the art, that portion of the specification means that all contacts must be tested. See Bove Tr. 897-901. However, complainant's expert testified that one of ordinary skill in the art, specifically one familiar with the designing of systems, would read that portion of the specification and understand that one need not test all the contacts but only all the contacts that are necessary for the intended

operation of the device. Kuc Tr. 334-335.

The interpretation offered by complainant's expert is reasonable, and is geared toward a practical application of the claimed invention. Furthermore, as discussed below, it is consistent with the plain language of the claim, which requires that all contacting surfaces required by the preamble must be brought into a contacting relationship.

In the preferred embodiment, all the contacts are to be connected using the claimed method. As parenthetically noted in the specification portion quoted above, each contact must be tested and consequently must be covered by the "bringing" step. Thus, the description of the preferred embodiment omits any discussion about a device in which certain contacts are not to be connected according to the claimed method because, for example, the circuit designer added contacts which are for optional use or which are otherwise held in reserve. Nevertheless, such a device could practice claim 1 and claim 8 of the '464 patent.

As respondents' expert stated:

Clearly, if there are contacts that don't further connect to any circuitry on the other side, it wouldn't be necessary to test them, but contacts where, in some cases, lack of proper contact and alignment would result in improper operation or no operation, I think should be tested. Certainly, that's the nature of this invention overall.

An appreciation of the overall invention is indeed important to understanding how one of ordinary skill would read the "bringing" step of claim 1. If, based on a design choice, one has decided not to rely on a particular contact, then it need not be brought into a contacting relationship at all -- not for testing and not for the overall purpose of the method which, as stated in the preamble, is one of making an electrical connection. Contacting surfaces for which electrical connection is not sought are not covered by the preamble of claim 1; however, their existence on the removable article does not prevent the claim from covering the other contacts for which electrical connection is in fact established through the claimed method.

The other issue disputed in connection with step (a), the "bringing" step, has to do with when the "bringing" step ends, and whether as a related matter, step (b), the "testing" step, occurs simultaneously with the "bringing" step. In particular, whether

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<sup>13</sup> During the portion of expert testimony quoted above, Dr. Bove testified in reference to the preferred embodiment that one might not necessarily know which "contacts might or might not be essential, so the safest thing is to test them all...." He also stated that he saw no "limitation in the claim that suggests that you get away with testing only a few of them." Bove Tr. 900-901. However, his testimony appears to acknowledge that the patent may cover situations other than those presented in the preferred embodiment, *i.e.*, situations in which a removable article has contacts that need not be tested for electrical connection. In any event, as explained above in the opinion, the administrative law judge finds no limitation which precludes a removable device with contacts not covered by the claim preamble from practicing the claimed invention with respect to other contacts for which electrical connection is sought.

power, which is necessary for testing, must or can be applied during the "bringing step."

OUII argues that the "bringing" step "begins with the corresponding contact surfaces separated from one another, and ends when the contacting surfaces have been placed in a 'contacting relationship,' i.e., when the contact surfaces are made to physically touch one another." OUII Post-Hearing Br. at 12. Their position is that "step (a)," the "bringing" step, "literally describes an action whereby the contacting surfaces of the card and reader are brought together until they touch one another." Id. at 13. OUII argues that the bringing step is "completed at this moment, when the contacts first come into contact with one another," or in other words "where they first touch." Id.; OUII Reply Br. at 7. It is further argued that any subsequent movement of the contact surfaces is "displacing" as described by step (c), and that displacement is stopped when testing indicates proper contact. OUII Post-Hearing Br. at 13 n.4; OUII Reply Br. at 13-14.

Respondents may concur with the OUII's argument concerning the commencement and ending of the "bringing" step inasmuch as they state in their Reply that "Innovatron is wrong when it argues that claim 8 and the specification do not address the time testing begins relative to the instant when a 'contacting relationship' is achieved." Respondents' Reply Br. at 5. In any event, it is clear that respondents argue that the bringing step must not be construed to end

before testing begins. They argue that power must be applied prior to the end of the bringing step, and that "testing must commence as soon as the card enters the system." Id.

Complainant argues that neither claim 8 (apparently through independent claim 1) nor the specification addresses the time that testing begins relative to the instant when the "contacting relationship" is achieved. It is argued that those skilled in the art would know to wait until after completion of the bringing step to apply power to any of the conductor elements (or pins) to protect against damage to the removable article. Complainant's Post-Hearing Br. at 8.

The plain language of the "bringing" step indicates that contact surfaces of the removable article's terminals are to be brought into a contacting relationship with the corresponding contact surfaces of the device's conductor elements. Thus, it is fair to say that the "bringing" step is completed when those contact surfaces are in a "contacting relationship." However, OUII's emphasis on the moment when any contact is achieved is not consistent with the terms and intent of the patent. OUII assumes that a "contacting relationship" is achieved at the instant when the contact surfaces touch. OUII reads phrases in the specification such as "until they touch" and "bringing ... to bear" to introduce concepts of "moment" and slight variations in time and space. However, these concepts do not appear in the record as important to the relevant art. In fact, expert

testimony received at the hearing demonstrates that a "contacting relationship" is understood by one of ordinary skill in the art to have a practical meaning and to require a more substantial physical contact between surfaces than they achieve when they first touch. This differs materially from OUII's definition.

Complainant's expert, Dr. Kuc testified that because one has a removable article one must bring it to the electric device, and that one of ordinary skill in the art would understand "bringing" the removable article to mean that the removable article is inserted into the electrical device so that it is in "a contacting relationship so that it's capable of working." Kuc Tr. 166. One skilled in the art wants to make sure that the removable article is in the position that is most favorable for making a contact. So, for example, with a modern smart card with pins and pads, one would want the pins to be approximately in the center of the pads. That would be the contacting relationship. Once a "contacting relationship" has been achieved between the removable article and the electrical device, one is not sure whether there is electrical contact; that must be tested for later. Id. at 167.

OUII relies in part on the testimony of Dr. Kuc during cross-examination in which he agreed with the questioner's statements to the effect that at the moment that contacts come into contact with one another, the bringing step has been completed, and further that any movement after this is "displacement," as that term is used in the

patent. OUII Post-Hearing Br. at 13 (quoting Kuc Tr. 1225). However, in listening to Dr. Kuc's testimony at the hearing, and in reading it in context, the administrative law judge understood Dr. Kuc's testimony to be based on the type of "contacting relationship" that is called for by the claims and about which he testified during direct examination. In that sense, once "contact" is achieved, that is to say once a "contacting relationship" is achieved, the bringing step is completed. Such "contacting relationship," as discussed above is achieved when the contacts are in a position capable of making electrical contact, with the goal of achieving the position most favorable for working.

Indeed, in reference to the preferred embodiment, the specification provides a flow chart, and explains in part as follows:

The drive system of the card is then started (73). The card advances and the contact surfaces face one another (contacts facing one another 74) and then approach (approach surfaces 75) until they touch (mechanical contact of the surfaces 76).  
If the card has not attained its maximal front position (end of passage? 77) it continues to advance 78).

CX 1 ('464 Patent) at col. 7, lines 31-38 (emphasis added).

Thus, as seen from the portion of the specification quoted above, in all cases the card must advance until the card has attained its maximal front position, even though mechanical contact has already been achieved between the contacts ("until they touch").

As stated above, both OUII and respondents argue that electrical

power must be applied during the bringing step. However, as explained by Dr. Kuc, a person skilled in the art would not apply power until the contacts on the removable article are in a contacting relationship with their corresponding contacts in the electrical device. Otherwise, power may be applied to the wrong contacts and that could damage the chip on the removable article. For example, if power commenced with the "bringing" step, power might be applied from the electrical device to contacts on the removable device that are used for signal leads and which therefore should not have power applied to them at all. This is a problem that would have been understood by one of ordinary skill in the art in 1978. In fact, the adverse consequences of indiscriminately applying power to the contacts in the removable article might have been greater in the late 1970s due to the fragility of integrated circuitry in use then as compared to the circuitry used today. Kuc Tr. 168-169.

Respondents' expert, Dr. Bove, who proposes applying power before the "bringing" step is complete, testified that the removable article used in the preferred embodiment would be "designed so that it will not be damaged if not all of the inputs or outputs are properly connected because one would be applying power, and before we know that it has proper contact and alignment ...." Bove Tr. 1059-1060. He also testified that "I have to presume that [patentee] Moreno anticipated using chips that would not be damaged, which it was known in those days how to make chips that would not be damaged under

those circumstances. He doesn't say for certain in the patent, but it would make good engineering sense." Bove Tr. 1138-1189.

In fact, there is nothing expressly in independent claim 1 or dependent claim 8 requiring the use of a chip that would withstand the application of power to the wrong contacts, nor is there any description of such a chip in the specification.<sup>14</sup> The use of such a chip is necessary in order for the claim construction proposed by respondents and OUII to have any validity. However, even assuming that such chips existed in 1978, no such chip is suggested anywhere in the '464 patent specification. Furthermore, other than Dr. Bove's statement that such chips existed in 1978 there is apparently no evidence of record concerning the availability of chips that could withstand application of power to contacts which should not have power applied to them. It is not clear whether, if such chips existed, they would have been suitable for use on a removable article used in the method of the '464 patent.

In addition to the problems that could be caused by applying power to the wrong contacts, there are also problems associated with

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<sup>14</sup> With respect to the question of when power should be applied, it appears from the expert testimony that there is no express statement in the specification concerning when power should first be supplied. Although respondents' expert testified that he found descriptions showing when power would commence, his view was based on his overall understanding of the specification and how the preferred embodiment works, rather than on text or illustrations expressly indicating the point at which power should first be applied. See Bove Tr. 1159; CX 1 ('464 Patent), Figs. 5, 6.

applying power near the edges of the contacts, which would occur if the "bringing" did not require the contact to be placed in a favorable position for electrical contact before power is applied. The distance between the contacts is small and so there is danger of shorting across contacts. There is also the possibility that a jiggling or vibration might disturb a contact thought to be good. A good engineer in 1978, as well as today, would want a reliable system that operates with some tolerance in the contacting relationship between the removable article and the electrical device, and which would not rely on edge contacts. Kuc Tr. 169-170.

In summary, the administrative law judge finds that the "bringing" step is understood by one of ordinary skill in the art to require that the removable object be brought to the electrical device by the insertion of the removable article (such as a smart card) into the device so that the terminals on the removable device that are to be powered come into a "contacting relationship" with the corresponding conductor elements located in the electrical device. A contacting relationship is understood to be that contact between contact surfaces favorable to the establishment of electrical contact. Furthermore, the administrative law judge finds that one of ordinary skill in the art would not apply power to the chip until the contacts to be powered are in such a "contacting relationship" with the corresponding conducting surfaces in the electrical device.

**3. Step (b) and Claim 8: "Testing ...."**

As discussed above, asserted claim 8 depends from independent claim 1 of the '464 patent. Claim 8 expands upon the "testing" step (b) of claim 1. For ease of reference, step (b) of claim 1, and claim 8 are reproduced immediately below:

1. Method for electrically connecting a removable article . . . comprising the steps of:

\* \* \*

(b) testing said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces;

\* \* \*

8. Method as defined by claim 1 wherein said step of testing said corresponding contact surfaces for said existence of correct electrical contact comprises: performing predetermined operations which provide a predetermined expected response from the removable article upon the existence of correct alignment and electrical contact; and comparing the actual response of said removable article with the predetermined expected response.

Step (b) of claim 1, and claim 8 require a test for the existence of correct alignment and electrical contact. CX 1 ('464 Patent) at col. 9, line 54 through col. 10, line 10; col. 10, lines 51-59; Kuc Tr. 171. Correct alignment and electrical contact is the condition that has to be satisfied for the device to operate as intended.<sup>15</sup> See

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<sup>15</sup> As discussed above with respect to the preamble of claim 1, the relevant intended operation is the operation for which one has inserted the removable article into the electrical device, e.g., the  
(continued...)

Kuc Tr. 175-178. Correct alignment and electrical contact are indicated by a test for proper electrical contact.<sup>16</sup> CX 1 ('464 Patent) at col. 7, lines 12-21.

Claim 8 specifies how to test for the existence of correct alignment and electrical contact in two basic steps. First, predetermined operations are performed which cause the removable article to provide a predetermined expected response, which will happen only upon the existence of correct alignment and electrical contact. The second step involves comparing the actual response from the smart card with the expected predetermined response. If the

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<sup>15</sup> (...continued)

reason why one has inserted a smart card into a smart card reader. Thus, in the preferred embodiment, successful testing for proper contact enables the exchange of data between the removable article and the electric device. Kuc Tr. 178. Claims 1 and 8 of the '464 patent have nothing to do with what operations, if any, the electrical device or the removable article may be capable of performing which do not require electrical contact between them. For example, in the preferred embodiment, it is not stated whether the transfer device is capable of performing useful functions without the credit card or whether the credit card could be used for anything when it is not inserted in the transfer device. The important point is that when a transfer of information between the credit card and the transfer device is sought, and therefore electrical connection is required, the method of the '464 patent is used to make proper electrical contact.

<sup>16</sup> One skilled in the art is not interested in the possible ways a card could fail. He or she is interested in knowing when the smart card is correctly inserted, so that is what the test does. The test informs of the existence of correct alignment and proper electrical contact. Kuc Tr. 312. Step (b) of claim 1 involves some procedure that is carried out which can indicate affirmatively when the article and the device are correctly aligned and when there is proper electrical contact between the corresponding contact surfaces. Bove Tr. 897.

responses match, then correct alignment and electrical contact has been achieved. See Kuc Tr. 163-164, 179.

A person of ordinary skill in the art understands that the clause "nonalignment and nonexistence of correct electrical contact" means the failure of the test in step (b) of claim 8. Kuc Tr. 183. A person of ordinary skill in the art understands the term, "predetermined operations" to mean those operations that are established at the time of the design of the system and that do not change over time. The predetermined expected response is expected in that it does not change over time, and it is expected in that it is the response that the card produces. Kuc Tr. 179-180.

A person of ordinary skill in the art understands the term "response from the removable article" to mean that the card has to respond. The response is generated by the integrated circuit contained on the removable article. Kuc. Tr. 180.

The '464 patent does not require that the predetermined expected response be used exclusively for the test specified in claim 8. There is nothing in claim 8 which limits the predetermined expected response from being used for other purposes. See Kuc Tr. 180, 209.

The '464 patent does not require that the removable article be in motion while the testing is done. See Kuc Tr. 187. There is no claim language requiring that the removable article remain in motion during the "testing" step (b). In fact, within claim 1, the testing step is recited separately, and sequentially in relation to the "bringing"

step (a). Furthermore, as discussed above, the testing does not begin until the "bringing" step is completed.

OUII and respondents argue that the testing step should be applied to all contacts. However, the testing required by step (b) of claim 8 does not require the testing of all the contacts. Kuc Tr. 171. Reference to "said corresponding contacts" in the testing step refers back to the first instance of that phrase, which appears in the preamble. As discussed above, that phrase should simply mean more than one, which is consistent with the file wrapper history. All the contacts on a removable article, such as a smart card, need not be brought into electrical contact if some are not needed for the purpose for which the card is inserted into the device. Such unneeded contacts are not covered by the claimed method for establishing electrical contact.

OUII argues that the testing step, specifically that portion found in claim 8, requires that the "predetermined operations must be able to ascertain the moment there is proper contact," as opposed to an interpretation by which the "predetermined operations should be able to provide a predetermined expected response if there is good contact." OUII Post-Hearing Br. at 17-18. This interpretation was based on an amendment to claim 8 (application claim 26) of the '464 patent that the OUII alleges was necessary for its allowance. OUII Post-Hearing Br. at 21.

Application claims 19 and 26 (issued claims 1 and 8,

respectively) were added through a May 4, 1981 Amendment. CSX 25 at II00124. Originally, application claim 26 simply recited "performing predetermined operations on said removable article; and comparing the actual response of said removable article with a predetermined expected response." CSX 25 at II00133. In that May 4 amendment, the assertion was made that none of the cited references disclose testing "by an electric device which tests to see if the card emits the correct predetermined response." Id. In light of that assertion, application claim 26 was ambiguous given its referral to a comparison involving "a predetermined expected response" without describing the origin of that expected response in the context of "performing predetermined operations."

After considering application claim 26 and the aforementioned assertion, the Examiner held that the claim is patentable, and would be allowed if certain section 112 rejections were overcome, i.e., the phrase "predetermined operations" was vague and indefinite. CSX 25 at II00147. To overcome that rejection, claim 19 was amended to its present form. CSX 25 at II00155-56.

That amendment was thus made to explain the origin of the predetermined operations. A literal interpretation of that amendment would simply be consistent with the assertion made in the May 4 amendment which the Examiner considered, and agreed with, in allowing application claim 26 to issue -- i.e., testing to see if the card emits the correct predetermined response as a result of the

predetermined operations. To interpret claim 8 as OUII does, to require receipt of the expected response at the precise or exact moment of proper contact, would impose additional requirements that are not supported by the claim language and prosecution history.

OUII further argues that its construction is consistent with the specification. OUII has focused on the alleged design goal of limiting the "wearing down of contact surfaces" to support its view that the testing step should determine the precise moment at which proper contact is established. OUII Post-Hearing Br. 18-20. Respondents have made similar arguments. However, the '464 patent is not a patent on testing for the exact moment when proper contact is first achieved. For the reasons discussed in connection with the "bringing" step, the relevant art is a practical one which seeks a reliable contact between the removable article and the electrical device, such as between a credit card and a transfer device. As stated as the first objective of the invention, the '464 patent seeks "to ensure a good electrical contact while compensating for wearing down and/or crushing the contact surfaces." CX 1 ('464 Patent) at col 1, lines 34-36.

Respondents assert that testing, which involves performing predetermined operations and a comparison, "begins before contact and proper operation of the device." Respondents' Post-Hearing Br. 10. In their reply, respondents join in OUII's argument that in order for a predetermined response to be provided "upon" the existence of good

contact, testing must commence before contact is achieved.

Respondents' Reply at 7-8.<sup>17</sup> However, as discussed above in connection with the "bringing" step, the steps of claim 1 and claim 8 are to be carried out consecutively in order to be consistent with good engineering practice. Furthermore, the term "upon" need not convey the sense of immediacy, almost simultaneity, which is proposed by OUII and respondents. See Webster's at 2517-18.<sup>18</sup>

OUII focuses on the language of "instantaneously immobilizing" the card set forth in column 8 of the '464 patent. OUII Post-Hearing Br. at 19. The preceding language of the specification states that certain components "can be arranged such that the whole cross-bar and the card is instantaneously immobilized." CX 1 ('464 Patent) at col. 8, lines 27-29. Based on this disclosure it is clear that the applicant knew how to describe an immediate stopping based on the testing step. If he had intended to include it in claim 8 as a

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<sup>17</sup> For guidance as to when testing commences, respondents refer to the fact that in the preferred embodiment the card presence detector is "permanently activated." See Respondents' Reply Br. at 8. However, the fact that the electrical device is ready to accept the introduction of a credit card and to commence the movement of the drawer does not indicate when testing (including the application of power) begins. See CX 1 ('464 Patent) at col. 4, line 63 through col. 5, line 36.

<sup>18</sup> The following are among the examples given in the dictionary for the word "upon": (<~ the demand of government leaders... arrangements were made this year -- Wheeler McMillen) <transcripts are sent ~ the request of the particular student -- Bull. Of Meharry Med. Coll.>). Webster's at 2518.

limitation in all cases, he would have done so. Moreover, one of ordinary skill in the art would conclude in comparing the claim to the specification that immediate stopping based on testing is not a claim limitation.

OUII argues that the phrase "correct . . . electrical contact" as used in the testing step "refers to a condition of continuity" by pointing to a comment made by the Examiner in the file wrapper and alleging that the applicant acknowledged that comment. Staff Br. at 15-16. The Examiner's comment concerning "continuity" was his suggestion as to what he thought "electrical cooperation" was intended to mean. CX 25C at II00146. However, that suggested term was not placed into the specification or used to replace "electrical cooperation." Rather, the term "electrical contact" was used to replace "electrical cooperation." CSX 25 at II00155-56. Accordingly, "continuity" should not be construed to equate with "electrical contact."

In fact, "correct electrical contact," as used in claim 8, means something more than continuity, which calls for assessing only whether any current is passing between a first and second point but not the nature of the signal voltage received at the second point. Elspass Tr. 571-572, 593-594, 605-606. Continuity is not a sufficient test to determine that the device and card are properly connected for their intended purpose. Elspass Tr. 568-573. The term "electrical contact" was used in the claim and parts of the specification in accordance

with its ordinary meaning, which is contact such that the removable card and the electric device will work as intended. Kuc Tr. 161, 175-178; CX 1, col. 5, lines 54-60; col. 1, lines 21-44.

**4. Step (c): "Displacing ...."**

This step requires "displacing said corresponding contact surfaces ... if said testing determines non-alignment and non-existence of correct electrical contact...." CX 1 ('464 Patent) at col. 10, lines 3-7. Therefore, displacement of the removable article occurs after the testing has been performed and if the results of that test indicate non-alignment and non-existence of correct electrical contact.

OUII argues as discussed above that any movement after initial contact is displacement, and further that "the displacing step searches for a point of good contact...." OUII Post-Hearing Br. at 33. However, as seen from the plain language of the claim, OUII's proposed construction cannot be adopted. The displacing step occurs sequentially after the testing step.

The act of "displacing said corresponding surfaces relatively, in a direction tangential to said corresponding contact surfaces" requires that the contact surfaces of the removable article's terminals and the electric device's conductors be moved in relation to each other such that the area of contact between them decreases. This is the plain meaning of the phrase, and would be understood in this manner by one of ordinary skill in the art. See Kuc Tr. 181. The

'464 patent contemplates bringing this relative movement about in mechanized devices or manually. CX 1 ('464 Patent) at col. 8, lines 14-37; Kuc Tr. 186-87.

Contrary to arguments made by respondents, displacement should not be continuous or limited to mechanical displacement. The plain language of the claim calls simply for displacement, which ordinarily requires movement but not continual or motor-driven movement. See, e.g., Bove Tr. 1131. In this case, the specification describes a motorized embodiment in detail yet also teaches other embodiments, including embodiments that use non-continuous, manual movement of a removable article such as a credit card. See Kuc Tr. 186; CX 1, col. 8, lines 14-37. For example, the specification provides in part:

In the embodiment of the invention described with reference to the figures, the card and the connection mechanism are activated by an electric motor. In other embodiments, it may be activated differently, in particular the displacement of the card and of the drawer can be due to the carrier of the card who introduces it. In this latter case, the relative movements of the contact surfaces will be essentially guided by guiding means, particularly ramps.

In a like fashion the translationally movable drawer may be replaced by a jointed shutter which is rotationally and translationally movable (in the same fashion as introduction mechanisms for magnetic cassettes in tape readers).

CX 1 ('464 Patent) at col. 8, lines 12-25 (emphasis added).

Clearly the card carrier (or a cassette tape drawer) cannot duplicate the card movement proposed by respondents and OUII. The argument that the displacing step should be limited to continuous,

mechanical displacement is based upon an improper interpretation of the '464 patent which would improperly read a limitation from one embodiment of the specification into the patent claim while ignoring other embodiments.

Dependent claim 8, through independent claim 1 step (c), also requires "stopping the relative displacement of corresponding contact surfaces, when said testing determines said alignment and existence of correct electrical contact." No limitation, express or implied, restricts the method of stopping. Stopping, like displacing, can be accomplished manually or mechanically. Nothing indicates that the word "stopping" in claim 8 is used other than in its accepted and normal meaning. The term "stopping" does not have any special engineering meaning. Bove Tr. 1142-1143. The administrative law judge construes the "stopping" requirement to refer to the fact that the removable article (such as a credit card or other type of smart card with embedded circuitry and contacts, etc.) should be displaced and tested again if proper electrical contact is not achieved, and further that displacement should stop when proper electrical contact is established as indicated through testing.

Respondents' expert, Dr. Bove, testified that stopping involves an instantaneous action. See Bove Tr. 903-904. Consistent with respondents' construction of other parts of claim 8, Dr. Bove bases his construction for instantaneously stopping on the immobilization of the removable article in the preferred embodiment and his opinion that

the claim requires a sort of continuous displacement as discussed immediately above. See Bove Tr. 903-904. Dr. Bove is of the opinion that the claimed invention should be carried out electromagnetically because of "a combination of human reaction time and also the fact that you can't guarantee that the human is necessarily going to stop even if you tell him or her to stop moving the card." Bove Tr. 925.

However, instantaneous immobilization is not expressly required by the plain language of the claim, although manual insertion and displacement of a removable article such as a credit card is taught in the specification. Furthermore, the teachings in the specification concerning instantaneous immobilization present the feature as an option. See CX 1 ('464 Patent) at col. 8, lines 26-37. Similar language is not included in claim 1 or dependent claim 8. A construction that imposes a requirement of instantaneous immobilization would limit the claimed method in a way that is not provided for in claim 1 or claim 8.

In addition to the issues discussed above, respondents raise another issue concerning claim 8 which concerns the form and proper interpretation of the claim.

The Patent Act provides in pertinent part, as follows:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents

thereof.

35 U.S.C. § 112, ¶ 6.

As explained by the Federal Circuit, "[s]ection 112, ¶ 6, as is well documented, was intended to permit use of means expressions without recitation of all the possible means that might be used in a claimed apparatus." O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1583 (Fed. Cir. 1997). However:

The price that must be paid for use of that convenience is limitation of the claim to the means specified in the written description and equivalents thereof. Similarly, a step for accomplishing a particular function in a process claim may also be claimed without specificity subject to the same price.

Id.

Respondents seek to use section 112, ¶ 6, to limit the scope of asserted claim 8. They argue that "[a]t least certain aspects of claim 8 are sufficiently indefinite and therefore purely functional so as to fall within the strictures of section 112, ¶ 6." Respondents' Post-Hearing Br. at 15 (footnote omitted). In particular, respondents argue that "[e]ven assuming the 'testing' described in claim 8 is sufficiently definite, it is inarguable that the limitations of "stopping" and "displacing" of step (c) contain no recitation of required acts." Id. at 15-16 (footnotes omitted) (citing Motorola, Inc. v. Interdigital Tech. Corp., 930 F. Supp. 952 (D. Del. 1996), aff'd in part and rev'd in part, 121 F.3d 1461 (Fed. Cir. 1997)).

It does not appear that in the Motorola case an issue was raised

as to whether or not the district court should construe certain of the claims at issue as "step-plus-function" claims. The opinion provides little guidance in differentiating claims that must be construed under section 112, paragraph 6, from those that must not. However, the Federal Circuit's opinion in O.I. Corp., relied upon by complainant to oppose respondents' arguments, is instructive as to when a method claim ought or ought not be construed pursuant to Paragraph 6.

The Federal Circuit held that:

Of course, as we have indicated, section 112, ¶ 6, is implicated only when means *plus function* without definite structure are present, and that is similarly true with respect to steps, that the paragraph is implicated only when steps *plus function* without acts are present.

O.I. Corp., 115 F.3d at 1583 (emphasis in original).

With respect to claim 8, and independent claim 1 from which it depends, the administrative law judge finds upon examination of the claim language that each of the steps (including step (c) of claim 1 and the specific limitations of claim 8) set forth acts that must be performed. As in the case of all claim language, claims 1 and claim 8 must be read in view of the specification. However, this is not a case in which the patentee has stated a step plus function with no acts. A discussion of the acts required by claim 8 and independent claim 1 has occupied a significant portion of this initial determination, and it is clear that the claim language conveys to one of ordinary skill in the art acts that are necessary to carry out each

step, including step (c) and the specific limitations added by claim 8.

As quoted above, respondents draw particular attention in their brief to the phrases "stopping" and "displacing" which are contained in step (c) of independent claim 1. Each of these words is part of the larger step (c). Yet even if they are analyzed individually -- essentially breaking step (c) into two steps -- neither the "stopping" nor the "displacing" constitutes a "step plus function."

In the claim, "displacing" occurs before "stopping." Taken in context, "displacing" is part of the clause: "displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said testing determines non-alignment and non-existence of correct electrical contact." "Stopping" is part of the clause: "stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact." In neither clause is there a stated function whose acts are left unrecited and for which one must turn to acts disclosed in the specification.

The specification must be used to help construe the terms "displacing" and "stopping" as in the case of any claim language. However, the specification in this instance provides an example, not a definition, of what is claimed. The administrative law judge finds no reason to limit "displacing" and "stopping" or the clauses introduced by those words to the acts described in the specification in the

manner provided for in section 112, paragraph 6.

In O.I. Corp., the Federal Circuit cautioned against improperly broadening the application section 112, paragraph 6, with respect to claims that recite steps, as follows:

But claiming a step by itself, or even a series of steps, does not implicate section 112, ¶ 6. Merely claiming a step without a recital of a function is not analogous to a means plus function. \* \* \* [W]e must be careful not to extend the language of this provision to situations not contemplated by Congress. If we were to construe every process claim containing steps described by an "ing" verb, such as passing, heating, reacting, transferring, etc. into a step-plus-function limitation, we would be limiting process claims in a manner never intended by Congress.

115 F.3d at 1583.

Therefore, for the reasons discussed above, the administrative law judge concludes that independent claim 1 and claim 8 which depends therefrom, do not contain step-plus-function elements which must be construed pursuant to 35 U.S.C. § 112, paragraph 6.<sup>19</sup>

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<sup>19</sup> In the alternative, if claim 8 required the application of section 112, paragraph 6, it is not clear from respondents' brief how they propose the specification should be read to limit the claim. The step elements could only be construed to cover the corresponding acts described in the '464 patent specification and equivalents thereof, not the corresponding structures. As stated by the Federal Circuit, "structure and material go with means, acts go with steps." O.I. Corp., 115 F.3d at 1582-83. Thus, whenever paragraph 6 applies to a method claim, the elements triggering its application are limited to corresponding acts described in the specification and equivalents thereof.

#### IV. VALIDITY

##### A. Introduction

A patent is presumed valid, and the presumption of validity attaches to each claim independently of all other claims. See Jones v. Hardy, 727 F.2d 1524, 1528 (Fed. Cir. 1984); 35 U.S.C. § 282. A party seeking to invalidate a patent must prove facts establishing invalidity by clear and convincing evidence, and the ultimate burden of persuasion never shifts from the patent challenger. 727 F.2d at 1528; Carella v. Starlight Archery & Pro Line Co., 804 F.2d 135, 138 (Fed. Cir. 1986).

Respondents argue that if claim 8 of the '464 patent is construed "to cover manual removal and insertion of an article into a device and a 'test' that is stopped by the human user," claim 8 of the '464 patent is invalid due to anticipation under 35 U.S.C. § 102, and/or invalid due to obviousness under 35 U.S.C. § 103. Respondents rely on several pieces of alleged prior art. See Respondents' Post-Hearing Br. at 35.

OUII argues that claim 8 of the '464 patent is not invalid if construed in the manner proposed by OUII. However, OUII argues that claim 8 may be invalid if construed as complainant proposes. In particular, OUII argues that under complainant's claim construction, claim 8 reads onto the Chesley patent (RX 50). See OUII Post-Hearing Br. at 30; OUII Reply Br. at 15.

Although the administrative law judge has not adopted

complainant's proposed construction of claim 8 (and independent claim 1 from which claim 8 depends) in its entirety, the administrative law judge has not construed claim 8 in the manner proposed by respondents and OUII. For example, the administrative law judge has construed claim 8 to include manual insertion and removal of the removable article by a human user.

Each of the references raised against claim 8 in respondents' and OUII's briefs is discussed below.

**B. Claim 8 of the '464 Patent Is Not Anticipated**

A patent claim is invalid for anticipation under 35 U.S.C. § 102 if a single piece of prior art reveals, expressly or inherently, each element or limitation of the claim. In re King, 801 F.2d 1324, 1326 (Fed. Cir. 1986). To anticipate a claimed invention, a prior art reference must describe the invention with enough detail to allow one skilled in the art to understand and practice it. In re Paulsen, 30 F.3d 1475, 1480-81 (Fed. Cir. 1994).

Each of the prior art references alleged to anticipate claim 8 of the '464 patent is discussed individually.

**1. The Perron Patent**

United States Letters Patent No. 3,859, 634 ("Perron patent"), entitled Digital Lock System Having Electronic Key Card, issued on January 7, 1975, to Perron and Fowler. RX 24. The claimed invention of the Perron patent relates to lock systems, "particularly to an electronic lock system employing active digital electronic circuitry

in both the key and the lock." Id. at col. 1, lines 10-14. It is not disputed that the Perron patent is prior art to the '464 patent.

The administrative law judge finds that Perron does not anticipate asserted claim 8 of the '464 patent because it lacks at least the "testing" limitations added by dependent claim 8, as well as the "testing" step (b) and the "displacing" step (c) of independent claim 1 from which claim 8 depends.

Perron does not disclose a "method for electrically connecting" a removable article and an electric device. Instead, it appears that each of the claims of the Perron patent is drawn to an electric lock system or a component of such a system. Indeed, the specification describes embodiments of the invention in which there is a comparison between a code contained within a memory on a key with a master code contained within a memory device in a lock. That comparison takes place after the key code is loaded into a register in the lock memory.

Although the Perron patent teaches a comparison of a response from the circuitry on the key with information stored in the master register, the success or failure of the user's key to match an expected response contained in the master register is not designed to provide information about correct alignment and electrical contact or (lack thereof) nor is such information implied. See Bove Tr. 982-985; Kuc Tr. 1218. When a user's key fails to provide bits of information stored in the master register, correct alignment and electrical contact may or may not exist between the contacts on the key and the

lock device.<sup>20</sup> In all cases, a lack of identify between the response received from the key and the expected response results in the identification of an unauthorized attempt to unlock the device.

For example, as seen from the teachings of the specification:

If, during comparison of any bit of the key code, a lack of identity is found between this bit and the associated bit of the master code in register 48, the output signal from comparator 46 will cause enabling of AND gate 60 and consequent resetting of flip-flop 58 which causes removal of the flip-flop output signal to gate 62. No actuation signal can be provided by reason of the disabling gate 62. An output signal from gate 60 is provided only upon detection of an error between the bit of the key code and a corresponding bit of the master code, and this output signal is also employed to activate an alarm circuit 64 to indicate detection of an erroneous key code. Upon sensing of an alarm condition, a stop signal can be generated by alarm circuitry 64 to stop clock 52 and discontinue the decoding process and to prevent the release of the key clamped in the lock by clamp 33.

RX 24 (Perron Patent) at col. 7, lines 48-65. See also Id. at col. 1, lines 42-46 ("In the event that there is not proper comparison between the master code and the key code, an alarm can be actuated and the key

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<sup>20</sup> Under the Perron patent, one may assume a case in which the key and the lock have correct electrical contact, yet the key is unauthorized and thus there is not a proper comparison between the key code and the master register. In such a case, the failure of the comparison has nothing to do with correct electrical contact or lack thereof.

If a case arose in which one inserted an authorized key but could not actuate the lock because a lack of correct electrical contact prevented reading of the key code, there would be no indication under the Perron patent of the lack of correct electrical contact. It appears that under the Perron patent, the lock would assume that the key is unauthorized.

can also be seized within the lock to prevent its removal therefrom." ).

The Perron patent does not teach a displacing step, especially a displacing step which allows for more than one attempt at establishing correct electrical contact. Rather, the Perron patent teaches away from the "displacing" step (c) of claim 1 of the '464 patent. As may be seen from its specification quoted above, the Perron patent teaches that it is preferable to disallow any movement of the key upon the failure of the test. The Perron patent is concerned with security and whether or not a particular key should be allowed to open a lock; it does not disclose a method of making an electrical connection. Thus, the Perron patent does not teach the necessity of allowing one to reinsert a key which has presumably failed for security reasons.

Furthermore, there is no need to teach a "stopping" of the "displacing" in the Perron patent because there is no attempt to test for correct alignment and electrical connection as claimed by claim 1 and claim 8 of the '464 patent. There is no teaching of displacement after a failed test, and in fact there is teaching away from allowing more than one attempt to insert the key to actuate the lock.

Complainant argues that the Perron patent also fails to disclose "a predetermined expected response" because the code changes from key to key, and may change over time. See Complainant's Post-Hearing Br. at 36; Complainant's Reply Br. at 22-23. The specification of the Perron patent does indeed teach that the code stored in each key

should be "readily alterable." Furthermore, in one embodiment of the claimed invention, the code residing in each key's shift register and the master code can be replaced from time to time or even immediately after use of a key, for example, to permit use of a key only once a day. RX 24 (Perron Patent) at col. 1, lines 34-39; col. 8, lines 39-46. In the case of each key used by the claimed invention of the Perron patent, the response is predetermined and expected. The response in an authorized key is set before the key is inserted into the lock, perhaps by the lock device itself, and further the register of the lock device assures that there is an expected response from each key. However, these teachings of the Perron patent are different from the comparison of a key code from the element of claim 8 of the '464 patent which requires comparison of an actual response from the removable article with the predetermined expected response, which is established when the system is designed and does not change over time.

Also, there is no limitation requiring that there exist only one predetermined expected response. The predetermined expected response required by claim 8 of the '464 patent is the response associated from a particular removable article inserted into the electronic device. There is no limitation which prohibits various removable articles from having various predetermined expected responses.

The important point is that the response from the removable article indicates whether or not correct electrical contact exists between the removable article and the electrical device. The response

received from the key in the Perron patent is not used to determine correct electrical contact.

Therefore the Perron patent does not anticipate claim 8 of the '464 patent.

Complainant argues with respect to the Perron patent that the administrative law judge should defer to the decision of the Examiner to allow the '464 patent to issue over United States Letters Patent 3,637,994, entitled "Active Electrical Card Device," which issued on January 25, 1972 to Ellingboe ("Ellingboe patent"). RX 32 (Ellingboe Patent); Complainant's Post-Hearing Br. at 36 (citing Minnesota Mining and Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d at 1559, 1572 (Fed. Cir. 1992). In Minnesota Mining, the Federal Circuit stated that "[w]here the PTO has considered a piece of prior art, and issued a patent notwithstanding that prior art, a court owes some deference to the PTO's decision." Id. (citing American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1360 (Fed. Cir.), cert. denied, 469 U.S. 821 (1984)).

In this case, the Examiner considered the Ellingboe patent, not the Perron patent. Furthermore, the two patents are not identical. Nevertheless, it appears from an examination of the Ellingboe patent, and from the expert testimony at the hearing that the Ellingboe and Perron patents have many similarities which are pertinent to the '464 patent. See Bove Tr. 1195-1196. Thus, while the directive in Minnesota Mining is not directly applicable here, the underlying

rationale has some application to these circumstances, i.e., the administrative law judge will accord some deference to determinations made by the patent Examiner with respect to certain technological issues that the Examiner decided during prosecution of the '464 patent. Indeed, the administrative law judge finds that the Ellingboe patent provides some context for understanding the documents found in the '464 patent's file wrapper and in understanding the scope of the patent grant made by the PTO.

The Ellingboe patent teaches, among other things, the use of a card, such as a credit card, with microelectric circuitry that is inserted into a reading device. The circuit on the card may provide a unique identification code. In one embodiment of the claimed invention of the Ellingboe patent, a series of clock pulses causes the code pattern to proceed to the reader "where it is sensed and compared with the corresponding codes in the memory bank of the reader." See, e.g., RX 32 (Ellingboe Patent) at col. 1, line 30 through col. 2, line 24; col. 6, lines 39-43; col. 6, lines 64-72.

Consequently, the Ellingboe patent taught a comparison of a predetermined expected response before the Perron patent and before the '464 patent. Thus, the prosecution history of the '464 patent, which contains the Ellingboe patent, shows that the applicant and the Examiner were aware of the fact that the comparison of a response from a card having at least one circuit with an expected response was well known in the art. Claim 8 of the '464 patent cannot therefore be

construed merely to cover this concept, which had been disclosed before.<sup>21</sup> Indeed, as previously discussed, the test claimed in claim 8 is a test for correct electrical contact. The prior art of record distinguishes the '464 patent and the prior art. While the prior art taught that code or other information from a circuit contained on a card or other removable device (such as a key card) may be used to indicate information such as the identity of a card (and presumably its user), the '464 patent teaches that the use of a predetermined expected response, which does not comprise the entirety of the information to be exchanged between the removable device and the electrical device, can be used to determine correct electrical contact.

## 2. The TI Calculator

Respondents and OUII argue that if complainant's proposed claim construction is adopted, then claim 8 of the '464 patent is anticipated by a Texas Instruments calculator, which they refer to as a TI 58/59 calculator.<sup>22</sup> The TI 58/59 calculator is alleged to have been in public use as early as 1977.<sup>22</sup> See Bove Tr. 1200-1201;

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<sup>21</sup> The Federal Circuit has held that a "court seeks to interpret claims to preserve, rather than defeat, their validity." Eastman Kodak Co. v. The Goodyear Tire & Rubber Co., 114 F.3d 1547, 42 U.S.P.Q.2d 1737, 1743 (Fed. Cir. 1997) (citing ACS Hospital Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577 (Fed. Cir. 1984) ("[C]laims should be construed, if possible, as to sustain their validity.")).

<sup>22</sup> The Patent Act provides in pertinent part:

(continued...)

Respondents' Post-Hearing Br. at 37-38; Respondents' Reply Br. at 5 n.4; OUII Post-Hearing Br. at 33.

Complainant argues on several grounds that the TI calculator, particularly as presented in evidence at the hearing, cannot be found to anticipate claim 8 of the '464 patent. One of complainant's arguments is that it has not been shown that the TI calculator is prior art to the '464 patent. Whether or not the TI calculator relied on by respondents and OUII, the so-called model 58/59, is prior art to the '464 patent is a threshold issue which will be addressed first.

The calculator offered into evidence at the hearing was marked by respondents as a physical exhibit, RPX 1. The casing of the calculator indicates that it is a "TI Programmable 59" with "Solid State Software." RPX 1; RX 225. The calculator marked as RPX 1 was not manufactured before the January 24, 1978 priority date of the '464 patent. According to respondents' expert it appears to have been manufactured in 1979. Bove Tr. 1168. Consequently, respondents did not produce a physical exemplar of a TI 58/59 calculator which could

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<sup>22</sup> (...continued)

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign county, before the invention thereof by the applicant for patent, or ....

35 U.S.C. § 102 (a).

invalidate the '464 patent or any claim thereof.

Respondents also rely on manuals marked as RX 68, RX 69 and RX 70, which are allegedly for the TI 58/59 calculator in public use in 1977. Each of the manuals produced at the hearing states on the cover that it is for the "TI Programmable 58C/59."<sup>23</sup> RX 68; RX 69; RX 70 (TI58C/59 Quick Reference Guide). Each of the manuals produced at the hearing bears copyrights that include the year 1979. Thus, the manuals were published after the priority date of the '464 patent, and presumably contained at least some revisions that were made after the priority date. RX 68 and RX 69 are especially lengthy and contain many details about the TI 58C/59 calculator. However, it is not clear exactly which portions of the manuals were revised or added in 1979, and which portions might describe a device that could have been in use before the '464 patent's priority date. It cannot be found therefore that these 1979 publications are prior art to the '464 patent, or that their content provides clear and convincing evidence concerning the calculator which is alleged to anticipate the '464 patent.

Following the hearing, respondents moved to substitute manuals that were published before the priority date for other manuals offered at the hearing. As discussed above in this initial determination, the administrative law judge has determined not to receive into evidence the manuals produced after the close of the hearing. However, even if

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<sup>23</sup> It is not clear from the record what the significance is of the model numbers "58C" and "59" or whether there was a model "58".

the belatedly produced manuals were admitted into evidence, questions would be raised as to their content inasmuch as there was no opportunity for expert examination and cross-examination concerning them, nor was the administrative law judge afforded the opportunity to examine them and to ask questions if necessary concerning their content.

Finally, respondents also seek to describe the function of the TI 58/59 calculator as it allegedly operated before the priority date of the '464 patent, by reference to: 1) U.S. Letters Patent 4,139,893, entitled "Calculator Program Security System," which issued on February 13, 1979 (based on applications filed in 1977 and 1976), to Sidney W. Poland; and 2) U.S. Letters Patent 4,153,937, entitled "Microprocessor System Having High Order Capability, which issued on May 8, 1979 (based on applications filed in 1977 and 1976) to Sidney W. Poland (collectively the "Poland patents"). Respondents rely particularly on the '937 patent to Poland. See RPF 513-521.

It has not been alleged that the Poland patents anticipate the '464 patent. Respondents rely on the Poland patents to provide information about the TI 58/59 calculator. Although the Poland patents were assigned to TI, there is no indication in the patents that they describe the functioning of any particular commercial product. Nor is there any indication from TI, such as an express statement in TI manuals, that the Poland patents cover a particular TI product. However, respondents' expert believes that the calculator

disclosed therein is identical in appearance and operational description to the TI 58/59 calculator. See RPF 521 (citing Bove Tr. 1003).

One of the main problems with respondents' argument concerning the Poland patents is that, as discussed above, it is not clear what a TI 58/59 calculator allegedly used in 1977 looked like or how it operated. The calculator and manuals offered at the hearing did not exist until 1979. Even if it were found that the Poland patents are reflected in the 1979 manuals, that would not confirm the details of how a particular TI calculator supposedly operated before the '464 patent's priority date.

In summary, the administrative law judge finds that there is a lack of evidence pertaining to any TI 58/59 calculator that was allegedly in public use in 1977, and upon which respondents and OUII rely. Inasmuch as no physical exemplar of a TI calculator used before the priority date was provided to the administrative law judge or to complainant's expert, and no written descriptions that clearly describe a device in use before the priority date are part of the evidence of record, it cannot be found that a TI 58/59 calculator which was allegedly in public use in 1977 is prior art to the '464 patent, nor can the operation of such a device be described in sufficient detail so as to provide clear and convincing evidence of patent invalidity.

Moreover, even if respondents' arguments concerning the operation

of the TI 58/59 calculator are considered, it cannot be found that asserted claim 8 of the '464 patent is anticipated for the reasons discussed below.<sup>24</sup>

Respondents argue that the TI calculator allegedly used in 1977 has a "removable article" in the form of a module incorporating a silicon chip and having eight electrical contacts arranged in two rows. The calculator body has eight corresponding contact surfaces. It is argued that the "bringing" step (a) of independent claim 1 is satisfied by the insertion of the module into the calculator, and that claim step (c), the "displacing" and "stopping" step, if construed to cover manual intervention, is inherently present in the operation of the calculator. See Respondents' Post-Hearing Br. at 37; RPF 486-490. With respect to the "testing" step, respondents argue, based on their expert's testimony, that it is accomplished in any one of three possible ways: (1) by accessing a function that resides on the module

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<sup>24</sup> Complainant argues one of the reasons why the TI calculator should not be found to anticipate claim 8 of the '464 patent is because the memory modules and the TI calculator do not "cooperate" due to the fact that the calculator is capable of performing some of its intended functions without installation of the module. See Complainant's Post-Hearing Br. at 35. However, as discussed in the section on claim construction, the administrative law judge does not adopt complainant's proposed interpretation of the term "cooperate." That a removable article "cooperates" with an electrical device does not mean that the electrical device is prohibited from performing any functions without the removable article. Therefore, the argument put forward by complainant with respect to cooperation, does not affect the analysis of the TI calculator as alleged prior art to the '464 patent. The TI calculator is not, however, found to render claim 8 of the '464 patent invalid for other reasons which are discussed in the main text, supra.

(an error indication with a flashing display will be returned if there is improper connection or alignment);<sup>25</sup> (2) by performing a "Diagnostic/Library Module Check" (a general test of calculator functions and proper module connection); or (3) by performing a "Library Module Check" (an identification number will be returned if the module connection is proper and a flashing number will be displayed if improper). See Respondents' Post-Hearing Br. at 38; RPF 495-496.

The first way of "testing" according to respondents (accessing a function on the module) is not a test as required by step (b) of claim 1 or by claim 8. As discussed above, the test required by the '464 patent is not one of merely determining whether or not the electrical device works, which in this case is determining whether one can access a function of the module. The test in claim 1 and claim 8 of the '464 patent is an integral part of actually establishing an electrical connection. The test is not applied after electrical connection is made.

Furthermore, while the ability to access a function on the module may be an indication of correct electrical contact between the contacts on the module and those in the calculator, a blinking display

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<sup>25</sup> It is argued that when accessing a function, the "predetermined operations" are the operations the calculator performs when it attempts to communicate with the module, and further that the module provides a "predetermined expected response," the absence of which causes the display to flash. See Respondents' Post-Hearing Br. at 38.

may not be related to electrical connection. It may be a result of requesting a program that does not exist in the module.<sup>26</sup> There was little or no evidence concerning the electronic design of the TI calculator, especially if the Poland patents are not taken into account. Therefore, it is not possible to determine the situations when a blinking display might appear on the TI calculator. See Bove Tr. 1185-1190.

Use of the "Diagnostic/Library Module Check" or the "Library Module Check" is also identified by respondents as a way of satisfying the "testing" requirement. There is very little evidence of record concerning those tests and what occurs in the circuitry of the TI calculator during those tests, especially if one does not rely on the Poland patents. See Bove Tr. 889-1000. However, it is clear that those "tests" are only performed after the user presses a sequence of buttons on the calculator to initiate the diagnostic routine. Furthermore, the user need not perform a diagnostic routine before attempting to use the module. The TI calculator may be used immediately upon insertion of a module into the back of the calculator. Testing "occurs after the module is electrically

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<sup>26</sup> Dr. Bove argues that the predetermined expected response from the TI module is the non-zero value in its first memory location. This non-zero value, which represents the number of functions or programs on the module, is returned when a user attempts to access a function on the module. According to Dr. Bove, that non-zero value is compared with the function number that the user types in, and if that number is less than the number the user typed in, the calculator generates an error and the display flashes. See Bove Tr. 1185-1190.

connected to the calculator." Bove Tr. 1172-1179. Therefore, neither of these tests involves establishing an electrical connection as required by claim 1 or claim 8 of the '464 patent.

Complainant argues that an important difference between the method of claim 8 and the TI calculator is that the Diagnostic/Library Module Check is not performed upon insertion of a module, and according to the recommended procedure (in the 1979 manual), the module is inserted while the calculator is off. When the user turns the calculator back on, the module is powered up and can operate in its intended mode.

It is not necessarily important in all cases that some power remain on during insertion of the removable article into the electrical device. As discussed in the claim construction section above, in the motorized embodiment detailed in the '464 patent specification power sufficient for testing and for operating the motor is required in order to effect a "bringing" and also to carry out a test that will stop the displacement of the removable article. However, in a manual embodiment under the '464 patent there does not appear to be any limitation requiring a flow of current, or testing, during insertion of the removable article into the electrical device by the user. Yet, in the case of the TI calculator the fact that the calculator is turned off when the module is inserted and then turned on with the module fully powered up for use, highlights the fact that the "check" or testing which may be performed is not a test for

correct alignment and electrical contact, which under the '464 patent would be performed before an attempt is made to exchange information between the removable article and the electrical device.<sup>27</sup> Bove Tr. 1172-1179.

The TI 58/59 calculator, even if it were prior art to the '464 patent, would not contain all of the elements of dependent claim 8 (or independent claim 1) of the '464 patent.

### 3. The Chesley Patent

OUII argues in its reply brief that if claim 8 of the '464 patent is construed in the manner proposed by complainant, it is anticipated by U.S. Letters Patent 4,055,754 ("Chesley patent"), entitled "Memory Device and Method of Testing the Same," which issued on October 25,

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<sup>27</sup> In Dr. Bove's experiments on the TI calculator, he covered in turn each of the eight contacts of the calculator's removal module. With seven of the terminals a user would not perceive a problem until that user attempted to access a function on the module. However, in the case of the eighth terminal, the calculator locked up. Thus, rather than testing for good connection, the TI calculator proceeds to connect without testing and can experience the consequences of not having a good electrical connection. Bove Tr. 1190-1192.

The same may be said of the common night light, which was raised in pre-hearing filings and is raised again by OUII in its main brief. See OUII Post Hearing Br. at 30. OUII observes that a connection is confirmed when a night light is first plugged into a socket, and that some jiggling motion may be necessary. However, there is no predetermined expected response between the night light and an electrical device. There is merely a successful or failed attempt at illumination of the bulb (which may already be spent prior to insertion of the night light into the socket). In the case of the night light, as in the case of the calculator module, a failure to operate or the need to jiggle the light in order to illuminate the bulb has no relation to a testing procedure as required by claim 8 of the '464 patent.

1977 to Gilman D. Chesley. See OUII Reply Br. at 15-20; RX 50 (Chesley Patent).<sup>28</sup>

The primary disputes between the parties concerning the Chesley patent center around whether the Chesley patent discloses the "testing" step as required by step (b) of claim 1 and claim 8, and whether there is a "displacing" step in the Chesley patent as required by step (c) of claim 1.

In the Chesley patent, the claimed invention "provides an integrated circuit memory device and method wherein test logic is included in the device for detecting the presence of predetermined patterns applied to the memory cells." RX 50 (Chesley Patent) at col. 1, lines 43-46.

Random access memories (RAMs) provide the background for the claimed invention, and are the memory cells used in the preferred embodiment disclosed in the specification. Id. at col. 1, lines 18-27; col. 2, lines 8-12. One of the purported advantages of the method disclosed in the Chesley patent is that instead of testing each cell individually, the memory can be tested row by row. Id. at col. 1, lines 44-50.<sup>29</sup>

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<sup>28</sup> Respondents oppose at least some of complainant's proposed findings concerning the Chesley patent. See Respondents' Comments on Complainant's Proposed Findings at 78, 80.

<sup>29</sup> There is no explicit "bringing" step in the Chesley patent. See Bove Tr. 1072-1073. However, OUII argues that the Chesley patent "obviously involves the bringing of the test device into a contacting  
(continued...)

However, the test disclosed in the Chesley patent is not one to establish or to determine correct electrical contact with the RAMs. It is a memory test to check the functioning of the RAMs. To test the memory, contents are put into memory and there is an attempt to read them out. In the '464 patent there is an express test for correct alignment and electrical contact, while in the Chesley patent correct alignment and electrical contact would have to be inferred if the test is successful. Yet, a failed test may not necessarily be due to a lack of correct electrical contact, because the memory function of the RAM may fail due to a defect. Furthermore, the Chesley patent does

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<sup>29</sup> (...continued)

relationship with the memory chip." OUII Reply Br. at 17 (citing Bove Tr. 1074).

Respondents' expert testified with respect to the bringing step, as follows:

Q And there's some sort of action where this chip is brought into connection with a testing device; is that right?

A Or by which it's installed into a socket or printed circuit board or something.

Q But the bringing element would be met?

A It has to be connected.

Bove Tr. 1074.

Although RAMs must be brought into connection with the Chesley testing device in some manner, there is so little information in the record concerning RAMs (as they existed in the 1970s), RAM testing devices and the way in which RAMs and testers were brought into contact, that the administrative law judge refrains from finding that the "bringing" of independent claim 1 is disclosed, expressly or inherently, by the Chesley patent.

not disclose a test to assure correct electrical contact before the RAMs are tested for memory. See Bove Tr. 1072-1073, 1076; Kuc Tr. 1222-1223.

There is no teaching in the Chesley patent that if the test fails, the RAMs should be "displaced" as that term is used in the '464 patent.<sup>30</sup> The Chesley patent does not disclose a method of electrically connecting. Therefore, the Chesley patent need not and does not disclose displacement and further testing as a way of establishing correct electrical contact between a removable article and an electrical device. In particular, there is no disclosure in the Chesley patent of a displacing that stops when testing determines alignment and existence of correct electrical contact, as required by independent claim 1 and dependent claim 8 of the '464 patent. See Bove Tr. 1072-1073; Kuc Tr. 1222-1223.

In summary, it has not been established by clear and convincing evidence that the Chesley patent contains all of the elements required by dependent claim 8 of the '464 patent or that claim 8 is invalid due to anticipation.

**C. Claim 8 of the '464 Patent Is Not Obvious**

Respondents and OUII argue that under complainant's proposed claim construction, claim 8 of the '464 patent is invalid for

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<sup>30</sup> There is no explicit "displacing" in the Chesley patent. See Bove Tr. 1072-1073.

obviousness under 35 U.S.C. § 103.<sup>31</sup> See Respondents' Post-Hearing Br. at 39-41; OUII Post-Hearing Br. at 35-37. As discussed above, the administrative law judge has not adopted complainant's proposed claim construction in its entirety. However, the administrative law judge has determined that in certain respects claim 8 is properly construed in a manner which is contrary to the claim construction arguments made by respondents and OUII. Consequently in this context, the obviousness arguments of respondents and OUII are discussed.

In order to prove invalidity under section 103 of the Patent Act, it must be demonstrated by clear and convincing evidence that the claimed invention would have been obvious in light of the combined teachings of items of prior art relied on by respondents.<sup>32</sup> See Graham

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<sup>31</sup> Section 103 of the Patent Act provides in pertinent part as follows:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

35 U.S.C. § 103(a).

<sup>32</sup> As discussed, supra at n.10, the '464 patent is directed toward one designing a circuit, likely an electrical engineer, who is knowledgeable about digital electronics and electronic interfaces. One might gain at least the level of ordinary skill in the aforementioned art through experience with electrical engineering and particularly experience with digital circuitry as it existed during the late 1970s. There is no evidence that an advanced degree in electronics or engineering was required.

v. John Deere Co., 383 U.S. 1, 37 (1966); Jones v. Hardy, 727 F.2d 1524, 1530-32 (Fed. Cir. 1984); Litton Sys., Inc. v. Honeywell, 97 F.3d 1559, 1566 (Fed. Cir. 1996) (section 103 obviousness analysis requires a determination of the scope and content of the prior art, the differences between the prior art references and the claimed invention and the secondary indicia of nonobviousness).<sup>33</sup>

Respondents rely on two pieces of prior art: 1) U.S. Letters Patent 4,222,516 (RX 3), entitled "Standardized Information Card," which issued to Bernard Badet et al. ("Badet patent"); and 2) U.S. Letters Patent 3,934,122 (RX 17), entitled "Electronic Security Card and System for Authenticating Card Ownership," which issued to James A. Riccitelli ("Riccitelli patent"). OUII relies on U.S. Letters Patent 4,163,210 (RX 45), entitled "Arrangement for Checking a Contact Inserted Between a Transmitter Circuit and a Receiver Circuit to Allow Electrical Signals to Be Transmitted," which issued to Georges M. Giraud ("Giraud patent"). It has not been disputed that these patents are prior art to the '464 patent. Each of these patents is discussed individually below.

The Badet patent claims to disclose, among other things, "means which ensure a good electrical connection between the device [embossed in a] card and the system which is required to co-operate with the card and the testing of the electrical connection." See RX 17 (Badet

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<sup>33</sup> The '464 patent has been the subject of numerous licenses. See CX 916 through CX 940C.

Patent) at col. 2, lines 49-65; col. 7, lines 40-44.

In the disclosure of the Badet patent, a voltage is applied between two electrodes located in the card reader. There are two electrodes associated with each contact on the card. Current flows from one electrode, through the contact on the card, and into the other electrode. As explained by respondents' expert, "the current is supposed to exceed a certain predetermined level and so there is a threshold, and above that threshold, if the current is measured to be above that threshold, then that suggests that there's low enough impedance connection that the connections are good." This flow demonstrates electrical continuity between the card and the reader.<sup>34</sup> Bove Tr. 1000-1011; Kuc Tr. 1219-1220.

There are at least two differences between the Badet patent and claim 8 of the '464 patent which prevent the Badet patent rendering claim 8 obvious. By relying on a test for electrical impedance, the Badet patent does not disclose or teach a "predetermined response from the removable article." In Badet, the removable article does not actively participate. There is no teaching in the Badet patent concerning a predetermined expected response from the card as an indication of correct electrical connection. Current flows through the electrodes on the card and the reader; no response is expected from or generated by the card. In fact, the Badet patent would

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<sup>34</sup> Complainant argues that Badet is no more than a simple DC static continuity check. See, e.g., Complainant's Reply Br. at 24.

suggest that a test of electrical impedance is adequate in assuring an electrical connection to a smart card. Therefore, the Badet patent may teach away from the invention of claim 8 which requires a predetermined expected response from a chip on the removable article. Kuc Tr. 1219-1220.

The Badet patent does not expressly disclose the "displacing" step of the '464 patent. See RX 17; Bove Tr. 1011. Yet, neither would it be obvious to one of ordinary skill to carry out the "displacing" step, as argued by respondents. The '464 patent requires "displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces." Although there is disagreement among the parties as to why this claim limitation is included in the '464 patent, it is a requirement of claim 8.<sup>35</sup> In the Badet patent, the electrodes move in a direction perpendicular to the contacts on the card and do not move in a tangential direction. Kuc Tr. 1219-1220.

The Riccitelli patent discloses the use of a card with circuitry on it. However, it does not disclose a method of electrically connecting. In a somewhat similar manner to the Perron patent and the Ellingboe patent discussed above, the Riccitelli patent discloses a method of authentication for a security system. However, in the

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<sup>35</sup> Complainant argues that the tangential movement helps to clean the contacts in the case of a poor electrical connection. Complainant's Post-Hearing Br. at 37; see Kuc Tr. 181.

Riccitelli patent, the object is authentication of card ownership.

In the Riccitelli patent, the card holder must key in a preselected sequence of digits or signals. Logic circuitry on the card is responsive to input signals. If the input signals are in a preselected sequence, an output is provided by the card. If the input signals are not in the preselected sequence, a feedback control signal is developed and applied to deactivate the logic circuitry. See, e.g., RX 17 (Riccitelli Patent) at col. 1, line 56 through col. 2, line 9; col. 3 lines 7-15; Bove Tr. 1014.

In the Riccitelli patent, correct electrical connection could be inferred in cases in which when the preselected sequence of signals is confirmed by the logic circuitry. See Bove Tr. 1015-1016. Yet, the "test" in the Riccitelli patent is not for correct electrical connection, and it does not indicate if the electrical connection is faulty (even in the case of an authorized user), or when electrical connection is correct in cases in which the holder of the card has entered an incorrect code.

Consequently, the Riccitelli patent does not disclose a displacing step. Bove Tr. 1017; Kuc Tr. 1214-1215. The Riccitelli patent does not teach or suggest displacement in order to attempt a correct electrical connection. The "test" in the Riccitelli patent is not used to help establish an electrical connection between the card and the terminal. In fact, the Riccitelli patent teaches away from the displacing step of the '464 patent. The Riccitelli patent assumes

normal operation with correct electrical connection. It does not contain any teachings or disclosure of what to do in cases of incorrect electrical connection. It teaches that when the "test" fails, the logic circuitry should be inhibited from further operation until reset. See RX 17 (Riccitelli Patent) at col. 1, lines 61-65, col. 5, lines 2-5; Kuc Tr. 1214-1215.

The Giraud patent discloses an arrangement to check the contact between a transmitter circuit and a receiver circuit. See, e.g., RX 45 (Giraud Patent) at col. 1, line 65 through col. 2, line 39. The Giraud patent does not teach or disclose a method of establishing electrical connection, or of testing electrical connection with a predetermined expected response.

The Giraud patent teaches that a test should be conducted during the entire time signals are transmitted from the transmitter to the receiver. RX 45 (Giraud Patent) at col. 2, lines 38-41; RX 45, col. 2, lines 38-41; Bove Tr. 1078-1079. This teaches away from the '464 patent, which requires that testing occurs as a way of establishing the electrical connection between the removable article and the electrical device. Furthermore, in the Giraud patent, good contact is confirmed by examining the currents carrying data between the transmitter and the receiver. However, the Giraud patent does not use "predetermined operations" or a "predetermined expected response." See Kuc Tr. 1223-1224; Bove Tr. 1077-1078.

Although the Giraud patent states that it is generally

satisfactory to ensure good contact between the two components at the start of a signal-transfer operation, it does not teach what is to be done in the case of bad contact, or how to use testing in the method of establishing contact. The Giraud patent does not suggest displacing or stopping of the displacing upon the existence of correct alignment and electrical contact. See RX 45 (Giraud Patent) at col. 1, lines 19-30; Kuc Tr. 1223-1224. The Giraud patent has a markedly different purpose and disclosure from that of the '464 patent.

As discussed in this section, none of the prior art teaches or discloses the elements of claim 8 of the '464 patent. Indeed, the prior art contains teachings that are contrary to the invention of claim 8. Although a combination of the prior art would not yield the invention elements of claim 8 of the '464 patent, there are no teachings or suggestions to one of ordinary skill in the art to combine the prior art relied upon in this investigation. Nor would it be clear to one of ordinary skill in the art how to combine the prior art. See Kuc Tr. 1224-1225.

For the reasons discussed above, it has not been shown by clear and convincing evidence that the prior art relied upon by respondents or OUII, alone or in combination, renders claim 8 of the '464 patent invalid for obviousness under 35 U.S.C. § 103.

## **V. INFRINGEMENT**

### **A. General Law of Infringement**

To establish literal infringement, every limitation set forth in

a claim must be found in an accused product, exactly. Southwall Technologies, 54 F.3d at 1575. Accord Graver Tank & Mfg. Co. v. Linde Co., 339 U.S. 605, 607 (1950) (Literal infringement of the asserted claim occurs "[i]f accused matter falls clearly within the asserted claim ....").

Limiting patent enforcement exclusively to literal infringement "would place the inventor at the mercy of verbalism and would be subordinating substance to form." Graver Tank, 339 F.2d at 607. Thus, if the accused product or process does not literally infringe the patent at issue, it may infringe under the doctrine of equivalents. See In re Certain Doxorubicin and Preparations Containing Same, 20 U.S.P.Q.2d 1602, 1608 (United States Int'l Trade Comm'n 1991) ("An allegation of infringement under the doctrine of equivalents presumes that literal infringement does not exist, i.e., that the asserted patent claims, properly interpreted, do not in terms cover the accused device or process.").

Infringement may be found under the doctrine of equivalents if an accused product that does not literally infringe the patent claim performs substantially the same function in substantially the same way to obtain substantially the same result.<sup>36</sup> Graver Tank, 339 U.S. 605,

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<sup>36</sup> In Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 117 S.Ct. 1040, 1054 (1997), the Supreme Court held that "[a]n analysis of the role played by each element in the context of the specific patent claim will thus inform the inquiry as to whether a substitute element matches the function, way, and result of the claimed element, or  
(continued...)

608 (1950); Valmont Indus. v. Reinke Mfg., 983 F.2d 1039, 1043 (Fed. Cir. 1993); Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed. Cir.) (en banc), cert. denied, 485 U.S. 961, 1009 (1987).

Equivalency must be proven on a limitation-by-limitation basis. Warner-Jenkinson, 117 S.Ct. at 1049; Pennwalt, 833 F.2d at 935. As the Federal Circuit stated in Pennwalt, 833 F.2d at 935, the doctrine of equivalents "does not mean one can ignore claim limitations." Further, as the Federal Circuit stated in Dolly, Inc. v. Spalding & Evenflo Cos., 16 F.3d 394 (Fed. Cir. 1994), "[u]nder the doctrine of equivalents, the accused device and the claimed invention cannot work in 'substantially the same way' if a limitation (including its equivalent) is missing." 16 F.3d at 398 (citing Valmont, 983 F.2d at 1043 n.2.).

As held in Warner-Jenkinson, the proper time to determine equivalency is at the time of the alleged infringement, not at the time the patent issued. 117 S.Ct. at 1053.

The doctrine of equivalents is limited in that it will not extend (1) to cover an accused device in the prior art, or (2) to allow the patentee to recover through equivalents certain coverage given up through prosecution. Pennwalt, 833 F.2d at 934 n.1. In this regard, the Supreme Court, in Warner-Jenkinson, held that prosecution history

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<sup>36</sup> (...continued)  
whether the substitute element plays a role substantially different from the claimed element."

estoppel can serve as a limitation on the doctrine of equivalents. Specifically, the Court noted that amendments made expressly to avoid the prior art or adopted as a substitute for a broader one previously used could result in prosecution history estoppel. Warner-Jenkinson, 117 S.Ct. at 1049-50.

The Federal Circuit has explained that "the essence of prosecution history estoppel is that a patentee should not be able to obtain, through the doctrine of equivalents, coverage of subject matter that was relinquished during prosecution to procure issuance of the patent." Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 951-52 (Fed. Cir. 1994).<sup>37</sup> Accord Sofanor Danek Group, Inc. v. Depuy-Motech, Inc., 74 F.3d 1216, 1222 (Fed. Cir. 1996) (citing Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 136 (1942)).

"Similarly a patentee may not assert a range of equivalents that captures art already in the public domain." Sofanor, 74 F.3d at 1222 (citing Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677, 683 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990)).

A party alleging infringement has the burden of proving infringement by a preponderance of the evidence. Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 758 (Fed. Cir. 1984); Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1361 (Fed. Cir. 1983). The

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<sup>37</sup> Whether one should apply prosecution history estoppel is a question of law. Southwall Technologies, 54 F.3d at 1579; Hoganas, 9 F.3d at 952.

question of infringement of properly interpreted claims is one of fact. Mannesman Demag Corp. v. Engineered Metal Prods. Co., 793 F.2d 1279, 1282 (Fed. Cir. 1986).

#### B. Direct Infringement

Complainant argues with respect to the issue of direct infringement that "[c]laim 8 of the '464 patent is infringed by operation of Thomson's DSS2 and DSS3 models, both literally and under the doctrine of equivalents."<sup>38</sup> Complainant's Post-Hearing Br. at 15.

Respondents argue that complainant "has failed to prove that use of the DSS receiver practices every element of claim 8." Respondents' Post-Hearing Br. at 16.

OUII argues that the accused devices do not practice each of the elements of claim 8 of the '464 patent. See OUII Post-Hearing Br. at 5-29.

Each of the elements recited in claim 8 or depending from independent claim 1 (as well as the preamble of claim 1) is discussed below.

##### 1. The Preamble of Claim 1

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<sup>38</sup> Complainant's arguments on the direct infringement issue address the question of whether or not the accused devices practice the elements of claim 8 of the '464 patent. A determination of whether or not the accused devices practice claim 8 is material to complainant's charges against the respondents of induced and contributory infringement, which are discussed below in individual sections. However, it does not appear that complainant charges respondents with operating the accused devices as an end-user would. Nor have any end-users of the accused devices been named as party-respondents.

As found above in the claim construction discussion, the preamble of claim 1 states the general purpose of the claim, and also sets forth certain limitations on the claimed method -- in particular the type of removable article and electric device to be used in the claimed method.

The evidence adduced at the hearing demonstrated that the accused cards and readers are of the type contemplated by the preamble. The DSS receivers carry out the "method for electrically connecting" and also "cooperate" with the cards inserted into them because an electrical connection is made between a removable article (having at least one electrical circuit) and an electric device. See Kuc Tr. 253-254. In particular, the record evidence shows that Thomson's removable smart cards have an integrated circuit embedded within them. Kuc Tr. 194, 199. Those smart cards also include electrically-conductive terminals or pads. Kuc Tr. 156, 195-196. The cards are inserted within an electric device, known as a smart card connector or reader. The smart card connector has conductive elements that make contact with the smart card pads. Kuc Tr. 193; Kelly Tr. 848. The smart card pads connect to corresponding connector elements so as to allow for communication between the two to take place. Kuc Tr. 195-196; Kelly Tr. 850; CX 24C (Hailey Dep.) Tr. 58.

**2. Step (a): "Bringing ..."**

Respondents argue that "there is no 'bringing' step involving the access card; since the evidence is undisputed that the DSS access card

is pre-installed at the factory" which takes place overseas.<sup>39</sup>

Respondents' Post-Hearing Br. at 16. However, smart cards have also been inserted into accused DSS readers in the United States. The evidence is uncontroverted and clear that thousands if not millions of new access cards have been provided for insertion into DSS readers in the United States as part of an upgrade. See Compton Tr. 741; CSX 4C (Stewart Dep.) Tr. 87-93, 220-221; CX 34C (Gonzalez Dep.) Tr. 78; CX 11C at 4.

In addition, there is strong evidence that on at least some occasions, and more than likely on a regular basis (i.e., daily or weekly), end-users of accused DSS devices remove and reinsert their access cards when there is an apparent malfunction of their receiver. Burns Tr. 672-689. Indeed, sometimes smart cards must be replaced. CX 34C (Gonzalez Dep.) Tr. 886-87; CX 11C at 5; CX 129C. Furthermore, { } of DSS receivers have been replaced. When an end-user receives a replacement receiver, he typically inserts his original access card into his replacement receiver before shipping the original

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<sup>39</sup> Respondents have long asserted that the finished DSS product arrives in the United States already assembled and ready for consumer use, and that the steps carried out overseas include the insertion of the smart card into the reader. Consequently, despite a discussion with counsel during the hearing, it remains unclear to the administrative law judge why complainant does not charge that an unfair act occurs as the result of the importation and sale of articles that "are made, produced ... under, or by means of, a process covered by the claims of a valid and enforceable United States patent." See 19 U.S.C. § 1337 (1)(1)(b)(ii); see also Tr. 289-294 (colloquy).

receiver to Thomson. Compton Tr. 742; CX 22C (Compton Dep.) Tr. 43-44.

Whether or not these acts from a legal viewpoint are to be considered part of induced or contributory infringement is addressed in detail below. Yet, there is no doubt that there is a "bringing," carried out in the United States, as that claim element has been construed herein.

Indeed, the evidence shows that insertion by a person of the smart card into the receiver's connector causes the card's pads to be brought into contact with the connector's pins.<sup>40</sup> See Kuc Tr. 193; Kelly Tr. 848-850.

### 3. Step (b) and Claim 8: "Testing ..."

After a smart card is inserted in the connector of a DSS receiver, the receiver performs test functions to determine the existence of proper electrical contact between the card and the connector.

The reset sequence specified by ISO 7816-3 is initiated by fully inserting the smart card into the receiver such that the smart card causes actuation of the switch in the receiver's connector. Kelly Tr. 846-850; CSX 5C (Pitsch Dep.) Tr. 16; CX 24C (Hailey Dep.) Tr. 89, 99. The reset sequence involves the application of certain signals to

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<sup>40</sup> OUII's argument that the bringing step must be completed at the moment the contact surfaces touch or bear against each other is discussed, and rejected, supra.

certain pads of the smart card in a well-defined and predetermined manner. Specifically, in accordance with the reset sequence, the following operations are carried out: (a) power is applied to the Vcc and Vpp pads, (b) the I/O signal is applied to the I/O pad, (c) a clock signal is provided to the clock pad (if needed), and (d) the reset signal is applied to the reset pad. Kuc Tr. 200-202, 228.

The application of various signals to the smart card, most especially the reset signal, constitutes the act of "performing predetermined operations" as called for by claim 8. Kuc Tr. 200. In response to application of the reset signal, the smart card provides the ATR sequence to the DSS receiver, as specified by the ISO 7816-3 standard. Kelly Tr. 846-847. The ATR sequence as specified by ISO-7816-3 is not itself a test for correct electrical contact, yet as detailed below the analysis of the sequence that is conducted by the accused DSS receivers is in fact such a test.

The first character of the ATR sequence is the TS character. Kuc Tr. 219. While the TS character can have either the value of 3F or 3B consistent with the ISO 7816-3 standard, smart cards used in Thomson's DSS receivers have only used the 3F value.<sup>41</sup> Kelly Tr. 848; Kuc Tr. 216. The value of the TS character reaching the receiver (from the smart card) may be a value other than 3F when there is a lack of proper electrical contact, due for example to the presence of a

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<sup>41</sup> Comparison of the TS character to the alternative values of 3F and 3B is expressly provided for in lines of code. CSX 23C.

foreign substance. See, e.g., Kuc Tr. 157-161, 239-240; LeDuc Tr. 72-74, 79-80, 81, 87, 95-99.

Reception of a TS character having a value of 3F by the DSS receiver is therefore indicative of proper electrical contact. Kuc Tr. 219, 224. Consequently, the TS character value of 3F (or potentially 3B) therefore constitutes the "predetermined expected response from the removable article upon the existence of correct alignment and electrical contact" called for by claim 8.<sup>42</sup> Kuc Tr. 202, 225.

Once received at the connector, the TS character is analyzed by Thomson's DSS receiver. The receiver compares the value of the TS character to the predetermined values of 3F and 3B. Kuc Tr. 255; CPX 26C and CPX 27C. Direct comparison of the received TS character with the predetermined values of 3F and 3B is also expressed in the code

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<sup>42</sup> Respondents and OUII argue that there is no "predetermined expected response" since the TS character is equal to 3B under direct convention and 3F under inverse convention. However, the DSS receivers receive, distinguish and interpret a single TS character.

Indeed, the administrative law judge finds that the accused cards and DSS receivers cannot avoid literal infringement because the TS character could potentially have one of two values. As discussed above, the evidence has shown only that one value (3F) is used by Thomson. Furthermore, before the DSS receiver checks to be sure that it is receiving a 3B or 3F character from the card, the receiver performs a parity test which determines the convention used by the card. See Kuc Tr. 218-222. In the alternative, infringement could be found under the doctrine of equivalents. Since the expected value of 3B or 3F is determined before comparison of the TS character is made, the accused receivers perform the "testing" step with substantially the same function, way, and result as in the case of a card which could potentially have only one value.

describing the operation of the DSS2 and DSS3 models, which is respectively provided for in CPX 7C. Kelly Tr. 861-865, 873-875; CX 326C at K22; CSX 24C; CPX 26C; CPX 7C. Comparison of the received TS character with the predetermined values of 3F and 3B therefore constitutes "comparing the actual response of said removable article with the predetermined expected response" as called for by claim 8. See Kuc Tr. 202, 225, 255-256.

If the received TS character does not have a value of 3F, the DSS receiver does not process any other characters of the ATR sequence. Kelly Tr. 966-867, 874-876. Rather, it concludes the absence of proper electrical contact. After attempting to receive a TS character having a value consistent with the predetermined expected response on three separate occasions, the DSS receiver issues the "Please insert valid Access Card" message. Kelly Tr. 870, 877.

Respondents' Dr. Bove testified during the hearing that based on the TS character, one cannot infer proper electrical contact between a smart card and connector since all contacts needed for long term operation of the smart card and receiver are not tested. Bove Tr. 952, 954. For example, Vpp is not tested, and Dr. Bove testified that Vpp is necessary for proper operation of the smart cards since disconnection of Vpp may lead to long term reliability problems with the chips embedded in the smart cards. Bove Tr. at 1119-1120. Dr. Bove based his arguments on "at least one chip" included in a list of chips that may be embedded in a smart card provided to Thomson. Bove

Tr. at 1120. He did not, however, state that such a chip was or is actually used in the cards provided to Thomson by NDC. Bove Tr. 1119-1120. He also admitted that he had not observed damage to a chip of a Thomson smart card by not providing Vpp.<sup>43</sup> Bove Tr. 1120.

Given that such arguments are based on the use of a chip that is not known to have been used in Thomson's smart cards, and given that there is no evidence that such a chip has been damaged by denial of Vpp, the evidence does not support a conclusion that Vpp is needed for the long-term operation of the smart card or receiver. Thus, the testing step is met even though Vcc or Vpp are not always subject to the testing step.<sup>44</sup>

Dr. Bove also testified that there is no testing for proper electrical contact since ATR is intended to reestablish communications. Bove Tr. 950-51. Similarly, Dr. Bove contends that the TS character is used for other purposes, such as setting the convention type.<sup>45</sup> Bove Tr. at 209. However, the evidence shows that

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<sup>43</sup> No evidence has been provided that Vcc (which is not tested) is necessary for such long-term operation.

<sup>44</sup> OUII argues, apparently for the first time in its post-hearing brief, that "there is no evidence that the input lines such as reset and clock lines are tested for continuity as required by the claim." OUII Post-Hearing Br. 28. As explained supra, the claim requires a test for "correct alignment and electrical contact," and not continuity.

<sup>45</sup> Furthermore, the operations carried out by the DSS receivers with respect to the TS character allow the DSS receivers to do more than assess the convention type. For example, the DSS3 receiver first

(continued...)

one of ordinary skill in the art would not read claim 8 to include the additional limitation that the predetermined expected response must be exclusively used to assess the existence of proper electrical contact. See Kuc Tr. 180 and claim construction section above.

In addition, respondents took the position that testing for alignment and electrical contact is not necessary because the cards and card connectors were supposedly produced to the dimensional specifications of ISO 7816-2. However, the evidence adduced at the hearing demonstrates that there are different quality levels of card and card readers. See LeDuc Tr. 8-11, 72; Hailey Tr. 825; CX 118C.

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Respondents have also had vendor qualification procedures, and do not qualify all potential suppliers. Hailey Tr. 825. Moreover, the dimensional specifications of ISO 7816-2 do not cover all of the factors that are important for good contact between the card and card

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<sup>45</sup> (...continued)

performs a parity check of the TS character, and depending on the results of that parity check, compares the received TS character to either 3F or 3B. Since the parity check itself can distinguish between the 3F and 3B characters, the later comparisons are for determining the existence of proper electrical contact as called for by the testing step. Otherwise, the operations following the parity check would be superfluous. See Kuc Tr. 219-224; Bove Tr. 1164. As Dr. Bove testified, the TS character (as well as other code) is used to make sure these consumer devices work, "given the problems that we have in the real world." See Bove Tr. 1164-1165.

reader. In particular, ISO 7816-2 does not specify the pressure that is applied between the pins of the card reader and the contact pads of the card. This pressure changes over time and can cause contact problems that are not immediately evident. LeDuc Tr. 73-74. As another example, even if the products are supplied in accordance with ISO specifications, stresses affect the performance of some components to the point that over time they no longer are within ISO standards. LeDuc Tr. 74. Indeed, Dr. Bove observed that the value of the TS character is calculated in order to deal with "real world" problems proves complainant's point. Bove Tr. 1165. In summary, the fact that ISO standards exist is no substitute for checking to ensure that proper contact has been made.

#### **4. Step (c): "Displacing ..."**

If the above described "testing" carried out by the DSS receiver does not determine that there is correct electrical contact (i.e., if the TS character does not equal either 3F or 3B ) an on-screen display message that reads "Please insert a valid Access Card" is displayed to the end-user. Kelly Tr. 870, 877; Kuc Tr. 204-206; Bove Tr. 945-946; CX 17C (Whitcomb Dep.) Tr. 77-80; CX 335C at RA 25656. That message is an indication that the card should be displaced. Kuc Tr. 204-205, 240-241.

In response to the "please insert valid access card," or in some cases a "check access card connections" message, (consistent with instructions provided by customer service representatives of the

Thomson respondents), a user should remove the smart card from the receiver's connector and then reinsert the card into the connector. See Burns Tr. 686; Kuc Tr. 158, 204-205, 240-241, 256; LeDuc Tr. 99.<sup>46</sup> Removal and reinsertion of the smart card constitutes displacement of the "corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces," as called for in claim 8.<sup>47</sup>

Respondents' Dr. Bove testified at the hearing that the displacing step is not met since end-users are not "forced" to displace or later stop displacing the card. Bove Tr. 957-959. Such an argument is inconsistent with the evidence that Thomson representatives routinely instruct users to remove and reinsert smart cards in response to the "please insert valid access card message." See, e.g., CX 149C; CX 198C at ALN216921, ALN217078, ALN217095-217096.

In order to meet this claim limitation it was not necessary for complainant to demonstrate why displacing is beneficial. However, the record does demonstrate that the acts of removal and reinsertion serve

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<sup>46</sup> CX 131C at RA34040; CX 380C at RA063065; CX 366C at SR00753048, ALN2166922, ALN216564, ALN216061, SR00794849, SR00797503; CX 198C at ALN216944.

<sup>47</sup> OUII argues that "in the accused connection process, the displacement occurs before there is any testing." OUII Br. at 27. As discussed above, any movement of the smart card that occurs before testing (and is not part of the bringing step) is not properly characterized as "displacing." Rather, in accordance with the claim only movements that occur after testing qualify as "displacing."

to clean the contact surfaces which assists in establishing proper electrical contact. See Kuc Tr. 158-162; LeDuc Tr. 76-79. Indeed, a user may also manually clean away any foreign substances from the smart card's pads, as he is often instructed to do by Thomson customer service representatives. See, e.g., Burns Tr. 682-683, 702, 710-713; Compton Tr. 749-750; CX 34C (Gonzalez Dep.) Tr. 69; CX 149C; CX 197C at ALN216061, ALN217051; CX 201C; CX 198C.

If the reinserted smart card establishes proper electrical contact with the DSS receiver, then programming is displayed to the end-user. The provision of programming is an indication of proper operation of the receiver, and more specifically, shows the establishment of proper electrical contact between the smart card and the receiver. Kuc Tr. 206. The provision of programming thus signifies to a user that he or she need not continue to displace further (i.e., remove and reinsert) the smart card. See Kuc Tr. 194, 204-206, 240-241, 254-256. Thus, discontinuing removal and reinsertion of the smart card constitutes "stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact," as recited in the displacing step of claim 8.

At the hearing, Dr. Bove testified that the "displacing" step was not met since the DSS receiver does not mechanically displace smart cards or stop displacement "at the instant at which the testing succeeded." Bove Tr. at 957-959. Indeed, with respect to the

infringement issue, respondents argue that "[f]irst and foremost, Thomson's DSS receiver does not include any motor or mechanism for displacing an access card." Respondents' Post-Hearing Br. at 16.

As discussed above, there is no express or implied limitation in claim 8 that calls for mechanical displacement and stopping, or instantaneous stopping. Respondents' argument requiring displacement and instantaneous immobilization by electromechanical means is inconsistent with the proper construction of claim 8 based on the plain language of the specification which includes a simple, manual embodiment in which a consumer approaches an electrical device and then inserts and removes his or her own credit card.

Respondents also argue that the accused devices do not meet the displacing step since the "sequence of operations in claim 8 and alleged in the DSS are fundamentally different." Respondents' Post-Hearing Br. 23-25. Respondents conclude that the DSS receivers do not infringe because (a) the card is fully inserted before detection can even occur and (b) ATR "occurs after correct contact and alignment are established," which is "guaranteed by ISO 7816-2." See Thomson Post-Hearing Br. 24.

ISO 7816-2 does not guarantee correct contact and alignment. For example, as stated above, a card can be of correct dimensions but a foreign substance on a contact can preclude proper electrical contact. Therefore, even when fully inserted, proper electrical contact may not exist.

Also, as discussed in detail above, one of ordinary skill in the art would seek to establish correct alignment and electrical contact and then test to determine whether correct alignment and electrical contact had been established. The fact that testing is triggered in the DSS receiver by fully inserting the smart card is thus fully consistent with claim 8.

In the context of the displacing step, Thomson argues that there is no "stopping" pursuant to claim 8 since the DSS receiver does not "instantaneously immobilize" the smart card. Thomson Post-Hearing Br. 25-26. Again, instantaneous immobilization is not required by claim 8. Displacing and stopping are clearly used in claim 8 in accordance with their normal meaning. As such, a user may, consistent with the claim and specification, displace a removable article.

Thomson argues that the "Please insert valid Access Card" message does not always "reflect a problem of bad electrical contact" as evidenced by "overwhelming evidence." It is not clear what evidence respondents rely upon for this argument. In any event, the evidence shows that when there is no proper electrical contact, the please insert valid access card" message is always displayed. CX 141C. See Kelly Tr. 870; Kuc Tr. 204, 240; CX 142C. That there may be other instances in which this message is displayed does not avoid infringement.

### **Conclusion on Direct Infringement**

Accordingly, for the reasons discussed above, the administrative law judge finds that the accused Thomson DSS receivers in combination with the access card literally practice each of the elements required by claim 8 (and independent claim 1) of the '464 patent.

### **C. Induced Infringement**

Complainant argues that the evidence of record in this investigation demonstrates overwhelmingly that respondents have induced infringement of the '464 patent. Complainant's Post-Hearing Br. at 21.

Respondents argue that even assuming direct infringement by DSS users could be found, complainant has failed to meet its burden of proving by a preponderance of the evidence that respondents induce users of the Thomson DSS system to infringe claim 8 of the '464 patent. Respondents Post-Hearing Br. at 28.

OUII takes the position that although respondents are correct in their conclusion that the accused products do not infringe claim 8 of the '464 patent, in the event the accused products are found to infringe claim 8, the evidence supports a finding that respondents have induced their customers to infringe the claim. OUII Reply Br. at 2.

Section 271(b) of the Patent Act provides in pertinent part, as follows:

(b) Whoever actively induces infringement of a patent shall be liable as an infringer.

35 U.S.C. § 271(b).

In Water Technologies Corp. v. Calco, Ltd., 850 F.2d 660 (Fed. cir. 1988), the Federal Circuit construed the statute as follows:

Thus, a person infringes by actively and *knowingly* aiding and abetting another's direct infringement. Although section 271(b) does not use the word "knowing," the case law and legislative history uniformly assert such a requirement.

850 F.2d at 668 (citation omitted) (emphasis in original).

The evidence demonstrates that the Thomson respondents have been aware of the '464 patent since at least 1989, which is long before Thomson developed its DSS receiver for the U.S. market. See CX 4C at 13; CX 6C at 15. {

}

A May 23, 1995 letter from Innovatron informed Thomson that its products fall within the scope of Innovatron's patents. A further letter of April 25, 1996 advised Thomson that it did not have a license agreement that extended to the United States. CX 163.<sup>48</sup>

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<sup>48</sup> {

(continued...)

Consequently, there is strong evidence that the actions by the Thomson respondents have been carried out knowingly. As discussed below, it has also been established that they have actively aided and abetted infringement by their customers.

In fact, Thomson developed the smart card drive software that checks for the value of the TS character. CX 24C (Hailey Dep.) Tr. 17-18, 37. Thomson worked with NDC and DirecTV to design the overall DSS system with full knowledge of the '464 patent. CX 905C; CX 331C at RA02963, RA39218, RA39224. Additionally, Thomson supplies the smart card and the card reader to the user as part of the sale of the product.

The Thomson respondents argue that the physical design of the DSS receiver discourages card removal. Respondents' Post-Hearing Br. at 29. Yet, this argument ignores the purpose of the smart card configuration as a removable form of security. See LeDuc Tr. 67-69; CSX 4C (Stewart Dep.) Tr. 96. Thomson, NDC and DirecTV jointly designed a system dependent on removable access cards. CX 333C.

Indeed, the record evidence establishes that removal and reinsertion of the access card is an integral part of the product as presently designed and marketed. Thomson's marketing materials show the access card out of the receiver, and tout the flexibility offered by smart cards. CX 171C ("**Smart Card Technology Provides system**

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<sup>48</sup> (...continued)

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*flexibility and security.* CX 171C at RA 36910 (bold and italics in original)). Furthermore, Thomson's manuals describe replacement procedures. See, e.g., CX 105C; CX 370C.

Complainant argues that Thomson could have provided an alternative design that did not rely on smart card technology. Indeed, there is evidence that the decryption function could have been included on a circuit board within the receiver. Kuc Tr. 194-195, 242-243. In any event, Thomson chose a smart card system with the features of the '464 patent, and provides the software, the hardware, and the instructions to end-users.<sup>49</sup>

Thomson argues that it does not encourage end-users to remove the access card from the DSS unit "except when issued a new card as a replacement for the original." Respondents' Post-Hearing Br. at 29. Yet, even that assertion admits that Thomson does in fact instruct users on how to remove cards and reinsert replacement cards.

Furthermore, in the discussion above on direct infringement, it is shown that there has been at least one large-scale replacement of access cards to all authorized DSS users. That replacement involved roughly 2.5 million units. See, e.g., CSX 4C (Stewart Dep.) Tr. 220. The replacement procedure involved three removal/reinsertion operations, involving roughly 7.5 million instances of insertion of

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<sup>49</sup> Thomson states that it has in the past used a door and a security clip to discourage removal of the card. However, the latest DSS model does not use the retaining clip. RPX 5; Burns Tr. 688.

cards into receivers. Compton Tr. 741; CSX 4C (Stewart Dep.) Tr. 221;  
CX 34C (Gonzalez Dep.) Tr. 80; CX 194C. {

}

In addition to large scale upgrades, the replacement of access cards by Thomson occurs on a continual basis with numbers in the tens of thousands per year. CX 11C at 5; CX 129C; CX 113C; CX 130C. Replacement of receivers also occurs continually at even higher rates. See Compton Tr. 742; CX 11C at 5; CX 130C. In response to customer service requests Thomson replaced more than { } cards and receivers during 1996. Bove Tr. 957; CX 130C. These replacements require removal and insertion of an access card into a receiver by the end-user. Compton Tr. 742; CX 22C (Compton Dep.) Tr. 43-44.

Respondents' end-users are also instructed by their agents to insert access cards into DSS receivers in connection with service calls.

Thomson, through a contract with Norcross,<sup>50</sup> maintains an extensive customer service call center that responds to inquiries from

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<sup>50</sup> The fact that the customer service representatives are not directly employed by Thomson does not effect Thomson's liability for inducement. See Crowell v. Baker Oil Tool, Inc., 143 F.2d 1003 (9th Cir.), cert. denied, 323 U.S. 760 (1944); Free Standing Stuffer, Inc. v. Holly Development Co., 187 U.S.P.Q. 323, 335 (N.D. Ill. 1974) (interposing an agent or independent contractor between the principal and the infringing act does not absolve the principal from liability).

end-users encountering difficulties. Removal and reinsertion of the access card is a standard and frequent instruction given to the end-users.

For example, removal and reinsertion of the access card is typically part of the so-called "soft reset" or "hard reset" procedures. See, e.g., CX 22C (Compton Dep.) Tr. 48-50; Burns Tr. 674-675; CX 149C; CX 131C; CX 106C. Soft and hard resets are common instructions to end-users to attempt to resolve problems with the DSS receivers. CX 106C; CX 201C; CX 195C; CX 197C; CX 198C; CX 199C. These reset procedures are set forth in Thomson's training manuals. CX 131C; CX 145C.

Also, Mr. Burns, a Norcross representative, testified that he frequently instructs end-users to remove the access card and wipe it off to clean the pad surfaces. Burns Tr. 682-687. In addition, the sample customer service documents submitted into evidence show that numerous other customer service representatives issue similar instructions. See Compton Tr. 721; CX 22C (Compton Dep.) Tr. 48; CX 197C; CX 198C. Customer service personnel have received no instructions to cease advising end-users of this procedure. See Burns Tr. 672-684, 713; Compton Tr. 742-754; CX 22C (Compton Dep.) Tr. 136; CX 131C; CX 136C; CX 145C; CX 104C.

Thomson alleges that it never instructed the representatives to tell end-users to wipe off their cards, and "was unaware that any service representatives instructed customers to wipe the card off."

Respondents' Post-Hearing Br. at 32. However, the evidence adduced at the hearing required a different conclusion. Thomson's witness, Mr. Compton, testified that he was aware that customer service representatives employed by Norcross have been telling customers to wipe off the card. Compton Tr. 751-752. Furthermore, contrary to Thomson's claims that this practice reflects "inadequate training," see Respondents' Post-Hearing Br. at 31, the fact is that removing the card, wiping it off, and reinserting it often solves the problem that prompted the end-user to call. Burns Tr. 686-687.

The message "Please insert a valid access card" is one of several on-screen display messages that can result in end-users calling for assistance and being told to reinsert their access cards. See Burns Tr. 683; Kuc Tr. 204-205, 240-241; CX 136C; CX 149C. Thomson argues that since a user typically has not already removed the access card when he or she calls for assistance, the instruction is at best ambiguous. Respondents' Post-Hearing Br. at 29.

Thomson cites C.R. Bard Inc. v. Cardiovascular Systems Inc., 911 F.2d 670, 675 (Fed. Cir. 1990), for the proposition that there is no inducement where instructions are ambiguous. However, Bard involved a motion for summary judgment, and evidence was ambiguous regarding when infringement might occur. In this case, the evidence of underlying infringement by end-users, as well as the instructions given by customer service representative are clear. Furthermore, even if some end-users have doubts as to whether they should remove their access

cards based on the on-screen message, any uncertainty is eliminated by the instructions provided by the customer service representatives who often tell end-users to remove (and sometimes wipe off) and reinsert the access card into the DSS receiver.<sup>51</sup>

Each time an access card is inserted into an accused Thomson DSS unit all the steps of claim 8 are carried out. Thus, the instances in which the cards have been removed and reinserted in the DSS receivers establish widespread infringement of the patent.

Inducement can be demonstrated in a variety of ways, including advertising, training methods and instructions to end-users. See, e.g., Honeywell, Inc. v. Metz Apparaturwerke, 509 F.2d 1137 (7th Cir. 1975); Rexnord Inc. v. Laitram Corp., 6 U.S.P.Q.2d 1817, 1842, 1988 WL 141526 (E.D. Wis. 1988) (inducement of infringement can be established through the defendant's advertising or provision of instructions); D. Chisum, Patents, § 17.04[4][f], at 17-82 & n.19 (1997).

In this case, the evidence shows that the accused smart cards and DSS receivers were designed with full knowledge on Thomson's part of the '464 patent to require the insertion of an access card in a manner

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<sup>51</sup> Thomson also argues that on-screen display messages referencing the access card are frequently triggered by causes which are not related to the card itself. Respondents' Post-Hearing Br. at 30. Presumably, in those cases removal and reinsertion of the access card may not occur. In other instances, insertion of the card into the DSS reader does occur. As noted by the Federal Circuit in Bell Comm. Research Inc. v. Vitalink Comm. Corp., 55 F.3d 615, 34 U.S.P.Q.2d 1816, 1822 (Fed. Cir. 1995), "an accused product that sometimes, but not always, embodies a claimed method nonetheless infringes."

that practices claim 8, and further that for various reasons smart cards have been inserted into Thomson DSS receivers millions of times in the United States at the request and instruction of Thomson or those representing Thomson. Also, it has been overwhelmingly established that Thomson has been actively and intentionally engaged in instructing end-users to practice claim 8 of the '464 patent.

The facts and law require a finding by at least a preponderance of the evidence that Thomson has induced the infringement of claim 8 of the '464 patent.

#### **D. Contributory Infringement**

Complainant argues that respondents have contributorily infringed claim 8 of the '464 patent. Complainant's Post-Hearing Br. at 25-30.

Respondents argue that even assuming that there are instances when users of the accused Thomson DSS receivers practice claim 8, respondents cannot be liable for contributory infringement.

Respondents' Post-Hearing Br. at 33-35.

OUII takes the position that although the accused products do not infringe claim 8 of the '464 patent, in the event the accused products are found to infringe claim 8, the evidence supports a finding that respondents have contributed to the infringement of the claim. OUII Reply Br. at 2, 21-22.

The Patent Act provides in pertinent part, as follows:

Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture,

combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

35 U.S.C. § 271(c).<sup>52</sup>

Certain elements of contributory infringement have already been established in connection with the issues of direct and induced infringement. The Thomson respondents have had knowledge of the '464 patent since at least 1989, and have since 1995 been put on notice by complainant Innovatron that Innovatron believed Thomson products to be within the scope of Innovatron's patents.<sup>53</sup> Furthermore, direct infringement by end-users of the accused access cards and DSS receivers has been established by at least a preponderance of the evidence.<sup>54</sup>

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<sup>52</sup> Except for the 1994 amendment to section 271(c), which involved offers to sell and importation, the Code provision quoted above is identical in all material respects to the provision which forms the basis of the cases on contributory infringement that were relied on by the parties in their briefs and are relied on by the administrative law judge in this initial determination. See U.S.C.A., Title 35, (West Supp. 1997 at 73-75).

<sup>53</sup> See Trell v. Marlee Elec. Corp., 912 F.2d 1443, 1447-48 (Fed. Cir. 1990) (concerning the knowledge requirement of section 271(c)).

<sup>54</sup> A claim for contributory infringement or inducement of infringement will not lie without proof of direct infringement. See C.R. Bard, 911 F.2d at 673, 673; Standard Havens Prods. v. Gencor Indus., 953 F.2d 1360, 1374 (Fed. Cir. 1991); Moleculon Research Corp. v. CBS, Inc., 872 F.2d 407, 410 (Fed. Cir. 1989).

Respondents argue that they cannot be liable for contributory infringement because: (1) the DSS receiver has substantial non-infringing uses; and (2) the DSS receiver is not especially made or adapted for use in infringing claim 8. Respondents' Post-Hearing Br. at 33-35; Respondents' Post-Hearing Reply Br. at 21-23.

With respect to the question of substantial non-infringing uses, respondents argue that the DSS access cards are pre-installed and not packaged separately, and that day in and day out when consumers use their DSS receivers without repositioning their access cards, the DSS receivers are used in a manner that even complainant concedes does not infringe claim 8. Citing C.R. Bard, Inc. v. Advanced Cardiovascular Sys., Inc., 911 F.2d 670 (Fed. Cir. 1990), respondents argue that whether or not all of complainant's allegations of access card upgrades, replacements, and instructions to consumers to remove and reinsert their access cards are true, contributory infringement cannot be established. This, it is argued, is because whether the DSS systems may be used in an infringing manner is insufficient:

"Innovatron must -- but did not -- show that the DSS *cannot be used* in a noninfringing manner." Respondents' Post-Hearing Br. at 34 (emphasis in original) (citing C.R. Bard, 911 F.2d at 674-75).

In C.R. Bard, the Federal Circuit reversed a district court's grant of summary judgment of contributory infringement. The Federal Circuit noted, according to the evidence then in the record, an accused medical device (a catheter used in cardiovascular surgery) was

not used in an infringing manner in two-thirds of its applications. Therefore, the Federal Circuit held that "[w]hether the ACS catheter 'has no use except through practice of the patented method,' *Dawson Chemical Co. v. Rohm & Haas Co.*, 448 U.S. 176, 199, 100 S.Ct. 2601, 2614, 65 L.Ed.2d 696 (1980), is thus a critical issue to be decided in this case." 911 F.2d at 674-75.

In this case, the evidence is clear that in many or most instances, following insertion of the access card in Mexico, consumers can purchase their DSS receivers, install the receivers in their homes, and watch programming without insertion (or reinsertion) of the access card into the receiver. However, it is also clear from the evidence that in many cases the card will have to be reinserted or replaced because of malfunctions, and that eventually all cards will be replaced and new cards inserted as part of an upgrade, thereby causing infringement of claim 8 to occur.

Thus, the question remains as to whether these facts constitute the type of non-infringing use the Federal Circuit contemplated in C.R. Bard.

As seen from the quotation of above, the Federal Circuit based its holding on Supreme Court precedent. Furthermore, the Federal Circuit's opinion also explained that its holding was based on the rationale expressed by the Supreme Court in Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417 (1983). See C.R. Bard, 911 F.2d at

In the Sony case, the Supreme Court, explained, as follows:

When a charge of contributory infringement is predicated entirely on the sale of an article of commerce that is used by the purchaser to infringe a patent, the public interest in access to that article of commerce is necessarily implicated. A finding of contributory infringement does not, of course, remove the article from the market altogether; it does, however, give the patentee effective control over the sale of that item. Indeed, a finding of contributory infringement is normally the functional equivalent of holding that the disputed article is within the monopoly granted to the patentee. For that reason, in contributory infringement cases arising under the patent laws the Court has always recognized the critical importance of not allowing the patentee to extend his monopoly beyond the limits of his specific grant. These cases deny the patentee any right to control the distribution of unpatented articles unless they are "unsuited for any commercial noninfringing use." *Dawson Chemical Co. v. Rohm & Hass Co.*, 448 U.S. 176, 198, 100 S.Ct. 2601, 2614, 65 L.Ed.2d 696 (1980). Unless a commodity "has no use except through practice of the patented method," *ibid*, the patentee has no right to claim that its distribution constitutes contributory infringement. "To form the basis for contributory infringement the item must almost be uniquely suited as a component of the patented invention." P. Rosenberg, *Patent Law Fundamentals* S 17.02[2] (1982). "[A] sale of an article which though adapted to an infringing use is also adapted to other and lawful uses, is not enough to make the seller a contributory infringer. Such a rule would block the wheels of commerce." *Henry v. A.B. Dick*

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<sup>55</sup> It is noted that the Sony case involved alleged contributory infringement under the Copyright Act, and not the Patent Act. However, as recognized by the Federal Circuit, the Supreme Court drew the analogy between the two intellectual property Acts as a vehicle for expressing the law and rationale applicable to both. See Sony, 417 U.S. at 439-442.

Co., 224 U.S. 1, 48, 32 S.Ct. 364, 379, 56 L.Ed. 645 (1912), overruled on other grounds, Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 517, 37 S.Ct. 416, 421, 61 L.Ed. 871 (1917).

Sony, 464 U.S. at 440-442 (1983) (footnote omitted).

In this case, the patentee is not seeking to expand his monopoly beyond its proper scope in order to restrict or prohibit sales of non-infringing goods. The relief sought by assignee Innovatron will not prohibit the importation and sale of any goods other than the DSS receivers and cards which have been found to infringe the '464 patent. Although many or most DSS receivers will initially function without infringement of the '464 patent in the United States, the accused products will not continue to function except through infringement. Unlike the medical devices in C.R. Bard which may be used successfully in surgery without ever having to infringe the subject patent in that case, there is abundant evidence that the accused Thomson receivers will eventually be used for a purpose that infringes of the '464 patent.<sup>56</sup>

Even if there is no defect resulting in card reinsertion there is universal card replacement for security purposes. Therefore, because use of each DSS receiver with the card already inserted will eventually be used in an infringing manner there is no substantial

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<sup>56</sup> Nor are the facts in this case like those in the Sony case in which the accused devices (Betamax recording devices) had potential uses which were authorized.

non-infringing use that qualifies the accused products as a staple of commerce.

With respect to the question of whether the DSS receiver is especially made or adapted for use in infringing claim 8, the evidence establishes that an alternative to the smart card design could have provided access for users to DSS programming. Kuc Tr. 194-195, 242-243. Instead, Thomson developed the smart card drive software that checks for the value of the TS character, and helped to design the overall DSS system with full knowledge of the '464 patent. CX 24C (Hailey Dep.) Tr. 17-18, 37; CX 905C; CX 331C at RA02963, RA39218, RA39224.

Accordingly, for the reason discussed above the administrative law judge finds that the Thomson respondents are liable for contributory infringement of claim 8 of the '464 patent.

#### VI. DOMESTIC INDUSTRY

Section 337(a)(1)(B), which is asserted against respondents in this investigation, applies "only if an industry in the United States, relating to the articles protected by the patent. . . exists or is in the process of being established." 19 U.S.C. § 1337(a)(2).

Although there must be a domestic industry with respect to the asserted patent or patents, there is no claim correspondence requirement as between the claims asserted against respondents and those practiced by the domestic industry. Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same

Including Self-Stick Repositionable Notes, Inv. No. 337-TA-366, USITC

Pub. 2949 (Jan. 1996).

The requisite domestic industry is defined in section 337 as follows:

(3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent . . . concerned --

- (A) significant investment in plant and equipment;
- (B) significant employment of labor or capital; or
- (C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a) (3).

The domestic industry requirement is satisfied by meeting the criteria of any one of the three factors listed above. Certain Concealed Cabinet Hinges and Mounting Plates, Inv. No. 337-TA-289, Comm'n Op. at 19-20 (1990). Complainant bears the burden of establishing that the domestic industry requirement is satisfied. Id. at 22.

The domestic industry determination is not made by the application of a rigid formula. The determination is made by an examination of the facts in each investigation, the article of commerce, and the realities of the marketplace. Thus, a domestic industry has been found to exist in a variety of circumstances. Certain Diltiazem Hydrochloride and Diltiazem Preparations, Inv. No.

337-TA-349, Initial Determination at 139 (United States Int'l Trade Comm'n Feb. 1, 1995) (domestic industry based on product finishing, quality control and packaging of imported bulk diltiazem), 60 Fed. Reg. 17366 (1995) (Comm'n determination not to review). See Certain Cube Puzzles, Inv. No. 337-TA-112, USITC Pub. 1334, 219 U.S.P.Q. 322 (Int'l Trade Comm'n 1983) (domestic industry based on quality control, repair and packaging of imported cube puzzles); Certain Plastic Fasteners and Processes for the Manufacture Thereof, Inv. No. 337-TA-248, Initial Determination (June 1987), aff'd, Comm'n Op. at 49-51 (1987) (domestic industry based in part on distribution and warehousing); Certain Airtight Cast Iron Stoves, Inv. No. 337-TA-69, USITC Pub. 1126, 215 U.S.P.Q. 963 (Int'l Trade Comm'n 1981) (domestic industry based on repair and installation activities associated with imported stoves).

To satisfy the domestic industry requirement, complainant relies on its licensee, Gemplus, and the equipment used at the Gemplus production facility located in Montgomeryville, Pennsylvania. The equipment is identified as the { } tester/handler ("the { } machine") and the GCR500 reader with on-line quality control software.<sup>57</sup>

#### **A. Technical Requirements**

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<sup>57</sup> The evidence also establishes that Gemplus pays royalties to Innovatron under the '464 patent for the production and sale of { } D'Angelo Tr. 517.

1. The { } Machine

The cards produced by Gemplus at Montgomeryville are embedded with a microprocessor chip. The cards are tested in the { } machine to determine if the microprocessor chip is properly functioning, i.e., able to read and write data. Elspass Tr. 564-566; D'Angelo Tr. 517-521; Kuc Tr. 245. The { } the microprocessor cards with information such as each card's serial number and system files. Elspass Tr. 564-566; CX 538C.

The plastic card bodies are embedded with microprocessors on { } at Montgomeryville, Pa. D'Angelo Tr. 534-536. These microprocessor cards are then moved from the embedding machine to the { } at the { } machine. See CX 524; CX 558. {

}  
The purpose of the { } machine is to determine if the memory cell of the microprocessor card is functioning properly and to { } Elspass Tr.

566-568. Yet, prior to making that determination, the { } machine  
conducts {

}

{

}

{

}

Thus, if an incorrect {                    } is returned from the card to the  
{        } machine, then the card will be displaced and retested for the  
proper response. Elspass Tr. 574, 580, 596.

If the card passes the {

}

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58 {

}

{

}

As noted, if any of the { } tests results in an error, then the card is { } displaced { } and the card is retested. Elspass Tr. 596-597. The reason for this displacement is that an error in the contact tests could be the result of improper contact or alignment of the contact pad on the card with the { } tester. In particular, if the reset test fails due to an improper { } received, then the failure could be due to dust or debris between one or more pads and the test head which would not be detected by { } tests. Elspass Tr. 579. By displacing the contact pads { } a better contact point may be established upon retest for the receipt and comparison of the { } by the { } machine. Elspass Tr. 579, 596.

{

} This is

because proper contact has been confirmed as a result of the { }

{ } which includes comparison with the { } Thus, any error that occurs subsequent to that test would not be as a result of improper contact between the pad and the test pins. In that case, since the card did not fail because of poor contact, repositioning the card with the objective of achieving better contact would accomplish nothing. Instead, the card is immediately rejected. Elspass Tr. 580-581.

After the memory cells of the card have been examined (i.e., written to and read from) and after the card has been {

}

As described above, the { } machine performs each element of claim 8 of the '464 patent. In summary, the { } machine utilizes a method of connecting the removable microprocessor cards to the { } machine (an electric device). See Kuc Tr. 246-247. The microprocessor card and the { } machine cooperate in that both have to be present for the { } testing and { } operations to occur. See Tr. Kuc Tr. 245-247. The { } machine then compares the { } to an expected value to confirm whether there is a

proper electrical contact. See Elspass Tr. 568-569. Specifically,  
the {

}

The predetermined { } is used for the purpose of determining whether proper contact has been established in accordance with the testing step of claim 8 of the patent. See Elspass Tr. 568-569. The { } is compared with the expected value of the { } Id. If the card returns an incorrect { } then the test head is raised, the card is displaced { } and the card is retested in accordance with the displacing step of claim 8 of the patent. See Elspass Tr. 568-569; Kuc Tr. 247-249. The retesting again compares the value of the { } received with the expected value of { } Elspass Tr. 568-569, 596. If an incorrect value of { } is received upon retest, then the card is rejected; otherwise, the { } proceeds to the intended operation of the machine, i.e., { } testing of the memory cells of the chip and { } See Elspass Tr. 610; Kuc Tr. 245.

Both respondents and OUII argue that the operation of the { } machine cannot be covered by the '464 patent because the test for the

{ }  
Yet, the fact that additional steps may be utilized in addition to the claimed steps does not avoid coverage by the claim. Certainly, such additional steps could not be used to avoid a finding of infringement if Gemplus were not complainant Innovatron's licensee. The fact remains that the steps of claim 8 of the patent are carried out by the Gemplus equipment.

The Montgomeryville facility includes a {  
} Elspass Tr. 588-589. This {

} that test every microprocessor card produced.

See Elspass Tr. 588-589. Thus, it also practices claim 8 of the '464 patent.

## 2. The GCR500

The Montgomeryville facility also uses Gemplus GCR500 card reader equipment along with an on-line computer to conduct quality control testing. D'Angelo Tr. 545-546. The evidence presented by Professor Kuc and the Gemplus witnesses described the operation of the GCR500 on-line control system for quality control of the microprocessor cards produced at the Montgomeryville facility.

After each card is tested and programmed using the { } machine, { } is selected for manual inspection as part of quality control. Elspass Tr. 583. The cards

are manually inserted into the GCR500 card reader -- in a manner similar to the insertion of the smart cards in the Thomson DSS receiver.<sup>59</sup> See Bove Tr. 979-980; LeDuc Tr. 81-83.

The card and the reader device correspond to the removable article and electric device required by the patent (and present in the Thomson DSS units). See Kuc Tr. 249-250, 357. The card reader includes a series of pins or terminals which correspond to the contact pads on the microprocessor cards to be tested. LeDuc Tr. 610. The insertion of the card in the GCR500 card reader is the bringing step of claim 8 of the '464 patent. See Kuc Tr. 250. This insertion triggers a card detection switch in the reader. LeDuc Tr. 117-118. A reset signal is sent to the card, and an answer-to-reset is sent from the card. LeDuc Tr. 101-102. {

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<sup>59</sup> {

}

Gemplus uses this { } to establish whether there is proper contact between the card and card reader. Elspass Tr. 584; LeDuc Tr. 81-83. If the reader receives a good answer to reset, then additional quality control tests are performed { } CX 525C at 9. {

} Thus, these personnel can determine from examining the { } whether proper contact has been achieved. CX 525C at 11. Accordingly, for the reasons discussed above, the GCR500 practices claim 8 of the '464 patent.

**B. Economic Requirements**

Beginning with Gemplus' initial purchase of the Montgomeryville facility in 1995 for { } Gemplus has invested { } in U.S. facilities. D'Angelo Tr. 515-517; CX 504C. This investment would not have been made unless Gemplus intended {

} CX 504C. Gemplus has over { } individuals in the United States engaged in production, technical support, customer service and development activities at the various Gemplus locations. D'Angelo Tr. 515. At least { }

machines and { } GCR500 readers are used at Montgomeryville for these purposes. It has also made investments elsewhere in the United States for developing the market for its microprocessor cards.

D'Angelo Tr. 522; Elspass Tr. 564-566, 588-589, 610. The annual U.S. payroll for individuals who spend most of their time on microprocessor card production, development and servicing exceeds { } and includes over { } individuals.<sup>60</sup> D'Angelo Tr. 525-530.

For 1997, sales of microprocessors produced at Montgomeryville will be roughly { } of the revenue of the facility, and this percentage is increasing.<sup>61</sup> D'Angelo Tr. 526, 531, 543-544. Thus, a proper current allocation of expenses attributable to microprocessor cards would include roughly { } percent of all of the expenses of the

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<sup>60</sup> Development for microprocessor cards is performed by several individuals in other Gemplus locations in the United States, and the development expenditures for these individuals alone total more than { } D'Angelo Tr. 527-530.

<sup>61</sup> The record is clear that Gemplus' investments are sufficiently large so that any reasonable allocation more than satisfies the domestic industry requirement. For example, during 1997, Gemplus will produce roughly { } microprocessor cards valued at { } at the Montgomeryville facility. D'Angelo Tr. 531. Indeed, Gemplus recently, produced { } microprocessor cards for { } at a price of roughly { } D'Angelo Tr. 532-533.

Furthermore, regarding capital investment, Gemplus invested roughly { } in smart card manufacturing equipment in 1996, and an additional { } in smart card manufacturing equipment in 1997. D'Angelo Tr. 515-516. As set forth in Gemplus' annual budget, identified as CX 508C, Gemplus budgeted revenues from the sale of microprocessor cards produced at Montgomeryville during 1997 to be { } D'Angelo Tr. 544-545.

Montgomeryville facility, including the payroll, lease commitments and equipment.

Respondents argue that Gemplus has not satisfied a value-added standard which Thomson argues is applicable to this investigation. However, cases cited by respondents involved situations where the domestic industry imported the product covered by the intellectual property at issue.<sup>62</sup> Value-added activities such as customer support and packaging with respect to the article covered by the intellectual property were therefore relevant to the domestic industry issue. This case involves production in the United States of the product covered by the '464 patent. The subject microprocessor cards are produced in large volumes at the Montgomeryville facility. See, e.g., Elspass Tr. 566. Thus, the cases relied upon by respondents are not applicable.

In summary, there is substantial production of microprocessor cards at Montgomeryville. The testing and programming that is a necessary part of that production practices the '464 patent, with respect to both the { } machine and the GCR500 on-line control system. Whether from the standpoint of investment in capital and equipment, in labor, or in engineering and development, the investment made by Gemplus in the United States is substantial and is more than sufficient to establish the existence of a domestic industry.

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<sup>62</sup> See Cabinet Hinges, Inv. No. 337-TA-289, Initial Determination (Sept. 28, 1989), Comm'n Op. (Jan. 9, 1990); Cube Puzzles, 219 U.S.P.Q. 322.

**Conclusion on the Domestic Industry Issue**

For the reasons stated above, the administrative law judge determines that the domestic industry requirement of section 337 is satisfied.

## Findings of Fact

### I. Background

1. The complainant is Innovatron S.A. ("Innovatron" or "complainant"), located at 1 rue Danton, Paris, France 75006. See 62 Fed. Reg. 15728 (1997); RX 257C at 2.
2. Respondents Thomson Multimedia, S.A. is located at 9 place des Vosges, Paris La Défense Cedex, France. See 62 Fed. Reg. 15728 (1997); CX 3 (Response to the Complaint) at 4.
3. Respondent Thomson Consumer Electronics, Inc. is located at 10330 North Meridian Street, Indianapolis, IN 46290. See 62 Fed. Reg. 15728 (1997); CX 3 at 4.
4. No party contests in personam or subject matter jurisdiction in this investigation.
5. The smart card is a plastic card that is often roughly the size of a credit card which contains an integrated circuit and some contacts that are meant to access that integrated circuit. Kuc Tr. 156; CX 3, ¶16.
6. The integrated circuit is connected to contact pads on the surface of the card, and when the card is inserted into a reader, these surfaces make contact with a connector. Kuc Tr. 156. The pins in the card reader are often elongated wires that have a little dip in them that allow a particular contacting surface to

be made in contact with the card. Kuc Tr. 156-157.

7. In a system such as the accused DSS system, bits that are coming out of the tuner are encrypted. In order to be decrypted they have to be run through a mathematical process which turns them into bits which can then be viewed as video or listened to as audio. The smart card provides the key to unlock that encrypted information. The smart card will only provide that key for programs that have previously been authorized or channels that it has previously been authorized to view. Tutorial Tr. 86; Kuc Tr. 194-195.

## II. Importation and Sale

8. Respondents manufacture the accused DSS receivers in Mexico and import the receivers into the United States for sale and use by U.S. consumers. These receivers are imported as a part of a package that also includes the accused smart card. Although respondents do not manufacture the smart cards, they procure them from other sources, package them with the receivers, and import both the receivers and the smart cards into the United States. See CX 3 (Response to Complaint), ¶¶ 36, 37, 40, 47, and 50.
9. Thomson Televisiones de Mexico manufactures and assembles Digital Satellite System ("DSS") receivers in Juarez, Mexico for import by Thomson Consumer Electronics, Inc. These Thomson DSS receivers are manufactured, assembled, and imported under an agreement with DirectTV, Inc. CX 4C ¶13; CX 21C (de Russé Dep.)

at 74.

10. Thomson has sold approximately {            } DSS units in the United States. Hailey Tr. 813.
11. Thomson Consumer Electronics purchases access cards from News Datacom Limited for the DSS system. CX 5C at 18-19; Hailey Tr. 802.
12. Thomson Consumer Electronics purchases, or may in the future purchase access card readers from others. CX 5C at 19.

**III. Claim Construction**

13. Claim 1 and claim 8 are as follows:

1. Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric device, which cooperates with said removable article, said removable article having electrically conductive terminals and said electric device having conductor elements, both said electrically conductive terminals and said conductor elements having corresponding contact surfaces, the method comprising the steps of:

(a) bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into contacting relationship with said corresponding contact surfaces of said conductor elements;

(b) testing said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces; and

(c) displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said

testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

8. Method as defined by claim 1 wherein said step of testing said corresponding contact surfaces for said existence of correct electrical contact comprises: performing predetermined operations which provide a predetermined expected response from the removable article upon the existence of correct alignment and electrical contact; and comparing the actual response of said removable article with the predetermined expected response.

CX 1 ('464 Patent) at col. 9, line 54 through col. 10, line 10; col. 10, lines 51-59.

14. Dr. Kuc testified that "method for electrically connecting" means that there are two things that are to be connected, and "[y]ou want to end up in a condition where they operate, so 'electrically connecting' means that you are going to bring one device in electrically operating -- in a condition such that they operate. This is the process of making the connection so that it can then do the things it's intended to do." Kuc Tr. 164-165.
15. In its discussion of the preferred embodiment, the specification contains a lengthy discussion of dangers posed by the counterfeiting or simulated operation of certain types of credit cards, as well as ways in which the claimed invention might be applied to detect and thwart counterfeiting or simulated operation. See CX 1 ('464 Patent) at col. 8, line 38 through

col. 9, line 46.

16. Electrical connection between the removable article and the electric device must be established in advance of any function that relies upon electrical connection with the removable article. For example, in the preferred embodiment drawn to the use of a particular kind of credit card and the temporary exchange of information between the credit card and a transfer device, it is clear that electric connection must be established between the credit card and the transfer device before the exchange of information will take place. See CX 1 ('464 Patent) at col. 3, lines 29-48.

17. Dr. Kuc testified as follows:

Q Is it your understanding that prior to the intended operation of an electric device, one has to successfully complete each of the steps in claim 8?

A Yes. The steps have to be completed. Then we can say that the device is properly connected.

Kuc Tr. 165.

18. Dr. Kuc testified on direct examination, as follows:

Q The next term that we see is highlighted is the term "cooperates"; is that correct?

A Yes.

Q What does that mean to a person of ordinary skill in the art?

A It means that both devices have to be present for the system to operate as intended.

Q Excuse me. When you say "both devices," what devices are you referring to?

A We're talking about an electric device and a removable article. And so the electric device will not work without the removable article and the removable article needs the electric device in order to perform the functions that are intended.

Q You say that the word "cooperate" implies that without the cooperation of the electric device will not work; is that your view?

A Yes, it is.

Q How do you come to that conclusion using the word "cooperate"?

A Well, if you -- the previous phrase talks about connecting things and so if you connect something with another thing, it works. So we have this additional phrase, which cooperates, so it must mean that it has this additional feature that both are necessary.

Kuc Tr. 165-166.

19. "Cooperate" is defined as follows:

1: to act or work with another or others to a common end : operate jointly (marines and navy men cooperated in the attack) (the police force always ~s with the fire department) 2: to act together : produce an effect jointly (heavy rains and rapid thaws cooperated to bring disastrous floods) 3: to associate with another or others for mutual often economic benefit (many nations cooperated in the trade agreement) **syn** see UNITE

Webster's Third New World International Dictionary 501

(1976) ("Webster's").

20. As set forth in a May 4, 1981 Office Action response, application claim 19, which matured and issued as claim 1, stated in part, as

follows:

Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric apparatus, which cooperates with said removable article, said removable article having at least one terminal and said electric apparatus having at least one conductor element, both said at least one terminal and said at least one conductor elements having corresponding contact surfaces ....

CSX 25 at II00124.

21. There is no limitation in the claim language as to how the "bringing ... into contacting relationship" is to be accomplished. This aspect of the claim should be read broadly, especially given the fact that the specification teaches that the contacting relationship may be brought about by a system that relies on an electric motor, on a non-electric mechanism, or manually by a person inserting a card. See, e.g., CX 1 ('464 Patent) at col. 8, lines 12-25.

22. The specification provides in pertinent part, as follows:

In a general fashion, whatever the nature of the electric or electronic circuits which are used in the card, it is possible to test for the proper electrical contact indicating the existence of correct alignment and electrical contact by making the card carry out predetermined operations for which it is known which response predetermined it must furnish (the test must be chosen in a fashion so as to operate all the electrical contacts).

CX 1 ('464 Patent) at col. 7, lines 12-20 (emphasis added).

23. Respondents' expert stated:

Clearly, if there are contacts that don't further connect to any circuitry on the other side, it wouldn't be necessary to test them, but contacts where, in some cases, lack of proper contact and alignment would result in improper operation or no operation, I think should be tested. Certainly, that's the nature of this invention overall.

Bove Tr. 901.

24. Because one has a removable article one must bring it to the electric device. One of ordinary skill in the art would understand "bringing" the removable article to mean that the removable article is inserted into the electrical device so that it is in "a contacting relationship so that it's capable of working." Kuc Tr. 166.
25. One skilled in the art wants to make sure that the removable article is in the position that is most favorable for making a contact. So, for example, with a modern smart card with pins and pads, one would want the pins to be approximately in the center of the pads. That would be the contacting relationship. Once a "contacting relationship" has been achieved between the removable article and the electrical device, one is not sure whether there is electrical contact; that must be tested for later. Id. at 167.
26. In reference to the preferred embodiment, the specification provides a flow chart, and explains in part as follows:

The drive system of the card is then started (73). The card advances and the contact surfaces face one another (contacts facing one another 74) and then

approach (approach surfaces 75) until they touch (mechanical contact of the surfaces 76).

If the card has not attained its maximal front position (end of passage? 77) it continues to advance 78).

CX 1 ('464 Patent) at col. 7, lines 31-38 (emphasis added).

27. Thus, as seen from the portion of the specification quoted above, in all cases the card must advance until the card has attained its maximal front position, even though mechanical contact has already been achieved between the contacts ("until they touch").
28. A person skilled in the art would not apply power until the contacts on the removable article are in a contacting relationship with their corresponding contacts in the electrical device. Otherwise, power may be applied to the wrong contacts and that could damage the chip on the removable article. For example, if power commenced with the "bringing" step, power might be applied from the electrical device to contacts on the removable device that are used for signal leads and which therefore should not have power applied to them at all. This is a problem that would have been understood by one of ordinary skill in the art in 1978. In fact, the adverse consequences of indiscriminately applying power to the contacts in the removable article might have been greater in the late 1970s due to the fragility of integrated circuitry in use then as compared to the circuitry used today. Kuc Tr. 168-169.
29. A good engineer in 1978, as well as today, would want a reliable

system that operates with some tolerance in the contacting relationship between the removable article and the electrical device, and which would not rely on edge contacts. Kuc Tr. 169-170.

30. Step (b) of claim 1, and claim 8 require a test for the existence of correct alignment and electrical contact. CX 1 ('464 Patent) at col. 9, line 54 through col. 10, line 10; col. 10, lines 51-59; Kuc Tr. 171.
31. Correct alignment and electrical contact is the condition that has to be satisfied for the device to operate as intended. See Kuc Tr. 175-178.
32. Correct alignment and electrical contact are indicated by a test for proper electrical contact. CX 1 ('464 Patent) at col. 7, lines 12-21.
33. One skilled in the art is not interested in the possible ways a card could fail. He or she is interested in knowing when the smart card is correctly inserted, so that is what the test does. The test informs of the existence of correct alignment and proper electrical contact. Kuc Tr. 312. Step (b) of claim 1 involves some procedure that is carried out which can indicate affirmatively when the article and the device are correctly aligned and when there is proper electrical contact between the corresponding contact surfaces. Bove Tr. 897.
34. Claim 8 specifies how to test for the existence of correct

alignment and electrical contact in two basic steps. First, predetermined operations are performed which cause the removable article to provide a predetermined expected response, which will happen only upon the existence of correct alignment and electrical contact. The second step involves comparing the actual response from the smart card with the expected predetermined response. If the responses match, then correct alignment and electrical contact has been achieved. See Kuc Tr. 163-164, 179.

35. A person of ordinary skill in the art understands that the clause "nonalignment and nonexistence of correct electrical contact" means the failure of the test in step (b) of claim 8. Kuc Tr. 183.
36. A person of ordinary skill in the art understands the term, "predetermined operations" to mean those operations that are established at the time of the design of the system and that do not change over time. The predetermined expected response is expected in that it does not change over time, and it is expected in that it is the response that the card produces. Kuc Tr. 179-180.
37. A person of ordinary skill in the art understands the term "response from the removable article" to mean that the card has to respond. The response is generated by the integrated circuit contained on the removable article. Kuc. Tr. 180.

38. The '464 patent does not require that the predetermined expected response be used exclusively for the test specified in claim 8. There is nothing in claim 8 which limits the predetermined expected response from being used for other purposes. See Kuc Tr. 180, 209.
39. The '464 patent does not require that the removable article be in motion while the testing is done. See Kuc Tr. 187.
40. Application claims 19 and 26 (issued claims 1 and 8, respectively) were added through a May 4, 1981 Amendment. CSX 25 at II00124.
41. Originally, application claim 26 simply recited "performing predetermined operations on said removable article; and comparing the actual response of said removable article with a predetermined expected response." CSX-25 at II00133. In that May 4 amendment, the assertion was made that none of the cited references disclose testing "by an electric device which tests to see if the card emits the correct predetermined response." Id.
42. In light of that assertion, application claim 26 was ambiguous given its referral to a comparison involving "a predetermined expected response" without describing the origin of that expected response in the context of "performing predetermined operations." After considering application claim 26 and the aforementioned assertion, the Examiner held that the claim is patentable, and would be allowed if certain section 112 rejections were overcome,

- i.e., the phrase "predetermined operations" as being vague and indefinite. CSX 25 at II00147.
43. To overcome that rejection, claim 19 was amended to its present form. CSX 25 at II00155-56.
44. As stated as the first objective of the invention, the '464 patent seeks "to ensure a good electrical contact while compensating for wearing down and/or crushing the contact surfaces." CX 1 ('464 Patent) at col 1, lines 34-36.
45. The fact that the electrical device is ready to accept the introduction of a credit card and to commence the movement of the drawer does not indicate when testing (including the application of power) begins. See CX 1 ('464 Patent) at col. 4, line 63 through col. 5, line 36.
46. The term "upon" need not convey the sense of immediacy, almost simultaneity, which is proposed by OUII and respondents. See Webster's at 2517-18.<sup>1</sup>
47. The Examiner's comment concerning "continuity" was his suggestion as to what he thought "electrical cooperation" was intended to mean. CX 25C at II00146. That suggested term was not found in

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<sup>1</sup> The following are among the examples given in the dictionary for the word "upon": (<~ the demand of government leaders... arrangements were made this year -- Wheeler McMillen) (<transcripts are sent ~ the request of the particular student -- *Bull. Of Meharry Med. Coll.*). Webster's at 2518.

the specification or used to replace "electrical cooperation."

Rather, the term "electrical contact" was used to replace

"electrical cooperation." CSX 25 at II00155-56.

48. "Correct electrical contact," as used in claim 8, means something more than continuity, which calls for assessing only whether any current is passing between a first and second point but not the nature of the signal voltage received at the second point.

Elspass Tr. 571-572, 593-594; see Elspass Tr. 605-06.

49. Continuity is not a sufficient test to determine that the device and card are properly connected for their intended purpose.

Elspass Tr. 568-573.

50. The term "electrical contact" was used in the claim and parts of the specification in accordance with its ordinary meaning, which is contact such that the removable card and the electric device will work as intended. Kuc Tr. 161, 175-178; CX 1, col. 5, lines 54-60; col. 1, lines 21-44.

51. The act of "displacing said corresponding surfaces relatively, in a direction tangential to said corresponding contact surfaces" requires that the contact surfaces of the removable article's terminals and the electric device's conductors be moved in relation to each other such that the area of contact between them moves. This is the plain meaning of the phrase, and would be understood in this manner by one of ordinary skill in the art.

See Kuc Tr. 181.

52. The '464 patent contemplates bringing this relative movement about in mechanized devices or manually. CX 1 ('464 Patent) at col. 8, lines 14-37; Kuc Tr. 186-87.
53. Displacement should not be continuous or limited to mechanical displacement. The plain language of the claim calls simply for displacement, which ordinarily requires movement but not continual or motor-driven movement. See, e.g., Bove Tr. 1131.
54. In this case, the specification describes a motorized embodiment in detail yet also teaches other embodiments, including embodiments that use non-continuous, manual movement of a removable article such as a credit card. See Kuc Tr. 186; CX 1, col. 8, lines 14-37.
55. For example, the specification provides in part:

In the embodiment of the invention described with reference to the figures, the card and the connection mechanism are activated by an electric motor. In other embodiments, it may be activated differently, in particular the displacement of the card and of the drawer can be due to the carrier of the card who introduces it. In this latter case, the relative movements of the contact surfaces will be essentially guided by guiding means, particularly ramps.

In a like fashion the translationally movable drawer may be replaced by a jointed shutter which is rotationally and translationally movable (in the same fashion as introduction mechanisms for magnetic cassettes in tape readers).

CX 1 ('464 Patent) at col. 8, lines 12-25 (emphasis added).

56. Nothing indicates that the word "stopping" in claim 8 is used other than in its accepted and normal meaning. The term

"stopping" does not have any special engineering meaning. See Bove Tr. 1142-1143.

57. The teachings in the specification concerning instantaneous immobilization present the feature as an option. See CX 1 ('464 Patent) at col. 8, lines 26-37.

#### IV. Validity

58. United States Letters Patent No. 3,859,634 ("Perron patent"), entitled Digital Lock System Having Electronic Key Card, issued on January 7, 1975, to Perron and Fowler. RX 24.
59. The claimed invention of the Perron patent relates to lock systems, "particularly to an electronic lock system employing active digital electronic circuitry in both the key and the lock." Id. at col. 1, lines 10-14.
60. It is not disputed that the Perron patent is prior art to the '464 patent.
61. Although the Perron patent teaches a comparison of a response from the circuitry on the key with information stored in the master register, the success or failure of the user's key to match an expected response contained in the master register is not designed to provide information about correct alignment and electrical contact or (lack thereof) nor is such information implied. See Bove Tr. 982-985; Kuc Tr. 1218.
62. In all cases, a lack of identify between the response received from the key and the expected response results in the

identification of an unauthorized attempt to unlock the device.

For example, as seen from the teachings of the specification:

If, during comparison of any bit of the key code, a lack of identity is found between this bit and the associated bit of the master code in register 48, the output signal from comparator 46 will cause enabling of AND gate 60 and consequent resetting of flip-flop 58 which causes removal of the flip-flop output signal to gate 62. No actuation signal can be provided by reason of the disabling gate 62. An output signal from gate 60 is provided only upon detection of an error between the bit of the key code and a corresponding bit of the master code, and this output signal is also employed to activate an alarm circuit 64 to indicate detection of an erroneous key code. Upon sensing of an alarm condition, a stop signal can be generated by alarm circuitry 64 to stop clock 52 and discontinue the decoding process and to prevent the release of the key clamped in the lock by clamp 33.

RX 24 (Perron Patent) at col. 7, lines 48-65. See also Id. at col. 1, lines 42-46 ("In the event that there is not proper comparison between the master code and the key code, an alarm can be actuated and the key can also be seized within the lock to prevent its removal therefrom.").

63. In one embodiment of the claimed Perron invention, the code residing in each key's shift register and the master code can be replaced from time to time or even immediately after use of a key, for example, to permit use of a key only once a day. RX 24 (Perron Patent) at col. 1, lines 34-39; col. 3-46. However, these teachings of the Perron patent do not differentiate the comparison of a key code as taught therein from the element of

claim 8 of the '464 patent which requires comparison of an actual response from the removable article with the predetermined expected response.

64. Complainant argues with respect to the Perron patent that the administrative law judge should defer to the decision of the Examiner to allow the '464 patent to issue over United States Letters Patent 3,637,994, entitled "Active Electrical Card Device," which issued on January 25, 1972 to Ellingboe ("Ellingboe patent"). RX 32 (Ellingboe Patent); Complainant's Post-Hearing Br. at 36.
65. The Perron and Ellingboe patents are not identical. Nevertheless, it appears from an examination of the Ellingboe patent, and from the expert testimony at the hearing that the Ellingboe and Perron patents have many similarities which are pertinent to the '464 patent. See Bove Tr. 1195-1196.
66. The Ellingboe patent teaches, among other things, the use of a card, such as a credit card, with microelectric circuitry that is inserted into a reading device. The circuit on the card may provide a unique identification code. In one embodiment of the claimed invention of the Ellingboe patent, a series of clock pulses causes the code pattern to proceed to the reader "where it is sensed and compared with the corresponding codes in the memory bank of reader." See, e.g., RX 32 (Ellingboe Patent) at col. 1, line 30 through col. 2, line 24; col. 6, lines 39-43; col. 6,

lines 64-72.

67. The Texas Instruments ("TI") calculator offered into evidence at the hearing was marked by respondents as a physical exhibit, RPX 1. The casing of the calculator indicates that it is a "TI Programmable 59" with "Solid State Software." RPX 1; RX 225.
68. The calculator marked as RPX 1 was not manufactured before the January 24, 1978 priority date of the '464 patent. According to respondents' expert it appears to have been manufactured in 1979. Bove Tr. 1168.
69. Consequently, respondents did not produce a physical exemplar of a TI 58/59 calculator which could invalidate the '464 patent or any claim thereof.
70. Each of the TI calculator manuals produced at the hearing states on its cover that it is for the "TI Programmable 58C/59."<sup>2</sup> Each of the manuals produced at the hearing bears copyrights that include the year 1979. RX 68; RX 69; RX 70 (TI58C/59 Quick Reference Guide).
71. Respondents seek to describe the function of the TI 58/59 calculator as it allegedly operated before the priority date of the '464 patent, by reference to: 1)U.S. Letters Patent 4,139,893, entitled "Calculator Program Security System," which issued on February 13, 1979 (based on applications filed in 1977

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<sup>2</sup> It is not clear from the record what the significance is of the model numbers "58C" and "59" or whether there was a model "58".

and 1976), to Sidney W. Poland; and 2) U.S. Letters Patent 4,153,937, entitled "Microprocessor System Having High Order Capability, which issued on May 8, 1979 (based on applications filed in 1977 and 1976) to Sidney W. Poland (collectively the "Poland patents"). Respondents rely particularly on the '937 patent to Poland. See RPF 513-521.

72. Respondents' expert believes that the calculator disclosed therein is identical in appearance and operational description to the TI 58/59 calculator. See RPF 521 (citing Bove Tr. 1003).
73. There was little or no evidence concerning the electronic design of the TI calculator, especially if the Poland patents are not taken into account. Therefore, it is not possible to determine the situations when a blinking display might appear on the TI calculator. See Bove Tr. 1185-1190.
74. Although use of the "Diagnostic/Library Module Check" or the "Library Module Check" is identified by respondents as a way of satisfying the "testing" requirement, there is very little evidence of record concerning those tests and what occurs in the circuitry of the TI calculator during those tests, especially if one does not rely on the Poland patents. See Bove Tr. 889-1000.
75. However, it is clear that those "tests" are only performed after the user presses a sequence of buttons on the calculator to initiate the diagnostic routine. Furthermore, the user need not perform a diagnostic routine before attempting to use the module.

The TI calculator may be used immediately upon insertion of a module into the back of the calculator. Testing "occurs after the module is electrically connected to the calculator." Bove Tr. 1172-1179.

76. In the case of the TI calculator, the fact that the calculator is turned off when the module is inserted and then turned on with the module fully powered up for use, highlights the fact that the "check" or testing which may be performed is not a test for correct alignment and electrical contact, which under the '464 patent would be performed before an attempt is made to exchange information between the removable article and the electrical device. Bove Tr. 1172-1179.
77. In Dr. Bove's experiments on the TI calculator, he covered in turn each of the eight contacts of the calculator's removal module. With seven of the terminals a user would not perceive a problem until that user attempted to access a function on the module. However, in the case of the eighth terminal, the calculator locked up. Thus, rather than testing for good connection, the TI calculator proceeds to connect without testing and can experience the consequences of not having a good electrical connection. Bove Tr. 1190-1192.
78. OUII argues in its reply brief that if claim 8 of the '464 patent is construed in the manner proposed by complainant, it is anticipated by U.S. Letters Patent 4,055,754 ("Chesley patent"),

entitled "Memory Device and Method of Testing the Same," which issued on October 25, 1977 to Gilman D. Chesley. See OUII Reply Br. at 15-20; RX 50 (Chesley Patent).

79. In the Chesley patent, the claimed invention "provides an integrated circuit memory device and method wherein test logic is included in the device for detecting the presence of predetermined patterns applied to the memory cells." RX 50 (Chesley Patent) at col. 1 lines 43-46.
80. Random access memories (RAMs) provide the background for the claimed invention, and are the memory cells used in the preferred embodiment disclosed in the specification. Id. at col. 1, lines 18-27; col. 2, lines 8-12.
81. One of the purported advantages of the method disclosed in the Chesley patent is that instead of testing each cell individually, the memory can be tested row by row. Id. at col. 1, lines 44-50.
82. There is no explicit "bringing" step in the Chesley patent. See Bove Tr. 1072-1073.
83. Respondents' expert testified with respect to he bringing step, as follows:

Q And there's some sort of action where this chip is brought into connection with a testing device; is that right?

A Or by which it's installed into a socket or printed circuit board or something.

Q But the bringing element would be met?

A It has to be connected.

Bove Tr. 1074.

84. The Chesley patent does not disclose a test to assure correct electrical contact before the RAMs are tested for memory. See Bove Tr. 1072-1073, 1076; Kuc Tr. 1222-1223.
85. There is no explicit "displacing" in the Chesley patent. See Bove Tr. 1072-1073.
86. There is no disclosure in the Chesley patent of a displacing that stops when testing determines alignment and existence of correct electrical contact, as required by independent claim 1 and dependent claim 8 of the '464 patent. See Bove Tr. 1072-1073; Kuc Tr. 1222-1223.
87. RX 3 contains a copy of U.S. Letters Patent 4,222,516, entitled "Standardized Information Card," which issued to Bernard Badet et al. ("Badet patent").
88. RX 17 contains a copy of U.S. Letters Patent 3,934,122, entitled "Electronic Security Card and System for Authenticating Card Ownership," which issued to James A. Riccitelli ("Riccitelli patent").
89. RX 45 contains a copy of U.S. Letters Patent 4,163,210, entitled "Arrangement for Checking a Contact Inserted Between a Transmitter Circuit and a Receiver Circuit to Allow Electrical Signals to Be Transmitted," which issued to Georges M. Giraud ("Giraud patent").

90. It has not been disputed that RX 3, RX 17 and RX 45 are prior art to the '464 patent.
91. The Badet patent claims to disclose, among other things, "means which ensure a good electrical connection between the device [embossed in a] card and the system which is required to cooperate with the card and the testing of the electrical connection." See RX 17 (Badet Patent) at col. 2, lines 49-65; col. 7, lines 40-44.
92. In the disclosure of the Badet patent, a voltage is applied between two electrodes located in the card reader. There are two electrodes associated with each contact on the card. Current flows from one electrode, through the contact on the card, and into the other electrode. As explained by respondents' expert, "the current is supposed to exceed a certain predetermined level and so there is a threshold, and above that threshold, if the current is measured to be above that threshold, then that suggests that there's low enough impedance connection that the connections are good." This flow demonstrates electrical continuity between the card and the reader. Kuc Tr. 1219-1220; Bove Tr. 1000-1011.
93. The Badet patent would suggest that a test of electrical impedance is adequate in assuring an electrical connection to a smart card.
94. Therefore, the Badet patent may teach away from the invention of

- claim 8 which requires a predetermined expected response from a chip on the removable article. Kuc Tr. 1219-1220.
95. The Badet patent does not expressly disclose the "displacing" step of the '464 patent. See RX 17; Bove Tr. 1011.
96. In the Badet patent, the electrodes move in a direction perpendicular to the contacts on the card and do not move in a tangential direction. Kuc Tr. 1219-1220.
97. In the Riccitelli patent, the card holder must key in a preselected sequence of digits or signals. Logic circuitry on the card is responsive to input signals. If the input signals are in a preselected sequence, an output is provided by the card. If the input signals are not in the preselected sequence, a feedback control signal is developed and applied to deactivate the logic circuitry. See, e.g., RX 17 (Riccitelli Patent) at col. 1, line 56 through col. 2, line 9; col. 3 lines 7-15; Bove Tr. 1014.
98. In the Riccitelli patent, correct electrical connection could be inferred in cases in which when the preselected sequence of signals is confirmed by the logic circuitry. See Bove Tr. 1015-1016.
99. The "test" in the Riccitelli patent is not for correct electrical connection, and it does not indicate if the electrical connection is faulty (even in the case of an authorized user), or when electrical connection is correct in cases in which the holder of

the card has entered the incorrect code. Consequently, the Riccitelli patent does not disclose a displacing step. Bove Tr. 1017; Kuc Tr. 1214-1215.

100. The Riccitelli patent does not teach or suggest displacement in order to attempt a correct electrical connection. The "test" in the Riccitelli patent is not used to help establish an electrical connection between the card and the terminal. In fact, the Riccitelli patent teaches away from the displacing step of the '464 patent. The Riccitelli patent assumes normal operation with correct electrical connection. It does not contain any teachings or disclosure of what to do in cases of incorrect electrical connection. It teaches that when the "test" fails, the logic circuitry should be inhibited from further operation until reset. See RX 17 (Riccitelli Patent) at col. 1, lines 61-65; col. 5, lines 2-5; Kuc Tr. 1214-1215.
101. The Giraud patent discloses an arrangement to check the contact between a transmitter circuit and a receiver circuit. See, e.g., RX 45 (Giraud Patent) at col. 1 line 65 through col. 2, line 39.
102. The Giraud patent teaches that a test should be conducted during the entire time signals are transmitted from the transmitter to the receiver. RX 45 (Giraud Patent) at col. 2, lines 38-41 RX 45, column 2, lines 38-41; Bove Tr. 1078-1079.
103. In the Giraud patent, good contact is confirmed by examining the currents carrying data between the transmitter and the receiver.

However, the Giraud patent does not use "predetermined operations" or a "predetermined expected response." See Kuc Tr. 1223-1224; Bove Tr. 1077-1078.

104. Although the Giraud patent states that it is generally satisfactory to ensure good contact between the two components at the start of a signal-transfer operation, it does not teach what is to be done in the case of bad contact, or how to use testing in the method of establishing contact. The Giraud patent does not suggest displacing or stopping of the displacing upon the existence of correct alignment and electrical contact. See RX 45 (Giraud Patent) at col. 1, lines 19-30; Kuc Tr. 1223-1224.
105. U.S. Patent No. 3,867,693 to Saxenmeyer concerns integrated chips that are very small. Typically there are many contacts on integrated circuits of this type. In order for the probes to make contact with the chip, they are positioned optically. The contacts on the chip are so small that there is no room for tangential motion, so Saxenmeyer does not have displacement in a tangential direction. Kuc Tr. 1220-1221; Bove Tr. 1022, 1194.
106. Furthermore, the integrated circuits in Saxenmeyer are not removable articles as that term is used in claim 8 of the '464 patent. They are not meant to be inserted and taken out and inserted. They are soldered into place. Kuc Tr. 1220-1221.
107. Additionally, the Saxenmeyer patent does not teach "a predetermined expected response from the removable article."

Rather it is basically a continuity test. Kuc Tr. 1221.

108. There are no teachings or suggestions to one of ordinary skill in the art to combine the prior art relied upon in this investigation. Nor would it be clear to one of ordinary skill in the art how to combine the prior art. See Kuc Tr. 1224-1225.

#### **V. Infringement**

109. The accused DSS receivers carry out the "method for electrically connecting" and also "cooperate" with the cards inserted into them because an electrical connection is made between a removable article (having at least one electrical circuit) and an electric device. See Kuc Tr. 253-254.
110. In particular, the record evidence shows that Thomson's removable smart cards have an integrated circuit embedded within them. Kuc Tr. 194, 199.
111. The accused smart cards also include electrically-conductive terminals or pads. Kuc Tr. 156, 195-196.
112. The cards are inserted within an electric device, known as a smart card connector or reader. The smart card connector has conductive elements that make contact with the smart card's pads. Kuc Tr. 193; Kelly Tr. 848.
113. The smart card pads connect to corresponding connector elements so as to allow for communication between the two to take place. Kuc Tr. 195-196; Kelly Tr. 850; CX 24C (Hailey Dep.) Tr. 58.
114. The evidence is uncontroverted and clear that thousands if not

millions of new access cards have been provided for insertion into DSS readers in the United States as part of an upgrade. See Compton Tr. 741; CSX 4C (Stewart Dep.) Tr. 87-93, 220-221; CX 34C (Gonzalez Dep.) Tr. 78; CX 11C at 4.

115. In addition, there is strong evidence that on at least some occasions, and more than likely on a regular basis (i.e., daily or weekly), end-users of accused DSS devices remove and reinsert their access cards when there is an apparent malfunction of their receiver. Burns Tr. 672-689.
116. Sometimes smart cards must be replaced. CX 34C (Gonzalez Dep.) Tr. 886-87; CX 11C at 5; CX 129C.
117. {            } of DSS receivers have been replaced. When an end-user receives a replacement receiver, he typically inserts his original access card into his replacement receiver before shipping the original receiver to Thomson. Compton Tr. 742; CX 22C (Compton Dep.) Tr. 43-44.
118. Insertion by a person of the smart card into the receiver's connector causes the card's pads to be brought into contact with the connector's pins. See Kuc Tr. 193; Kelly Tr. 848-850.
119. The reset sequence specified by ISO 7816-3 is initiated by fully inserting the smart card into the receiver such that the smart card causes actuation of the switch in the receiver's connector. Kelly Tr. 846-850; CSX 5C (Pitsch Dep.) Tr. 16; CX 24C (Hailey Dep.) Tr. 89, 99.

120. The reset sequence involves the application of certain signals to certain pads of the smart card in a well-defined and predetermined manner. Specifically, in accordance with the reset sequence, the following operations are carried out: (a) power is applied to the Vcc and Vpp pads, (b) the I/O signal is applied to the I/O pad, (c) a clock signal is provided to the clock pad (if needed), and (d) the reset signal is applied to the reset pad. Kuc Tr. 200-202, 228.
121. The application of various signals to the smart card, most especially the reset signal, constitutes the act of "performing predetermined operations" as called for by claim 8. Kuc Tr. 200.
122. In response to application of the reset signal, the smart card provides the ATR sequence to the DSS receiver, as specified by the ISO 7816-3 standard. Kelly Tr. 846-847.
123. The first character of the ATR sequence is the TS character. Kuc Tr. 219.
124. While the TS character can have either the value of 3F or 3B consistent with the ISO 7816-3 standard, smart cards used in Thomson's DSS receivers have only used the 3F value. Kelly Tr. 848; Kuc Tr. 216.
125. Comparison of the TS character to the alternative values of 3F and 3B is expressly provided for in lines of code. CSX 23C.
126. The value of the TS character reaching the receiver (from the smart card) may be a value other than 3F when there is a lack of

proper electrical contact, due for example to the presence of a foreign substance. See, e.g., Kuc Tr. 157-161, 239-240; LeDuc Tr. 72-74, 79-80, 81, 87, 95-99.

127. Reception of a TS character having a value of 3F by the DSS receiver is therefore indicative of proper electrical contact. Kuc Tr. 219, 224. The TS character value of 3F (or potentially 3B) therefore constitutes the "predetermined expected response from the removable article upon the existence of correct alignment and electrical contact" called for by claim 8. Kuc Tr. 202, 225.
128. Once received at the connector, the TS character is analyzed by Thomson's DSS receiver. The receiver compares the value of the TS character to the predetermined values of 3F and 3B. Kuc Tr. 255; CPX 26C and CPX 27C.
129. Direct comparison of the received TS character with the predetermined values of 3F and 3B is also expressed in the code describing the operation of the DSS2 and DSS3 models, which is respectively provided for in CPX 7C. Kelly Tr. 861-865, 873-875; CX 326C at K22; CSX 24C; CPX 26C; CPX 7C.
130. Comparison of the received TS character with the predetermined values of 3F and 3B therefore constitutes "comparing the actual response of said removable article with the predetermined expected response" as called for by claim 8. See Kuc Tr. 202, 225, 255-256.

131. If the received TS character does not have a value of 3F, the DSS receiver does not process any other characters of the ATR sequence. Kelly Tr. 966-867, 874-876.
132. Rather, it concludes the absence of proper electrical contact. After attempting to receive a TS character having a value consistent with the predetermined expected response on three separate occasions, the DSS receiver issues the "Please insert valid Access Card" message. Kelly Tr. 870, 877.
133. Respondents' Dr. Bove testified during the hearing that based on the TS character, one cannot infer proper electrical contact between a smart card and connector since all contacts needed for long term operation of the smart card and receiver are not tested. Bove Tr. 952, 954. For example, Vpp is not tested, and Dr. Bove testified that Vpp is necessary for proper operation of the smart cards since disconnection of Vpp may lead to long term reliability problems with the chips embedded in the smart cards. Bove Tr. at 1119-1120. Dr. Bove based his arguments on "at least one chip" included in a list of chips that may be embedded in a smart card provided to Thomson. Bove Tr. at 1120. He did not, however, state that such a chip was or is actually used in the cards provided to Thomson by NDC. Bove Tr. 1119-1120. He also admitted that he had not observed damage to a chip of a Thomson smart card by not providing Vpp. Bove Tr. 1120.
134. One of ordinary skill in the art would not read claim 8 to

include the additional limitation that the predetermined expected response must be exclusively used to assess the existence of proper electrical contact. Kuc Tr. 180.

135. The evidence adduced at the hearing demonstrates that there are different quality levels of card and card readers. See LeDuc Tr. 8-11, 72; Hailey Tr. 825; CX 118C. {

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136. Respondents have also had vendor qualification procedures, and do not qualify all potential suppliers. Hailey Tr. 825.

137. The dimensional specifications of ISO 7816-2 do not cover all of the factors that are important for good contact between the card and card reader. In particular, ISO 7816-2 does not specify the pressure that is applied between the pins of the card reader and the contact pads of the card. This pressure changes over time and can cause contact problems that are not immediately evident. LeDuc Tr. 73-74.

138. Even if the products are supplied in accordance with ISO specifications, stresses affect the performance of some components to the point that over time they no longer are within ISO standards. LeDuc Tr. 74.

139. Dr. Bove observed that the value of the TS character is calculated in order to deal with "real world" problems proves

complainant's point. Bove Tr. 1165.

140. If the above described "testing" carried out by the DSS receiver does not determine that there is correct electrical contact (i.e., if the TS character does not equal either 3F or 3B ) an on-screen display message that reads "Please insert a valid Access Card" is displayed to the end-user. Kelly Tr. 870, 877; Kuc Tr. 204-206; Bove Tr. 945-946; CX 17C (Whitcomb Dep.) Tr. 77-80; CX 335C at RA 25656.
141. That message is an indication that the card should be displaced. Kuc Tr. 204-205, 240-241.
142. In response to the "please insert valid access card," or in some cases a "check access card connections" message, (consistent with instructions provided by customer service representatives of the Thomson respondents), a user should remove the smart card from the receiver's connector and then reinsert the card into the connector. See Burns Tr. 686; Kuc Tr. 158, 204-205, 240-241, 256; LeDuc Tr. 99.<sup>3</sup>
143. Thomson representatives routinely instruct users to remove and reinsert smart cards in response to the "please insert valid access card message." See, e.g., CX 149C; CX 198C at ALN216921, ALN217078, ALN217095-217096.

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<sup>3</sup> CX 131C at RA34040; CX 380C at RA063065; CX 366C at SR00753048, ALN2166922, ALN216564, ALN216061, SR00794849, SR00797503; CX 198C at ALN216944.

144. Removal and reinsertion may serve to clean the contact surfaces which assists in establishing proper electrical contact. See Kuc Tr. 158-162; LeDuc Tr. 76-79.
145. A user may also manually clean away any foreign substances from the smart card's pads, as he is often instructed to do by Thomson customer service representatives. See, e.g., Burns Tr. 682-683, 702, 710-713; Compton Tr. 749-750; CX 34C (Gonzalez Dep.) Tr. 69; CX 149C; CX 197C at ALN216061, ALN217051; CX 201C; CX 198C.
146. If the reinserted smart card establishes proper electrical contact with the DSS receiver, then programming is displayed to the end-user. The provision of programming is an indication of proper operation of the receiver, and more specifically, shows the establishment of proper electrical contact between the smart card and the receiver. Kuc Tr. 206.
147. The provision of programming thus signifies to a user that he or she need not continue to further displace, i.e., remove and reinsert, the smart card. See Kuc Tr. 194, 204-206, 240-241, 254-256.
148. When there is no proper electrical contact, the "please insert valid access card" message is always displayed. CX 141C. See Kelly Tr. 870; Kuc Tr. 204, 240; CX 142C.
149. Thomson respondents have been aware of the '464 patent since at least 1989, which is long before Thomson developed its DSS receiver for the US market. See CX 4C at 13; CX 6C at 15.

150. {

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151. {

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152. A May 23, 1995 letter from Innovatron informed Thomson that its products fall within the scope of Innovatron's patents. A further letter of April 25, 1996 advised Thomson that it did not have a license agreement that extended to the United States. CX 163.

153. Thomson developed the smart card drive software that checks for the value of the TS character. CX 24C (Hailey Dep.) Tr. 17-18, 37. Thomson worked with NDC and DirectTV to design the overall DSS system with full knowledge of the '464 patent. CX 905C; CX 331C at RA02963, RA39218, RA39224.

154. The smart card configuration is a removable form of security. See LeDuc Tr. 67-69; CSX 4C (Stewart Dep.) Tr. 96.

155. Thomson, NDC and DirectTV jointly designed a system dependent on removable access cards. CX 333C.

156. Thomson's marketing materials show the access card out of the receiver, and tout the flexibility offered by smart cards. CX 171C ("**Smart Card Technology Provides system flexibility and security.** CX 171C at RA 36910 (bold and italics in original)).

157. Thomson's manuals describe replacement procedures. See, e.g., CX

105C; CX 370C.

158. There has been at least one large-scale replacement of access cards to all authorized DSS users. That replacement involved roughly 2.5 million units. See, e.g., CSX 4C (Stewart Dep.) Tr. 220.

159. The replacement procedure involved three removal/reinsertion operations, involving roughly 7.5 million instances of insertion of cards into receivers. Compton Tr. 741; CSX 4C (Stewart Dep.) Tr. 221; CX 34C (Gonzalez Dep.) Tr. 80; CX 194C.

160. {

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161. In addition to large scale upgrades, the replacement of access cards by Thomson occurs on a continual basis with numbers in the tens of thousands per year. CX 11C at 5; CX 129C; CX 113C; CX 130C.

162. Replacement of receivers also occurs continually at even higher rates. See Compton Tr. 742; CX 11C at 5; CX 130C.

163. In response to customer service requests Thomson replaced more than { } cards and receivers during 1996. Bove Tr. 957; CX 130C.

164. These replacements require removal and insertion of an access card into a receiver by the end-user. Compton Tr. 742; CX 22C

(Compton Dep.) Tr. 43-44.

165. Removal and reinsertion of the access card is typically part of the so-called "soft reset" or "hard reset" procedures. See, e.g., CX 22C (Compton Dep.) Tr. 48-50; Burns Tr. 674-675; CX 149C; CX 131C; CX 106C. Soft and hard resets are common instructions to end-users to attempt to resolve problems with the DSS receivers. CX 106C; CX 201C; CX 195C; CX 197C; CX 198C; CX 199C.
166. These reset procedures are set forth in Thomson's training manuals. CX 131C; CX 145C.
167. Mr. Burns, a Norcross representative, testified that he frequently instructs end-users to remove the access card and wipe it off to clean the pad surfaces. Burns Tr. 682-687.
168. The sample customer service documents submitted into evidence show that numerous other customer service representatives issue similar instructions. See Compton Tr. 721; CX 22C (Compton Dep.) Tr. 48; CX 197C; CX 198C.
169. Customer service personnel have received no instructions to cease advising end-users of this procedure. See Burns Tr. 672-684, 713; Compton Tr. 742-754; CX 22C (Compton Dep.) Tr. 136; CX 131C; CX 136C; CX 145C; CX 104C.
170. Thomson's witness, Mr. Compton, testified that he was aware that customer service representatives employed by Norcross have been telling customers to wipe off the card. Compton Tr. 751-752.

171. Removing the card, wiping it off, and reinserting it often solves the problem that prompted the end-user to call. Burns Tr. 686-687.
172. The message "Please insert a valid access card" is one of several on-screen display messages that can result in end-users calling for assistance and being told to reinsert their access cards. See Burns Tr. 683; Kuc Tr. 204-205, 240-241; CX 136C; CX 149C.
173. "Remove access card" and "reinsert the access card" are two actions consistent with his understanding of how to perform a soft reset. Burns Tr. 675-676; CX 104C at N76.
174. During training, Mr. Burns learned how to perform a hard reset. Burns Tr. 676.
175. Mr. Burns was instructed that a "soft reset" should be performed by first, removing the access card from the receiver; second, depressing the down arrow key and on/off key for approximately 10 seconds; and third, turning the power back on and reinserting the card. Burns Tr. 674-675.
176. It is Mr. Stewart's understanding that the message "Insert valid access card" can represent a bad connection between the smart card and the receiver. CSX (Stewart Dep.) 4C at 113.
177. Section 5.6 of Exhibit CX 120C references On Screen Display ("OSD") messages: Several types of OSD messages provide feedback and additional information to aid the customer when problems occur, or to provide hints and warnings about the operation of





new Access Card" is displayed when {

} CX 161.

189. The message "This Access Card is no longer valid. Please insert your new access card" will be displayed when {

} CX 131; CX 161.

190. {

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191. {

}

192. {

}

193. {

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194. Thomson customer service representatives instruct users to remove their access cards and clean the contacts on their access cards with a soft cloth or an eraser. In response to certain access card-related On-Screen Display ("OSD") messages such as "Insert

your access card," "Please insert a valid Access Card," and "Please call ext. 745." CX 366C at SR00753048, ALN216692, ALN216564, ALN216061, SR00794849, SR00797503.

195. In response to these access card-related messages, Thomson customer service representatives sometimes apparently believe that it may help to wiggle the access card. CX 366C at ALN216442, SR00562709.

196. DirecTV's website under the heading "Customer Service" provides the text of each on-screen display message, a description of each message and comments relating to each message. CX 191.

197. The on-screen display message "Please insert your access card" is described as "No access card in DSS receiver." DirecTV advises "Check that the access card is fully inserted into the slot." CX 191.

198. The on-screen display message "Please insert a valid access card" is described as "Access card is invalid or defective. DirecTV advises "Access Card is defective or not a legitimate a DSS card. The card may need to be replaced. The DSS unit is still under warrant, call the manufacturer. If not, call customer service." CX 191.

199. The on-screen display message "You have inserted the wrong card" is described as "This card belongs to another DSS unit." This may occur if you have multiple boxes and the cards get swapped. It may occur if the DSS unit is swapped out do to hardware

problems. DirectTV advises "Match card to box or call customer service." CX 191.

200. The on-screen display message "This access card is no longer valid. Please insert your new access card" is described as "All of access card inserted after { } to new card. Use a the new card." DirectTV advises {

} After that, the old card won't work." CX 191.

201. {

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202. The DSS Agent Concession Report for July 1997 identifies the customer service representative, Matt Burns took { } calls and created { } service requests. CX 194C; CX 150C.

203. The telephone calls Mr. Burns receives as a senior product support associate or customer service representative are typically made by an end-user, a dealer or servicer of Thomson DSS products. Burns Tr. 666.

204. There are presently over 100 customer service call representatives who handle calls concerning Thomson's DSS products. Burns Tr. 666.

205. Mr. Burns presently receives approximately 35-50 calls a day dealing with Thomson's DSS product. Burns Tr. 666.
206. When handling calls from DSS end-users the information that is provided by a caller is sometimes included in a service request note. Burns Tr. 669.
207. The information contained in those service request notes typically includes the caller's name, phone number and the model number and serial number of the Thomson DSS receiver that person has purchased. Burns Tr. 669.
208. The complaint codes are typically included in the service requests created by Mr. Burns. Burns Tr. 670.
209. Complaint codes are based on the conversation with the customer and indicate where the problem might exist, be it a symptom or a particular area. CX 22C at 73-74; Burns Tr. 670.
210. Complainant's Exhibit CX 121C at Bates number RA34084 under the title "access card codes" are the complaint codes that are associated with access cards that are used in Thomson's DSS receivers. Burns Tr. 670; CX 121C.
211. The service request notes typically include a general description of a call received and any action that was taken in response to that call. Burns Tr. 671-672.
212. It is standard operating procedure to create an service request for every call. Burns Tr. 672.
213. In practice, however, a service request is not created for every

call that Mr. Burns receives. Sometimes he does not feel that it is necessary Burns Tr. 672-673.

214. The service requests that are created are accessible to the customer service representative's supervisor. Burns Tr. 672.

215. When Mr. Burns advises callers to do a soft reset, he more often than not instructs them to remove the access card and reinsert it with the intention that they do so. Burns Tr. 675.

216. In those instances where Mr. Burns has instructed callers to perform a soft reset that included removing and reinserting an access card, he usually does not denote that removal and reinsertion on a service request. Burns Tr. 675.

217. Mr. Burns generally understands performing a hard reset to include removing the access card, unplugging the DSS receiver for at least one hour, preferably overnight, and then reinserting the access card and powering the receiver. Burns Tr. 676.

218. Mr. Burns has advised callers to perform a hard reset. Burns Tr. 676.

219. When Mr. Burns advises callers to perform a hard reset, he typically informs the caller to remove the access card with the intention that they do so. Burns Tr. 676.

220. Removing the access card is consistent with Mr. Burns' understanding of how to perform a hard reset. CX 104C; Burns Tr. 677.

221. Reinsertion of the access card is also consistent with Mr. Burns'

understanding of how to perform a hard reset given that reinsertion of the access card would be necessary to get the system back up and running. Burns Tr. 677.

222. Mr. Burns typically advises callers to perform a soft reset or a hard reset more than once a day. Burns Tr. 677-678.

223. On certain days, Mr. Burns has advised callers to perform a soft reset or hard reset several times during the course of the day. Burns Tr. 678.

224. As part of his job, Mr. Burns handles calls regarding problems with access cards of the DSS receivers. Burns Tr. 678.

225. Mr. Burns recognizes that there is a problem with the DSS receiver reading the already-inserted access card when a caller informs him that the "please insert a valid access card" on-screen display message is being displayed on their television set. Burns Tr. 680.

226. Mr Burns believes that the "please insert valid access card" message corresponds with complaint code 702. Burns Tr. 680.

227. Complaint code 702 occurs more frequently than other complaint codes associated with access cards. Burns Tr. 681.

228. The "please insert valid access card" message also be displayed when the card is not inserted correctly. Burns Tr. 682.

229. When a caller tells Mr. Burns that their television displays the "please insert valid access card" message, it has been his practice to tell that caller to remove the access card, wipe it

- off with a dry cloth and then reinsert it. Burns Tr. 682.
230. In fact, whenever a caller has called with the "please insert valid access card" message, the first command or instruction that Mr. Burns gives is to remove the access card, wipe off the card and reinsert it into the receiver. Burns Tr. 682-683.
231. When confronted with the "please insert valid access card" on-screen display message Mr. Burns virtually always instructs callers to remove the access card, wipe off the card and reinsert it into the receiver. Burns Tr. 683.
232. When Mr. Burns instructs a caller to remove the access card, wipe off the card and reinsert it, he intends for the caller to take the card out of the receiver and reinsert it. Burns Tr. 683.
233. In Mr. Burns' experience, having callers remove the access card from the receiver, wiping off the card and then replacing the card causes "insert valid access card" message to go away. Burns Tr. 683-684.
234. Mr. Burns never attempted to conceal the fact that he instructed callers to remove the access card, wipe off the access card and reinsert the access card. Burns Tr. 684.
235. When given the message "please insert a valid access card," Mr. Burns instructs callers to remove the access card, wipe it off and reinsert it. He does not always instruct callers to perform the additional steps of pressing the two buttons on the receiver. Burns Tr. 686.

236. Mr. Burns has found that in some cases it is not necessary to have the caller reset the receiver in these cases because the simple act of removing the access card out, wiping it off and reinserting it is enough to solve the problem. Burns Tr. 686-687.
237. Callers frequently ask Mr. Burns how to remove an access card from their DSS receiver. Burns Tr. 687.
238. When requested, Mr. Burns instructs callers on how to remove the access card from their DSS receiver. Burns Tr. 687.
239. Mr. Burns does not generally create a service request note when asked by caller how to remove an access card. Burns Tr. 688.
240. Mr. Burns has never been instructed by a supervisor or anyone else, at Norcross not to inform a caller how to remove an access card. Burns Tr. 688.
241. When a caller indicates that he or she has received the "please call customer service extension 745" on-screen display message, it has been Mr. Burns' practice to instruct callers to perform a soft reset as the first thing that should be done to correct that complaint. Burns Tr. 689.
242. In giving those instructions, Mr. Burns typically instructs callers to remove the access card before performing a soft reset. Burns Tr. 689.
243. Complainant's Exhibit CX 199C, reflects typical advice in connection with an extension 745 on-screen display message.

Burns Tr. 690-691.

244. It is Mr. Burns' understanding that complaint code 700 corresponds with the "please insert your access card" on-screen display message. Burns Tr. 691.
245. In is Mr. Burns' understanding that the "please insert your access card" on-screen display message typically indicates that the access card has been removed from the DSS receiver or that the reader of the receiver is not recognizing the access card that is inserted within it. Burns Tr. 691.
246. When a caller informs he or she is receiving the "please insert your access card" message, and the card is still in a DSS receiver, Mr. Burns typically would verify, that the card was in the receiver. He would have them take the card out to make sure that it was flat, and if it was, he would have them reinsert it within the receiver and if it was still not reading that there was a card in there, he would replace the receiver. Burns Tr. 691-693.
247. Mr. Burns instructed the caller to remove the access card from the receiver, wipe off any material on the card and then try a soft boot of his DSS receiver. Mr. Burns then told the caller to put the card flat on the table to determine if it was warped. Those instructions, of removing the card to determine whether it was warped, were based on the advice of his supervisor. Burns Tr. 693-694; CX 107C.

248. Based on his experience, Mr. Burns is aware that the DSS2 sometimes loses its signal. Burns Tr. 695
249. When a caller informs Mr. Burns that he or she has lost the signal, he typically instructs those callers to execute a soft reset that may includes removal and reinsertion of an access card. Burns Tr. 696.
250. In order to follow the instructions in the customer service training manual (CX 104C) for performing a soft reset Mr. Burns is required to instruct the caller to remove and reinsert the access card when performing a soft reset. Burns Tr. 696.
251. Mr. Burns has determined that an access card being used by a caller needs to be replaced. Burns Tr. 696-697.
252. When Mr. Burns determines that an access needs to be replaced he instructs the caller to return it to Thomson. The instruction to remove the access card from the receiver is implicit. Burns Tr. 697.
253. Mr. Burns also receives calls regarding complaint code 701, which indicates that the access card was preactivated. In these instances, Mr. Burns informs the caller that the access card needs to be replaced before they can receive programming on the DSS receiver. Burns Tr. 697-698.
254. In Mr. Burns' experience, Thomson's DSS receivers are sometimes returned by customers to the dealer or retailer after already having been activated for programming. If the access has already

- been activated, the dealer would need a replacement card before the unit could be resold. Burns Tr. 699.
255. In fact, Thomson has set up an exchange program to handle these situations. When dealing with the dealer, Mr. Burns instructs that the activated access card be returned and arranges for another access card to be sent out. Burns Tr. 699.
256. Complaint code 703 signifies that an access card has been lost or stolen. Burns Tr. 699.
257. Provided the customer is willing to pay for a new access card, Mr. Burns arranges for a new card to be sent out. Burns Tr. 699-700.
258. Mr. Burns receives calls from time to time from caller who have received a "please call customer service extension 746" message on their television set. When so informed by callers, he instructs the caller to remove the old card from the receiver, unplug the receiver until a time he can arrange to have a replacement card sent to them. Burns Tr. 700.
259. The OSD message "you have inserted the wrong card," generally means that the program provider has a different access card number assigned to that receiver. In that case, the customer service representative instructed the caller to do a soft boot and clean the card. Burns Tr. 703; CX 198C at ALN216203.
260. C-o-n stands for consumer or customer. Burns Tr. 703-704.
261. Mr. Burns uses the soft or the hard reset in attempting to solve

a caller's problem in more situations than those specified in the manual. Burns Tr. 708.

262. In response to the "please insert valid access" message Mr. Burns' first instruction is to remove the access card, wipe off the card and reinsert it. If that does not work, then Mr. Burns arranges to have the access card replaced. Burns Tr. 710-711.
263. No one at Thomson or at Norcross has instructed Mr. Burns to discontinue instructing callers to remove the access card, wipe it off and then reinsert the access card. Burns Tr. 713.
264. Mr. Burns does occasionally discuss the recommendations made to callers with other customer service agents. Burns Tr. 713-714.
265. {

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266. {

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267. As part of a larger call center facility, there is a center that handles customer service calls for DSS products. This center was

set up at the time of market introduction (June 1994). Compton  
Tr. 721.

268. {

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269. It appears from the service request notes that customers  
sometimes remove and reinsert their access cards, without  
prompting by Thomson, to fix or attempt to fix access card-  
related problems. CX 389C at SR00776363, SR00572856.

270. A service record is not created in every instance where a  
customer is instructed by a Thomson customer service  
representative to remove and reinsert a smart card. Burns Tr. at  
672-673. {

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271. Shortly after the product went to market, an eraser was used on the contacts to see if there was any film over them. Compton Tr. 733.
272. While Mr. Compton was manager of the DSS custom home theater, the volume of calls received on the DSS product had increased to at least 2000 calls a day in 1997. The volume of calls received in 1994 was much less. Compton Tr. 737.
273. Currently, between 3000 and 4000 agent-answered calls for the DSS go to the call center a day. Compton Tr. 737.
274. The "update service request notes" allows the operator to make notes or document the various transaction or information they provided to the caller. The agent is identified on the page either by a user ID number or by name. The date the record is created and the date it is updated will also appear on this page. Compton Tr. 748-749.
275. In a particular example in Exhibit CX 197C dated June 27, 1997, the instructions given state "receives a display, insert your access card, did quick hard boot and had him wipe off chip.

- Works fine now." The access card need not be in the receiver for the hard boot to work. Compton Tr. 749-750.
276. As a general course, Mr. Compton's group does not periodically review the service request notes. Compton Tr. 750.
277. Mr. Compton and his staff rely on anecdotal evidence to determine whether the operators are giving the correct advice. There is some call monitoring, but that is usually after a problem has been brought to his attention. Compton Tr. 750-751.
278. Norcross has its own quality performance that monitors calls for adherence purposes and quality control. Norcross, however, is not in a position to necessarily determine whether information is terribly accurate or not. Compton Tr. 751.
279. Mr. Compton is aware that Norcross customer service agents have been telling customers to wipe off the card, even though his group has told them not to. Compton Tr. 751-752.
280. Mr. Compton has not personally sat through a training session so he has no personal knowledge of how this issue of card wiping is discussed. Compton Tr. 752.
281. On Exhibit CX 166C, a service request note that states in part, it says "also had con. clean chip on back of card." According to Mr. Compton, "one would assume that they've told them to clean the contacts of the card." Compton Tr. 752-753.
282. On CX 166C (service request note dated 3/31/97, agent: Jason Hychs), the second line of the note states "had cons. clean the

gold foil on the back of the card with a clean pencil eraser."

Mr. Compton's understanding would be the same as the previous examples. Compton Tr. 753-754.

283. Mr. Compton is aware that a soft reset is typically performed with the smart card removed from the receiver. CX 22C (Compton Dep.) Tr. 48.

284. It is Mr. Compton's understanding that {

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CX 22C (Compton Dep.) Tr. 49.

285. A soft reset is recommended other than simply in response to on-screen display messages. It is recommended when {

} CX 22C (Compton

Dep.) Tr. 49-50.

286. The access card related complaint codes consist of the following:

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287. The access card must be installed to receive services. CX 131 at RA34099.
288. The DSS agent concession report lists { } customer service representatives. CX 150C.
289. Document ALN215641 through ALN216000 consists of an August 5, 1997 list of service requests referencing access card complaint codes. CX 106C.
290. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
291. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June

1997, and { } were received during July 1997. CX 106C.

292. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

293. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

294. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

295. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

296. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

297. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and

- { } were received during July 1997. CX 106C.
298. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
299. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
300. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
301. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
302. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
303. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and

{ } were received during July 1997. CX 106C.

304. On April 3, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216016-216017; CX 198C at ALN216268-216486 at CX 198C; CX 199C at ALN217225-217357; CX 200C at ALN217799-217816; CX 201C at ALN218020-218035. Please see footnote for list of { } service notes regarding soft/hard reset procedures.<sup>4</sup>

305. In the three days from April 1 to April 3, 1997, DSS customer service representatives answered { } service calls. { } of those requests concerned access cards, which had the following breakdown with respect to error messages: {

} CX 195.

306. On May 14, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these

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<sup>4</sup> CX 198C at ALN216369, 216395, 216398, 216404, 216411, 216413, 216418, 216423, 216438, 216440, 216444, 216446, 216457, 216463, 216468, 216470, 216474, 216483, 216486; CX 199C at ALN217340, 217342, 217344, 217346, 217348, 217349, 217351, 217353, 217355, 21735; CX 200C at ALN217801, 217805, 217808, 217812, 217814, 217816; CX 201C at ALN218035.

customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216018-216025; CX 198C at ALN216487-216545; CX 199C at ALN217358-217383; CX 200C at ALN217817-217836; CX 201C at ALN218036-218053.<sup>5</sup>

307. On May 15, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216026-216033; CX 198C at ALN216446-216627; CX 199C at ALN217384-217432; CX 200C at ALN217837-217899; CX 201C at ALN218054-218058 at CX 201.<sup>6</sup>

308. On May 16, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216034-216040; CX 198C at ALN216628-216728; CX 199C at ALN217433-217467; CX 200C at

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<sup>5</sup> CX 197C at ALN216021; CX 198C at ALN216491, 216495, 216497, 216501, 216505, 216507, 216510, 216512, 216516, 216524, 216528, 216532, 216543, 216545; CX 199C at ALN217359, 217361, 217365, 217367, 217369, 217371, 217373, 217375, 217377, 217379, 217381, 217383; CX 200C at ALN217820, 217822, 217824, 217826, 217828, 217833, 217836; CX 201C at ALN218043, 218053.

<sup>6</sup> CX 197C at ALN216027, 216029, 216033; CX 198C at ALN216547, 216549, 216563, 216567, 216573, 216587, 216589, 216594, 216600, 216602, 216607, 216611, 216626; CX 199C at ALN217385, 217389, 217391, 217393, 217395, 217398, 217400, 217402, 217404, 217406, 217408, 217410, 217415, 217417, 217420, 217423, 217426, 217432; CX 200C at ALN217838, 217841, 217846, 217852, 217858, 217861, 217869, 217871, 217873, 217878, 217881, 217883, 217885, 217889, 217894; CX 201C at ALN218053.

ALN217900-217924; CX 201C at ALN218059-218064.<sup>7</sup>

309. In the three days from May 14 to May 16, 1997, DSS customer service representatives answered { } service calls. { } of those requests concerned access cards, which had the following breakdown with respect to error messages: {

} CX 195C.

310. On June 25, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216041-216044; CX 198C at ALN216729-216827; CX 199C at ALN217468-217526; CX 200C at ALN217925-217926; CX 201C at ALN218065-218078 at CX 201.<sup>8</sup>

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<sup>7</sup> CX 197C at ALN216035, 216037; CX 198C at ALN216629, 216633, 216641, 216646, 216651, 216659, 216661, 216665, 216670, 216685, 216688, 216698, 216704, 216707, 216714, 216716, 216718, 216719, 216722, 216724, 216728; CX 199C at ALN217434, 217436, 217438, 217440, 217442, 217444, 217446, 217449, 217451, 217454, 217456, 217458, 217460, 217462, 217464, 217466; CX 200C at ALN217898, 217903, 217910, 217913, 217916, 217918, 217922, 217924.

<sup>8</sup> CX 198C at ALN216730, 216732, 216737, 216739, 216742, 216745, 216751, 216753, 216756, 216758, 216765, 216769, 216771, 216779, 216781, 216785, 216790, 216804, 216806, 216809, 216811, 216813, 216816, 216818, 216821, 216823, 216825; CX 199C at ALN217469, 217471, 217473, 217475, 217477, 217485, 217486, 217488, 217490, 217492,

(continued...)

311. On June 26, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197 at ALN216045-216057; CX 198C at ALN216828-216901; CX 199C at ALN217527-217589; CX 200C at ALN217927-217938; CX 201C at ALN218079-218103.<sup>9</sup>

312. On June 27, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216058-216063; CX 198C at ALN216902-216976; CX 199C at ALN217590-217631.<sup>10</sup>

313. In the three days from June 25 to June 27, 1997, DSS customer service representatives answered { } service requests. { }

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<sup>8</sup> (...continued)

217496, 217498, 217500, 217502, 217504, 217506, 217510, 217512, 217514, 217518, 217520, 217522, 217524, 217526; CX 200C at ALN217926; CX 201C at ALN218076.

<sup>9</sup> CX 197C at ALN216057; CX 198C at ALN216833, 216837, 216839, 216843, 216854, 216862, 216864, 216867, 216870, 216872, 216874, 216876, 216878, 216882, 216883, 216886, 216888, 216894, 216901; CX 199C at ALN217528, 217530, 217532, 217534, 217536, 217540, 217542, 217544, 217546, 217548, 217550, 217552, 217554, 217556, 217558, 217561, 217564, 217566, 217568, 217568, 217570, 217572, 217574, 217575, 217577, 217579, 217581, 217583, 217585, 217587, 217589; CX 200C at ALN217930, 217932, 217935; CX 201C at ALN218099.

<sup>10</sup> CX 197C at ALN216061; CX 198C at ALN216903, 216908, 216909, 216911, 216913, 216917, 216922, 216927, 216929, 216936, 216938, 216938, 216944, 216949, 216959, 216963, 216971, 216974, 216976; CX 199C at ALN217591, 217593, 217597, 217599, 217601, 217603, 217605, 217607, 217611, 217613, 217613, 217615, 217617, 217619, 217621, 217623, 217625, 217627, 217628, 217631.

{ } of those requests concerned access cards,  
which had the following breakdown with respect to error messages:

{

} CX 195C

314. On July 29, 1997, DSS customer service representatives received  
{ } phone calls concerning access cards. { } of these  
customers { } received advice regarding soft and/or hard  
reset procedures. CX 195; CX 197C at ALN216064-216073; CX 198C  
at ALN216977-217059; CX 199C at ALN217632-217692; CX 200 at  
ALN217939-217954; CX 201C at ALN218104-218113.<sup>11</sup>

315. On July 30, 1997, DSS customer service representatives received  
{ } phone calls concerning access cards. { } of these  
customers { } received advice regarding soft and/or hard  
reset procedures. CX 195; CX 197C at ALN216074-216082; CX 198C  
at ALN217060-217078 CX 199C at ALN217693-217714; CX 200C at

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<sup>11</sup> CX 197C at ALN216063, 216069, 216071, 216073; CX 198C at  
ALN216983, 216987, 216991, 216993, 216995, 217002, 217004, 217008,  
217012, 217014, 217022, 217023, 217025, 217028, 217033, 217037,  
217041, 217049, 217051, 217055; CX 199C at ALN217633, 217635, 217637,  
217639, 217641, 217643, 217645, 217647, 217649, 217651, 217653,  
217655, 217657, 217659, 217663, 217665, 217667, 217669, 217671,  
217673, 217675, 217676, 217678, 217680, 217682, 217684, 217686,  
217687, 217690, 217692; CX 200C at ALN217937, 217940, 217942, 217944,  
217946, 217952; CX 201C at ALN218105, 218112.

ALN217955-217972; CX 201 at ALN218114-218120.<sup>12</sup>

316. On July 31, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216083-216085; CX 198C at ALN217079-217157; CX 199C at ALN217715-217742; CX 200C at ALN217973-217990; CX 201C at ALN218121-218133.<sup>13</sup>

317. In the three days from July 29 to July 31, 1997, DSS customer service representatives answered { } service calls. { } of those requests concerned access cards, which had the following breakdown with respect to error messages:

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} CX 195C.

318. {

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<sup>12</sup> CX 197C at ALN216075, 216077; CX 198C at ALN217063, 217067, 217072, 217076, 217078; CX 199C at ALN217694, 217696, 217698, 217700, 217702, 217704, 217706, 217708, 217710 217712, 217714; CX 200C at ALN217956, 217958, 217964, 217966, 217970, 217972.

<sup>13</sup> CX 198C at ALN217080, 217084, 217088, 217091, 217095, 217101, 217103, 217105, 217114, 217116, 217127, 217132, 217136, 217140, 217143, 217148, 217150, 217154, 217157; CX 199C at ALN217716, 217718, 217720, 217722, 217724, 217727, 217729, 217732, 217734, 217736, 217742; CX 200C at ALN217975, 217977, 217988, 217990.

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367. The current call center is operated by a contract agency called Norcross. Norcross manages the day-to-day operations within the call center for all Thomson products and has done so since March, 1997. Compton Tr. 722.

368. The current call center is operated by a contract agency called Norcross. Norcross manages the day-to-day operations within the call center for all Thomson products and has done so since March, 1997. Compton Tr. 722.

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372. In January of 1996 the complaint code { } was received { } times.  
CX 140C.

373. In February of 1996 the complaint code { } was received  
{ } times. CX 140C.

374. In March of 1996 the complaint code { } was received { } times.  
CX 140C.

375. In April of 1996 the complaint code { } was received { } times.  
CX 140C.

376. In May of 1996 the complaint code { } was received { } times. CX  
140C.

377. In June of 1996 the complaint code { } was received { } times.  
CX 140C.

378. In July of 1996 the complaint code { } was received { } times.  
CX 140C.

379. In August of 1996 the complaint code { } was received { } times.

CX 140C.

380. In September of 1996 the complaint code { } was received { }  
times. CX 140C.

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385. It is reasonable to infer, as have some Thomson customer service representatives, that the "Please insert a valid access card" OSD message may be caused by dust or debris on the contacts of the smart card. CX 366C at ALN216692. In such instances, the removal and reinsertion of the smart card may clear the dust off the contacts from the wiping action of the smart card reader.

See Kuc Tr. 158; LeDuc Tr. 99.

386. The "Please insert a valid Access Card" message is displayed when there is an error in card reset. In such instance, the consumer may have an invalid or defective cam inserted in his or her DSS receiver. CX 400C at RA04094.

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389. The DSS Agent Concession Report for July 1997 identifies { } customer service representatives. CX 194C.

390. The DSS Agent Concession Report for July 1997 states that the { } customer service representatives took { } calls, but created only { } service requests. CX 194C.

391. When the subscribers received the new P2 replacement card, they had to perform what is referred to as a { } process in order to authorize the P2 card. The { } process is as follows: There is a menu option on the DSS system that the customers initiate, and there are various on-screen prompts which guide them through the process of removing the old card, putting the new card in for some period of time. Then it prompts the consumer to put the old card back in and after some period of time it prompts the consumer to put the new card back in, and then they're free to discard the old card. Compton Tr. 741.

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394. As part of the changeover process the subscriber or somebody on his behalf has to remove the old access card and re-insert the new access card. CSX 4C (Stewart Dep.) Tr. 153.

395. As part of the { } process a customer receives a new card in the mail along with a simple set of instructions. The customer removes their old card and inserts their new card. {

} CSX

4C (Stewart Dep.) Tr. 157-158.

396. The { } process requires the removal of the old card, the re-insertion of the new card, the subsequent removal of the new card, the re-insertion of the old card, removal of the old card, and the final re-insertion of the new card.. CSX 4C (Stewart





408. Thomson's DSS3 product includes a DSS System Test. This test conducts diagnostics on the DSS satellite signal, the phone connection, and the access card. For the access card portion of the test, the user is instructed to "check access card connections" in the event of a failure. CX 400C at RA04056.
409. The DSS system test allows users to initiate diagnostic procedures on the DSS system. These diagnostic procedures are to be used when the DSS receiver doesn't seem to be working correctly. There are four separate tests: signal, tuning, phone, and access card. If the DSS system fails one of these tests, users are instructed to run the tests several times before concluding there is a problem. CX 405C at RA38922.
410. A series of instructions are included on every NDC access card which goes into a DSS product. The instructions are on the access cards themselves. CX 23C (Miller Dep.) Tr. 142.
411. The first instruction under the term "Important" is "Do not bend access card." CX 23C (Miller Dep.) Tr. 142.
412. These instructions are intended for the end-users, which include customers who buy the DSS product. CX 23C (Miller Dep.) Tr. 142.
413. The access card must be removed from the unit before the instructions can be seen. CX 23C (Miller Dep.) Tr. 143.
414. An alternative to the smart card design could have provided access for users to DSS programming. Kuc Tr. 194-195, 242-243.
415. Instead, Thomson developed the smart card drive software that

checks for the value of the TS character, and helped to design the overall DSS system with full knowledge of the '464 patent. CX 24C (Hailey Dep.) Tr. 17-18, 37; CX 905C; CX 331C at RA02963, RA39218, RA39224.

**VI. Domestic Industry**

416. Gemplus pays royalties to Innovatron under the '464 patent for the production and sale of these { } D'Angelo Tr. 517.

417. The cards produced by Gemplus at Montgomeryville are embedded with a microprocessor chip. The cards are tested in the { } machine to determine if the microprocessor chip is properly functioning, i.e., able to read and write data. Elspass Tr. 564-566; D'Angelo Tr. 517-521; Kuc Tr. 245.

418. The { } the microprocessor cards with information such as each card's serial number and system files. Elspass Tr. 564-566; CX 538C.

419. The plastic card bodies are embedded with microprocessors on { } at Montgomeryville, Pa. D'Angelo Tr. 534-536.

420. These microprocessor cards are then moved from the embedding machine to the { } machine. See CX 524; CX 558.

421. { }  
}

{ }

422. {

}

423. {

}

424. {

}

425. The purpose of the { } machine is to determine if the memory cell of the microprocessor card is functioning properly and to { } Elspass Tr. 566-568. Yet, prior to making that determination, the { } machine conducts {

}

426. {

}

427. {

}

428. {

}

429. {

}

430. {

}

431. {

}

432. {

}

433. {

}

434. {

}

435. {

}

---

-{

}

436. {

}

437. {

}

438. {

}

439. Thus, if an incorrect {                    } is returned from the card to the {   } machine, then the card will be displaced and retested for the proper response. Elspass Tr. 574, 580, 596.

440. If the card passes the {

}

441. {

}

442. {

}

- { }
443. If any of the { } tests results in an error, then the card is { } displaced { } and the card is retested. Elspass Tr. 596-597.
444. The reason for this displacement is that an error in the contact tests could be the result of improper contact or alignment of the contact pad on the card with the { } tester. In particular, if the reset test fails due to an improper { } received, then the failure could be due to dust or debris between one or more pads and the test head which would not be detected by { } tests. Elspass Tr. 579.
445. By displacing the contact pads { } a better contact point may be established upon retest for the receipt and comparison of the { } by the { } machine. Elspass Tr. 579, 596.
446. {

{ This is because proper contact has been confirmed as a result of the { } which includes comparison with the { } Thus, any error that occurs subsequent to that

test would not be as a result of improper contact between the pad and the test pins. In that case, since the card did not fail because of poor contact, repositioning the card with the objective of achieving better contact would accomplish nothing. Instead, the card is immediately rejected. Elspass Tr. 580-581.

447. After the memory cells of the card have been examined (i.e., written to and read from) and after the card has been {

}

448. {

}

449. The { } machine utilizes a method of connecting the removable microprocessor cards to the { } machine (an electric device).  
See Kuc Tr. 246-247.

450. The microprocessor card and the { } machine cooperate in that both have to be present for the { } testing and { } operations to occur. See Tr. Kuc Tr. 245-247.

451. The { } machine then compares the { } to an expected value to confirm whether there is a proper electrical contact.  
See Elspass Tr. 568-569.

452. The {

}

453. The {

}

454. The predetermined { } is used for the purpose of determining whether proper contact has been established in accordance with the testing step of claim 8 of the patent. See Elspass Tr. 568-569.

455. The { } is compared with the expected value of the { } Id. If the card returns an incorrect { } then the test head is raised, the card is displaced { } and the card is retested in accordance with the displacing step of claim 8 of the patent. See Elspass Tr. 568-569; Kuc Tr. 247-249.

456. The retesting again compares the value of the { } received with the expected value of { } Elspass Tr. 568-569, 596. If an incorrect value of { } is received upon retest, then the card is rejected; otherwise, the { } proceeds to the intended operation of the machine, i.e., { } testing of the memory cells of the chip and { } See Elspass Tr.



correspond to the contact pads on the microprocessor cards to be tested. LeDuc Tr. 610.

465. The insertion of the card in the GCR500 card reader is the bringing step of claim 8 of the '464 patent. See Kuc Tr. 250.

466. This insertion triggers a card detection switch in the reader. LeDuc Tr. 117-118.

467. A reset signal is sent to the card, and an answer-to-reset is sent from the card. LeDuc Tr. 101-102.

468. {

}

469. {

}

470. Gemplus uses this { } to establish whether there is proper contact between the card and card reader. Elspass Tr. 584; LeDuc Tr. 81-83.

471. If the reader receives a good answer to reset, then additional quality control tests are performed { }

{ } CX 525C at 9.

472. {

} Thus, these personnel can determine from examining the { } whether proper contact has been achieved. CX 525C at 11.

473. Beginning with Gemplus' initial purchase of the Montgomeryville facility in 1995 for { } Gemplus has invested { } of dollars in U.S. facilities. D'Angelo Tr. 515-517; CX 504C.

474. This investment would not have been made unless Gemplus intended to produce { } as the U.S. market expands. D'Angelo Tr. 517.

475. Gemplus has made large investments in { } expressly for the production of smart cards, with microprocessor cards being the most important component of the smart card production. CX 504C.

476. Gemplus has over { } individuals in the United States engaged in production, technical support, customer service and development activities at the various Gemplus locations. D'Angelo Tr. 515.

477. At least { } machines and { } GCR500 readers are used at Montgomeryville for these purposes. It has also made investments elsewhere in the United States for developing the market for its microprocessor cards. D'Angelo Tr. 522; Elspass Tr. 564-566,

588-589, 610.

478. The annual U.S. payroll for individuals who spend most of their time on microprocessor card production, development and servicing exceeds { } and includes over { } individuals.<sup>15</sup> D'Angelo Tr. 525-530.

479. For 1997, sales of microprocessors produced at Montgomeryville will be roughly { } of the revenue of the facility, and this percentage is increasing. D'Angelo Tr. 526, 531, 543-544.

480. During 1997, Gemplus will produce roughly { } microprocessor cards valued at { } at the Montgomeryville facility. D'Angelo Tr. 531. Gemplus recently, produced { } microprocessor cards for { } at a price of roughly { } D'Angelo Tr. 532-533.

481. Gemplus invested roughly { } in smart card manufacturing equipment in 1996, and an additional { } in smart card manufacturing equipment in 1997. D'Angelo Tr. 515-516. As set forth in Gemplus' annual budget, identified as CX 508C, Gemplus {

} D'Angelo Tr.

544-545.

---

<sup>15</sup> Development for microprocessor cards is performed by several individuals in other Gemplus locations in San Mateo and Shakopee, and the development expenditures for these individuals alone totals more than { } D'Angelo Tr. 527-530.

## CONCLUSIONS OF LAW

1. The Commission has personal jurisdiction over the parties and subject matter jurisdiction over this investigation. See Op. at 2 n.1.

2. There have been importations and sales after importation of accused products. See Op. at 10.

3. It has not been demonstrated by clear and convincing evidence that claim 8 of the '464 patent is invalid due to anticipation. See Op. at 62-81.

4. It has not been demonstrated by clear and convincing evidence that claim 8 of the '464 patent is invalid due to obviousness. See Op. at 83-88.

5. It has been demonstrated by at least a preponderance of the evidence that the accused electronic cards and electronic reader devices directly infringe claim 8 of the '464 patent, and that respondents have induced infringement and contributorily infringed. See Op. at 92-120.

7. It has been demonstrated that there is a domestic industry which practices the '464 patent, whose investments and activities with respect to said patent satisfy the domestic industry requirement of section 337. See Op. at 134.

8. There is a violation of section 337(a)(1)(B) with respect to claim 8 of the '464 patent. See Conclusions of Law 1-7.

## INITIAL DETERMINATION AND ORDER

Based on the foregoing opinion, findings of fact, conclusions of law, the evidence, and the record as a whole, and having considered all pleadings and arguments as well as proposed findings of fact and conclusions of law, it is the administrative law judge's INITIAL DETERMINATION ("ID") that a violation of § 337 exists in the importation and sale of certain removable electronic cards and electronic card reader devices and products containing same by reason of infringement of claim 8 U.S. Letters Patent 4,404,464.

The administrative law judge hereby CERTIFIES to the Commission this ID, together with the record of the hearing in this investigation consisting of the following:

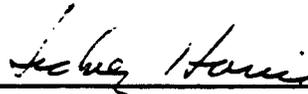
1. The transcript of the hearing, with appropriate corrections as may hereafter be ordered by the administrative law judge; and further,
2. The exhibits accepted into evidence in this investigation as listed in the attached exhibit lists.

In accordance with 19 C.F.R. § 210.39(c), all material found to be confidential by the administrative law judge under 19 C.F.R. § 210.5 is to be given in camera treatment.

The Secretary shall serve a public version of this ID upon all parties of record and the confidential version upon counsel who are signatories to the Protective Order (Order No. 1) issued by the

administrative law judge in this investigation, and the Commission investigative attorney. To expedite service of the public version, counsel are hereby ordered to serve on the administrative law judge by no later than March 31, 1998, a copy of this ID with those sections considered by the party to be confidential bracketed in red.

Pursuant to 19 C.F.R. § 210.42(h), this ID shall become the determination of the Commission unless a party files a petition for review pursuant to § 210.43(a) or the Commission, pursuant to § 210.44, orders on its own motion a review of the ID or certain issues herein.

  
\_\_\_\_\_  
Sidney Harris  
Administrative Law Judge

Issued: March 24, 1998



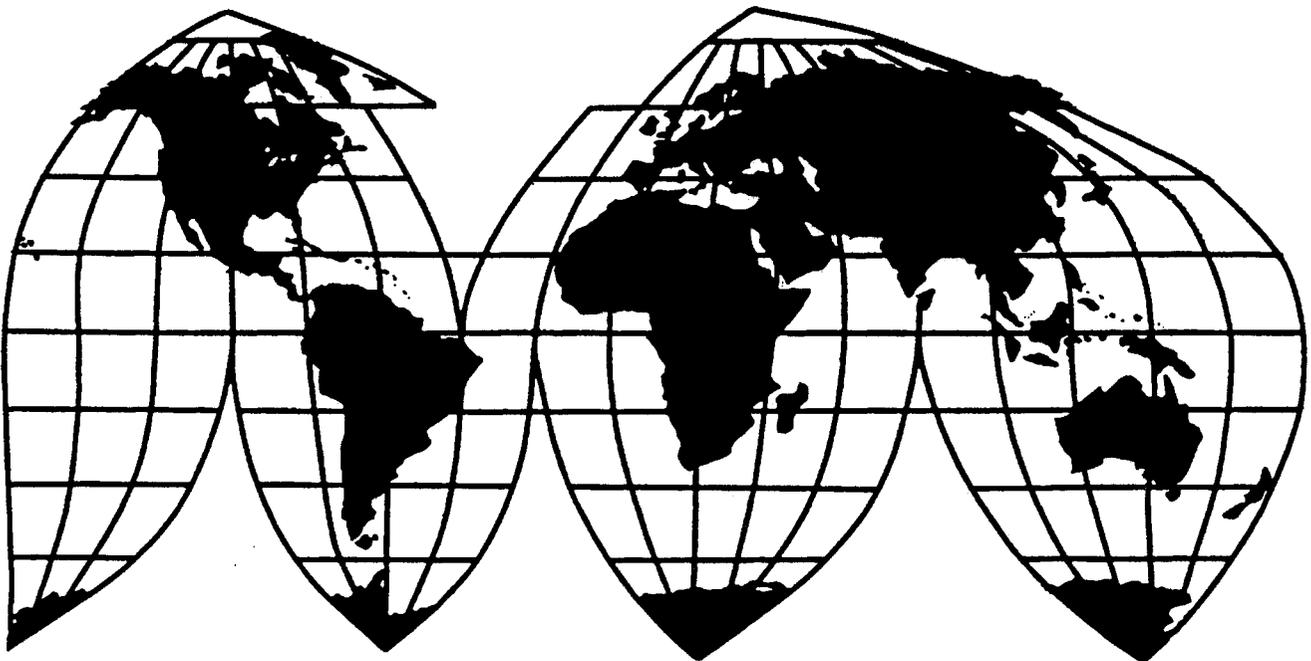
*In the Matter of*  
**Certain Removable Electronic Cards and  
Electronic Card Reader Devices and  
Products Containing the Same**

Investigation No. 337-TA-396

Publication 3123

August 1998

**U.S. International Trade Commission**



Washington, DC 20436

# **U.S. International Trade Commission**

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**Thelma Askey**

**Address all communications to  
Secretary to the Commission  
United States International Trade Commission  
Washington, DC 20436**

# **U.S. International Trade Commission**

Washington, DC 20436

*In the Matter of*  
**Certain Removable Electronic Cards and  
Electronic Card Reader Devices and  
Products Containing the Same**



**Publication 3123**

**August 1998**



UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436

In the Matter of

CERTAIN REMOVABLE ELECTRONIC  
CARDS AND ELECTRONIC CARD  
READER DEVICES AND PRODUCTS  
CONTAINING SAME

Inv. No. 337-TA-396

**NOTICE OF FINAL DETERMINATION**

**AGENCY:** U.S. International Trade Commission

**ACTION:** Notice

**SUMMARY:** Notice is hereby given that the U.S. International Trade Commission has determined to find no violation of section 337 of the Tariff Act of 1930 in the above-captioned investigation.

**FOR FURTHER INFORMATION CONTACT:** Michael Diehl, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-205-3095.

**SUPPLEMENTAL INFORMATION:**

The Commission instituted this investigation on April 2, 1997, on the basis of a complaint filed by Innovatron S.A. ("Innovatron"). 62 Fed. Reg. 15728. The complaint, as subsequently amended, named two respondents -- Thomson Multimedia, S.A. and Thomson Consumer Electronics, Inc.

In its complaint, Innovatron alleged that respondents violated section 337 by importing into the United States, and selling after importation, television receivers and receiver access cards that infringe claim 8 of Innovatron's U.S. Letters Patent 4,404,464 (the "`464 patent"). The presiding administrative law judge ("ALJ") held an evidentiary hearing from September 29 to October 7, 1997.

On March 24, 1998, the ALJ issued his final ID finding a violation of section 337. He found that claim 8 of the `464 patent was not invalid due to anticipation or obviousness, that there have been importations and sales after importation of the accused devices, and that the accused devices can be used to practice the method patented in claim 8 of the `464 patent. He also found that respondents actively induced infringement of claim 8 of the `464 patent and that they contributorily infringed that claim as well. Finally, the ALJ found that there is a domestic industry with respect to the `464 patent.

On April 6, 1998, the Commission investigative attorney and the Thomson respondents filed petitions for review of the ALJ's final ID. Complainant Innovatron filed a response in opposition to the petitions. The Commission determined to review the bulk of the ID and directed the parties to file

written responses addressing certain question posed in the Commission's notice of review, and the issues of remedy, the public interest, and bonding. In accordance with the Commission's directions, the parties filed initial briefs on June 11, 1998, and reply briefs on June 18, 1998.

Having examined the record in this investigation, including the ID, the review briefs, and the responses thereto, the Commission determined that there is no violation of section 337. More specifically, the Commission modified the ALJ's construction of claim 8 of the '464 patent, and found the claim as properly construed to be valid but not infringed by users of the accused imported products. The Commission found further that the domestic industry requirement is not met in this investigation.

This action is taken under the authority of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) and sections 210.42-.45 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.42-.45).

Copies of the public version of the ID, the Commission's order and opinion, and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810. General information concerning the Commission may also be obtained by accessing its Internet server (<http://www.usitc.gov>).

By order of the Commission



Donna R. Koehnke  
Secretary

Issued: July 20, 1998

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436

In the Matter of

CERTAIN REMOVABLE ELECTRONIC  
CARDS AND ELECTRONIC CARD  
READER DEVICES AND PRODUCTS  
CONTAINING SAME

Inv. No. 337-TA-396

ORDER

The Commission instituted this investigation on April 2, 1997, on the basis of a complaint filed by Innovatron S.A. ("Innovatron"). 62 Fed. Reg. 15728. The complaint, as subsequently amended, named two respondents -- Thomson Multimedia, S.A. and Thomson Consumer Electronics, Inc.

In its complaint, Innovatron alleged that respondents violated section 337 by importing into the United States, and selling after importation, television receivers and receiver access cards that infringe claim 8 of Innovatron's U.S. Letters Patent 4,404,464 (the "`464 patent"). The presiding administrative law judge ("ALJ") held an evidentiary hearing from September 29 to October 7, 1997.

On March 24, 1998, the ALJ issued his final ID finding a violation of section 337. He found that claim 8 of the `464 patent was not invalid due to anticipation or obviousness, that there have been importations and sales after importation of the accused devices, and that the accused devices can be used to practice the method patented in claim 8 of the `464 patent. He also found that respondents actively induced infringement of claim 8 of the `464 patent and that they contributorily infringed that claim as well. Finally, the ALJ found that there is a domestic industry with respect to the `464 patent.

On April 6, 1998, the Commission investigative attorney and the Thomson respondents filed petitions for review of the ALJ's final ID. Complainant

Innovatron filed a response in opposition to the petitions. The Commission determined to review the bulk of the ID and directed the parties to file written responses addressing certain questions posed in the Commission's notice of review, and the issues or remedy, the public interest, and bonding. In accordance with the Commission's directions, the parties filed initial briefs on June 11, 1998, and reply briefs on June 18, 1998.

Having examined the record in this investigation, including the ID, the review briefs, and the responses thereto, it is hereby ORDERED THAT:

1. The investigation is terminated with a finding of no violation of section 337 of the Tariff Act of 1930.
2. The claim construction of claim 8 of the `464 patent is modified as set forth in the Commission's opinion to be issued.
3. The Commission finds that claim 8 of the `464 patent is valid.
4. The Commission finds that use of the accused imported products does not infringe the method claimed in claim 8 of the `464 patent.
5. The Commission finds that complainant Innovatron has not established a domestic industry with respect to the `464 patent.
6. The Secretary shall serve copies of this Order, and the forthcoming Commission opinion in support thereof, on the parties of record and on the Department of Health and Human Services, the Department of Justice, and the Federal Trade Commission, and publish notice thereof in the *Federal Register*.

By order of the Commission.



Donna R. Koehnke  
Secretary

Issued: **July 20, 1998**

**PUBLIC VERSION**

**UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436**

**In the Matter of**

**CERTAIN REMOVABLE ELECTRONIC  
CARDS AND ELECTRONIC CARD  
READER DEVICES AND PRODUCTS  
CONTAINING SAME**

**Inv. No. 337-TA-396**

**COMMISSION OPINION**

This section 337 investigation is before the Commission for final resolution of the violation issues under review, and, in the event that the Commission finds a violation of section 337, for determinations on remedy, the public interest, and bonding.

**I. BACKGROUND**

The Commission instituted this patent-based section 337 investigation on April 2, 1997, based on a complaint filed by Innovatron S.A. ("Innovatron"), alleging that respondents Thomson Multimedia, S.A. and Thomson Consumer Electronics, Inc. (collectively "Thomson") violated section 337 of the Tariff Act of 1930 by importing and selling digital satellite system receivers and receiver access cards (collectively, the "DSS" or the "DSS products") that allow end users in the United States to infringe claim 8 of Innovatron's U.S. Letters Patent 4,404,464 (the "'464 patent").

Claim 8 describes a method for establishing electrical contact between a removable card and the card reader device into which the card is inserted.<sup>1 2</sup> Innovatron alleged that end users of Thomson's DSS products in the United States directly infringe claim 8, and that Thomson has both actively induced such direct infringement and contributorily infringed claim 8. Innovatron also alleged that a domestic industry exists in the United States that relates to the method of claim 8.

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<sup>1</sup> Claim 8 refers to a "removable article" rather than a card, and to an "electric device" rather than a card reader. We use the words "card" and "card reader," however, in the interest of clarity.

<sup>2</sup> Claim 8 of the '464 patent depends from independent claim 1, and thus incorporates all of the limitations of claim 1.

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The presiding administrative law judge (“ALJ”) held an evidentiary hearing from September 29 to October 7, 1997. On March 24, 1998, the ALJ issued an initial determination (“ID”), in which he found a violation of section 337. In the ID, the ALJ addressed various issues of claim construction, determined that claim 8 was not invalid, and found that users of the DSS products infringed claim 8 by practicing the claimed method. The ALJ also found that Thomson induced infringement by end users in the United States and that Thomson contributorily infringed claim 8. Finally, the ALJ found that a domestic industry exists with regard to claim 8.

On April 6, 1998, Thomson petitioned for review of the ALJ’s claim construction and nearly all of the rest of the ALJ’s findings. The Commission investigative attorney (“IA”) also petitioned for review, alleging that the ALJ’s claim construction was erroneous and resulted in clear errors in the ALJ’s findings regarding infringement. Innovatron and the IA subsequently filed responses to the petitions.

On May 29, 1998, the Commission notified the parties that it had determined to review the bulk of the ID, including the issues of claim construction, infringement, and domestic industry. The Commission notified the parties that it had determined not to review the ALJ’s determination that 35 U.S.C. § 112, paragraph 6 does not apply to claim 8 and his denial of several motions by Thomson. The Commission’s notice of review included eight questions, which the parties were requested to address. The notice also invited the parties and members of the public to submit comments on the issues of remedy, the public interest, and bonding.

Having considered the parties’ written submissions and the evidence of record, we determine to: (1) modify the ALJ’s construction of claim 8 of the ‘464 patent in several significant respects; (2) find that an industry does not exist in the United States that relates to claim 8 as properly construed; (3) find that claim 8 as properly construed is not invalid; and (4) find that end users of the DSS products in the United States do not directly infringe claim 8 as properly construed. Thus, we have determined that Thomson has not violated section 337.

## II. VIOLATION ISSUES

### A. The Proper Construction of Claim 8 of the ‘464 Patent

In their petitions for review, Thomson and the IA argued that the ALJ’s construction of claim 8 was erroneous in several respects. Claim 8, and claim 1 from which claim 8 depends, read as follows:

Claim 8 Method as defined by claim 1 wherein said step of *testing* said corresponding contact surfaces for said existence of correct electrical contact comprises: performing *predetermined operations* which provide a

## PUBLIC VERSION

*predetermined expected response* from the removable article upon the existence of correct alignment and electrical contact; and comparing the actual response of said removable article with the predetermined expected response.<sup>3</sup>

### Claim 1

Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric device, which cooperates with said removable article, said removable article having electrically conductive terminals and said electric device having conductor elements, both said electrically conductive terminals and said conductor elements having *corresponding contact surfaces*, the method comprising the steps of:

(a) *bringing*, respectively, said corresponding contact surfaces of said electrically conductive terminals into *contacting relationship* with said corresponding contact surfaces of said conductor elements;

(b) *testing* said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces; and

(c) *displacing* said corresponding contact surfaces relatively, *in a direction tangential to said corresponding contact surfaces* if said testing determines non-alignment and non-existence of correct electrical contact, and *stopping* the relative displacement of corresponding contact surfaces *when* said testing determines said alignment and existence of correct electrical contact.<sup>4</sup>

In summary form, the method of claim 8 consists of the following three steps: (a) the “bringing” step, in which the contact surfaces of the removable card and the card reader device are brought into a “contacting relationship;” (b) the “testing” step, in which correct alignment and electrical contact of the corresponding contact surfaces is tested, and where the test is performed by the card reader prompting the card to give a response and then comparing the response received with the expected response; and (c) if the testing determines that correct alignment and electrical contact does not exist, the card is displaced “in a direction tangential to the corresponding contact surfaces” and then stopped when testing determines correct alignment and electrical contact. The parties’ arguments and our findings with regard to the construction of the

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<sup>3</sup> ‘464 patent, col. 10, ll. 51-59 (emphasis added).

<sup>4</sup> ‘464 patent, col. 9, l. 54 to col. 10, l. 10 (emphasis added).

## PUBLIC VERSION

disputed claim limitations are presented below on a limitation-by-limitation basis.<sup>5</sup>

1. Whether claim 8 requires that all the electrical contacts of the card and the reader device be brought into physical contact and tested for correct electrical contact

The preamble to claim 8 states that the claimed method is one for electrically connecting a removable card with a card reader. It states further that the card has “electrically conductive terminals” (“card terminals”) and that the card reader has “conductor elements” (“card reader elements”). It also provides that both the card terminals and card reader elements have “corresponding contact surfaces.” These card terminals, card reader elements, and corresponding contact surfaces are also referenced in steps (a) (“bringing”) and (b) (“testing”) of claim 8.

Before the ALJ, Thomson argued that the claim must be construed to require that all of the card terminals be brought into contact with all of the card reader elements, and that all of the corresponding card terminals and card reader elements be tested for correct alignment and electrical contact. Innovatron, on the other hand, argued that the claim requires only that more than one card terminal and more than one card reader element be brought into contact and tested, but not necessarily that all card terminals and card reader elements be brought into contact and tested.

The ALJ found nothing in the claim indicating that all of the card terminals and card reader elements must be brought into contact and tested. He found that the plural terms “terminals” and “elements” in the claim indicate only that more than one of such terminals and elements must be brought into contact and tested, but not that all such terminals and elements be brought into contact and tested. ID at 32, 34-37, 48.

Likewise, the ALJ found nothing in the prosecution history of claim 8 to indicate that all card terminals and card reader elements must be brought into contact and tested. Thomson had argued that a change to the preamble during prosecution indicated that all terminals and elements must be brought into contact and tested. Before the preamble matured into the form in which it ultimately issued, an earlier version described a method to electrically connect a card having “at least one terminal” (rather than “terminals” as stated in the issued preamble) to a card reader having “at least one conductor element” (instead of “conductor elements” as provided in the issued preamble). The earlier version of the preamble also indicated that “both said at least one

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<sup>5</sup> The petitions for review did not challenge various aspects of the ALJ’s claim construction, including his construction of the phrases “method for electrically connecting a removable article” and “cooperates with said removable article” from the preamble, and his construction that claim 8 requires an express test for proper alignment and correct electrical contact. Accordingly, the petitioners have waived their right to challenge those aspects of the ID, as has Innovatron, which did not petition for review of the ID. 19 CFR § 210.43(b)(2) & (4).

## PUBLIC VERSION

terminal and said at least one conductor elements hav[e] corresponding contact surfaces.” Thomson argued that the change from the “at least one” terminal or element to the plural “terminals” and “elements” indicated that all such terminals and elements must be brought into contact.

The ALJ found that the change to the preamble did not indicate that bringing into contact and testing was required for all terminals and elements, because the change was made to correct a grammatical error. He stated that, under the prior version of the preamble, if there was only a single card terminal and a single card reader element, they would have only a single corresponding contact surface. Therefore, according to the ALJ, the change in the preamble was made not to indicate that all terminals and elements must be brought into contact and tested, but rather, as noted, to correct a grammatical error.

In its petition for review, Thomson maintained that the claim requires the bringing into contact and testing of all the card terminals and card reader elements, and that the prior version of the preamble contained no grammatical error. It argued that even in the case of a single terminal and a single element, each has a contact surface. Thus, use of the plural term “corresponding contact surfaces” in the phrase “both said at least one terminal and said at least one conductor elements having corresponding contact surfaces” is grammatically correct. Thomson also argued that the use of the plural, absent any “numerically limiting language,” indicates that all terminals and elements must be brought into contact and tested.

We agree with Thomson that the use of the plural “corresponding contact surfaces” in the prior version of the preamble is grammatically correct. Nevertheless, we find no error in the ALJ’s construction of the claim. Whether or not a prior version of the preamble contained a grammatical error, we agree with the ALJ that no language in the claim requires that all the card terminals and card reader elements be brought into contact and tested. We also agree with the ALJ that the use of the plural form indicates “more than one” but does not necessarily mean “all.” If the inventor had intended to require that all terminals and elements be brought into contact and tested, then we believe he would have used the word “all” or otherwise unambiguously indicated that intent. We agree with the ALJ that claim 8 should be construed broadly enough so that it would cover a method of electrically connecting a card to a card reader device even if the card has an optional terminal for which electrical connection is not necessary to practice the claimed method.

With regard to the amendment to the preamble during prosecution, we are not persuaded that replacing the phrase “at least one terminal” with “terminals” and the phrase “at least one conductor elements” with “conductor elements” indicates that all card terminals and card reader elements must be brought into contact and tested. Prior to the change, the preamble indicated that the card could have one or more terminals, and that the card reader could have one or more conductor elements. After the amendment, the preamble indicates that the card can have two or

## PUBLIC VERSION

more terminals, and that the card reader can have two or more conductor elements. It does not follow, however, that a change from one or more terminals and elements to two or more terminals or elements somehow indicates all terminals and elements. Thus, although we do not agree with the ALJ regarding the existence of a grammatical error, we do agree that the claim does not require that all terminals and elements be brought into contact and tested. Accordingly, we adopt the ALJ's construction for the reasons given above and in the ID, with the exception of the ALJ's analysis of the alleged grammatical error.

### 2. When the "bringing" of step (a) is complete

Before the ALJ, the parties disputed the meaning of the term "contacting relationship" as it appears in step (a) of claim 8. Step (a) provides that this part of the method consists of:

bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into *contacting relationship* with said corresponding contact surfaces of said conductor elements . . . .

The parties did not dispute that the bringing of step (a) is complete when a contacting relationship exists, but they disagreed on the proper construction of "contacting relationship."

Thomson and the IA argued in their petitions for review that a contacting relationship is established, and the bringing step is therefore complete, at the instant that any portion of the contact surfaces of the card terminals touch any portion of the contact surfaces of the card reader elements. Innovatron argued that a contacting relationship is not established until the card terminals and card reader elements are brought into a position expected to be favorable to electrical contact.

The ALJ found that a "contacting relationship" is established not at the instant of first physical contact, but instead when the card terminals and card reader elements reach a position favorable for making contact, that is, when they are roughly centered with regard to each other.

We agree with the ALJ's construction that a contacting relationship is not established at the instant of physical contact between the terminals and conductor elements, however, we disagree with one aspect of the ALJ's analysis of this limitation. The patent's description of the preferred embodiment provides in relevant part that:

The drive system of the card is then started . . . . The card advances and the contact surfaces face one another . . . then approach . . . until they touch . . . . *If the card has not attained its maximal front position . . . it continues to advance.* If the electrical contact is correct . . . the motor stops . . . and a wait of 0.05 seconds is counted . . . . If, at the end of the 0.05 second wait, the electric contact is incorrect, the motor starts up again . . .

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[and] the card *continues to advance* . . . . If . . . the drawer . . . has attained its maximal rearward position, . . . the direction of rotation of the motor is reversed [and] [t]he card begins to retract.<sup>6</sup>

The ALJ, relying on the first italicized phrase quoted above, found that the description of the preferred embodiment indicates that the card continues to advance into the connector apparatus until it reaches its maximal front position. We believe that that conclusion is erroneous because, as argued by Thomson and the IA, the second italicized phrase indicates that the card may *continue* to advance even after the first test for electrical contact. Reading the first phrase more closely reveals that, if the card has not already attained its maximal front position, it will continue to advance.<sup>7</sup> Accordingly, we believe that the ALJ erroneously found that a contacting relationship is established in the preferred embodiment only when the card advances to the maximal front position.

More broadly, however, we agree with the ALJ that the description of the preferred embodiment indicates that the card advances even after the contact surfaces come into physical contact. The specification states that the corresponding contact surfaces approach each other “until they touch,” and that the card may “continue to advance” prior to any mention of testing. If the card continues to advance after first physical contact prior to testing, then a contacting relationship is established in the preferred embodiment after first physical contact. Reading claim 8 in view of the specification, we therefore agree with the ALJ that the contacting relationship described in step (a) of claim 8 is not established at the instant there is physical contact.<sup>8</sup>

Similarly, we find no error in the ALJ’s interpretation of “contacting relationship” as referring to a position favorable to contact. We agree that one of ordinary skill in the art would understand the bringing step to end with a position that allows a good chance of electrical contact. Thomson and the IA may have misinterpreted the ALJ’s construction of the term. They attack the ALJ’s construction as erroneous based on language in the ID referring to the “position most favorable for making contact,” claiming, among other things, that such a construction would render superfluous the subsequent displacing step. Read in context, however, we believe that the

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<sup>6</sup> ‘464 patent, col. 7, ll. 38-59.

<sup>7</sup> The passage is somewhat confusing because it refers to the motion in question from two different perspectives. It refers both to the *card’s* “maximal front position” and also to the *drawer’s* (the moveable platform inside the connector apparatus on which the card rests) “maximal rearward position,” which are in fact the same position. It is clear, however, that the direction of the motor is not reversed until after the card (and drawer) reach this position.

<sup>8</sup> See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (“Claims must be read in view of the specification of which they are a part.”).

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ALJ used the phrase “position most favorable for making contact” in summarizing the testimony of a witness rather than in explaining his construction. ID at 40. When indicating his own construction, the ALJ referred to the position as “favorable,” not “most favorable.” *Compare* ID at 40 to 44. Indicative of the ID’s true meaning, the ALJ described the bringing step as having the “goal of achieving the position most favorable for working . . .” ID at 41. Additionally, the ALJ expressly acknowledged that, even after a contacting relationship has been achieved, “one is not certain whether there is electrical contact; that must be tested for later.” ID at 40. Accordingly, we adopt the ALJ’s construction of contacting relationship, and therefore the time at which the bringing of step (a) is complete, for the reasons given above and in the ID, with the exception already noted. We also adopt the ALJ’s construction of when the testing step begins, which is after the bringing step ends. *See* ID at 48.

3. The “predetermined operations” and “a predetermined expected response” limitations

Claim 8 indicates that the testing of the corresponding contact surfaces for correct electrical contact in step (b) is comprised of :

performing predetermined operations which provide a predetermined expected response from the removable [card] upon the existence of correct alignment and electrical contact, and comparing the actual response received with the predetermined expected response.

The ALJ construed the word “predetermined” in the phrase “predetermined operations” to mean “those operations that are established at the time of the design of the system and that do not change over time.” ID at 47. He also construed “expected” in the phrase “predetermined expected response” to mean that the response “does not change over time and it . . . is the response that the card produces.” *Id.*

After receiving the petitions for review, we asked the parties to comment on alternative constructions of the terms, *viz.*, that “predetermined” means “to determine, decide, or establish in advance,” and that “expected” means “predicted.”

*“predetermined”*

On review of the parties’ comments and the record evidence, we disagree with the ALJ’s construction that the word “predetermined” in the phrase “predetermined operations” means operations that are established at the time of design and that do not change over time. We find nothing in the specification or the claim that indicates that predetermined operations must be established at the time of design. Contrary to Innovatron’s assertion, expert testimony that “predetermined” means determined at design and incapable of being changed is not the only

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record evidence on the issue. Other expert testimony on the record indicates that the predetermined operations need to be established prior to the test, but does not indicate that they must be established at the time of design.<sup>9</sup> Moreover, the Commission is not bound to accept a witness's testimony regarding the meaning of a claim term.<sup>10</sup>

In the absence of a definition of the term in the patent, we believe “predetermined” should be construed to have its ordinary dictionary definition. The ordinary meaning of “predetermine” is “to determine, decide, or decree beforehand.” Webster's New World Dictionary, 1061, Third College Edition (1988). “Predetermine” is also defined as “[t]o determine or decide in advance.” The American Heritage Dictionary, 540, Office Edition (1983). Accordingly, we construe “predetermined” to mean determined or decided in advance.

We find no support in the patent for Innovatron's contention that the operations must be determined in advance of the first testing. That construction would introduce a limitation not indicated by the claim or the patent specification. Instead, we construe the claim to require only that the operation be determined in advance of the test performed, not necessarily the first test performed.

### *“expected”*

We also disagree with the ALJ's construction that “expected” means “not changing over time.” We find no indication in the patent that expected should be construed other than in accordance with its ordinary dictionary meaning. The ordinary meaning of “expected” is “to look for as likely to occur or appear.” Webster's New World Dictionary, 478. The word is also defined generally as meaning “predicted.” Roget's Thesaurus (Robert A. Dutch ed. 1969). “Expected” is explained further to “impl[y] a considerable degree of confidence that a particular event will happen.” Webster's New World Dictionary, 478. Taking these definitions together, we construe “expected” in the phrase “a predetermined expected response” to mean a response that is predicted to occur.

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<sup>9</sup> Bove Tr. at 904.

<sup>10</sup> See *Vitronics Corp. v. Conceptronics, Inc.*, 90 F.3d 1576, 1585 (Fed. Cir. 1996) (“[Expert testimony] may only be relied upon if the patent documents, taken as a whole, are insufficient to enable the court to construe the disputed claim terms. Such instances will rarely, if ever, occur. . . . Even in those rare instances, prior art documents and dictionaries, although to a lesser extent, are more objective and reliable . . . [and] are preferred over opinion testimony . . .”).

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4. The “displacing . . . in a direction tangential to said corresponding contact surfaces” limitation
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Step (c) provides as follows:

(c) *displacing* said corresponding contact surfaces relatively, *in a direction tangential to said corresponding contact surfaces* if said testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

The ALJ construed this language to “require[] that the contact surfaces of the [card’s] terminals and the [card reader’s] conductors be moved in relation to each other such that the area of contact between them *decreases*.” ID at 53 (emphasis added). Displacing requires movement, according to the ALJ, but not continuous or motor-driven movement. ID at 54.

The ALJ did not address the meaning of the phrase “in a direction tangential to the corresponding contact surfaces” in his discussion of claim construction, although he stated in his infringement analysis that “[r]emoval and reinsertion of the [DSS] smart card constitutes displacement of the ‘corresponding contact surfaces’ as called for in claim 8.” See ID at 53-56 (discussing the ALJ’s construction of the displacing limitation) and at 102 (addressing infringement). Thus, although the ALJ did not indicate precisely how he construed the tangential displacement limitation, we know that he construed it broadly enough to cover removing and reinserting the card.

We disagree with the ALJ’s construction that “displacing” means that the corresponding contact surfaces are moved such that the area of contact decreases. The ALJ’s interpretation appears to be grounded in his finding, discussed previously, that in the bringing step the removable card advances to its maximal front position inside the reader device. Thus, the ALJ appears to have concluded that any displacement thereafter must be in the opposite direction. As noted above, however, we believe that the ALJ’s conclusion that the removable card necessarily advances to its maximal front position in the bringing step is erroneous. In the preferred embodiment, as also discussed above, the removable card may, after the completion of the bringing step, continue to advance into the card reader device.<sup>11</sup> Additionally, after reaching its maximal front position, the card returns in the opposite direction, and may ultimately make several

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<sup>11</sup> ‘464 patent, col. 7, l. 50.

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passes back and forth in search of proper alignment and electrical contact.<sup>12</sup> Thus, in displacing, the area of contact between the contact surfaces alternatively increases and decreases. The ALJ's construction whereby the area only decreases is therefore erroneous.

We also disagree with the ALJ's construction in another respect. In his discussion of claim construction, the ALJ did not specify whether the displacing must occur while the corresponding contact surfaces are in constant contact, or whether it can also occur by taking the corresponding contact surfaces out of contact, displacing them, and then bringing them back into contact. ID at 53-55. In his infringement analysis, however, the ALJ indicated that displacing encompasses the second type of motion. As indicated previously, the ALJ indicated that “[r]emoval and reinsertion of the [DSS] smart card constitutes displacement of the ‘corresponding contact surfaces’ as called for in claim 8.”<sup>13</sup>

We disagree that the “in a direction tangential” limitation encompasses a displacing motion in which the corresponding contact surfaces are separated before displacing and then brought back into contact. To be sure, the meaning of the phrase “in a direction tangential to said corresponding contact surfaces” is difficult to construe in isolation. As indicated by the parties, the ‘464 patent does not define the term “tangential.” Even considering the dictionary definition of tangent (“a line, curve, or surface touching, but not intersecting another line, curve, or surface”), the phrase’s meaning is not readily apparent. The American Heritage Dictionary, 695. This is so in part because the thing as to which the direction is tangential (“the corresponding contact surfaces”) is not well defined. It is not clear, for example, whether the direction is tangential to the area of contact between the corresponding contact surfaces, or whether the direction can be tangential to the contact surfaces in some other way.

The meaning of the phrase is clear, however, when it is considered in the context of the rest of claim 8. The displacement in a “direction tangential” in step (c) of claim 8 begins only after the bringing of the corresponding contact surfaces into a contacting relationship in step (a). Thus, the displacing begins while the corresponding contact surfaces are in physical contact.

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<sup>12</sup> ‘464 patent, col. 7, l. 50 to col. 8, l. 11. *See also* ‘464 patent at col. 2, ll. 6-8 (indicating that displacement occurs in oscillating movements around a midpoint).

<sup>13</sup> ID at 102. The ALJ also stated the following in the findings of fact:

The act of “displacing said corresponding surfaces relatively, in a direction tangential to said corresponding contact surfaces” requires that the contact surfaces of the removable [card’s] terminals and the [card reader’s] conductors be moved in relation to each other such that the area of contact between them moves.

ID at 148, Finding of Fact 51.

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Also, there is no mention in claim 8 of the separation of the corresponding contact surfaces or of the bringing them back into contact before again testing for proper alignment and correct electrical contact. Instead, step (c) expressly limits displacing to “a” (*i.e.*, a *single*) “direction tangential to the corresponding contact surfaces . . . .” The separation, displacement, and re-bringing of the corresponding contact surfaces would involve displacement in various directions, including some not tangential. The bringing of step (a), for example, which is described in the specification as “relatively displacing the contact surfaces of the conductors towards each other, along a direction having at least one component normal to their surface . . . ,” is not contemplated by the “displacing . . . in a direction tangential” of step (c).<sup>14</sup> Thus, we believe that in “a direction tangential” cannot mean movement that takes the corresponding contact surfaces out of contact and then back into contact.

In addition, we disagree with Innovatron that the ALJ’s construction is supported by the following portion of the specification:

displacing in an oscillatory or alternating and relative fashion the two contact surfaces, around a median point, in a direction tangential to their surface, at least as long as these surfaces are in contact. This oscillatory movement can be carried out while the two contact surfaces are constantly in contact *and it may equally be carried out by successive passes, i.e., by a repetition of the contacting process.*<sup>15</sup>

Innovatron contends that the quotation indicates that displacing in a “direction tangential” can include a repetition of the bringing step. As noted above, however, claim 8 indicates that displacing in a direction tangential occurs after the bringing into a contacting relationship is complete, and contains no mention of ending the contacting relationship prior to displacing in a direction tangential, or of repeating the bringing step after displacing and prior to testing. In fact, it appears to us that the portion of the specification upon which Innovatron bases its argument is not relevant to claim 8, but rather to claim 5 of the ‘464 patent, a claim which is not at issue in this investigation. Unlike claim 8, claim 5 expressly involves the repetition of bringing in coordination with displacing.

For the reasons given above, we construe “displacing . . . in a direction tangential to said corresponding contact surfaces” to mean that the contact surfaces are moved relative to each other in any direction provided that they remain in contact.

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<sup>14</sup> See ‘464 patent at col. 1, ll. 60-62.

<sup>15</sup> ‘464 patent, col. 2, ll. 6-13 (emphasis added).

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### 5. The “stopping . . . when” limitation

The “stopping . . . when” limitation appears in step (c) of claim 8:

(c) displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

The ALJ found “stopping”:

to refer to the fact that the removable article . . . should be displaced and tested again if proper electrical contact is not achieved, and further that displacement should stop when proper electrical contact is established as indicated through testing.

ID at 55. He found that the claim language contains no express or implied limitation regarding the method of stopping, and that it can be done mechanically or manually. *Id.* The ALJ also found that the claim language contains no requirement that displacement be stopped instantaneously, or almost instantaneously, upon the detection of proper alignment and good electrical contact. ID at 56. The specification describes instantaneous stopping, but only as an option, he found. *Id.*

The ALJ’s construction was based in part on his finding that the claim specification indicates that stopping can be performed manually. Before discussing our construction of the “stopping . . . when” limitation, we address the subsidiary issue of whether the specification indeed discloses manual stopping.

The portion of the specification that the ALJ found to disclose manual stopping consists of three consecutive paragraphs. The paragraphs follow the detailed description of the preferred embodiment, and give examples of other possible embodiments of the patented method. On review, we asked the parties to provide comment on the disputed paragraphs, which provide as follows:

In the embodiment of the invention described with reference to the figures, the card and the connection mechanism are activated by an electric motor. In other embodiments, it may be activated differently, in particular the displacement of the card and of the drawer can be due to the carrier of the card who introduces it. In this latter case, the relative movements of the contact surfaces will be essentially guided by guiding means, particularly ramps.

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In a like fashion, the translationally movable drawer may be replaced by a jointed shutter which is rotationally and translationally movable (in the same fashion as introduction mechanisms for magnetic cassettes in tape readers).

Furthermore, the card, the drawer and the support of the connection cross-bar can be arranged on the frame such that the whole cross-bar and the card is instantaneously immobilized with respect to one another as soon as the contact is correct. The inertia of the manual or mechanic driving mechanisms will thus result in the displacement of both the cross-bar and the card without modifying the position of the zones in contact with one another. Such a solution makes possible, notably in the absence of a motor, to manually introduce the card without having to be concerned with the instant when the contact is correctly established.<sup>16</sup>

Having considered the disputed paragraphs from the claim specification and the arguments of the parties, we find that the specification does not indicate that stopping can be performed manually. Innovatron contended that manual stopping is described in the first disputed paragraph because stopping “goes hand-in-hand” with displacing. Manual stopping, however, presupposes a display element to inform the user that the corresponding contact surfaces are in proper electrical contact. The first paragraph describes no such display.

We believe that the failure to describe a display element of some kind, or otherwise indicate how the user would know to perform stopping, is significant. The three paragraphs of the specification at issue describe possible alternative arrangements to practice the patent. The first paragraph expressly indicates that displacing can be performed manually, the second paragraph discloses that a jointed shutter structure can be used to receive the card instead of a translationally movable drawer, and the third paragraph indicates that the card can be immobilized relative to the connection cross bar rather than by halting the displacing motor. Thus, the paragraphs describe with specificity the various alternative arrangements possible to practice the various limitations of the patent. The failure to indicate a structure necessary to practice a particular arrangement (such as a display element or other means of indicating that the user should stop displacing) indicates that such alternative arrangement is not contemplated in the specification.

Moreover, we find it significant that the inventor expressly indicated that *displacing* can be performed manually, but did not expressly indicate that *stopping* can also be performed manually. Because the inventor indicated that one limitation of the method can be performed manually, his failure to indicate that another limitation can be performed manually strongly suggests that it cannot.

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<sup>16</sup> ‘464 patent, col. 8, ll. 12-37.

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Our finding that the three paragraphs do not disclose manual stopping is further supported by the description of the alternative arrangement for stopping described in the third paragraph. That paragraph expressly states that the arrangement is particularly suited to manual displacement because it allows the user to not be concerned with the “instant” in which contact is achieved. This indicates that the inventor recognized that manual displacement presented a problem because stopping could not be performed rapidly enough to prevent the corresponding contact surfaces from moving out of contact. To solve that problem, the inventor disclosed a method to achieve instantaneous stopping “notably, in the absence of a motor . . . .”<sup>17</sup>

For the foregoing reasons, we find that the specification does not teach that stopping can be performed manually. As indicated previously, however, the question of whether the specification teaches that stopping can be performed manually is subsidiary to the larger question of how properly to construe the “stopping . . . when” limitation.

As indicated previously, step (c) of claim 8 provides for “*stopping* the relative displacement of the corresponding contact surfaces *when* said testing determines said alignment and existence of correct electrical contact.” The issue before the Commission on review was whether “stopping . . . when” should be construed, as Innovatron argued, to encompass stopping that does not occur when testing indicates correct alignment and electrical contact, or whether, as Thomson and the IA argued, to mean stopping that occurs as a result of a positive test for electrical contact and is instantaneous or nearly instantaneous such that the relative displacing is halted before the corresponding contact surfaces are moved from a position of correct alignment and electrical contact to a position out of such alignment and contact.

We construe the phrase “stopping . . . when” to mean stopping that occurs as a result of a positive test for correct alignment and electrical contact, and that is instantaneous or nearly instantaneous such that relative displacing is halted before the corresponding contact surfaces are moved from a position of proper alignment and correct electrical contact to a position out of such alignment and contact. We disagree with Innovatron’s contention that the word “when” as used in the “stopping . . . when” limitation in step (c) means “if,” and therefore does not have a temporal connotation. The gist of Innovatron’s contention is that we should construe “stopping . . . when” to have a non-temporal meaning, such as “stopping . . . if,” rather than construe it to have a temporal meaning, such as “stopping . . . as soon as.” Although Innovatron is correct that the word “when” can have a temporal (*e.g.*, “as soon as”) or a non-temporal (“if”) connotation, we find that only the temporal connotation of the word is reasonable in this investigation, as indicated by the context of the language of claim 8 and the specification. Under the non-temporal construction reached by the ALJ and urged by Innovatron, displacing would be performed in a series of separate and discrete movements (such as by nudging or jiggling the card). *See* ID at 55. After the corresponding contact surfaces come to rest, as a result of one of these movements, in a

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<sup>17</sup> ‘464 patent, col 8., ll. 34-35.

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position of correct alignment and electrical contact, “stopping” would occur by the discontinuation of further intermittent movements. *Id.* Under this construction, the corresponding contact surfaces can move into and back out of proper alignment and correct electrical contact any number of times before displacing is finally stopped. This is because there is no means of halting ongoing displacing when the corresponding contact surfaces come into proper alignment and electrical contact. The discontinuation of further movements would instead occur when, as a result of an intermittent movement, the corresponding contact surfaces happen to come to rest in a position of correct alignment and electrical contact.

A non-temporal construction of the word “when” is not supported by the claim or the specification. The only stopping described in the claim comes as a result of a determination of correct alignment and electrical contact (“and stopping the relative displacement . . . when said testing determines said alignment and existence of correct electrical contact”). The claim does not also describe other random stopping as a result of intermittent movements.

Moreover, the non-temporal construction of “when” is at odds with two stated purposes of the patent, *viz.*, to “facilitate the rapid placement in contact . . . [and] to limit the wearing down of the contact surfaces to only that which is absolutely necessary.”<sup>18</sup> Displacing by a series of separate and random movements, which would achieve proper alignment and electrical contact only when the corresponding contact surfaces by chance come to rest in the proper position, is not consistent with the rapid placement in contact and the prevention of unnecessary wearing down of the contact surfaces. Thus, the construction of the ALJ is not affirmatively indicated in the claim (because the claim indicates stopping only as a result of a test determination that there is proper alignment and electrical contact) and is also at odds with two express purposes of the patented invention.

A non-temporal construction of the word “when” is disfavored for another reason. The ALJ found, and Innovatron urged the Commission to find, that “stopping . . . when” should be construed as “stopping . . . if.” However, the patentee used the word “if” in step (c) (“displacing . . . *if* said testing determines non-alignment and non-existence of correct electrical contact . . . .” (emphasis added)). The patentee’s use of the non-temporal word “if” in the same step strongly suggests that his use of the normally temporal word “when” in regard to stopping was purposive, and thus intended to connote a temporal meaning.

Finally, Innovatron mistakenly cites *Pall Corporation* for the proposition that a change in the scope of a claim made during prosecution should be disregarded in construing the claim if the change is not made in order to overcome an examiner’s rejection based on the prior art. However, *Pall Corporation* addresses the effect of the prosecution history on a patentee’s ability

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<sup>18</sup> ‘464 patent, col. 2, ll. 22-29.

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to claim infringement under the doctrine of equivalents, not claim construction.<sup>19</sup>

Accordingly, we construe the “stopping . . . when” limitation to mean stopping that occurs as a result of a positive test for correct alignment and electrical contact, and that is instantaneous or nearly instantaneous, such that relative displacing is halted before the corresponding contact surfaces are moved from a position of proper alignment and correct electrical contact to a position out of such alignment and electrical contact.<sup>20</sup>

### **B. Domestic Industry**

The importation or sale of articles that infringe a valid and enforceable United States patent constitutes a violation of section 337 “only if an industry in the United States, relating to the articles protected by the patent . . . exists or is in the process of being established.” 19 U.S.C. § 1337(a)(2). Thus, before considering the validity of claim 8 of the ‘464 patent and possible infringement of it, we address whether the required domestic industry exists or is in the process of being established.

Proceeding under a claim construction that we have found to be incorrect in certain respects, the ALJ found that the domestic industry requirement is satisfied. For the reasons provided below, however, we find that a domestic industry does not exist in relation to claim 8 of the patent as that claim is properly construed.

The domestic industry requirement of section 337 comprises a “technical” prong and an “economic” prong. The technical prong is satisfied if “an industry in the United States, relating to the articles protected by the patent . . . exists or is in the process of being established.”<sup>21</sup> The economic prong is satisfied if there is:

- (A) significant investment in plant and equipment;
- (B) significant employment of labor or capital; or

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<sup>19</sup> See *Pall Corporation v. Micron Separations, Inc.*, 66 F.3d 1211, 1219-20 (Fed. Cir. 1995) and *Mannesman Demag Corp. v. Engineered Metal Products*, 793 F.2d 1279, 1284-85 (Fed. Cir. 1986).

<sup>20</sup> As noted previously, we have generally used the terms “removable card” or “card” instead of “removable article” and the term “card reader” instead of “electric device.” To avoid ambiguity, however, when setting forth our construction of a claim limitation containing such terms, we use the original terms “removable article” and “electric device.”

<sup>21</sup> 19 U.S.C. § 1337(a)(2).

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- (C) substantial investment in [the patent's] exploitation, including engineering, research and development, or licensing.

In this investigation, the parties do not dispute that the economic prong is satisfied. With respect to the technical prong, the parties have raised the following three issues: (1) whether Innovatron's U.S. licensee, Gemplus, practices the patented method in the production of microprocessor cards; (2) whether the cards manufactured by Gemplus can be used in connection with a card reader to practice the patented method and, if they can, whether such manufacture and use is sufficient to satisfy the technical prong; and (3) whether there must be competition between the accused DSS and the microprocessor cards manufactured by Gemplus in order to satisfy the domestic industry requirement. We discuss each issue in turn below.

1. Whether Gemplus practices the patented method in the testing and quality control of microprocessor cards

Innovatron argues that Gemplus practices the patented method in its use of the [CONFIDENTIAL] and the GCR500 machine, which perform testing and quality control operations during the manufacture of Gemplus' microprocessor cards in the United States.

The [CONFIDENTIAL] tests the cards to determine whether the memory cell of the card's microprocessor functions properly. ID at 123. After the microprocessor card is fed into the [ C ] the machine [

CONFIDENTIAL

C ] If any of three tests detects an error, [ CONFIDENTIAL ] and the tests are repeated. *Id.* [

]<sup>22</sup> [

CONFIDENTIAL

] In addition to the tests performed by the [CONFIDENTIAL] others tests are performed by the GCR500 machine. After the cards are tested and initialized by the [ C ] a [ C ] of the cards are manually inserted into the GCR500 machine for further testing for the purpose of quality control. ID at 129-130. [

CONFIDENTIAL

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<sup>22</sup> [

CONFIDENTIAL ]

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If the GCR500 receives the expected value, further quality control tests are performed. ID at 131. ]

We find that Gemplus does not practice the patented method in the use of either the [ C ] or the GCR500. Neither machine practices the “displacing . . . in a direction tangential” or “stopping . . . when” claim limitations. As discussed in section II.A above, “displacing . . . in a direction tangential is properly construed to mean that the corresponding contact surfaces are moved relative to each other in any direction provided that they remain in contact. In the [

C ] upon a failed test, [ CONFIDENTIAL

] This movement does not practice “displacing . . . in a direction tangential” because the contact surfaces do not remain in contact while it is done. Nor does the stopping of the [ C ] occur as a result of a positive test of correct alignment and electrical contact, as required by claim 8. Instead, it is predetermined that after [

CONFIDENTIAL

] In fact, because the movement occurs while the card and the [ C ] of the [ C ] are not in contact, such movement cannot be stopped as a result of a determination of proper electrical contact.

In the GCR500, upon a failed test, the card is manually removed and reinserted. This action fails to practice the “displacing . . . in a direction tangential” claim limitation because the contact surfaces of the microprocessor card and the GCR500 do not remain in contact during removal and reinsertion. Removal and reinsertion also fails to practice the “stopping . . . when” limitation because the motion of the card is not stopped as a result of a positive test for correct alignment and electrical contact.<sup>23</sup> Accordingly, we determine that Gemplus does not practice the patented method in the testing and/or quality control of its microprocessor cards in the United States.

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<sup>23</sup> Similar to the GCR500, removal and reinsertion also occurs in the operation of the accused imported DSS products. Innovatron presented various alternative arguments contending that the “displacing . . . in a direction tangential” and “stopping . . . when” limitations are practiced in the removal and reinsertion of the DSS access cards. To the extent that Innovatron asserts the same arguments with regard to the removal and reinsertion of the microprocessor card in the GCR500, we disagree for the same reasons that removal and reinsertion of DSS access cards fails to practice the limitations. See section II.D.3 below. In addition, [ CONFIDENTIAL

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2. Whether the cards manufactured by Gemplus are used in connection with a reader device to practice the patented method, and, if they are, whether such manufacture and use satisfy the technical prong

As a result of an argument advanced by the IA on review, we asked the parties to comment on whether the cards manufactured by Gemplus are used in connection with a reader device to practice the patented method, and, if they are, whether such manufacture and use satisfy the technical prong.

We do not see that the record supports the IA's contention that the microprocessor cards manufactured by Gemplus are used by U.S. consumers in connection with a reader device to practice the patented method. The record contains little information regarding how the Gemplus cards are used, or whether that use practices each of the limitations of the method patented in claim 8. We disagree with the IA's assertion to the contrary for several reasons. First, the IA stated that his contention is based on the assumption that the ALJ's claim construction applies. For the reasons given previously, the ALJ's claim construction must be modified in certain significant respects. Second, the IA stated that his contention that purchasers of Gemplus access cards will use them to practice the patented method was supported by the fact that the patented method was used (as the IA also assumes) in the testing and quality control of the cards. We have determined, however, that Gemplus does not practice the patented method in the testing and quality control of its microprocessor cards. Moreover, it does not necessarily follow that an article produced using a patented method will necessarily itself be used in practicing that method.

3. Whether the imported articles must compete with the articles produced by Gemplus in order to satisfy the domestic industry requirement

Thomson argued that the cards produced by Gemplus do not compete with the accused imported articles and that, absent such competition, the action brought under section 337 against the DSS products is not on behalf of a U.S. industry, as required by section 337. Thomson also submitted that the domestic industry requirement must be interpreted in light of the purposes of section 337, which purpose is to benefit a domestic industry involved in a dispute involving imported products. Thomson argued that Gemplus is not involved in a trade dispute involving Thomson's imported products, and that no relief can be issued that would benefit Gemplus because of the lack of competition between Gemplus' cards and Thomson's accused imported products.

We disagree. The legislative history of the 1988 amendments to section 337 makes clear that the injury requirement was removed for patent-based cases. H.R. Rep. No. 100-40, Part I, at 156 (1987). Nowhere, in fact, does the legislative history indicate that the domestic industry must produce a product that directly competes with the imported product. We find that Thomson's arguments based on the alleged purposes of the statute do not outweigh the clear intent of

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Congress as expressed in the legislative history to the 1988 amendments.

### 4. Conclusion

We find that the technical prong of the domestic industry requirement is not satisfied in this investigation. As indicated above, Innovatron has failed to demonstrate that Gemplus practices the patented method in the testing and quality control of its microprocessor cards, or that its microprocessor cards are used in the United States in connection with other articles to practice the patented method.<sup>24</sup> The failure to satisfy the domestic industry requirement precludes a finding that Thomson violated section 337. Although the Commission can base its determination on a single issue, we also render decisions in this investigation on the validity of claim 8 of the '464 patent and whether it is infringed.<sup>25</sup>

### C. **Validity**

The ALJ determined that the '464 patent was not invalid, finding that it was not anticipated or rendered obvious by the prior art. In their petitions for review, neither Thomson nor the IA argued that the ALJ's validity analysis was erroneous.<sup>26</sup> On review, we asked the parties whether the patent would be invalid if it were construed as indicated in section II.A above. Each of the parties agreed that the patent would not be invalid if construed as indicated above. In particular, Innovatron argued that the proposed construction was generally narrower than that of the ALJ, and thus could not render the '464 patent invalid as anticipated or obvious. Based on the ALJ's analysis of the prior art and for the reasons given above, we determine that the '464 patent as construed above is not invalid.

### D. **Infringement**

Infringement of a claim can be shown by evidence of direct infringement, induced

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<sup>24</sup> Because we find that it has not been demonstrated that Gemplus' microprocessor cards are used in the United States in connection with other articles to practice the patented method, we do not reach the issue of whether such use is sufficient to satisfy the technical prong of the domestic industry requirement.

<sup>25</sup> See *Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) and *Coleco Industries Inc. v. United States International Trade Commission*, 573 F.2d 1247, 1252 (CCPA 1978) (indicating that the Commission has discretion whether to address more than one dispositive issue).

<sup>26</sup> Thomson did, however, argue that the ALJ construed the patent differently for purposes of his validity and infringement analyses.

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infringement, or contributory infringement. Induced and contributory infringement cannot, however, exist unless there is also direct infringement. Innovatron argued that Thomson induced infringement of claim 8 and contributorily infringed that claim, and that users in the United States of Thomson's DSS products committed direct infringement. We first examine whether DSS users directly infringe claim 8 because, if they do not, then Thomson cannot have induced infringement of claim 8 or contributorily infringed that claim. The party alleging infringement has the burden of proving infringement by a preponderance of the evidence.<sup>27</sup> The question of infringement of a properly interpreted claim is one of fact.<sup>28</sup>

Proceeding under a claim construction that, as indicated above, we have found to be erroneous in certain significant respects, the ALJ found that DSS end users in the United States practiced every limitation of claim 8 and therefore directly infringed it. He found each of the limitations to be literally infringed, although he found that the "predetermined expected response" limitation could in the alternative be found to be infringed under the doctrine of equivalents. ID at 97 n.42. There is infringement under the doctrine of equivalents if the differences between the claimed method and the accused method are insubstantial.<sup>29</sup>

After reviewing the petitions for review and the responses thereto, we asked the parties to comment on whether end users of DSS products in the United States directly infringed claim 8 as construed above. The parties' comments centered on the "testing" limitation of step (b) and the "displacing . . . in a direction tangential" and "stopping . . . when" limitations of step (c).<sup>30</sup> We discuss below whether the DSS products infringe claim 8 on a limitation-by-limitation basis. For those limitations not discussed below, we adopt the infringement findings of the ALJ.<sup>31</sup>

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<sup>27</sup> *Environtech Corp. v. Al George, Inc.*, 730 F.2d 753, 758 (Fed. Cir. 1984); *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1361 (Fed. Cir. 1983).

<sup>28</sup> *Mannesman Demag Corp. v. Engineered Metal Prods. Co.*, 793 F.2d 1279, 1282 (Fed. Cir. 1986).

<sup>29</sup> *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 137 L.Ed.2d 146, 161 (1997).

<sup>30</sup> Thomson also presented argument regarding whether there is infringement of the step (a) "bringing" limitation. We have not considered this argument, however, because Thomson failed to preserve the issue in its petition for review. (If we had modified the ALJ's construction of the bringing limitation, however, we would have allowed all parties to comment on whether, under such a modified construction of the limitation, there is direct infringement.)

<sup>31</sup> Although we generally adopt the infringement findings and analysis of the ALJ concerning those limitations not discussed here, that adoption does not extend to any finding or analysis that  
(continued...)

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### 1. The “express” test limitation

The ALJ construed the testing limitation of step (b) to require a test that is expressly for the purpose of determining proper alignment and correct electrical contact. In distinguishing several prior art references, the ALJ found that a test of whether the device operates properly is not an express test for proper alignment and correct electrical contact, because such alignment and electrical contact can only be inferred from the proper operation of the device. We agree with and adopt the ALJ’s construction of this limitation, which was not challenged in the petitions for review.

The ALJ found that after an access card is inserted into a DSS receiver, the receiver sends a “reset” signal conforming to an internationally recognized standard to the card. ID at 95. The signal is sent in the form of binary computer characters with values of “0 ” or “1.” Kuc Tr. at 219-222. After receiving the reset signal, the card provides an “answer-to-reset” (“ATR”) signal, also conforming to an internationally recognized standard, and also in the form of a string of binary computer characters. ID at 96. The receiver then analyzes the ATR string. ID at 97. The ALJ found that, although the ATR sequence specified by the international standard is not a test for correct alignment and electrical contact, it functions as such in the DSS. ID at 96. Specifically, the ALJ found that the first character of the ATR, the TS character, acts as a test of correct electrical contact. *Id.*

Having considered the arguments and the evidence of record, we find that Innovatron has not demonstrated by a preponderance of the evidence that the DSS involves an express test for proper alignment and correct electrical contact. We do not agree with Innovatron’s contention that the DSS receiver practices such an express test by reading the TS character received from the access card. To the contrary, the record indicates that the purpose of the test of the TS character is to indicate whether the card communicates according to the direct or inverse convention. RX at 8, Kuc Tr. at 219-221. *See* ID at 99-100 & n.45. Although it can be inferred from the receipt of the TS character that correct electrical connection is established, the possibility of such an inference does not make the test of the TS character into an express test for correct electrical connection.

Moreover, the test alleged by Innovatron to constitute an express test for electrical contact involves more than just the TS character. Claim 8 indicates that a failed test is the event that initiates displacing and that a positive test is the event that triggers the stopping of displacing.

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<sup>31</sup> (...continued)  
is inconsistent with this opinion.

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In the DSS, by contrast, displacing<sup>32</sup> is commenced by the user after viewing the on-screen message “Please insert valid Access Card.” The message “Please insert valid Access Card” does not expressly indicate that the DSS receiver and access card are not in proper alignment and electrical contact. To the contrary, the message indicates that the inserted card is not valid. The fact that the test in the DSS generates the message that the access card is invalid indicates that the test is not expressly for determining alignment and electrical contact. The way in which the DSS indicates to the end user that displacing should be stopped also indicates that the DSS does not involve an express test for alignment and correct electrical contact. In the DSS, displacement is stopped<sup>33</sup> by the user after seeing that the DSS is functioning properly. As indicated above, the ALJ found, and we agree, that a test for proper functioning is not an express testing for alignment and electrical contact.

Based on the foregoing, we find that the DSS does not practice an express test for proper alignment and correct electrical contact. Although the failure to practice a single limitation of a claim establishes non-infringement, we will proceed to analyze whether the DSS practices the other disputed claim limitations.

2. The “predetermined operations” and “predetermined expected response” limitations

As indicated above, we have construed “predetermined” to mean “determined or decided in advance of the test in question” and “expected” to mean “predicted to occur.” Innovatron argued that the DSS practices the “predetermined operations” and “predetermined expected response” limitations of step (b). It noted that the constructions of the terms proposed by the Commission in its notice of review (which are not substantially different from those indicated in section II.A above) are broader than those adopted by the ALJ, and that therefore the ALJ’s findings that the DSS practices them is, under the Commission’s proposed construction, only strengthened.

Thomson argued that the test performed by the DSS does not involve a “predetermined expected response.” It contended that the removable card responds to the predetermined operations by transmitting a series of characters constituting the ATR string. Because the ATR string varies, Thomson argued, it does not constitute a predetermined expected response. Thomson also contended that even if what is considered to be the test is not the entire ATR

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<sup>32</sup> For purposes of this analysis only, we assume that a DSS user can practice “displacing” by the removal and reinsertion, or the jiggling, of the DSS access card, as advocated by Innovatron. Below we address whether such actions in fact practice the displacing limitation of step (c).

<sup>33</sup> For purposes of this analysis, we assume that a DSS user can practice stopping manually. We address below whether a DSS user can in fact practice stopping manually.

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string, but rather the subpart known as the TS character, then there are still two different possible responses. Because the DSS receiver does not know which response it will receive from the access card, Thomson asserted, the response cannot be “expected.”

We find that the “predetermined operations” and “a predetermined expected response” limitations of claim 8 are practiced in the DSS. Predetermined operations are performed when the card reader transmits the reset signal to the card. This operation is predetermined because it is determined, decided, or established in advance of the test. The predetermined expected response is practiced when the card transmits the TS character in response to the reset signal. The TS character is determined during the design of the DSS, and all DSS access cards generate a TS character with a value of “3F” in response to the test. Thus, the response is also “expected” or “predicted to occur.” Accordingly, we find that the accused DSS practices a test involving the “predetermined operations” and “a predetermined expected response” limitations of claim 8.

3. The “displacing . . . in a direction tangential to the corresponding contact surfaces” and “stopping . . . when” limitations

As indicated previously, we have construed the “displacing . . . in a direction tangential to said corresponding contact surfaces” limitation to mean that the corresponding contact surfaces are moved in any direction provided that they remain in contact. We have construed the “stopping . . . when” limitation to mean stopping that occurs as a result of a positive test for correct alignment and electrical contact, and that is instantaneous or nearly instantaneous such that the relative displacing is halted before the corresponding contact surfaces are moved from a position of proper alignment and correct electrical contact to a position out of such alignment and contact. The parties presented argument regarding whether the DSS practices these limitations as properly construed.

Having considered the arguments of the parties and the record evidence, we find that users of the DSS practice neither the “displacing . . . in a direction tangential” nor the “stopping . . . when” limitations. Innovatron advanced several arguments that the DSS practices these limitations, none of which we find persuasive. Innovatron argued first that the DSS practices these limitations when users remove and reinsert their access cards. Innovatron in effect argues that removal and reinsertion practices the displacing in a direction tangential limitation whether removal and reinsertion is construed as a single act or is construed to consist of various acts (removal of the card, the card residing outside the DSS reader, and the reinsertion of the card). We do not agree that removal and reinsertion practices the displacing in a direction tangential limitation or the stopping limitation under either interpretation.

If the removal and reinsertion of the access card is considered to be a single act, then during this act the access card is completely removed from the DSS receiver such that the corresponding contact surfaces are no longer in contact. Thus, removal and reinsertion does not

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practice the displacement “in a direction tangential” limitation, which, as properly construed, requires that the contact surfaces remain in contact during displacement.

In addition, it has not been proved by a preponderance of the evidence that the act of removal and reinsertion results in the card being in a different position after reinsertion than it was before removal. To the contrary, the record indicates that the DSS access cards are designed to stop in the same fully inserted position. Bove Tr. at 960-963 and ID at 175 (Finding of Fact 185), 177 (Finding of Fact 197). Thus, it has not been demonstrated that removal and reinsertion results in any overall displacement at all. In fact, the evidence of record strongly suggests that DSS customers are instructed to remove and reinsert access cards for the purpose of cleaning the contacts rather than the purpose of achieving relative displacement. ID at 102-04, 169-187 (Findings of Fact 144, 154, 171, 194, 229-231, 233-235, 236, and 262-263) (in some cases, the card was removed to determine whether it was warped -- ID at 184, 187 (Findings of Fact 246-247 and 265-266)).

We also find that the overall process of removal and reinsertion of DSS access cards fails to practice the “stopping . . . when” limitation. “[S]topping . . . when” is properly construed as stopping that occurs as a result of a positive test for correct alignment and electrical contact, that is instantaneous or nearly instantaneous such that relative displacing is halted before the corresponding contact surfaces are moved from a position of proper alignment and correct electrical contact to a position out of such alignment and contact. Assuming for purposes of argument that removal and reinsertion practices displacing (which we believe it does not for the reasons given above), such displacing is not stopped when proper electrical contact is established. In removal and reinsertion, stopping occurs in the DSS when the card is fully inserted into the receiver. Thus, in the DSS stopping does not occur in response to a determination of proper contact, nor is the “stopping” instantaneous or near instantaneous such that contacts in a position of correct alignment and electrical contact are prevented from moving out of such alignment and electrical contact. Stopping instead occurs as a result of the card becoming fully inserted. We find, therefore, that removal and reinsertion of the access card therefore does not practice the “stopping . . . when” limitation of claim 8, as it is properly construed.

Moreover, we find that the act of removal and reinsertion cannot practice the “displacing . . . if” and “stopping . . . when” limitations of step (c) of claim 8 because that act constitutes a repetition of the “bringing” of step (a). Claim 8 provides that in the bringing action of step (a), the corresponding contact surfaces of the card and the electric device are brought into a contacting relationship. The testing of step (b) then follows. If the test indicates that the corresponding contact surfaces are not in proper electrical contact, then step (c) of claim 8 indicates that the card is displaced in a direction tangential and that such displacement is stopped when correct electrical contact is determined. Thus, whereas steps (a) and (b) of claim 8 teach that the card is brought into contact with the receiver and then tested, step (c) teaches the distinct act of displacing the card if proper contact does not exist and stopping that displacing when

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proper contact is determined. In the DSS, however, after a failed test in step (b), steps (a) and (b) are simply repeated by removal and reinsertion of the access card. There is no distinct act of displacing and stopping, as required by step (c). To find that removal and reinsertion also practices step (c) is to find that step (c) and its limitations add nothing to the patented method. We therefore conclude that while the removal and reinsertion of the card may practice steps (a) and (b), such removal and reinsertion does not practice step (c).

Innovatron urged in the alternative that the DSS practices the step (c) limitations, not in the entire process of removal and reinserting, but in the initial part of removing the card and the latter part of reinserting it. Specifically, Innovatron contended that there is displacing in a direction tangential during these parts of removal and reinsertion. It argued further that the limitations can be practiced even if unrelated intervening actions occur (such as removal of the card).

As described above, however, we find that the repeated insertion and removal of the card is fully described by steps (a) (bringing) and (b) (testing) of claim 8. It is possible that in some literal sense the initial part of removing and the part of latter reinserting involve some minimal degree of displacing in a direction tangential. However, any such displacing is incidental to removing and bringing, and thus does not practice the displacing taught in step (c). As noted above, step (c) teaches displacing that is distinct from the actions taught in steps (a) and (b). Therefore, any displacing that may occur in performing steps (a) and (b) does not practice displacing in step (c).

Even if the initial part of removing and the latter part of reinserting are considered to be displacing in a direction tangential, such actions do not practice the “stopping . . . when” limitation of the step (c). On removal, the “displacing” proceeds uninterrupted until the card is removed from the DSS receiver. Thus, no stopping of any kind occurs in removal, let alone stopping that is instantaneous or near instantaneous such that the contact surfaces are not moved out of a position of proper alignment and correct electrical contact. On reinsertion, stopping occurs only when the card is fully inserted. As described above, this stopping does not practice “stopping . . . when,” as that limitation is properly construed.

Innovatron argued finally that the step (c) limitations are practiced in the DSS when customers “jiggle” or “flick” the already inserted cards. However, jiggling or flicking involves the very problem that the patented method was intended to eliminate. Two stated purposes of the claim are to facilitate rapid placement in electrical contact and to limit wear of the contact surfaces to that which is absolutely necessary. Innovatron argued nevertheless that jiggling practices the stopping limitation because the specification discloses that stopping can be performed manually. As indicated above in our discussion of claim construction, however, we do not agree that the specification discloses manual stopping.

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We also disagree with Innovatron that the record indicates that a person jiggling the card can practice instantaneous or nearly instantaneous stopping such that the corresponding contact surfaces are halted before moving back out of proper alignment and proper contact. The specification discloses two arrangements to achieve stopping that, based on the record, is more rapid than a human being can perform. In the first, power to the motor that drives displacement is cut off. The specification indicates that after power is cut there is a wait of 50 milliseconds (one-twentieth of a second) before testing is performed, to allow the card to come to rest. In the other arrangement, the card and the connection cross card are immobilized with respect to each other “immediately” upon a test that determines that good contact is achieved. In fact, the specification indicates that this arrangement is particularly useful in the event of manual displacement so that the user need not be concerned with the “instant” that good contact occurs.

Innovatron has argued that the evidence of record indicates that a human being can react within the 50 milliseconds indicated in the specification. We do not agree. Thomson’s expert witness (Dr. Bove) testified that a human being could not perform stopping due to a combination of reaction time and possible failure to pay attention to the proper cues. Innovatron’s expert witness (Dr. Kuc) did not testify as to whether a person can halt a hand motion within 50 milliseconds, although he recalled experiments in the past indicating that a person can speak within about 50 milliseconds after seeing a light. The experiment was not entered into evidence, however, and in any event involved a different human reaction than the reaction at issue in this investigation (speaking in response to a light instead of stopping a hand motion in response to seeing television programming).

Moreover, Innovatron has not established by a preponderance of the evidence that stopping displacing within 50 milliseconds, even if a human being can react that rapidly, is sufficiently rapid to prevent the contact surfaces from moving out of proper contact and alignment in the DSS. Although 50 milliseconds is sufficiently rapid to stop the card in the preferred embodiment described in the patent specification, it is not necessarily sufficiently rapid in the DSS. Differences between the preferred embodiment and the DSS in the speed of displacement and the size or length of the contact surfaces could make the time required in the DSS shorter or longer than that required in the preferred embodiment. Thus, even if the record indicated that a human being can halt a hand motion within 50 milliseconds, the same does not establish that a person can stop jiggling the DSS card rapidly enough to prevent the corresponding contact surfaces from moving out of contact of correct alignment and electrical contact. As the party alleging infringement, Innovatron bore the burden of establishing these facts by a preponderance of the evidence.

Our conclusion is not affected by the possibility that jiggling may ultimately result in the card coming to rest in a position of proper alignment and correct electrical contact, at which time the user would presumably decide to stop jiggling. To practice “stopping . . . when,” as properly construed, the displacement must be halted before the contact surfaces move back out of

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alignment. With jiggling, the contact surfaces may move into and back out of alignment multiple times before the motion by chance causes the card to come to rest in a position of proper alignment. As indicated above, jiggling involves the very problem that the patented method was intended to solve.

#### 4. Conclusion

In sum, end users of the DSS products do not practice the following three limitations of claim 8: (1) the express test limitation, (2) the “displacing . . . in a direction tangential to the corresponding contact surfaces” limitation, and (3) the “stopping . . . when” limitation.<sup>34</sup> Accordingly, we find that use of the DSS in the United States does not directly infringe claim 8 of the ‘464 patent. In the absence of direct infringement, Thomson cannot be found to have induced infringement of, or contributorily infringed, claim 8. As indicated above, we also find that the domestic industry requirement is not met in this investigation. Having determined that Thomson has not violated section 337, there is no need for us to address the issues of remedy, the public interest, and bonding during the Presidential review period.

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<sup>34</sup> Our analysis pertains to literal infringement. Innovatron, which as the party alleging infringement bears the burden of proof, did not argue that the DSS infringes under the doctrine of equivalents.



PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

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In the Matter of )  
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CERTAIN REMOVABLE ELECTRONIC CARDS )  
AND ELECTRONIC CARD READER DEVICES ) Investigation No. 337-TA-396  
AND PRODUCTS CONTAINING THE SAME )  
\_\_\_\_\_ )

INITIAL DETERMINATION

Administrative Law Judge Sidney Harris

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PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

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In the Matter of	)	
	)	
CERTAIN REMOVABLE ELECTRONIC CARDS	)	
AND ELECTRONIC CARD READER DEVICES	)	Investigation No. 337-TA-396
AND PRODUCTS CONTAINING THE SAME	)	
_____	)	

INITIAL DETERMINATION

Administrative Law Judge Sidney Harris

Pursuant to the Notice of Investigation, 62 Fed. Reg. 15728 (1997), this is the administrative law judge's Initial Determination in the Matter of Certain Removable Electronic Cards and Electronic Card Reader Devices and Products Containing Same, United States International Trade Commission Investigation No. 337-TA-396. 19 C.F.R. § 210.42(a).

The administrative law judge hereby determines that a violation of section 337 of the Tariff Act of 1930, as amended, has been found in the importation and the sale within the United States after importation of certain removable electronic cards and electronic card reader devices and products containing same by reason of infringement of claim 8 of United States Letters Patent 4,404,464.



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## I. BACKGROUND

### A. Procedural History

By publication in the Federal Register on April 2, 1997, this investigation was instituted pursuant to an Order of the United States International Trade Commission which issued on March 27, 1997, after consideration of a complaint filed on February 11, 1997, on behalf of Innovatron S.A. ("Innovatron" or "complainant"), 1 rue Danton, Paris, France 75006. See 62 Fed. Reg. 15728 (1997); 19 C.F.R. § 210.10(b).

The Commission's Order required that pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, an investigation be instituted to determine whether there is a violation of 19 U.S.C. § 1337(a)(1)(B) in the importation into the United States, the sale for importation, or sale within the United States after importation of certain removable electronic cards or electronic card reader devices or products containing same by reason of infringement of claim 8 of U.S. Letter Patent 4,404,464 ("464 patent"), and whether there exists an industry in the United States as required by subsection (a)(2) of section 337. 62 Fed. Reg. 15728 (1997).

The Commission named Innovatron as the complainant, and the following companies as respondents:

Thomson Multimedia, S.A.  
9 place des Vosges,  
Paris La Défense Cedex, France

Thomson Consumer Electronics, Inc.  
10330 North Meridian Street  
Indianapolis, IN 46290.

Kent R. Stevens, Esq. of the Office of Unfair Import

Investigations ("OUII") was designated as the Commission Investigative Attorney.<sup>1</sup>

On April 23, 1997, a preliminary conference was held at which Innovatron, Thomson Multimedia, S.A. and Thomson Consumer Electronics, Inc. (collectively, "Thomson" or "respondents"), and OUII were represented.

Innovatron, Thomson and OUII remain the only parties in this investigation.<sup>2</sup>

The hearing in this investigation commenced on September 29, 1997, and concluded on October 7, 1997. All parties were represented at the hearing. Post-hearing briefs, and proposed findings of fact and conclusions of law, as well as replies thereto, were subsequently filed by all parties.

Certain legal issues were raised during the hearing as to which written motions were filed after the hearing. These motions are ruled upon below.

On October 23, 1997, complainant filed a motion to strike and exclude certain evidence and testimony relating to a Texas Instruments ("TI") calculator that respondents assert as prior art against the

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<sup>1</sup> On March 24, 1998, Juan S. Cockburn, Esq. was designated as the Commission Investigative Attorney. See Notice of Change of Commission Investigative Attorney.

<sup>2</sup> No jurisdictional challenge was made in this investigation. The administrative law judge finds that the Commission has personal jurisdiction over the parties and subject matter jurisdiction over this investigation. See FF 1-4, 8-12.

'464 patent. Motion Docket No. 396-58.

On October 29, 1997, respondents filed their opposition to the motion to strike, which included a "motion to substitute pages" (which does not appear to have been filed or docketed as a separate motion).

On November 5, 1997, as provided for during the hearing, complainant filed a reply concerning its motion to strike. The filing also contained an opposition to the aforementioned motion of respondents to substitute pages.

Complainant argues that the TI calculator and manuals relied upon by respondents at the hearing, and the testimony of respondents' expert relating thereto, should be stricken because neither the calculator nor the manuals constitute prior art.

Having considered the arguments of the parties, the administrative law judge has determined not to strike the evidence (including testimony) offered by respondents at the hearing concerning the TI calculator and manuals. However, questions concerning whether or not the TI calculator and manuals offered into evidence by respondents may be considered prior art under applicable law are addressed in this initial determination within the context of the patent validity issues.

Respondents' motion to substitute pages is in essence a request to replace calculator manuals relied upon at the hearing with other documents which were published earlier. Respondents argue that there are no differences between the substitutes and the corresponding pages

already in the record.<sup>3</sup>

However, the new exhibits (RX 68 Substituted and RX 69 Substituted) prepared by respondents are hundreds of pages long. Complainant would be prejudiced by admission of the substitute exhibits without an opportunity to examine them closely, and to have the opportunity at the hearing to conduct cross-examination thereon.

Accordingly, complainant's Motion No. 396-58 is DENIED, and respondents' motion to substitute pages (i.e., for the admission of substitute versions of RX 68 and RX 69) is also denied.

On October 23, 1997, respondents filed a motion to admit certain deposition testimony of Gemplus Corp. Motion Docket No. 396-59.

On October 29, 1997, complainant filed its opposition to respondents' motion.

Respondents request admission of the deposition of two Gemplus employees, Serge Barthélémy and Roman Eude. Gemplus is the domestic licensee under the patent-in-suit upon which complainant relies for satisfaction of the domestic industry requirement of section 337.

Respondents seek to have the depositions admitted as admissions under the rationale of Federal Rule of Evidence 801(d)(2)(D). Respondents argue that in order for the Gemplus depositions to be admitted: "Gemplus must be found to be the agent of Innovatron, its

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<sup>3</sup> During the hearing, respondents' expert testified that one of the 1979 manuals relied upon (RX 69) was "substantially identical" to a 1977 version that he possessed but which was not brought to the hearing. Bove Tr. 1171-1172.

statements must concern the subject matter of the agency, and the statements must have been made during the existence of the agency." Respondents' Mot. at 3. In the alternative, it is argued under the rationale of Rule 801(d)(2)(C) that Gemplus was authorized to speak on behalf of complainant Innovatron. Id. at 6.

The administrative law judge does not find that it has been demonstrated that a principal/agent relationship exists between Innovatron and Gemplus. However, the administrative law judge does find at least an implied authorization on Innovatron's part for Gemplus to speak on behalf of Innovatron with respect the domestic industry issue.

Innovatron relied upon a declaration of Gemplus' Mr. Barthélémy in order to have this investigation instituted. In effect, Gemplus was speaking to the Commission on Innovatron's behalf. That act alone virtually insured that Gemplus, through Mr. Barthélémy or another witness, would be deposed in this investigation, and that the deposition would be treated like that of a party.

Furthermore, during the investigation Innovatron relied upon Gemplus witnesses to prove a material element of their case, i.e., domestic industry.<sup>4</sup>

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<sup>4</sup> Innovatron brought Gemplus to this investigation for a particular purpose; and the two companies acted in concert. Thus, the circumstances involving the Gemplus fact witnesses, including the filing of the Gemplus affidavit in support of the complaint, is similar to the use of an expert witness who is expected to provide

(continued...)

Complainant Innovatron argues that respondents could have called Messrs. Barthélémy and Eude as witnesses at the hearing, and need not rely upon their depositions. Yet, given Innovatron's reliance on testimony provided by Gemplus to fulfill Innovatron's statutory and evidentiary requirements, including Innovatron's adoption of Gemplus' affidavit and testimonial evidence, it would be unfair to prevent respondents from taking advantage of evidentiary vehicles afforded to one taking discovery of a party-opponent.<sup>5</sup>

Consequently, under 19 C.F.R. § 210.28(h)(2),<sup>6</sup> or alternatively § 210.28(h)(3)(v),<sup>7</sup> the Barthélémy and Eude depositions are admitted into evidence.

Accordingly, Motion No. 396-59 is GRANTED.

Any motions not previously ruled upon are hereby denied.

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<sup>4</sup> (...continued)

evidence in his affidavit or during the trial, and whose deposition may therefore be taken and admitted into evidence. See Collins v. Wayne Corp., 621 F.2d 777, 782 (5th Cir. 1980); Dean v. Watson, No. 93 C 1846 (N.D. Ill. Nov. 16, 1995) (1995 WL 692020).

<sup>5</sup> In addition, there is no specific indication of the unreliability of the deposition testimony of either witness. There is no indication that Innovatron disavows any of the testimony given by Gemplus in connection with this investigation.

<sup>6</sup> Commission Rule 210.28(h)(2) provides that "[t]he deposition of a party may be used by an adverse party for any purpose."

<sup>7</sup> Commission Rule 210.28(h)(3)(v) provides for a situation in which it is found "[u]pon application and notice, that such exceptional circumstances exist as to make it desirable in the interest of justice and with due regard to the importance of presenting oral testimony of witnesses at a hearing, to allow the deposition to be used."

This Initial Determination is based on the entire record of this proceeding. Proposed findings not herein adopted, either in form or in substance, are rejected as not being supported by the evidence or as involving immaterial matters.

The findings of fact include references to supporting evidentiary items in the record. Such references are intended to serve as guides to the depositions, exhibits, and hearing testimony supporting the findings of fact; they do not necessarily represent complete summaries of the evidence supporting each finding. Some findings of fact are contained only in the opinion.

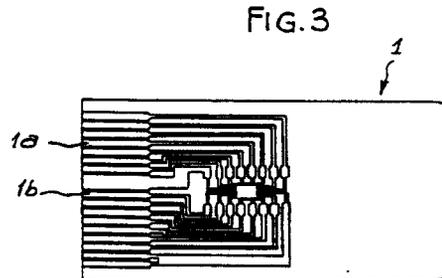
The following abbreviations may be used in this Initial Determination:

CX	-	Complainant's Exhibit
CSX	-	Complainant's Supplemental Exhibit
CPX	-	Complainant's Physical Exhibit
RX	-	Respondents' Exhibit
RPX	-	Respondents' Physical Exhibit
SX	-	Commission Investigative Staff ("OUII") Exhibit
FF	-	Finding of Fact
PFF	-	Proposed FF (CPFF, RPF, or SPFF)
PRFF	-	Proposed Reply FF
Dep.	-	Deposition
Tr.	-	Transcript.

## B. Technological Background

The smart card is a plastic card that is often roughly the size of a credit card which contains an integrated circuit. The integrated circuit is connected to contact pads on the surface of the card, and when the card is inserted into a reader, these surfaces make contact with a connector. The pins in the card reader are often elongated wires that have a little dip in them to allow a particular contacting surface to exist when the pins are in contact with the card. FF 5-6.

Reproduced below is an example of a smart card from the '464 patent (CX 1), showing the pads which are designed for contact with the pins of the reader:



The pads and pins need not make contact on the edge of the smart card as illustrated in the above Figure from the '464 patent. Indeed, the pads on the smart card may be placed in a pattern of rows on the bottom surface of the card, as for example, in accordance with

international standards which state where pads are to be located. See Kuc Tr. 196-197; CPX 10.

When inventor Roland Moreno filed the application for the '464 patent, smart cards did not exist in their present form. Consequently, there were no international standards concerning features such as the size of the smart card, the location of the contacts on the card, or the function of the contacts. Moreno Tr. 23-25. However today, international standards are set by a committee, and are referred to by their ISO specification number. The ISO standards assist in the task of making sure that smart cards can operate in equipment produced by different manufacturers. Naujokas Tr. 772-777. For example, ISO 7816-2 covers some of the physical parameters necessary for card alignment, such as the location, minimum size, and also the assignment of contacts or pads for specific uses. See RX 56; Kuc Tr. 193, 197; Bove Tr. 946; LeDuc Tr. 73. ISO 7816-3 includes operating procedures for the smart cards such as communications protocols, including the answer-to-reset sequence which includes the TS character, which in modern-day cards plays an important role in the patented process. See RX 58; Kuc Tr. 162.

Smart cards are often used in connection with encrypted information. For example, in a system such as the accused DSS system, encrypted television programming is received from satellite transmissions, and the bits of programming information are still encrypted as they exit the DSS tuner. In order to be decrypted the

bits have to be run through a mathematical process which turns them into bits which can then be viewed as video or listened to as audio. Due to the integrated circuit embedded in the smart card, the card can act as a key to unlock the encrypted information. However, the smart card will only provide that key for programs that have previously been authorized. FF 7.

## II. IMPORTATION AND SALE

It is not disputed that importations and sales of accused cards and readers have occurred.

Respondents manufacture accused DSS receivers in Mexico and import the receivers into the United States for sale and use by U.S. consumers. These receivers are imported as part of a package that also includes the accused smart card. Although respondents do not manufacture the smart cards, they procure smart cards from other sources, and package them with the receivers. See FF 8-12.

Respondents have sold approximately {                    } DSS units in the United States. FF 10.

## III. CLAIM CONSTRUCTION

### A. General Law of Claim Construction

Complainant charges that respondents are responsible for infringement of claim 8 of the '464 patent. In order to perform a patent infringement analysis, any claim must first be construed to determine its proper scope and meaning. Palumbo v. Don-Joy Co., 762 F.2d 969, 974 (Fed. Cir. 1985); Lemelson v. General Mills, Inc., 968

F.2d 1202, 1206 (Fed. Cir. 1992), cert. denied, 506 U.S. 1053, 113 S.Ct. 976 (1993). Consequently, claim 8 must be properly construed before proceeding to the infringement analysis. Furthermore, as is often the case in patent-based investigations, proper construction of the asserted patent claim or claims is important to deciding other issues such as respondents' patent validity defenses and the question of whether complainant's activities and investments satisfy the domestic industry requirement of section 337.

The construction of patent claims is a matter of law. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff'd, 116 S.Ct. 1384 (1996); Tandon Corp. v. Int'l Trade Comm'n, 831 F.2d 1017, 1021 (Fed. Cir. 1987).

All elements of a patent claim are material, with no single part of a claim being more important or "essential" than another. Markman, 52 F.3d at 988.

"Claims must be read in view of the specification, of which they are a part." Markman, 52 F.3d at 979 (quoting Autogiro Co. v. United States, 384 F.2d 391, 197 (Ct. Cl. 1967)). The specification may serve as a sort of dictionary which explains the invention and may define terms used in the claims. 52 F.3d at 979. In fact, it has often been said that "a patentee is free to be his own lexicographer." Id. at 980 (quoting Autogiro, 384 F.2d at 397). However, "any special definition given to a word must be clearly defined in the specification." 52 F.3d at 980 (citing Intellicall, Inc. v.

Phonometrics, Inc., 952 F.2d 1384, 1388 (Fed. Cir. 1992)).

In considering the claims in view of the specification, it must be remembered that "[t]he written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of the claims." Markman, 52 F.3d at 980.

To construe claim language, one "should also consider the patent's prosecution history, if it is in evidence." Id. Indeed, the prosecution history (or "file wrapper") "is of primary importance in understanding the claims." Id. Although the prosecution history should be used to understand the language of the claims, like the specification, it cannot enlarge, diminish or vary the claims.

Markman, 52 F.3d at 980 (quoting Goodyear Dental Vulcanite, 102 U.S. 222, 227 (1880)). The prosecution history "limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution." Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed. Cir. 1995).

Extrinsic evidence may also be used to construe patent claims. Such evidence "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." Markman, 52 F.3d at 980. Extrinsic evidence may, for example, help to explain scientific principles, technical terms, or the state of the art at the time of the invention. Id. Furthermore, "[e]xpert testimony, including evidence of how those skilled in the art would interpret the claims,

may also be used." Markman, 52 F.2d at 979 (quoting Fonar Corp. v. Johnson & Johnson, 821 F.2d 627, 631 (Fed. Cir. 1987)). See also SmithKline Diagnostics, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 882 (Fed. Cir. 1988) ("Moreover, claims should be construed as one of ordinary skill in the art would construe them.").

A "court may, in its discretion, receive extrinsic evidence in order 'to aid the court in coming to a correct conclusion' as to the 'true meaning of the language employed' in the patent." Markman, 52 F.3d at 979 (quoting Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 546 (1871)). A trial judge has sole discretion to decide whether or not he needs, or desires, an expert's assistance to understand a patent. Markman, 52 F.3d at 981 (quoting Seattle Box Co. v. Industrial Crating & Packing, Inc., 731 F.2d 818, 826 (Fed. Cir. 1984)). Extrinsic evidence is to be used to understand the patent, not to vary or contradict the terms of the claims. 52 F.3d at 981. Extrinsic evidence "may be necessary to inform the court about the language in which the patent is written. But this evidence is not for the purpose of clarifying ambiguity in claim terminology." Id. at 986.

#### **B. Claims 1 and 8 of the '464 Patent**

Claim 8 of the '464 patent is the only claim asserted in this investigation, and depends from claim 1. Claim 1 and claim 8 are as follows:

1. Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric device, which cooperates

with said removable article, said removable article having electrically conductive terminals and said electric device having conductor elements, both said electrically conductive terminals and said conductor elements having corresponding contact surfaces, the method comprising the steps of:

(a) bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into contacting relationship with said corresponding contact surfaces of said conductor elements;

(b) testing said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces; and

(c) displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

8. Method as defined by claim 1 wherein said step of testing said corresponding contact surfaces for said existence of correct electrical contact comprises: performing predetermined operations which provide a predetermined expected response from the removable article upon the existence of correct alignment and electrical contact; and comparing the actual response of said removable article with the predetermined expected response.

CX 1 ('464 Patent) at col. 9, line 54 through col. 10, line 10; col. 10, lines 51-59.

As a dependent claim, claim 8 includes all of the limitations of

claim 1. Furthermore, claim 8 adds limitations to step (b), or the "testing" step, of claim 1. Thus, in their briefing, the parties combined their arguments concerning claim 1 and claim 8. A similar format is used in the following claim construction analysis.

**1. The Preamble of Claim 1.**

Claim preambles are construed in a manner that is consistent with the principles of claim construction applied to all other claim language, which are (1) that the language of the claim defines the scope of the protected inventions; and (2) that claims are to be construed in light of the specification. Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 619-20 (Fed. Cir. 1995).

A question often arises as to whether or not language contained in a claim preamble should be deemed to be among the limitations of the claim. The Court of Appeals for the Federal Circuit has held that "a claim preamble has the import that the claim as a whole suggests for it." Id. at 620. The Federal Circuit, quoting Kropa v. Robie, 187 F.2d 150, 152 (C.C.P.A. 1951), has stated as follows:

[T]he preamble has been denied the effect of a limitation where ... the claim or [interference] count apart from the introductory clause completely defined the subject matter [of the invention], and the preamble merely stated a purpose or intended use of that subject matter. On the other hand, in those ... cases where the preamble to the claim or count was expressly or by necessary implication given the effect of a limitation, the introductory phrase was deemed essential to point out the invention defined by the claim or count. In the

latter class of cases, the preamble was considered necessary to give life, meaning and vitality to the claims or counts.

Bell Communications, 55 F.3d at 620-21 (footnote omitted).

In its main brief, complainant cites Gerber Garment Tech. Inc. v. Lectra Sys., Inc., 916 F.2d 683, 688-89 (Fed. Cir. 1990), to argue without qualification that "[s]tatements in a preamble give meaning to the claim and define the invention." Complainant's Post-Hearing Br. at 7. In its reply, complainant, again citing Gerber Garment, criticizes respondents for arguing that the preamble of claim 1 (from which claim 8 depends) "merely explains 'the purpose of subsequent steps' and 'is not a separate limitation.'" Complainant's Reply Br. at 1 ("[R]espondents' argument 'ignores the preamble's legal significance of giving meaning to and defining an invention.>").

Complainant proposes, based on Gerber Garment, that a preamble must be read to define the claimed invention. It also appears that complainant argues that a preamble cannot be read merely to contain a statement of the claim's purpose. If that position were correct, then the Federal Circuit's opinion in Gerber Garment would stand in contradiction to the opinion of the Federal Circuit's predecessor court in Kropa as well as in contradiction to the Federal Circuit's own opinion in Bell Communications, both of which are quoted above. However, a reading of the Gerber Garment opinion shows that it is in accordance with the opinions in Kropa and Bell Communications.

In Gerber Garment, it was found that a cutting blade, recited in

the claim preamble and "referenced repeatedly in the body of the claim," constituted a claim limitation. 916 F.2d at 689. Yet, the cutting blade was not construed as a claim limitation merely because of its appearance in the claim preamble. The Federal Circuit explained its standards for evaluating the claim preamble, as follows:

That "a tool in the form of a cutting blade" appears in the preamble of claim 15 is not determinative of whether it is a claim limitation. See *Corning Glass Works v. Suitomo, Inc.* 868 F.2d 1251, 1257 9 USPQ2d 1962, 1966 (Fed.Cir.1989). Where words in the preamble "are necessary to give meaning to the claim and properly define the invention," they are deemed limitations of the claim. *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 896, 221 USPQ 669, 675 (Fed.Cir.), cert. denied, 469 U.S. 857, 105 S.Ct. 187, 83 L.Ed.2d 120 (1984); see *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 866, 226 USPQ 90, 92 (Fed.Cir.1985).

The cutting blade is "necessary to give meaning" to claims 15 and 16 and "properly define the invention." *Perkin-Elmer*, 732 F.2d at 896, 221 USPQ at 675.

Id. at 688-89.

Thus, each claim preamble must be analyzed individually to determine whether or not it adds any claim limitations.

In this case, each of the parties argues that the preamble of independent claim 1 should be construed to define or narrow the application of the claim to some extent. However, there is a dispute as to which portions of the preamble are to be construed as claim limitations, and as to the meaning to be ascribed to the disputed claim language contained in the preamble.

The preamble of claim 1 is lengthy and detailed, relative to the body of the claim. For the reasons which follow, the administrative law judge finds that the preamble of claim 1 states a general purpose for the claim, and also sets forth certain prerequisites or limitations upon the claimed method. In particular, the preamble specifies the type of removable article and electric device which must be used in the claimed method. The administrative law judge does not find, however, that the preamble includes all of the limitations proposed by the parties in the post-hearing briefing.

The meaning of several portions of the preamble of claim 1 are in dispute. Each disputed portion is discussed below in the order in which it appears in the text.

**"Method for electrically connecting a removable article...."**

Complainant argues that this phrase signifies that a removable article is connected to an electric device so that the card and the device function as intended, and that the steps of claim 8 (depending from claim 1) are performed as part of the process of electrically connecting the article and device. It is argued that claim 8 is not performed after the article and device have already been connected or during the normal operation of the device (once the article has been properly installed). Complainant's Post-Hearing Br. at 7.

Respondents argue that the phrase "method for electrically connecting" explains the purpose of the steps to follow, which is to

bring about an electrical connection between two elements, and that although not all the steps of claim 8 (depending from claim 1) are performed after alignment and electrical contact is achieved, the claim language does not prohibit some of the steps from occurring at other points in time during normal operation. Respondents' Comments on Complainant's Findings at 15.

The administrative law judge reads this introductory phrase of the preamble as a general statement about one purpose of the claim, which is to make an electrical connection between a removable article (having at least one electric circuit) and an electric device.

Obviously, a purpose of deliberately making an electrical connection between the removable article and the electric device is to enable the removable article and the electric device to function together. Otherwise no electrical connection would need to be established. In that sense, complainant is correct in stating that a "method of electrically connecting" is the process of making the connection so the devices can function as intended. See, e.g., CPFF 180.

In the expert testimony relied upon by complainant, Dr. Kuc testified that "method for electrically connecting" means that there are two things that are to be connected, and "[y]ou want to end up in a condition where they operate, so 'electrically connecting' means that you are going to bring one device in electrically operating -- in a condition such that they operate. This is the process of making the

connection so that it can then do the things it's intended to do."

Kuc Tr. 164-165.

Dr. Kuc's testimony may be in accordance with the proper construction of the preamble. Yet the administrative law judge is aware that phrases such as "intended functions" or devices "functioning as intended" are given particular meaning in the parties' briefs having to do with the functions performed by the electrical device during normal operation. However, the phrase "method for electrically connecting" does not address questions as to which functions of the electrical device must be enabled by electrical connection of the device with the removable article. Nor does the specification, in its general discussion or in its discussion of the preferred embodiment, contain any language which causes this portion of the claim to limit the functions the electrical device might be capable of performing without electrical connection to the removable article.

In its discussion of the preferred embodiment, the specification contains a lengthy discussion of dangers posed by the counterfeiting or simulated operation of certain types of credit cards, as well as ways in which the claimed invention might be applied to detect and thwart counterfeiting or simulated operation. See CX 1 ('464 Patent) at col. 8, line 38 through col. 9, line 46. That discussion shows that steps may be taken to ensure that the electrical device performs the functions of accessing financial accounts and making payments only

when a genuine credit card is used.

The aforementioned discussion might appear to support complainant's argument that the electrical device must not perform its so-called "intended function" except in conjunction with the removable article, which is in this case a genuine credit card. However, there are at least two reasons why this part of the specification fails to give the preamble of independent claim 1 the meaning that complainant would ascribe to it.

First, this portion of the specification, while strongly emphasizing the requirement that a genuine credit card be used, does not restrict the electrical device with respect to operations that are independent of the credit card. The emphasis is only on making sure that when a card or other article is inserted that the electrical device verifies that the card is not counterfeit. Other operations which might be performed by the electrical device are irrelevant to the problem of making sure that the electrical device does not exchange data with a counterfeit credit card or in response to the simulated operation of a genuine credit card.

Second, neither claim 1 nor its dependent claim 8 covers the method or apparatus described in this portion of the specification. The specification at this point describes electrical devices whose physical construction minimizes the risk of counterfeit or simulated operations, as well as means for testing the electric power consumption of cards which are inserted into the electrical devices

and for testing the response time of the cards. There are no corresponding means or other elements contained in claims 1 and 8. It is not permissible to read such elements or claim limitations into the phrase "method of electrically connecting" in the preamble and thus into either claim 1 or claim 8. See Markman, 52 F.3d at 980.

A similar issue raised by complainant of the limiting effect that the claim preamble may have on the relationship between the removable article and the electrical device is the matter of timing. Specifically, the question is raised as to whether claim 8 (depending from claim 1) is restricted so that the claimed steps cannot be performed after the article and device have been connected or during the normal operation of the device.

Such a limitation is not expressly stated in the claim preamble.

Of course, electrical connection between the removable article and the electric device must be established in advance of any function that relies upon electrical connection with the removable article. For example, in the preferred embodiment drawn to the use of a particular kind of credit card and the temporary exchange of information between the credit card and a transfer device, it is clear that electric connection must be established between the credit card and the transfer device before the exchange of information will take place. See CX 1 ('464 Patent) at col. 3, lines 29-48. This is a matter of simple logic. However, the administrative law judge does not see in the claim preamble any limitation restricting the

application of the claimed method to electrical devices and cards that carry out all the claimed elements before operation of the device.

On this topic, Dr. Kuc testified as follows:

Q Is it your understanding that prior to the intended operation of an electric device, one has to successfully complete each of the steps in claim 8?

A Yes. The steps have to be completed. Then we can say that the device is properly connected.

Kuc Tr. 165.

Dr. Kuc is correct that in order to make a proper electrical connection under the claimed invention, each of the claimed steps must be completed. However, the question that was posed to Dr. Kuc suggests that under the claimed invention, the so-called "intended operation" of the electrical device cannot take place until each of the claimed steps is first performed. As stated above, the claim addresses only those functions that the removable article and electrical device are to perform once an electrical connection is established between them.

For example, with respect to the preferred embodiment, an electrical connection must be made between the credit card and the transfer device before the intended exchange of information can take place. However, there is no suggestion that if the transfer device is capable of performing other functions that do not depend on the credit card, that the transfer device is then incapable of practicing the

claimed invention on the occasions when it does in fact carry out the claimed steps in order to assure electrical connection with the credit card. The specification and the claims are simply silent as to what, if anything, the transfer device might be used for when it does not use the claimed method to connect to a credit card. Consequently, it cannot be found that such a limitation exists.

**"[C]ooperates with said removable article...."**

Complainant argues that this phrase "means that both the removable article and electric device are necessary in that they must be present and appropriately connected for the electric device to perform its intended function." Complainant's Post-Hearing Br. at 8. It is argued that "cooperate" as defined in a dictionary means to "work together toward the accomplishment of a common task." CPFF 188 (citing Kuc Tr. 285).

Complainant proposes that:

A person of ordinary skill in the art understands the term "cooperates" to mean that both the electric device and the removable article have to be present for the system to operate as intended. The electric device will not work without the removable article, and the removable article needs the electric device, in order to perform the functions that are intended. In other words, both the electric device and the removable article are necessary.

CPFF 187 (citing Kuc Tr. 165-166).<sup>8</sup>

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<sup>8</sup> Dr. Kuc testified on direct examination, as follows:

(continued...)

Respondents argue that "cooperate" must be accorded its plain meaning, and that in the preamble it means that the electric device and removable article work together in a common operation involving both. Respondents dispute complainant's argument that the electric

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<sup>8</sup> (...continued)

Q The next term that we see is highlighted is the term "cooperates"; is that correct?

A Yes.

Q What does that mean to a person of ordinary skill in the art?

A It means that both devices have to be present for the system to operate as intended.

Q Excuse me. When you say "both devices," what devices are you referring to?

A We're talking about an electric device and a removable article. And so the electric device will not work without the removable article and the removable article needs the electric device in order to perform the functions that are intended.

Q You say that the word "cooperate" implies that without the cooperation of the electric device will not work; is that your view?

A Yes, it is.

Q How do you come to that conclusion using the word "cooperate"?

A Well, if you -- the previous phrase talks about connecting things and so if you connect something with another thing, it works. So we have this additional phrase, which cooperates, so it must mean that it has this additional feature that both are necessary.

Kuc Tr. 165-166.

device and the removable article will not work without each other, and are thus mutually and inseparably interdependent. Respondents' Post-Hearing Br. at 7-8.

OUII adopts that view that "cooperates" means to act or work together with one another for a common purpose, but rejects the argument that the word implies that the electric device will not work at all without the removable article. OUII Post-Hearing Br. at 9-10.

The parties are in agreement that the term "cooperates" as found in the claim preamble should be accorded its ordinary meaning. Indeed, the term must be accorded its ordinary meaning because the specification provides no clear definition of any special meaning.<sup>9</sup> See Markman, 52 F.3d at 980.

Complainant relies on both the dictionary definition of the term as well as its expert's understanding of what the term would mean to one of ordinary skill in the art. Neither complainant nor any other party perceives any discrepancies between the meaning of the term

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<sup>9</sup> In referring to the relationship between the removable article and the electric device, the specification of the '464 patent uses the term "cooperates" in its ordinary sense without any special definition. For example, the specification refers to card reader devices as "devices adapted to cooperate with the cards." See CX 1 ('464 Patent) at col. 8, line 66; col. 9, line 21. The specification also refers to the readers as "cooperating devices." See Id. at col. 9, line 32. In a more general sense, without specific reference to the relationship between the removable card and the electric device, the specification uses the word "cooperate" in an ordinary manner. See Id. at col. 9, line 32; col. 3, line 62 through col. 4, line 23 (with reference to the mechanical components of the "transfer device" in the preferred embodiment which uses a credit card).

based on its dictionary definition (i.e., how the term is commonly used in a variety of non-technical and technical situations) and the way in which the term would be understood by one working in the relevant technical field. Furthermore, the administrative law judge finds that there is no evidence of record showing that the meaning ascribed to the term "cooperate" by one of ordinary skill in the art would differ from the term's common meaning.<sup>10</sup>

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<sup>10</sup> Although much of the testimony at the hearing was presented in terms of the understanding of one of ordinary skill in the art, and much of the briefing addresses that point as well, it appears that no party has provided a succinct and explicit explanation of, or finding on, what the relevant art is and what knowledge one of ordinary skill would have possessed in the relevant time frame. However, certain facts are clear from the record.

Complainant offered Dr. Kuc as an expert in smart cards, interfacing, digital circuitry, and generally the electronics and contact problems dealing with smart cards. Kuc Tr. 153-155. Respondents offered Dr. Bove as an expert in the general fields of digital electronics and data communications, including electronic interfaces. Bove Tr. 889.

Furthermore, when testifying about one of ordinary skill in the art, Dr. Kuc referred to one designing a circuit. Kuc Tr. 171-172. Similarly, Dr. Bove, testified with respect to an electrical engineer who was trying to find a solution to a problem, and would examine a fairly broad range of disciplines in order to do so. Bove Tr. 1007.

Based on these facts, as well as additional testimony and evidence received at the hearing, the administrative law judge concludes that the '464 patent is directed toward one designing a circuit, likely an electrical engineer, who is knowledgeable about digital electronics and electronic interfaces.

The record does not appear to contain an estimate of the educational background of one of ordinary skill in the art. However, it appears that at least in the late 1970's (in which the '464 priority occurred), one might gain at least the level of ordinary skill in the aforementioned art through experience with electrical engineering and particularly experience with digital circuitry as it existed at the time. There is no evidence that an advanced degree in electronics or engineering was required. In fact the inventor, Mr.

(continued...)

"Cooperate" is defined as follows:

1: to act or work with another or others to a common end : operate jointly (marines and navy men *cooperated* in the attack) (the police force always ~s with the fire department) 2: to act together : produce an effect jointly (heavy rains and rapid thaws *cooperated* to bring disastrous floods) 3: to associate with another or others for mutual often economic benefit (many nations *cooperated* in the trade agreement) **syn** see UNITE

Webster's Third New World International Dictionary 501

(1976) ("Webster's").

Based on the ordinary meaning of the word "cooperate," it is found that the claimed method must be carried out with a removable article and an electrical device that act together to a common end. They may also be said to "operate jointly" or to "unite" to a common end. For example, in the preferred embodiment, the access card and the transfer device act together to accomplish the temporary exchange of information needed for financial transactions.

However, there is nothing in the ordinary usage of the word "cooperate," or in its dictionary definition, to suggest that those persons or things that cooperate with one other are prohibited from acting independently or acting to any end that is not common. For example, to expand upon the illustration provided in the dictionary,

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<sup>10</sup> (...continued)

Moreno, had no formal educational background in the art when he filed his patent application. Furthermore, Dr. Bove, who has personal knowledge of the level of ordinary skill at that time, had yet to pursue his own formal higher education. See Moreno Tr. 14; Bove Tr. 888-889; CX 1 ('464 Patent) (1978 priority date).

the marines and the navy act together in certain attacks, yet they are thereby in no way restricted from acting independently in other attacks or in other activities.<sup>11</sup>

Similarly with respect to the claim language at issue, there is no doubt that the claim preamble describes a method in which the removable article and the electric device cooperate for a common end or purpose. However, there is nothing in the claim language that limits the removable article or the electrical device to only that end. There is nothing that limits the operation of the electrical device in situations when no electrical connection is sought between the removable article and the electric device.

**"[C]orresponding contact surfaces...."**

Respondents argue that this portion of the claim preamble requires that each contact surface on the removable article must be connected with each corresponding contact surface of the electric device.<sup>12</sup> Respondents' Post-Hearing Br. at 4; Respondents' Reply Br. at 8-9.

Complainant argues that the claim, and particularly the preamble, does not place an "all contacts" limitation on the claim. Complainant

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<sup>11</sup> Respondents propose another illustration that is scientific or technical in nature, which is that a modem and a computer may be said to "cooperate" with each other, although a computer can be used without a modem. See Respondents' Post-Hearing Br. at 8 n.1.

<sup>12</sup> It appears OUII agrees with respondents that connection with all contacts is required although not necessarily based on the claim preamble.

does, however, argue that more than one contact surface is required by the claim, including the claim preamble. Complainant's Post-Hearing Br. at 8; Complainant's Reply Br. at 1-2.

The claim preamble requires that the removable article have electrically conductive terminals and that the electric device have conductor elements. The claim preamble also requires that both the electrically conductive terminals and the conductor elements have corresponding contact surfaces. The plain language therefore requires that contact be possible between all terminals and all conductor elements. That fact does not appear to be in dispute. The question is whether an electrical connection must exist between each terminal and contact surface.

The administrative law judge finds nothing in the plain text of the claim preamble to require that electrical connection occur between each terminal and its corresponding contact surface in order to carry out the claimed method. Respondents argue that it is only logical that "corresponding contact surfaces" means that each contact surface on the removable article must be connected with each corresponding contact surface on the electrical device. See Respondents' Reply Br. at 8. However, the plain language of the preamble itself does not clearly require electrical contact between the card and the devices at each contact surface. It contains no limitation about how the circuitry on the card must function, and whether all contacts must always be used. The administrative law judge does not find it

appropriate to read a claim limitation into the preamble where none is stated.

Respondents' arguments concerning this portion of the preamble are not limited to the plain language of the text. Respondents argue that the prosecution history of the preamble confirms the importance of connecting each contact surface. In particular, respondents rely on the fact that the terms "electrically conductive terminals" (in the plural) and "conductor elements" (in the plural) were substituted for the language "at least one terminal" and "at least one conductor element." Thus, it is argued that, at first claim 8 would have required testing of something less than all contacts, yet once the claim language was amended to require "terminals" and "elements," with no other numerically limiting language, the "all contacts" requirement was created. See Respondents' Post Hearing Br. at 8-9; RPF 197-199.

Complainant argues that the change to the initial claim language, which was not in response to any objection by the Examiner at the Patent and Trademark Office ("PTO"), was made to correct a grammatical error, and that it did not add a claim limitation. See Complainant's Reply at 2.

As set forth in a May 4, 1981 Office Action response, application claim 19, which matured and issued as claim 1, stated in part, as follows:

Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric apparatus, which

cooperates with said removable article, said removable article having at least one terminal and said electric apparatus having at least one conductor element, both said at least one terminal and said at least one conductor elements having corresponding contact surfaces ....

CSX 25 at II00124.

That language allowed a situation in which there was only one terminal and one conductor element yet there were also "corresponding contact surfaces." Obviously, if there was only one terminal and one conductor, there could not be contact surfaces (plural). Therefore, a change in the claim language had to be made for grammatical reasons.

What is relevant in deciding the issue presented is that rather than changing the claim language to replace the phrase "corresponding contact surfaces" with a phrase that would allow only one surface, the applicant chose instead to remove the language that allowed there to be only one terminal and one conductor element. The applicant substituted language indicating that there are to be more than one terminal and more than one corresponding conductor element. So, clearly the invention is properly understood to require the use of a removable article with more than one terminal and an electrical device with more than one conductor element. However, this amendment to the claim language, while informative about the structure of the requisite removable article and device, says nothing about whether the claimed invention requires and/or tests for electrical connection at all contact surfaces. If that limitation is contained in the claims it is

not found in the preamble of independent claim 1.

Indeed, questions concerning whether electrical connection must exist at all contact surfaces is also relevant to steps contained within the body of the claim, and will therefore be addressed in the discussion of those steps.

**2. Step (a): "Bringing ...."**

Step (a) in the body of independent claim 1 of the '464 patent is concerned with the use of the contact surfaces required by the preamble, and provides as follows:

(a) bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into contacting relationship with said corresponding contact surfaces of said conductor elements....

There is no limitation in the claim language as to how the "bringing ... into contacting relationship" is to be accomplished. This aspect of the claim should be read broadly, especially given the fact that the specification teaches that the contacting relationship may be brought about by a system that relies on an electric motor, on a non-electric mechanism, or manually by a person inserting a card. See, e.g., CX 1 ('464 Patent) at col. 8, lines 12-25.

There are, however, two areas of dispute among the parties with respect to this first, so-called "bringing" step. One dispute is similar to an issue raised by respondents in connection with the preamble; it concerns the question of whether all contact surfaces must be brought into a contacting relationship. The other dispute

concerns when the bringing step ends. Each of these disputes is addressed separately below.

Respondents argue that step (a) of claim 1 requires that each contact surface on each side must be brought together so that all corresponding contact surfaces on the removable article are touching the corresponding surfaces of the device. Respondents base their argument on the claim language, specification and prosecution history. See Respondents' Post-Hearing Br. at 9; Respondents' Reply Br. at 4.

Complainant argues that this step should not be construed to mean all corresponding contact surfaces. Complainant argues that "said corresponding contact surfaces" simply refers back to the initial occurrence of the term in the preamble. Complainant's Post-Hearing Br. at 9.

As discussed above in connection with the preamble, it is known from the plain language of the claim and from the prosecution history that there must be more than one contact between a terminal and a conductor. However, the fact that there must be more than one contact, according to step (a), does not mean that all the contacting surfaces must be brought into a contacting relationship.

The plain language of step (a), the "bringing" step, indicates that all of the surfaces required by the preamble must be brought into a contacting relationship. The term "said" is used in an unqualified manner to refer to the contact surfaces required by the claim preamble.

In their main brief, respondents rely on the specification, and one portion in particular, on the issue of whether all contact surfaces must be brought into a contacting relationship. Respondents' Post-Hearing Br. at 4 (citing RPF 213-214). The specification provides in pertinent part, as follows:

In a general fashion, whatever the nature of the electric or electronic circuits which are used in the card, it is possible to test for the proper electrical contact indicating the existence of correct alignment and electrical contact by making the card carry out predetermined operations for which it is known which response predetermined it must furnish (the test must be chosen in a fashion so as to operate all the electrical contacts).

CX 1 ('464 Patent) at col. 7, lines 12-20 (emphasis added).

That portion of the specification pertains to the "testing" step (b) rather than the "bringing" step (a), yet it may shed light on the "bringing" step because the testing of the connection between a terminal and a conductor cannot of course occur without the contact surfaces having been brought into a contacting relationship.

Respondents' expert testified that to one of ordinary skill in the art, that portion of the specification means that all contacts must be tested. See Bove Tr. 897-901. However, complainant's expert testified that one of ordinary skill in the art, specifically one familiar with the designing of systems, would read that portion of the specification and understand that one need not test all the contacts but only all the contacts that are necessary for the intended

operation of the device. Kuc Tr. 334-335.

The interpretation offered by complainant's expert is reasonable, and is geared toward a practical application of the claimed invention. Furthermore, as discussed below, it is consistent with the plain language of the claim, which requires that all contacting surfaces required by the preamble must be brought into a contacting relationship.

In the preferred embodiment, all the contacts are to be connected using the claimed method. As parenthetically noted in the specification portion quoted above, each contact must be tested and consequently must be covered by the "bringing" step. Thus, the description of the preferred embodiment omits any discussion about a device in which certain contacts are not to be connected according to the claimed method because, for example, the circuit designer added contacts which are for optional use or which are otherwise held in reserve. Nevertheless, such a device could practice claim 1 and claim 8 of the '464 patent.

As respondents' expert stated:

Clearly, if there are contacts that don't further connect to any circuitry on the other side, it wouldn't be necessary to test them, but contacts where, in some cases, lack of proper contact and alignment would result in improper operation or no operation, I think should be tested. Certainly, that's the nature of this invention overall.

An appreciation of the overall invention is indeed important to understanding how one of ordinary skill would read the "bringing" step of claim 1. If, based on a design choice, one has decided not to rely on a particular contact, then it need not be brought into a contacting relationship at all -- not for testing and not for the overall purpose of the method which, as stated in the preamble, is one of making an electrical connection. Contacting surfaces for which electrical connection is not sought are not covered by the preamble of claim 1; however, their existence on the removable article does not prevent the claim from covering the other contacts for which electrical connection is in fact established through the claimed method.

The other issue disputed in connection with step (a), the "bringing" step, has to do with when the "bringing" step ends, and whether as a related matter, step (b), the "testing" step, occurs simultaneously with the "bringing" step. In particular, whether

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<sup>13</sup> During the portion of expert testimony quoted above, Dr. Bove testified in reference to the preferred embodiment that one might not necessarily know which "contacts might or might not be essential, so the safest thing is to test them all...." He also stated that he saw no "limitation in the claim that suggests that you get away with testing only a few of them." Bove Tr. 900-901. However, his testimony appears to acknowledge that the patent may cover situations other than those presented in the preferred embodiment, *i.e.*, situations in which a removable article has contacts that need not be tested for electrical connection. In any event, as explained above in the opinion, the administrative law judge finds no limitation which precludes a removable device with contacts not covered by the claim preamble from practicing the claimed invention with respect to other contacts for which electrical connection is sought.

power, which is necessary for testing, must or can be applied during the "bringing step."

OUII argues that the "bringing" step "begins with the corresponding contact surfaces separated from one another, and ends when the contacting surfaces have been placed in a 'contacting relationship,' i.e., when the contact surfaces are made to physically touch one another." OUII Post-Hearing Br. at 12. Their position is that "step (a)," the "bringing" step, "literally describes an action whereby the contacting surfaces of the card and reader are brought together until they touch one another." Id. at 13. OUII argues that the bringing step is "completed at this moment, when the contacts first come into contact with one another," or in other words "where they first touch." Id.; OUII Reply Br. at 7. It is further argued that any subsequent movement of the contact surfaces is "displacing" as described by step (c), and that displacement is stopped when testing indicates proper contact. OUII Post-Hearing Br. at 13 n.4; OUII Reply Br. at 13-14.

Respondents may concur with the OUII's argument concerning the commencement and ending of the "bringing" step inasmuch as they state in their Reply that "Innovatron is wrong when it argues that claim 8 and the specification do not address the time testing begins relative to the instant when a 'contacting relationship' is achieved." Respondents' Reply Br. at 5. In any event, it is clear that respondents argue that the bringing step must not be construed to end

before testing begins. They argue that power must be applied prior to the end of the bringing step, and that "testing must commence as soon as the card enters the system." Id.

Complainant argues that neither claim 8 (apparently through independent claim 1) nor the specification addresses the time that testing begins relative to the instant when the "contacting relationship" is achieved. It is argued that those skilled in the art would know to wait until after completion of the bringing step to apply power to any of the conductor elements (or pins) to protect against damage to the removable article. Complainant's Post-Hearing Br. at 8.

The plain language of the "bringing" step indicates that contact surfaces of the removable article's terminals are to be brought into a contacting relationship with the corresponding contact surfaces of the device's conductor elements. Thus, it is fair to say that the "bringing" step is completed when those contact surfaces are in a "contacting relationship." However, OUII's emphasis on the moment when any contact is achieved is not consistent with the terms and intent of the patent. OUII assumes that a "contacting relationship" is achieved at the instant when the contact surfaces touch. OUII reads phrases in the specification such as "until they touch" and "bringing ... to bear" to introduce concepts of "moment" and slight variations in time and space. However, these concepts do not appear in the record as important to the relevant art. In fact, expert

testimony received at the hearing demonstrates that a "contacting relationship" is understood by one of ordinary skill in the art to have a practical meaning and to require a more substantial physical contact between surfaces than they achieve when they first touch. This differs materially from OUII's definition.

Complainant's expert, Dr. Kuc testified that because one has a removable article one must bring it to the electric device, and that one of ordinary skill in the art would understand "bringing" the removable article to mean that the removable article is inserted into the electrical device so that it is in "a contacting relationship so that it's capable of working." Kuc Tr. 166. One skilled in the art wants to make sure that the removable article is in the position that is most favorable for making a contact. So, for example, with a modern smart card with pins and pads, one would want the pins to be approximately in the center of the pads. That would be the contacting relationship. Once a "contacting relationship" has been achieved between the removable article and the electrical device, one is not sure whether there is electrical contact; that must be tested for later. Id. at 167.

OUII relies in part on the testimony of Dr. Kuc during cross-examination in which he agreed with the questioner's statements to the effect that at the moment that contacts come into contact with one another, the bringing step has been completed, and further that any movement after this is "displacement," as that term is used in the

patent. OUII Post-Hearing Br. at 13 (quoting Kuc Tr. 1225). However, in listening to Dr. Kuc's testimony at the hearing, and in reading it in context, the administrative law judge understood Dr. Kuc's testimony to be based on the type of "contacting relationship" that is called for by the claims and about which he testified during direct examination. In that sense, once "contact" is achieved, that is to say once a "contacting relationship" is achieved, the bringing step is completed. Such "contacting relationship," as discussed above is achieved when the contacts are in a position capable of making electrical contact, with the goal of achieving the position most favorable for working.

Indeed, in reference to the preferred embodiment, the specification provides a flow chart, and explains in part as follows:

The drive system of the card is then started (73). The card advances and the contact surfaces face one another (contacts facing one another 74) and then approach (approach surfaces 75) until they touch (mechanical contact of the surfaces 76).  
If the card has not attained its maximal front position (end of passage? 77) it continues to advance 78).

CX 1 ('464 Patent) at col. 7, lines 31-38 (emphasis added).

Thus, as seen from the portion of the specification quoted above, in all cases the card must advance until the card has attained its maximal front position, even though mechanical contact has already been achieved between the contacts ("until they touch").

As stated above, both OUII and respondents argue that electrical

power must be applied during the bringing step. However, as explained by Dr. Kuc, a person skilled in the art would not apply power until the contacts on the removable article are in a contacting relationship with their corresponding contacts in the electrical device. Otherwise, power may be applied to the wrong contacts and that could damage the chip on the removable article. For example, if power commenced with the "bringing" step, power might be applied from the electrical device to contacts on the removable device that are used for signal leads and which therefore should not have power applied to them at all. This is a problem that would have been understood by one of ordinary skill in the art in 1978. In fact, the adverse consequences of indiscriminately applying power to the contacts in the removable article might have been greater in the late 1970s due to the fragility of integrated circuitry in use then as compared to the circuitry used today. Kuc Tr. 168-169.

Respondents' expert, Dr. Bove, who proposes applying power before the "bringing" step is complete, testified that the removable article used in the preferred embodiment would be "designed so that it will not be damaged if not all of the inputs or outputs are properly connected because one would be applying power, and before we know that it has proper contact and alignment ...." Bove Tr. 1059-1060. He also testified that "I have to presume that [patentee] Moreno anticipated using chips that would not be damaged, which it was known in those days how to make chips that would not be damaged under

those circumstances. He doesn't say for certain in the patent, but it would make good engineering sense." Bove Tr. 1138-1189.

In fact, there is nothing expressly in independent claim 1 or dependent claim 8 requiring the use of a chip that would withstand the application of power to the wrong contacts, nor is there any description of such a chip in the specification.<sup>14</sup> The use of such a chip is necessary in order for the claim construction proposed by respondents and OUII to have any validity. However, even assuming that such chips existed in 1978, no such chip is suggested anywhere in the '464 patent specification. Furthermore, other than Dr. Bove's statement that such chips existed in 1978 there is apparently no evidence of record concerning the availability of chips that could withstand application of power to contacts which should not have power applied to them. It is not clear whether, if such chips existed, they would have been suitable for use on a removable article used in the method of the '464 patent.

In addition to the problems that could be caused by applying power to the wrong contacts, there are also problems associated with

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<sup>14</sup> With respect to the question of when power should be applied, it appears from the expert testimony that there is no express statement in the specification concerning when power should first be supplied. Although respondents' expert testified that he found descriptions showing when power would commence, his view was based on his overall understanding of the specification and how the preferred embodiment works, rather than on text or illustrations expressly indicating the point at which power should first be applied. See Bove Tr. 1159; CX 1 ('464 Patent), Figs. 5, 6.

applying power near the edges of the contacts, which would occur if the "bringing" did not require the contact to be placed in a favorable position for electrical contact before power is applied. The distance between the contacts is small and so there is danger of shorting across contacts. There is also the possibility that a jiggling or vibration might disturb a contact thought to be good. A good engineer in 1978, as well as today, would want a reliable system that operates with some tolerance in the contacting relationship between the removable article and the electrical device, and which would not rely on edge contacts. Kuc Tr. 169-170.

In summary, the administrative law judge finds that the "bringing" step is understood by one of ordinary skill in the art to require that the removable object be brought to the electrical device by the insertion of the removable article (such as a smart card) into the device so that the terminals on the removable device that are to be powered come into a "contacting relationship" with the corresponding conductor elements located in the electrical device. A contacting relationship is understood to be that contact between contact surfaces favorable to the establishment of electrical contact. Furthermore, the administrative law judge finds that one of ordinary skill in the art would not apply power to the chip until the contacts to be powered are in such a "contacting relationship" with the corresponding conducting surfaces in the electrical device.

**3. Step (b) and Claim 8: "Testing ...."**

As discussed above, asserted claim 8 depends from independent claim 1 of the '464 patent. Claim 8 expands upon the "testing" step (b) of claim 1. For ease of reference, step (b) of claim 1, and claim 8 are reproduced immediately below:

1. Method for electrically connecting a removable article . . . comprising the steps of:

\* \* \*

(b) testing said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces;

\* \* \*

8. Method as defined by claim 1 wherein said step of testing said corresponding contact surfaces for said existence of correct electrical contact comprises: performing predetermined operations which provide a predetermined expected response from the removable article upon the existence of correct alignment and electrical contact; and comparing the actual response of said removable article with the predetermined expected response.

Step (b) of claim 1, and claim 8 require a test for the existence of correct alignment and electrical contact. CX 1 ('464 Patent) at col. 9, line 54 through col. 10, line 10; col. 10, lines 51-59; Kuc Tr. 171. Correct alignment and electrical contact is the condition that has to be satisfied for the device to operate as intended.<sup>15</sup> See

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<sup>15</sup> As discussed above with respect to the preamble of claim 1, the relevant intended operation is the operation for which one has inserted the removable article into the electrical device, e.g., the  
(continued...)

Kuc Tr. 175-178. Correct alignment and electrical contact are indicated by a test for proper electrical contact.<sup>16</sup> CX 1 ('464 Patent) at col. 7, lines 12-21.

Claim 8 specifies how to test for the existence of correct alignment and electrical contact in two basic steps. First, predetermined operations are performed which cause the removable article to provide a predetermined expected response, which will happen only upon the existence of correct alignment and electrical contact. The second step involves comparing the actual response from the smart card with the expected predetermined response. If the

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<sup>15</sup> (...continued)

reason why one has inserted a smart card into a smart card reader. Thus, in the preferred embodiment, successful testing for proper contact enables the exchange of data between the removable article and the electric device. Kuc Tr. 178. Claims 1 and 8 of the '464 patent have nothing to do with what operations, if any, the electrical device or the removable article may be capable of performing which do not require electrical contact between them. For example, in the preferred embodiment, it is not stated whether the transfer device is capable of performing useful functions without the credit card or whether the credit card could be used for anything when it is not inserted in the transfer device. The important point is that when a transfer of information between the credit card and the transfer device is sought, and therefore electrical connection is required, the method of the '464 patent is used to make proper electrical contact.

<sup>16</sup> One skilled in the art is not interested in the possible ways a card could fail. He or she is interested in knowing when the smart card is correctly inserted, so that is what the test does. The test informs of the existence of correct alignment and proper electrical contact. Kuc Tr. 312. Step (b) of claim 1 involves some procedure that is carried out which can indicate affirmatively when the article and the device are correctly aligned and when there is proper electrical contact between the corresponding contact surfaces. Bove Tr. 897.

responses match, then correct alignment and electrical contact has been achieved. See Kuc Tr. 163-164, 179.

A person of ordinary skill in the art understands that the clause "nonalignment and nonexistence of correct electrical contact" means the failure of the test in step (b) of claim 8. Kuc Tr. 183. A person of ordinary skill in the art understands the term, "predetermined operations" to mean those operations that are established at the time of the design of the system and that do not change over time. The predetermined expected response is expected in that it does not change over time, and it is expected in that it is the response that the card produces. Kuc Tr. 179-180.

A person of ordinary skill in the art understands the term "response from the removable article" to mean that the card has to respond. The response is generated by the integrated circuit contained on the removable article. Kuc. Tr. 180.

The '464 patent does not require that the predetermined expected response be used exclusively for the test specified in claim 8. There is nothing in claim 8 which limits the predetermined expected response from being used for other purposes. See Kuc Tr. 180, 209.

The '464 patent does not require that the removable article be in motion while the testing is done. See Kuc Tr. 187. There is no claim language requiring that the removable article remain in motion during the "testing" step (b). In fact, within claim 1, the testing step is recited separately, and sequentially in relation to the "bringing"

step (a). Furthermore, as discussed above, the testing does not begin until the "bringing" step is completed.

OUII and respondents argue that the testing step should be applied to all contacts. However, the testing required by step (b) of claim 8 does not require the testing of all the contacts. Kuc Tr. 171. Reference to "said corresponding contacts" in the testing step refers back to the first instance of that phrase, which appears in the preamble. As discussed above, that phrase should simply mean more than one, which is consistent with the file wrapper history. All the contacts on a removable article, such as a smart card, need not be brought into electrical contact if some are not needed for the purpose for which the card is inserted into the device. Such unneeded contacts are not covered by the claimed method for establishing electrical contact.

OUII argues that the testing step, specifically that portion found in claim 8, requires that the "predetermined operations must be able to ascertain the moment there is proper contact," as opposed to an interpretation by which the "predetermined operations should be able to provide a predetermined expected response if there is good contact." OUII Post-Hearing Br. at 17-18. This interpretation was based on an amendment to claim 8 (application claim 26) of the '464 patent that the OUII alleges was necessary for its allowance. OUII Post-Hearing Br. at 21.

Application claims 19 and 26 (issued claims 1 and 8,

respectively) were added through a May 4, 1981 Amendment. CSX 25 at II00124. Originally, application claim 26 simply recited "performing predetermined operations on said removable article; and comparing the actual response of said removable article with a predetermined expected response." CSX 25 at II00133. In that May 4 amendment, the assertion was made that none of the cited references disclose testing "by an electric device which tests to see if the card emits the correct predetermined response." Id. In light of that assertion, application claim 26 was ambiguous given its referral to a comparison involving "a predetermined expected response" without describing the origin of that expected response in the context of "performing predetermined operations."

After considering application claim 26 and the aforementioned assertion, the Examiner held that the claim is patentable, and would be allowed if certain section 112 rejections were overcome, i.e., the phrase "predetermined operations" was vague and indefinite. CSX 25 at II00147. To overcome that rejection, claim 19 was amended to its present form. CSX 25 at II00155-56.

That amendment was thus made to explain the origin of the predetermined operations. A literal interpretation of that amendment would simply be consistent with the assertion made in the May 4 amendment which the Examiner considered, and agreed with, in allowing application claim 26 to issue -- i.e., testing to see if the card emits the correct predetermined response as a result of the

predetermined operations. To interpret claim 8 as OUII does, to require receipt of the expected response at the precise or exact moment of proper contact, would impose additional requirements that are not supported by the claim language and prosecution history.

OUII further argues that its construction is consistent with the specification. OUII has focused on the alleged design goal of limiting the "wearing down of contact surfaces" to support its view that the testing step should determine the precise moment at which proper contact is established. OUII Post-Hearing Br. 18-20.

Respondents have made similar arguments. However, the '464 patent is not a patent on testing for the exact moment when proper contact is first achieved. For the reasons discussed in connection with the "bringing" step, the relevant art is a practical one which seeks a reliable contact between the removable article and the electrical device, such as between a credit card and a transfer device. As stated as the first objective of the invention, the '464 patent seeks "to ensure a good electrical contact while compensating for wearing down and/or crushing the contact surfaces." CX 1 ('464 Patent) at col 1, lines 34-36.

Respondents assert that testing, which involves performing predetermined operations and a comparison, "begins before contact and proper operation of the device." Respondents' Post-Hearing Br. 10. In their reply, respondents join in OUII's argument that in order for a predetermined response to be provided "upon" the existence of good

contact, testing must commence before contact is achieved.

Respondents' Reply at 7-8.<sup>17</sup> However, as discussed above in connection with the "bringing" step, the steps of claim 1 and claim 8 are to be carried out consecutively in order to be consistent with good engineering practice. Furthermore, the term "upon" need not convey the sense of immediacy, almost simultaneity, which is proposed by OUII and respondents. See Webster's at 2517-18.<sup>18</sup>

OUII focuses on the language of "instantaneously immobilizing" the card set forth in column 8 of the '464 patent. OUII Post-Hearing Br. at 19. The preceding language of the specification states that certain components "can be arranged such that the whole cross-bar and the card is instantaneously immobilized." CX 1 ('464 Patent) at col. 8, lines 27-29. Based on this disclosure it is clear that the applicant knew how to describe an immediate stopping based on the testing step. If he had intended to include it in claim 8 as a

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<sup>17</sup> For guidance as to when testing commences, respondents refer to the fact that in the preferred embodiment the card presence detector is "permanently activated." See Respondents' Reply Br. at 8. However, the fact that the electrical device is ready to accept the introduction of a credit card and to commence the movement of the drawer does not indicate when testing (including the application of power) begins. See CX 1 ('464 Patent) at col. 4, line 63 through col. 5, line 36.

<sup>18</sup> The following are among the examples given in the dictionary for the word "upon": (<~ the demand of government leaders... arrangements were made this year -- Wheeler McMillen) <transcripts are sent ~ the request of the particular student -- Bull. Of Meharry Med. Coll.>). Webster's at 2518.

limitation in all cases, he would have done so. Moreover, one of ordinary skill in the art would conclude in comparing the claim to the specification that immediate stopping based on testing is not a claim limitation.

OUII argues that the phrase "correct . . . electrical contact" as used in the testing step "refers to a condition of continuity" by pointing to a comment made by the Examiner in the file wrapper and alleging that the applicant acknowledged that comment. Staff Br. at 15-16. The Examiner's comment concerning "continuity" was his suggestion as to what he thought "electrical cooperation" was intended to mean. CX 25C at II00146. However, that suggested term was not placed into the specification or used to replace "electrical cooperation." Rather, the term "electrical contact" was used to replace "electrical cooperation." CSX 25 at II00155-56. Accordingly, "continuity" should not be construed to equate with "electrical contact."

In fact, "correct electrical contact," as used in claim 8, means something more than continuity, which calls for assessing only whether any current is passing between a first and second point but not the nature of the signal voltage received at the second point. Elspass Tr. 571-572, 593-594, 605-606. Continuity is not a sufficient test to determine that the device and card are properly connected for their intended purpose. Elspass Tr. 568-573. The term "electrical contact" was used in the claim and parts of the specification in accordance

with its ordinary meaning, which is contact such that the removable card and the electric device will work as intended. Kuc Tr. 161, 175-178; CX 1, col. 5, lines 54-60; col. 1, lines 21-44.

**4. Step (c): "Displacing ...."**

This step requires "displacing said corresponding contact surfaces ... if said testing determines non-alignment and non-existence of correct electrical contact...." CX 1 ('464 Patent) at col. 10, lines 3-7. Therefore, displacement of the removable article occurs after the testing has been performed and if the results of that test indicate non-alignment and non-existence of correct electrical contact.

OUII argues as discussed above that any movement after initial contact is displacement, and further that "the displacing step searches for a point of good contact...." OUII Post-Hearing Br. at 33. However, as seen from the plain language of the claim, OUII's proposed construction cannot be adopted. The displacing step occurs sequentially after the testing step.

The act of "displacing said corresponding surfaces relatively, in a direction tangential to said corresponding contact surfaces" requires that the contact surfaces of the removable article's terminals and the electric device's conductors be moved in relation to each other such that the area of contact between them decreases. This is the plain meaning of the phrase, and would be understood in this manner by one of ordinary skill in the art. See Kuc Tr. 181. The

'464 patent contemplates bringing this relative movement about in mechanized devices or manually. CX 1 ('464 Patent) at col. 8, lines 14-37; Kuc Tr. 186-87.

Contrary to arguments made by respondents, displacement should not be continuous or limited to mechanical displacement. The plain language of the claim calls simply for displacement, which ordinarily requires movement but not continual or motor-driven movement. See, e.g., Bove Tr. 1131. In this case, the specification describes a motorized embodiment in detail yet also teaches other embodiments, including embodiments that use non-continuous, manual movement of a removable article such as a credit card. See Kuc Tr. 186; CX 1, col. 8, lines 14-37. For example, the specification provides in part:

In the embodiment of the invention described with reference to the figures, the card and the connection mechanism are activated by an electric motor. In other embodiments, it may be activated differently, in particular the displacement of the card and of the drawer can be due to the carrier of the card who introduces it. In this latter case, the relative movements of the contact surfaces will be essentially guided by guiding means, particularly ramps.

In a like fashion the translationally movable drawer may be replaced by a jointed shutter which is rotationally and translationally movable (in the same fashion as introduction mechanisms for magnetic cassettes in tape readers).

CX 1 ('464 Patent) at col. 8, lines 12-25 (emphasis added).

Clearly the card carrier (or a cassette tape drawer) cannot duplicate the card movement proposed by respondents and OUII. The argument that the displacing step should be limited to continuous,

mechanical displacement is based upon an improper interpretation of the '464 patent which would improperly read a limitation from one embodiment of the specification into the patent claim while ignoring other embodiments.

Dependent claim 8, through independent claim 1 step (c), also requires "stopping the relative displacement of corresponding contact surfaces, when said testing determines said alignment and existence of correct electrical contact." No limitation, express or implied, restricts the method of stopping. Stopping, like displacing, can be accomplished manually or mechanically. Nothing indicates that the word "stopping" in claim 8 is used other than in its accepted and normal meaning. The term "stopping" does not have any special engineering meaning. Bove Tr. 1142-1143. The administrative law judge construes the "stopping" requirement to refer to the fact that the removable article (such as a credit card or other type of smart card with embedded circuitry and contacts, etc.) should be displaced and tested again if proper electrical contact is not achieved, and further that displacement should stop when proper electrical contact is established as indicated through testing.

Respondents' expert, Dr. Bove, testified that stopping involves an instantaneous action. See Bove Tr. 903-904. Consistent with respondents' construction of other parts of claim 8, Dr. Bove bases his construction for instantaneously stopping on the immobilization of the removable article in the preferred embodiment and his opinion that

the claim requires a sort of continuous displacement as discussed immediately above. See Bove Tr. 903-904. Dr. Bove is of the opinion that the claimed invention should be carried out electromagnetically because of "a combination of human reaction time and also the fact that you can't guarantee that the human is necessarily going to stop even if you tell him or her to stop moving the card." Bove Tr. 925.

However, instantaneous immobilization is not expressly required by the plain language of the claim, although manual insertion and displacement of a removable article such as a credit card is taught in the specification. Furthermore, the teachings in the specification concerning instantaneous immobilization present the feature as an option. See CX 1 ('464 Patent) at col. 8, lines 26-37. Similar language is not included in claim 1 or dependent claim 8. A construction that imposes a requirement of instantaneous immobilization would limit the claimed method in a way that is not provided for in claim 1 or claim 8.

In addition to the issues discussed above, respondents raise another issue concerning claim 8 which concerns the form and proper interpretation of the claim.

The Patent Act provides in pertinent part, as follows:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents

thereof.

35 U.S.C. § 112, ¶ 6.

As explained by the Federal Circuit, "[s]ection 112, ¶ 6, as is well documented, was intended to permit use of means expressions without recitation of all the possible means that might be used in a claimed apparatus." O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1583 (Fed. Cir. 1997). However:

The price that must be paid for use of that convenience is limitation of the claim to the means specified in the written description and equivalents thereof. Similarly, a step for accomplishing a particular function in a process claim may also be claimed without specificity subject to the same price.

Id.

Respondents seek to use section 112, ¶ 6, to limit the scope of asserted claim 8. They argue that "[a]t least certain aspects of claim 8 are sufficiently indefinite and therefore purely functional so as to fall within the strictures of section 112, ¶ 6." Respondents' Post-Hearing Br. at 15 (footnote omitted). In particular, respondents argue that "[e]ven assuming the 'testing' described in claim 8 is sufficiently definite, it is inarguable that the limitations of "stopping" and "displacing" of step (c) contain no recitation of required acts." Id. at 15-16 (footnotes omitted) (citing Motorola, Inc. v. Interdigital Tech. Corp., 930 F. Supp. 952 (D. Del. 1996), aff'd in part and rev'd in part, 121 F.3d 1461 (Fed. Cir. 1997)).

It does not appear that in the Motorola case an issue was raised

as to whether or not the district court should construe certain of the claims at issue as "step-plus-function" claims. The opinion provides little guidance in differentiating claims that must be construed under section 112, paragraph 6, from those that must not. However, the Federal Circuit's opinion in O.I. Corp., relied upon by complainant to oppose respondents' arguments, is instructive as to when a method claim ought or ought not be construed pursuant to Paragraph 6.

The Federal Circuit held that:

Of course, as we have indicated, section 112, ¶ 6, is implicated only when means *plus function* without definite structure are present, and that is similarly true with respect to steps, that the paragraph is implicated only when steps *plus function* without acts are present.

O.I. Corp., 115 F.3d at 1583 (emphasis in original).

With respect to claim 8, and independent claim 1 from which it depends, the administrative law judge finds upon examination of the claim language that each of the steps (including step (c) of claim 1 and the specific limitations of claim 8) set forth acts that must be performed. As in the case of all claim language, claims 1 and claim 8 must be read in view of the specification. However, this is not a case in which the patentee has stated a step plus function with no acts. A discussion of the acts required by claim 8 and independent claim 1 has occupied a significant portion of this initial determination, and it is clear that the claim language conveys to one of ordinary skill in the art acts that are necessary to carry out each

step, including step (c) and the specific limitations added by claim 8.

As quoted above, respondents draw particular attention in their brief to the phrases "stopping" and "displacing" which are contained in step (c) of independent claim 1. Each of these words is part of the larger step (c). Yet even if they are analyzed individually -- essentially breaking step (c) into two steps -- neither the "stopping" nor the "displacing" constitutes a "step plus function."

In the claim, "displacing" occurs before "stopping." Taken in context, "displacing" is part of the clause: "displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said testing determines non-alignment and non-existence of correct electrical contact." "Stopping" is part of the clause: "stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact." In neither clause is there a stated function whose acts are left unrecited and for which one must turn to acts disclosed in the specification.

The specification must be used to help construe the terms "displacing" and "stopping" as in the case of any claim language. However, the specification in this instance provides an example, not a definition, of what is claimed. The administrative law judge finds no reason to limit "displacing" and "stopping" or the clauses introduced by those words to the acts described in the specification in the

manner provided for in section 112, paragraph 6.

In O.I. Corp., the Federal Circuit cautioned against improperly broadening the application section 112, paragraph 6, with respect to claims that recite steps, as follows:

But claiming a step by itself, or even a series of steps, does not implicate section 112, ¶ 6. Merely claiming a step without a recital of a function is not analogous to a means plus function. \* \* \* [W]e must be careful not to extend the language of this provision to situations not contemplated by Congress. If we were to construe every process claim containing steps described by an "ing" verb, such as passing, heating, reacting, transferring, etc. into a step-plus-function limitation, we would be limiting process claims in a manner never intended by Congress.

115 F.3d at 1583.

Therefore, for the reasons discussed above, the administrative law judge concludes that independent claim 1 and claim 8 which depends therefrom, do not contain step-plus-function elements which must be construed pursuant to 35 U.S.C. § 112, paragraph 6.<sup>19</sup>

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<sup>19</sup> In the alternative, if claim 8 required the application of section 112, paragraph 6, it is not clear from respondents' brief how they propose the specification should be read to limit the claim. The step elements could only be construed to cover the corresponding acts described in the '464 patent specification and equivalents thereof, not the corresponding structures. As stated by the Federal Circuit, "structure and material go with means, acts go with steps." O.I. Corp., 115 F.3d at 1582-83. Thus, whenever paragraph 6 applies to a method claim, the elements triggering its application are limited to corresponding acts described in the specification and equivalents thereof.

#### IV. VALIDITY

##### A. Introduction

A patent is presumed valid, and the presumption of validity attaches to each claim independently of all other claims. See Jones v. Hardy, 727 F.2d 1524, 1528 (Fed. Cir. 1984); 35 U.S.C. § 282. A party seeking to invalidate a patent must prove facts establishing invalidity by clear and convincing evidence, and the ultimate burden of persuasion never shifts from the patent challenger. 727 F.2d at 1528; Carella v. Starlight Archery & Pro Line Co., 804 F.2d 135, 138 (Fed. Cir. 1986).

Respondents argue that if claim 8 of the '464 patent is construed "to cover manual removal and insertion of an article into a device and a 'test' that is stopped by the human user," claim 8 of the '464 patent is invalid due to anticipation under 35 U.S.C. § 102, and/or invalid due to obviousness under 35 U.S.C. § 103. Respondents rely on several pieces of alleged prior art. See Respondents' Post-Hearing Br. at 35.

OUII argues that claim 8 of the '464 patent is not invalid if construed in the manner proposed by OUII. However, OUII argues that claim 8 may be invalid if construed as complainant proposes. In particular, OUII argues that under complainant's claim construction, claim 8 reads onto the Chesley patent (RX 50). See OUII Post-Hearing Br. at 30; OUII Reply Br. at 15.

Although the administrative law judge has not adopted

complainant's proposed construction of claim 8 (and independent claim 1 from which claim 8 depends) in its entirety, the administrative law judge has not construed claim 8 in the manner proposed by respondents and OUII. For example, the administrative law judge has construed claim 8 to include manual insertion and removal of the removable article by a human user.

Each of the references raised against claim 8 in respondents' and OUII's briefs is discussed below.

**B. Claim 8 of the '464 Patent Is Not Anticipated**

A patent claim is invalid for anticipation under 35 U.S.C. § 102 if a single piece of prior art reveals, expressly or inherently, each element or limitation of the claim. In re King, 801 F.2d 1324, 1326 (Fed. Cir. 1986). To anticipate a claimed invention, a prior art reference must describe the invention with enough detail to allow one skilled in the art to understand and practice it. In re Paulsen, 30 F.3d 1475, 1480-81 (Fed. Cir. 1994).

Each of the prior art references alleged to anticipate claim 8 of the '464 patent is discussed individually.

**1. The Perron Patent**

United States Letters Patent No. 3,859, 634 ("Perron patent"), entitled Digital Lock System Having Electronic Key Card, issued on January 7, 1975, to Perron and Fowler. RX 24. The claimed invention of the Perron patent relates to lock systems, "particularly to an electronic lock system employing active digital electronic circuitry

in both the key and the lock." Id. at col. 1, lines 10-14. It is not disputed that the Perron patent is prior art to the '464 patent.

The administrative law judge finds that Perron does not anticipate asserted claim 8 of the '464 patent because it lacks at least the "testing" limitations added by dependent claim 8, as well as the "testing" step (b) and the "displacing" step (c) of independent claim 1 from which claim 8 depends.

Perron does not disclose a "method for electrically connecting" a removable article and an electric device. Instead, it appears that each of the claims of the Perron patent is drawn to an electric lock system or a component of such a system. Indeed, the specification describes embodiments of the invention in which there is a comparison between a code contained within a memory on a key with a master code contained within a memory device in a lock. That comparison takes place after the key code is loaded into a register in the lock memory.

Although the Perron patent teaches a comparison of a response from the circuitry on the key with information stored in the master register, the success or failure of the user's key to match an expected response contained in the master register is not designed to provide information about correct alignment and electrical contact or (lack thereof) nor is such information implied. See Bove Tr. 982-985; Kuc Tr. 1218. When a user's key fails to provide bits of information stored in the master register, correct alignment and electrical contact may or may not exist between the contacts on the key and the

lock device.<sup>20</sup> In all cases, a lack of identify between the response received from the key and the expected response results in the identification of an unauthorized attempt to unlock the device.

For example, as seen from the teachings of the specification:

If, during comparison of any bit of the key code, a lack of identity is found between this bit and the associated bit of the master code in register 48, the output signal from comparator 46 will cause enabling of AND gate 60 and consequent resetting of flip-flop 58 which causes removal of the flip-flop output signal to gate 62. No actuation signal can be provided by reason of the disabling gate 62. An output signal from gate 60 is provided only upon detection of an error between the bit of the key code and a corresponding bit of the master code, and this output signal is also employed to activate an alarm circuit 64 to indicate detection of an erroneous key code. Upon sensing of an alarm condition, a stop signal can be generated by alarm circuitry 64 to stop clock 52 and discontinue the decoding process and to prevent the release of the key clamped in the lock by clamp 33.

RX 24 (Perron Patent) at col. 7, lines 48-65. See also Id. at col. 1, lines 42-46 ("In the event that there is not proper comparison between the master code and the key code, an alarm can be actuated and the key

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<sup>20</sup> Under the Perron patent, one may assume a case in which the key and the lock have correct electrical contact, yet the key is unauthorized and thus there is not a proper comparison between the key code and the master register. In such a case, the failure of the comparison has nothing to do with correct electrical contact or lack thereof.

If a case arose in which one inserted an authorized key but could not actuate the lock because a lack of correct electrical contact prevented reading of the key code, there would be no indication under the Perron patent of the lack of correct electrical contact. It appears that under the Perron patent, the lock would assume that the key is unauthorized.

can also be seized within the lock to prevent its removal therefrom." ).

The Perron patent does not teach a displacing step, especially a displacing step which allows for more than one attempt at establishing correct electrical contact. Rather, the Perron patent teaches away from the "displacing" step (c) of claim 1 of the '464 patent. As may be seen from its specification quoted above, the Perron patent teaches that it is preferable to disallow any movement of the key upon the failure of the test. The Perron patent is concerned with security and whether or not a particular key should be allowed to open a lock; it does not disclose a method of making an electrical connection. Thus, the Perron patent does not teach the necessity of allowing one to reinsert a key which has presumably failed for security reasons.

Furthermore, there is no need to teach a "stopping" of the "displacing" in the Perron patent because there is no attempt to test for correct alignment and electrical connection as claimed by claim 1 and claim 8 of the '464 patent. There is no teaching of displacement after a failed test, and in fact there is teaching away from allowing more than one attempt to insert the key to actuate the lock.

Complainant argues that the Perron patent also fails to disclose "a predetermined expected response" because the code changes from key to key, and may change over time. See Complainant's Post-Hearing Br. at 36; Complainant's Reply Br. at 22-23. The specification of the Perron patent does indeed teach that the code stored in each key

should be "readily alterable." Furthermore, in one embodiment of the claimed invention, the code residing in each key's shift register and the master code can be replaced from time to time or even immediately after use of a key, for example, to permit use of a key only once a day. RX 24 (Perron Patent) at col. 1, lines 34-39; col. 8, lines 39-46. In the case of each key used by the claimed invention of the Perron patent, the response is predetermined and expected. The response in an authorized key is set before the key is inserted into the lock, perhaps by the lock device itself, and further the register of the lock device assures that there is an expected response from each key. However, these teachings of the Perron patent are different from the comparison of a key code from the element of claim 8 of the '464 patent which requires comparison of an actual response from the removable article with the predetermined expected response, which is established when the system is designed and does not change over time.

Also, there is no limitation requiring that there exist only one predetermined expected response. The predetermined expected response required by claim 8 of the '464 patent is the response associated from a particular removable article inserted into the electronic device. There is no limitation which prohibits various removable articles from having various predetermined expected responses.

The important point is that the response from the removable article indicates whether or not correct electrical contact exists between the removable article and the electrical device. The response

received from the key in the Perron patent is not used to determine correct electrical contact.

Therefore the Perron patent does not anticipate claim 8 of the '464 patent.

Complainant argues with respect to the Perron patent that the administrative law judge should defer to the decision of the Examiner to allow the '464 patent to issue over United States Letters Patent 3,637,994, entitled "Active Electrical Card Device," which issued on January 25, 1972 to Ellingboe ("Ellingboe patent"). RX 32 (Ellingboe Patent); Complainant's Post-Hearing Br. at 36 (citing Minnesota Mining and Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d at 1559, 1572 (Fed. Cir. 1992). In Minnesota Mining, the Federal Circuit stated that "[w]here the PTO has considered a piece of prior art, and issued a patent notwithstanding that prior art, a court owes some deference to the PTO's decision." Id. (citing American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1360 (Fed. Cir.), cert. denied, 469 U.S. 821 (1984)).

In this case, the Examiner considered the Ellingboe patent, not the Perron patent. Furthermore, the two patents are not identical. Nevertheless, it appears from an examination of the Ellingboe patent, and from the expert testimony at the hearing that the Ellingboe and Perron patents have many similarities which are pertinent to the '464 patent. See Bove Tr. 1195-1196. Thus, while the directive in Minnesota Mining is not directly applicable here, the underlying

rationale has some application to these circumstances, i.e., the administrative law judge will accord some deference to determinations made by the patent Examiner with respect to certain technological issues that the Examiner decided during prosecution of the '464 patent. Indeed, the administrative law judge finds that the Ellingboe patent provides some context for understanding the documents found in the '464 patent's file wrapper and in understanding the scope of the patent grant made by the PTO.

The Ellingboe patent teaches, among other things, the use of a card, such as a credit card, with microelectric circuitry that is inserted into a reading device. The circuit on the card may provide a unique identification code. In one embodiment of the claimed invention of the Ellingboe patent, a series of clock pulses causes the code pattern to proceed to the reader "where it is sensed and compared with the corresponding codes in the memory bank of the reader." See, e.g., RX 32 (Ellingboe Patent) at col. 1, line 30 through col. 2, line 24; col. 6, lines 39-43; col. 6, lines 64-72.

Consequently, the Ellingboe patent taught a comparison of a predetermined expected response before the Perron patent and before the '464 patent. Thus, the prosecution history of the '464 patent, which contains the Ellingboe patent, shows that the applicant and the Examiner were aware of the fact that the comparison of a response from a card having at least one circuit with an expected response was well known in the art. Claim 8 of the '464 patent cannot therefore be

construed merely to cover this concept, which had been disclosed before.<sup>21</sup> Indeed, as previously discussed, the test claimed in claim 8 is a test for correct electrical contact. The prior art of record distinguishes the '464 patent and the prior art. While the prior art taught that code or other information from a circuit contained on a card or other removable device (such as a key card) may be used to indicate information such as the identity of a card (and presumably its user), the '464 patent teaches that the use of a predetermined expected response, which does not comprise the entirety of the information to be exchanged between the removable device and the electrical device, can be used to determine correct electrical contact.

## 2. The TI Calculator

Respondents and OUII argue that if complainant's proposed claim construction is adopted, then claim 8 of the '464 patent is anticipated by a Texas Instruments calculator, which they refer to as a TI 58/59 calculator.<sup>22</sup> The TI 58/59 calculator is alleged to have been in public use as early as 1977.<sup>22</sup> See Bove Tr. 1200-1201;

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<sup>21</sup> The Federal Circuit has held that a "court seeks to interpret claims to preserve, rather than defeat, their validity." Eastman Kodak Co. v. The Goodyear Tire & Rubber Co., 114 F.3d 1547, 42 U.S.P.Q.2d 1737, 1743 (Fed. Cir. 1997) (citing ACS Hospital Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577 (Fed. Cir. 1984) ("[C]laims should be construed, if possible, as to sustain their validity.")).

<sup>22</sup> The Patent Act provides in pertinent part:

(continued...)

Respondents' Post-Hearing Br. at 37-38; Respondents' Reply Br. at 5 n.4; OUII Post-Hearing Br. at 33.

Complainant argues on several grounds that the TI calculator, particularly as presented in evidence at the hearing, cannot be found to anticipate claim 8 of the '464 patent. One of complainant's arguments is that it has not been shown that the TI calculator is prior art to the '464 patent. Whether or not the TI calculator relied on by respondents and OUII, the so-called model 58/59, is prior art to the '464 patent is a threshold issue which will be addressed first.

The calculator offered into evidence at the hearing was marked by respondents as a physical exhibit, RPX 1. The casing of the calculator indicates that it is a "TI Programmable 59" with "Solid State Software." RPX 1; RX 225. The calculator marked as RPX 1 was not manufactured before the January 24, 1978 priority date of the '464 patent. According to respondents' expert it appears to have been manufactured in 1979. Bove Tr. 1168. Consequently, respondents did not produce a physical exemplar of a TI 58/59 calculator which could

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<sup>22</sup> (...continued)

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign county, before the invention thereof by the applicant for patent, or ....

35 U.S.C. § 102 (a).

invalidate the '464 patent or any claim thereof.

Respondents also rely on manuals marked as RX 68, RX 69 and RX 70, which are allegedly for the TI 58/59 calculator in public use in 1977. Each of the manuals produced at the hearing states on the cover that it is for the "TI Programmable 58C/59."<sup>23</sup> RX 68; RX 69; RX 70 (TI58C/59 Quick Reference Guide). Each of the manuals produced at the hearing bears copyrights that include the year 1979. Thus, the manuals were published after the priority date of the '464 patent, and presumably contained at least some revisions that were made after the priority date. RX 68 and RX 69 are especially lengthy and contain many details about the TI 58C/59 calculator. However, it is not clear exactly which portions of the manuals were revised or added in 1979, and which portions might describe a device that could have been in use before the '464 patent's priority date. It cannot be found therefore that these 1979 publications are prior art to the '464 patent, or that their content provides clear and convincing evidence concerning the calculator which is alleged to anticipate the '464 patent.

Following the hearing, respondents moved to substitute manuals that were published before the priority date for other manuals offered at the hearing. As discussed above in this initial determination, the administrative law judge has determined not to receive into evidence the manuals produced after the close of the hearing. However, even if

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<sup>23</sup> It is not clear from the record what the significance is of the model numbers "58C" and "59" or whether there was a model "58".

the belatedly produced manuals were admitted into evidence, questions would be raised as to their content inasmuch as there was no opportunity for expert examination and cross-examination concerning them, nor was the administrative law judge afforded the opportunity to examine them and to ask questions if necessary concerning their content.

Finally, respondents also seek to describe the function of the TI 58/59 calculator as it allegedly operated before the priority date of the '464 patent, by reference to: 1) U.S. Letters Patent 4,139,893, entitled "Calculator Program Security System," which issued on February 13, 1979 (based on applications filed in 1977 and 1976), to Sidney W. Poland; and 2) U.S. Letters Patent 4,153,937, entitled "Microprocessor System Having High Order Capability, which issued on May 8, 1979 (based on applications filed in 1977 and 1976) to Sidney W. Poland (collectively the "Poland patents"). Respondents rely particularly on the '937 patent to Poland. See RPF 513-521.

It has not been alleged that the Poland patents anticipate the '464 patent. Respondents rely on the Poland patents to provide information about the TI 58/59 calculator. Although the Poland patents were assigned to TI, there is no indication in the patents that they describe the functioning of any particular commercial product. Nor is there any indication from TI, such as an express statement in TI manuals, that the Poland patents cover a particular TI product. However, respondents' expert believes that the calculator

disclosed therein is identical in appearance and operational description to the TI 58/59 calculator. See RPF 521 (citing Bove Tr. 1003).

One of the main problems with respondents' argument concerning the Poland patents is that, as discussed above, it is not clear what a TI 58/59 calculator allegedly used in 1977 looked like or how it operated. The calculator and manuals offered at the hearing did not exist until 1979. Even if it were found that the Poland patents are reflected in the 1979 manuals, that would not confirm the details of how a particular TI calculator supposedly operated before the '464 patent's priority date.

In summary, the administrative law judge finds that there is a lack of evidence pertaining to any TI 58/59 calculator that was allegedly in public use in 1977, and upon which respondents and OUII rely. Inasmuch as no physical exemplar of a TI calculator used before the priority date was provided to the administrative law judge or to complainant's expert, and no written descriptions that clearly describe a device in use before the priority date are part of the evidence of record, it cannot be found that a TI 58/59 calculator which was allegedly in public use in 1977 is prior art to the '464 patent, nor can the operation of such a device be described in sufficient detail so as to provide clear and convincing evidence of patent invalidity.

Moreover, even if respondents' arguments concerning the operation

of the TI 58/59 calculator are considered, it cannot be found that asserted claim 8 of the '464 patent is anticipated for the reasons discussed below.<sup>24</sup>

Respondents argue that the TI calculator allegedly used in 1977 has a "removable article" in the form of a module incorporating a silicon chip and having eight electrical contacts arranged in two rows. The calculator body has eight corresponding contact surfaces. It is argued that the "bringing" step (a) of independent claim 1 is satisfied by the insertion of the module into the calculator, and that claim step (c), the "displacing" and "stopping" step, if construed to cover manual intervention, is inherently present in the operation of the calculator. See Respondents' Post-Hearing Br. at 37; RPF 486-490. With respect to the "testing" step, respondents argue, based on their expert's testimony, that it is accomplished in any one of three possible ways: (1) by accessing a function that resides on the module

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<sup>24</sup> Complainant argues one of the reasons why the TI calculator should not be found to anticipate claim 8 of the '464 patent is because the memory modules and the TI calculator do not "cooperate" due to the fact that the calculator is capable of performing some of its intended functions without installation of the module. See Complainant's Post-Hearing Br. at 35. However, as discussed in the section on claim construction, the administrative law judge does not adopt complainant's proposed interpretation of the term "cooperate." That a removable article "cooperates" with an electrical device does not mean that the electrical device is prohibited from performing any functions without the removable article. Therefore, the argument put forward by complainant with respect to cooperation, does not affect the analysis of the TI calculator as alleged prior art to the '464 patent. The TI calculator is not, however, found to render claim 8 of the '464 patent invalid for other reasons which are discussed in the main text, supra.

(an error indication with a flashing display will be returned if there is improper connection or alignment);<sup>25</sup> (2) by performing a "Diagnostic/Library Module Check" (a general test of calculator functions and proper module connection); or (3) by performing a "Library Module Check" (an identification number will be returned if the module connection is proper and a flashing number will be displayed if improper). See Respondents' Post-Hearing Br. at 38; RPF 495-496.

The first way of "testing" according to respondents (accessing a function on the module) is not a test as required by step (b) of claim 1 or by claim 8. As discussed above, the test required by the '464 patent is not one of merely determining whether or not the electrical device works, which in this case is determining whether one can access a function of the module. The test in claim 1 and claim 8 of the '464 patent is an integral part of actually establishing an electrical connection. The test is not applied after electrical connection is made.

Furthermore, while the ability to access a function on the module may be an indication of correct electrical contact between the contacts on the module and those in the calculator, a blinking display

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<sup>25</sup> It is argued that when accessing a function, the "predetermined operations" are the operations the calculator performs when it attempts to communicate with the module, and further that the module provides a "predetermined expected response," the absence of which causes the display to flash. See Respondents' Post-Hearing Br. at 38.

may not be related to electrical connection. It may be a result of requesting a program that does not exist in the module.<sup>26</sup> There was little or no evidence concerning the electronic design of the TI calculator, especially if the Poland patents are not taken into account. Therefore, it is not possible to determine the situations when a blinking display might appear on the TI calculator. See Bove Tr. 1185-1190.

Use of the "Diagnostic/Library Module Check" or the "Library Module Check" is also identified by respondents as a way of satisfying the "testing" requirement. There is very little evidence of record concerning those tests and what occurs in the circuitry of the TI calculator during those tests, especially if one does not rely on the Poland patents. See Bove Tr. 889-1000. However, it is clear that those "tests" are only performed after the user presses a sequence of buttons on the calculator to initiate the diagnostic routine. Furthermore, the user need not perform a diagnostic routine before attempting to use the module. The TI calculator may be used immediately upon insertion of a module into the back of the calculator. Testing "occurs after the module is electrically

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<sup>26</sup> Dr. Bove argues that the predetermined expected response from the TI module is the non-zero value in its first memory location. This non-zero value, which represents the number of functions or programs on the module, is returned when a user attempts to access a function on the module. According to Dr. Bove, that non-zero value is compared with the function number that the user types in, and if that number is less than the number the user typed in, the calculator generates an error and the display flashes. See Bove Tr. 1185-1190.

connected to the calculator." Bove Tr. 1172-1179. Therefore, neither of these tests involves establishing an electrical connection as required by claim 1 or claim 8 of the '464 patent.

Complainant argues that an important difference between the method of claim 8 and the TI calculator is that the Diagnostic/Library Module Check is not performed upon insertion of a module, and according to the recommended procedure (in the 1979 manual), the module is inserted while the calculator is off. When the user turns the calculator back on, the module is powered up and can operate in its intended mode.

It is not necessarily important in all cases that some power remain on during insertion of the removable article into the electrical device. As discussed in the claim construction section above, in the motorized embodiment detailed in the '464 patent specification power sufficient for testing and for operating the motor is required in order to effect a "bringing" and also to carry out a test that will stop the displacement of the removable article. However, in a manual embodiment under the '464 patent there does not appear to be any limitation requiring a flow of current, or testing, during insertion of the removable article into the electrical device by the user. Yet, in the case of the TI calculator the fact that the calculator is turned off when the module is inserted and then turned on with the module fully powered up for use, highlights the fact that the "check" or testing which may be performed is not a test for

correct alignment and electrical contact, which under the '464 patent would be performed before an attempt is made to exchange information between the removable article and the electrical device.<sup>27</sup> Bove Tr. 1172-1179.

The TI 58/59 calculator, even if it were prior art to the '464 patent, would not contain all of the elements of dependent claim 8 (or independent claim 1) of the '464 patent.

### 3. The Chesley Patent

OUII argues in its reply brief that if claim 8 of the '464 patent is construed in the manner proposed by complainant, it is anticipated by U.S. Letters Patent 4,055,754 ("Chesley patent"), entitled "Memory Device and Method of Testing the Same," which issued on October 25,

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<sup>27</sup> In Dr. Bove's experiments on the TI calculator, he covered in turn each of the eight contacts of the calculator's removal module. With seven of the terminals a user would not perceive a problem until that user attempted to access a function on the module. However, in the case of the eighth terminal, the calculator locked up. Thus, rather than testing for good connection, the TI calculator proceeds to connect without testing and can experience the consequences of not having a good electrical connection. Bove Tr. 1190-1192.

The same may be said of the common night light, which was raised in pre-hearing filings and is raised again by OUII in its main brief. See OUII Post Hearing Br. at 30. OUII observes that a connection is confirmed when a night light is first plugged into a socket, and that some jiggling motion may be necessary. However, there is no predetermined expected response between the night light and an electrical device. There is merely a successful or failed attempt at illumination of the bulb (which may already be spent prior to insertion of the night light into the socket). In the case of the night light, as in the case of the calculator module, a failure to operate or the need to jiggle the light in order to illuminate the bulb has no relation to a testing procedure as required by claim 8 of the '464 patent.

1977 to Gilman D. Chesley. See OUII Reply Br. at 15-20; RX 50 (Chesley Patent).<sup>28</sup>

The primary disputes between the parties concerning the Chesley patent center around whether the Chesley patent discloses the "testing" step as required by step (b) of claim 1 and claim 8, and whether there is a "displacing" step in the Chesley patent as required by step (c) of claim 1.

In the Chesley patent, the claimed invention "provides an integrated circuit memory device and method wherein test logic is included in the device for detecting the presence of predetermined patterns applied to the memory cells." RX 50 (Chesley Patent) at col. 1, lines 43-46.

Random access memories (RAMs) provide the background for the claimed invention, and are the memory cells used in the preferred embodiment disclosed in the specification. Id. at col. 1, lines 18-27; col. 2, lines 8-12. One of the purported advantages of the method disclosed in the Chesley patent is that instead of testing each cell individually, the memory can be tested row by row. Id. at col. 1, lines 44-50.<sup>29</sup>

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<sup>28</sup> Respondents oppose at least some of complainant's proposed findings concerning the Chesley patent. See Respondents' Comments on Complainant's Proposed Findings at 78, 80.

<sup>29</sup> There is no explicit "bringing" step in the Chesley patent. See Bove Tr. 1072-1073. However, OUII argues that the Chesley patent "obviously involves the bringing of the test device into a contacting  
(continued...)

However, the test disclosed in the Chesley patent is not one to establish or to determine correct electrical contact with the RAMs. It is a memory test to check the functioning of the RAMs. To test the memory, contents are put into memory and there is an attempt to read them out. In the '464 patent there is an express test for correct alignment and electrical contact, while in the Chesley patent correct alignment and electrical contact would have to be inferred if the test is successful. Yet, a failed test may not necessarily be due to a lack of correct electrical contact, because the memory function of the RAM may fail due to a defect. Furthermore, the Chesley patent does

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<sup>29</sup> (...continued)

relationship with the memory chip." OUII Reply Br. at 17 (citing Bove Tr. 1074).

Respondents' expert testified with respect to the bringing step, as follows:

Q And there's some sort of action where this chip is brought into connection with a testing device; is that right?

A Or by which it's installed into a socket or printed circuit board or something.

Q But the bringing element would be met?

A It has to be connected.

Bove Tr. 1074.

Although RAMs must be brought into connection with the Chesley testing device in some manner, there is so little information in the record concerning RAMs (as they existed in the 1970s), RAM testing devices and the way in which RAMs and testers were brought into contact, that the administrative law judge refrains from finding that the "bringing" of independent claim 1 is disclosed, expressly or inherently, by the Chesley patent.

not disclose a test to assure correct electrical contact before the RAMs are tested for memory. See Bove Tr. 1072-1073, 1076; Kuc Tr. 1222-1223.

There is no teaching in the Chesley patent that if the test fails, the RAMs should be "displaced" as that term is used in the '464 patent.<sup>30</sup> The Chesley patent does not disclose a method of electrically connecting. Therefore, the Chesley patent need not and does not disclose displacement and further testing as a way of establishing correct electrical contact between a removable article and an electrical device. In particular, there is no disclosure in the Chesley patent of a displacing that stops when testing determines alignment and existence of correct electrical contact, as required by independent claim 1 and dependent claim 8 of the '464 patent. See Bove Tr. 1072-1073; Kuc Tr. 1222-1223.

In summary, it has not been established by clear and convincing evidence that the Chesley patent contains all of the elements required by dependent claim 8 of the '464 patent or that claim 8 is invalid due to anticipation.

**C. Claim 8 of the '464 Patent Is Not Obvious**

Respondents and OUII argue that under complainant's proposed claim construction, claim 8 of the '464 patent is invalid for

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<sup>30</sup> There is no explicit "displacing" in the Chesley patent. See Bove Tr. 1072-1073.

obviousness under 35 U.S.C. § 103.<sup>31</sup> See Respondents' Post-Hearing Br. at 39-41; OUII Post-Hearing Br. at 35-37. As discussed above, the administrative law judge has not adopted complainant's proposed claim construction in its entirety. However, the administrative law judge has determined that in certain respects claim 8 is properly construed in a manner which is contrary to the claim construction arguments made by respondents and OUII. Consequently in this context, the obviousness arguments of respondents and OUII are discussed.

In order to prove invalidity under section 103 of the Patent Act, it must be demonstrated by clear and convincing evidence that the claimed invention would have been obvious in light of the combined teachings of items of prior art relied on by respondents.<sup>32</sup> See Graham

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<sup>31</sup> Section 103 of the Patent Act provides in pertinent part as follows:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

35 U.S.C. § 103(a).

<sup>32</sup> As discussed, supra at n.10, the '464 patent is directed toward one designing a circuit, likely an electrical engineer, who is knowledgeable about digital electronics and electronic interfaces. One might gain at least the level of ordinary skill in the aforementioned art through experience with electrical engineering and particularly experience with digital circuitry as it existed during the late 1970s. There is no evidence that an advanced degree in electronics or engineering was required.

v. John Deere Co., 383 U.S. 1, 37 (1966); Jones v. Hardy, 727 F.2d 1524, 1530-32 (Fed. Cir. 1984); Litton Sys., Inc. v. Honeywell, 97 F.3d 1559, 1566 (Fed. Cir. 1996) (section 103 obviousness analysis requires a determination of the scope and content of the prior art, the differences between the prior art references and the claimed invention and the secondary indicia of nonobviousness).<sup>33</sup>

Respondents rely on two pieces of prior art: 1) U.S. Letters Patent 4,222,516 (RX 3), entitled "Standardized Information Card," which issued to Bernard Badet et al. ("Badet patent"); and 2) U.S. Letters Patent 3,934,122 (RX 17), entitled "Electronic Security Card and System for Authenticating Card Ownership," which issued to James A. Riccitelli ("Riccitelli patent"). OUII relies on U.S. Letters Patent 4,163,210 (RX 45), entitled "Arrangement for Checking a Contact Inserted Between a Transmitter Circuit and a Receiver Circuit to Allow Electrical Signals to Be Transmitted," which issued to Georges M. Giraud ("Giraud patent"). It has not been disputed that these patents are prior art to the '464 patent. Each of these patents is discussed individually below.

The Badet patent claims to disclose, among other things, "means which ensure a good electrical connection between the device [embossed in a] card and the system which is required to co-operate with the card and the testing of the electrical connection." See RX 17 (Badet

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<sup>33</sup> The '464 patent has been the subject of numerous licenses. See CX 916 through CX 940C.

Patent) at col. 2, lines 49-65; col. 7, lines 40-44.

In the disclosure of the Badet patent, a voltage is applied between two electrodes located in the card reader. There are two electrodes associated with each contact on the card. Current flows from one electrode, through the contact on the card, and into the other electrode. As explained by respondents' expert, "the current is supposed to exceed a certain predetermined level and so there is a threshold, and above that threshold, if the current is measured to be above that threshold, then that suggests that there's low enough impedance connection that the connections are good." This flow demonstrates electrical continuity between the card and the reader.<sup>34</sup> Bove Tr. 1000-1011; Kuc Tr. 1219-1220.

There are at least two differences between the Badet patent and claim 8 of the '464 patent which prevent the Badet patent rendering claim 8 obvious. By relying on a test for electrical impedance, the Badet patent does not disclose or teach a "predetermined response from the removable article." In Badet, the removable article does not actively participate. There is no teaching in the Badet patent concerning a predetermined expected response from the card as an indication of correct electrical connection. Current flows through the electrodes on the card and the reader; no response is expected from or generated by the card. In fact, the Badet patent would

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<sup>34</sup> Complainant argues that Badet is no more than a simple DC static continuity check. See, e.g., Complainant's Reply Br. at 24.

suggest that a test of electrical impedance is adequate in assuring an electrical connection to a smart card. Therefore, the Badet patent may teach away from the invention of claim 8 which requires a predetermined expected response from a chip on the removable article. Kuc Tr. 1219-1220.

The Badet patent does not expressly disclose the "displacing" step of the '464 patent. See RX 17; Bove Tr. 1011. Yet, neither would it be obvious to one of ordinary skill to carry out the "displacing" step, as argued by respondents. The '464 patent requires "displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces." Although there is disagreement among the parties as to why this claim limitation is included in the '464 patent, it is a requirement of claim 8.<sup>35</sup> In the Badet patent, the electrodes move in a direction perpendicular to the contacts on the card and do not move in a tangential direction. Kuc Tr. 1219-1220.

The Riccitelli patent discloses the use of a card with circuitry on it. However, it does not disclose a method of electrically connecting. In a somewhat similar manner to the Perron patent and the Ellingboe patent discussed above, the Riccitelli patent discloses a method of authentication for a security system. However, in the

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<sup>35</sup> Complainant argues that the tangential movement helps to clean the contacts in the case of a poor electrical connection. Complainant's Post-Hearing Br. at 37; see Kuc Tr. 181.

Riccitelli patent, the object is authentication of card ownership.

In the Riccitelli patent, the card holder must key in a preselected sequence of digits or signals. Logic circuitry on the card is responsive to input signals. If the input signals are in a preselected sequence, an output is provided by the card. If the input signals are not in the preselected sequence, a feedback control signal is developed and applied to deactivate the logic circuitry. See, e.g., RX 17 (Riccitelli Patent) at col. 1, line 56 through col. 2, line 9; col. 3 lines 7-15; Bove Tr. 1014.

In the Riccitelli patent, correct electrical connection could be inferred in cases in which when the preselected sequence of signals is confirmed by the logic circuitry. See Bove Tr. 1015-1016. Yet, the "test" in the Riccitelli patent is not for correct electrical connection, and it does not indicate if the electrical connection is faulty (even in the case of an authorized user), or when electrical connection is correct in cases in which the holder of the card has entered an incorrect code.

Consequently, the Riccitelli patent does not disclose a displacing step. Bove Tr. 1017; Kuc Tr. 1214-1215. The Riccitelli patent does not teach or suggest displacement in order to attempt a correct electrical connection. The "test" in the Riccitelli patent is not used to help establish an electrical connection between the card and the terminal. In fact, the Riccitelli patent teaches away from the displacing step of the '464 patent. The Riccitelli patent assumes

normal operation with correct electrical connection. It does not contain any teachings or disclosure of what to do in cases of incorrect electrical connection. It teaches that when the "test" fails, the logic circuitry should be inhibited from further operation until reset. See RX 17 (Riccitelli Patent) at col. 1, lines 61-65, col. 5, lines 2-5; Kuc Tr. 1214-1215.

The Giraud patent discloses an arrangement to check the contact between a transmitter circuit and a receiver circuit. See, e.g., RX 45 (Giraud Patent) at col. 1, line 65 through col. 2, line 39. The Giraud patent does not teach or disclose a method of establishing electrical connection, or of testing electrical connection with a predetermined expected response.

The Giraud patent teaches that a test should be conducted during the entire time signals are transmitted from the transmitter to the receiver. RX 45 (Giraud Patent) at col. 2, lines 38-41; RX 45, col. 2, lines 38-41; Bove Tr. 1078-1079. This teaches away from the '464 patent, which requires that testing occurs as a way of establishing the electrical connection between the removable article and the electrical device. Furthermore, in the Giraud patent, good contact is confirmed by examining the currents carrying data between the transmitter and the receiver. However, the Giraud patent does not use "predetermined operations" or a "predetermined expected response." See Kuc Tr. 1223-1224; Bove Tr. 1077-1078.

Although the Giraud patent states that it is generally

satisfactory to ensure good contact between the two components at the start of a signal-transfer operation, it does not teach what is to be done in the case of bad contact, or how to use testing in the method of establishing contact. The Giraud patent does not suggest displacing or stopping of the displacing upon the existence of correct alignment and electrical contact. See RX 45 (Giraud Patent) at col. 1, lines 19-30; Kuc Tr. 1223-1224. The Giraud patent has a markedly different purpose and disclosure from that of the '464 patent.

As discussed in this section, none of the prior art teaches or discloses the elements of claim 8 of the '464 patent. Indeed, the prior art contains teachings that are contrary to the invention of claim 8. Although a combination of the prior art would not yield the invention elements of claim 8 of the '464 patent, there are no teachings or suggestions to one of ordinary skill in the art to combine the prior art relied upon in this investigation. Nor would it be clear to one of ordinary skill in the art how to combine the prior art. See Kuc Tr. 1224-1225.

For the reasons discussed above, it has not been shown by clear and convincing evidence that the prior art relied upon by respondents or OUII, alone or in combination, renders claim 8 of the '464 patent invalid for obviousness under 35 U.S.C. § 103.

## **V. INFRINGEMENT**

### **A. General Law of Infringement**

To establish literal infringement, every limitation set forth in

a claim must be found in an accused product, exactly. Southwall Technologies, 54 F.3d at 1575. Accord Graver Tank & Mfg. Co. v. Linde Co., 339 U.S. 605, 607 (1950) (Literal infringement of the asserted claim occurs "[i]f accused matter falls clearly within the asserted claim ....").

Limiting patent enforcement exclusively to literal infringement "would place the inventor at the mercy of verbalism and would be subordinating substance to form." Graver Tank, 339 F.2d at 607. Thus, if the accused product or process does not literally infringe the patent at issue, it may infringe under the doctrine of equivalents. See In re Certain Doxorubicin and Preparations Containing Same, 20 U.S.P.Q.2d 1602, 1608 (United States Int'l Trade Comm'n 1991) ("An allegation of infringement under the doctrine of equivalents presumes that literal infringement does not exist, i.e., that the asserted patent claims, properly interpreted, do not in terms cover the accused device or process.").

Infringement may be found under the doctrine of equivalents if an accused product that does not literally infringe the patent claim performs substantially the same function in substantially the same way to obtain substantially the same result.<sup>36</sup> Graver Tank, 339 U.S. 605,

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<sup>36</sup> In Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 117 S.Ct. 1040, 1054 (1997), the Supreme Court held that "[a]n analysis of the role played by each element in the context of the specific patent claim will thus inform the inquiry as to whether a substitute element matches the function, way, and result of the claimed element, or  
(continued...)

608 (1950); Valmont Indus. v. Reinke Mfg., 983 F.2d 1039, 1043 (Fed. Cir. 1993); Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed. Cir.) (en banc), cert. denied, 485 U.S. 961, 1009 (1987).

Equivalency must be proven on a limitation-by-limitation basis. Warner-Jenkinson, 117 S.Ct. at 1049; Pennwalt, 833 F.2d at 935. As the Federal Circuit stated in Pennwalt, 833 F.2d at 935, the doctrine of equivalents "does not mean one can ignore claim limitations." Further, as the Federal Circuit stated in Dolly, Inc. v. Spalding & Evenflo Cos., 16 F.3d 394 (Fed. Cir. 1994), "[u]nder the doctrine of equivalents, the accused device and the claimed invention cannot work in 'substantially the same way' if a limitation (including its equivalent) is missing." 16 F.3d at 398 (citing Valmont, 983 F.2d at 1043 n.2.).

As held in Warner-Jenkinson, the proper time to determine equivalency is at the time of the alleged infringement, not at the time the patent issued. 117 S.Ct. at 1053.

The doctrine of equivalents is limited in that it will not extend (1) to cover an accused device in the prior art, or (2) to allow the patentee to recover through equivalents certain coverage given up through prosecution. Pennwalt, 833 F.2d at 934 n.1. In this regard, the Supreme Court, in Warner-Jenkinson, held that prosecution history

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<sup>36</sup> (...continued)  
whether the substitute element plays a role substantially different from the claimed element."

estoppel can serve as a limitation on the doctrine of equivalents. Specifically, the Court noted that amendments made expressly to avoid the prior art or adopted as a substitute for a broader one previously used could result in prosecution history estoppel. Warner-Jenkinson, 117 S.Ct. at 1049-50.

The Federal Circuit has explained that "the essence of prosecution history estoppel is that a patentee should not be able to obtain, through the doctrine of equivalents, coverage of subject matter that was relinquished during prosecution to procure issuance of the patent." Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 951-52 (Fed. Cir. 1994).<sup>37</sup> Accord Sofanor Danek Group, Inc. v. Depuy-Motech, Inc., 74 F.3d 1216, 1222 (Fed. Cir. 1996) (citing Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 136 (1942)).

"Similarly a patentee may not assert a range of equivalents that captures art already in the public domain." Sofanor, 74 F.3d at 1222 (citing Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677, 683 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990)).

A party alleging infringement has the burden of proving infringement by a preponderance of the evidence. Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 758 (Fed. Cir. 1984); Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1361 (Fed. Cir. 1983). The

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<sup>37</sup> Whether one should apply prosecution history estoppel is a question of law. Southwall Technologies, 54 F.3d at 1579; Hoganas, 9 F.3d at 952.

question of infringement of properly interpreted claims is one of fact. Mannesman Demag Corp. v. Engineered Metal Prods. Co., 793 F.2d 1279, 1282 (Fed. Cir. 1986).

#### B. Direct Infringement

Complainant argues with respect to the issue of direct infringement that "[c]laim 8 of the '464 patent is infringed by operation of Thomson's DSS2 and DSS3 models, both literally and under the doctrine of equivalents."<sup>38</sup> Complainant's Post-Hearing Br. at 15.

Respondents argue that complainant "has failed to prove that use of the DSS receiver practices every element of claim 8." Respondents' Post-Hearing Br. at 16.

OUII argues that the accused devices do not practice each of the elements of claim 8 of the '464 patent. See OUII Post-Hearing Br. at 5-29.

Each of the elements recited in claim 8 or depending from independent claim 1 (as well as the preamble of claim 1) is discussed below.

##### 1. The Preamble of Claim 1

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<sup>38</sup> Complainant's arguments on the direct infringement issue address the question of whether or not the accused devices practice the elements of claim 8 of the '464 patent. A determination of whether or not the accused devices practice claim 8 is material to complainant's charges against the respondents of induced and contributory infringement, which are discussed below in individual sections. However, it does not appear that complainant charges respondents with operating the accused devices as an end-user would. Nor have any end-users of the accused devices been named as party-respondents.

As found above in the claim construction discussion, the preamble of claim 1 states the general purpose of the claim, and also sets forth certain limitations on the claimed method -- in particular the type of removable article and electric device to be used in the claimed method.

The evidence adduced at the hearing demonstrated that the accused cards and readers are of the type contemplated by the preamble. The DSS receivers carry out the "method for electrically connecting" and also "cooperate" with the cards inserted into them because an electrical connection is made between a removable article (having at least one electrical circuit) and an electric device. See Kuc Tr. 253-254. In particular, the record evidence shows that Thomson's removable smart cards have an integrated circuit embedded within them. Kuc Tr. 194, 199. Those smart cards also include electrically-conductive terminals or pads. Kuc Tr. 156, 195-196. The cards are inserted within an electric device, known as a smart card connector or reader. The smart card connector has conductive elements that make contact with the smart card pads. Kuc Tr. 193; Kelly Tr. 848. The smart card pads connect to corresponding connector elements so as to allow for communication between the two to take place. Kuc Tr. 195-196; Kelly Tr. 850; CX 24C (Hailey Dep.) Tr. 58.

**2. Step (a): "Bringing ..."**

Respondents argue that "there is no 'bringing' step involving the access card; since the evidence is undisputed that the DSS access card

is pre-installed at the factory" which takes place overseas.<sup>39</sup>

Respondents' Post-Hearing Br. at 16. However, smart cards have also been inserted into accused DSS readers in the United States. The evidence is uncontroverted and clear that thousands if not millions of new access cards have been provided for insertion into DSS readers in the United States as part of an upgrade. See Compton Tr. 741; CSX 4C (Stewart Dep.) Tr. 87-93, 220-221; CX 34C (Gonzalez Dep.) Tr. 78; CX 11C at 4.

In addition, there is strong evidence that on at least some occasions, and more than likely on a regular basis (i.e., daily or weekly), end-users of accused DSS devices remove and reinsert their access cards when there is an apparent malfunction of their receiver. Burns Tr. 672-689. Indeed, sometimes smart cards must be replaced. CX 34C (Gonzalez Dep.) Tr. 886-87; CX 11C at 5; CX 129C. Furthermore, { } of DSS receivers have been replaced. When an end-user receives a replacement receiver, he typically inserts his original access card into his replacement receiver before shipping the original

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<sup>39</sup> Respondents have long asserted that the finished DSS product arrives in the United States already assembled and ready for consumer use, and that the steps carried out overseas include the insertion of the smart card into the reader. Consequently, despite a discussion with counsel during the hearing, it remains unclear to the administrative law judge why complainant does not charge that an unfair act occurs as the result of the importation and sale of articles that "are made, produced ... under, or by means of, a process covered by the claims of a valid and enforceable United States patent." See 19 U.S.C. § 1337 (1)(1)(b)(ii); see also Tr. 289-294 (colloquy).

receiver to Thomson. Compton Tr. 742; CX 22C (Compton Dep.) Tr. 43-44.

Whether or not these acts from a legal viewpoint are to be considered part of induced or contributory infringement is addressed in detail below. Yet, there is no doubt that there is a "bringing," carried out in the United States, as that claim element has been construed herein.

Indeed, the evidence shows that insertion by a person of the smart card into the receiver's connector causes the card's pads to be brought into contact with the connector's pins.<sup>40</sup> See Kuc Tr. 193; Kelly Tr. 848-850.

### 3. Step (b) and Claim 8: "Testing ..."

After a smart card is inserted in the connector of a DSS receiver, the receiver performs test functions to determine the existence of proper electrical contact between the card and the connector.

The reset sequence specified by ISO 7816-3 is initiated by fully inserting the smart card into the receiver such that the smart card causes actuation of the switch in the receiver's connector. Kelly Tr. 846-850; CSX 5C (Pitsch Dep.) Tr. 16; CX 24C (Hailey Dep.) Tr. 89, 99. The reset sequence involves the application of certain signals to

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<sup>40</sup> OUII's argument that the bringing step must be completed at the moment the contact surfaces touch or bear against each other is discussed, and rejected, supra.

certain pads of the smart card in a well-defined and predetermined manner. Specifically, in accordance with the reset sequence, the following operations are carried out: (a) power is applied to the Vcc and Vpp pads, (b) the I/O signal is applied to the I/O pad, (c) a clock signal is provided to the clock pad (if needed), and (d) the reset signal is applied to the reset pad. Kuc Tr. 200-202, 228.

The application of various signals to the smart card, most especially the reset signal, constitutes the act of "performing predetermined operations" as called for by claim 8. Kuc Tr. 200. In response to application of the reset signal, the smart card provides the ATR sequence to the DSS receiver, as specified by the ISO 7816-3 standard. Kelly Tr. 846-847. The ATR sequence as specified by ISO-7816-3 is not itself a test for correct electrical contact, yet as detailed below the analysis of the sequence that is conducted by the accused DSS receivers is in fact such a test.

The first character of the ATR sequence is the TS character. Kuc Tr. 219. While the TS character can have either the value of 3F or 3B consistent with the ISO 7816-3 standard, smart cards used in Thomson's DSS receivers have only used the 3F value.<sup>41</sup> Kelly Tr. 848; Kuc Tr. 216. The value of the TS character reaching the receiver (from the smart card) may be a value other than 3F when there is a lack of proper electrical contact, due for example to the presence of a

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<sup>41</sup> Comparison of the TS character to the alternative values of 3F and 3B is expressly provided for in lines of code. CSX 23C.

foreign substance. See, e.g., Kuc Tr. 157-161, 239-240; LeDuc Tr. 72-74, 79-80, 81, 87, 95-99.

Reception of a TS character having a value of 3F by the DSS receiver is therefore indicative of proper electrical contact. Kuc Tr. 219, 224. Consequently, the TS character value of 3F (or potentially 3B) therefore constitutes the "predetermined expected response from the removable article upon the existence of correct alignment and electrical contact" called for by claim 8.<sup>42</sup> Kuc Tr. 202, 225.

Once received at the connector, the TS character is analyzed by Thomson's DSS receiver. The receiver compares the value of the TS character to the predetermined values of 3F and 3B. Kuc Tr. 255; CPX 26C and CPX 27C. Direct comparison of the received TS character with the predetermined values of 3F and 3B is also expressed in the code

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<sup>42</sup> Respondents and OUII argue that there is no "predetermined expected response" since the TS character is equal to 3B under direct convention and 3F under inverse convention. However, the DSS receivers receive, distinguish and interpret a single TS character.

Indeed, the administrative law judge finds that the accused cards and DSS receivers cannot avoid literal infringement because the TS character could potentially have one of two values. As discussed above, the evidence has shown only that one value (3F) is used by Thomson. Furthermore, before the DSS receiver checks to be sure that it is receiving a 3B or 3F character from the card, the receiver performs a parity test which determines the convention used by the card. See Kuc Tr. 218-222. In the alternative, infringement could be found under the doctrine of equivalents. Since the expected value of 3B or 3F is determined before comparison of the TS character is made, the accused receivers perform the "testing" step with substantially the same function, way, and result as in the case of a card which could potentially have only one value.

describing the operation of the DSS2 and DSS3 models, which is respectively provided for in CPX 7C. Kelly Tr. 861-865, 873-875; CX 326C at K22; CSX 24C; CPX 26C; CPX 7C. Comparison of the received TS character with the predetermined values of 3F and 3B therefore constitutes "comparing the actual response of said removable article with the predetermined expected response" as called for by claim 8. See Kuc Tr. 202, 225, 255-256.

If the received TS character does not have a value of 3F, the DSS receiver does not process any other characters of the ATR sequence. Kelly Tr. 966-867, 874-876. Rather, it concludes the absence of proper electrical contact. After attempting to receive a TS character having a value consistent with the predetermined expected response on three separate occasions, the DSS receiver issues the "Please insert valid Access Card" message. Kelly Tr. 870, 877.

Respondents' Dr. Bove testified during the hearing that based on the TS character, one cannot infer proper electrical contact between a smart card and connector since all contacts needed for long term operation of the smart card and receiver are not tested. Bove Tr. 952, 954. For example, Vpp is not tested, and Dr. Bove testified that Vpp is necessary for proper operation of the smart cards since disconnection of Vpp may lead to long term reliability problems with the chips embedded in the smart cards. Bove Tr. at 1119-1120. Dr. Bove based his arguments on "at least one chip" included in a list of chips that may be embedded in a smart card provided to Thomson. Bove

Tr. at 1120. He did not, however, state that such a chip was or is actually used in the cards provided to Thomson by NDC. Bove Tr. 1119-1120. He also admitted that he had not observed damage to a chip of a Thomson smart card by not providing Vpp.<sup>43</sup> Bove Tr. 1120.

Given that such arguments are based on the use of a chip that is not known to have been used in Thomson's smart cards, and given that there is no evidence that such a chip has been damaged by denial of Vpp, the evidence does not support a conclusion that Vpp is needed for the long-term operation of the smart card or receiver. Thus, the testing step is met even though Vcc or Vpp are not always subject to the testing step.<sup>44</sup>

Dr. Bove also testified that there is no testing for proper electrical contact since ATR is intended to reestablish communications. Bove Tr. 950-51. Similarly, Dr. Bove contends that the TS character is used for other purposes, such as setting the convention type.<sup>45</sup> Bove Tr. at 209. However, the evidence shows that

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<sup>43</sup> No evidence has been provided that Vcc (which is not tested) is necessary for such long-term operation.

<sup>44</sup> OUII argues, apparently for the first time in its post-hearing brief, that "there is no evidence that the input lines such as reset and clock lines are tested for continuity as required by the claim." OUII Post-Hearing Br. 28. As explained supra, the claim requires a test for "correct alignment and electrical contact," and not continuity.

<sup>45</sup> Furthermore, the operations carried out by the DSS receivers with respect to the TS character allow the DSS receivers to do more than assess the convention type. For example, the DSS3 receiver first

(continued...)

one of ordinary skill in the art would not read claim 8 to include the additional limitation that the predetermined expected response must be exclusively used to assess the existence of proper electrical contact. See Kuc Tr. 180 and claim construction section above.

In addition, respondents took the position that testing for alignment and electrical contact is not necessary because the cards and card connectors were supposedly produced to the dimensional specifications of ISO 7816-2. However, the evidence adduced at the hearing demonstrates that there are different quality levels of card and card readers. See LeDuc Tr. 8-11, 72; Hailey Tr. 825; CX 118C.

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Respondents have also had vendor qualification procedures, and do not qualify all potential suppliers. Hailey Tr. 825. Moreover, the dimensional specifications of ISO 7816-2 do not cover all of the factors that are important for good contact between the card and card

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<sup>45</sup> (...continued)

performs a parity check of the TS character, and depending on the results of that parity check, compares the received TS character to either 3F or 3B. Since the parity check itself can distinguish between the 3F and 3B characters, the later comparisons are for determining the existence of proper electrical contact as called for by the testing step. Otherwise, the operations following the parity check would be superfluous. See Kuc Tr. 219-224; Bove Tr. 1164. As Dr. Bove testified, the TS character (as well as other code) is used to make sure these consumer devices work, "given the problems that we have in the real world." See Bove Tr. 1164-1165.

reader. In particular, ISO 7816-2 does not specify the pressure that is applied between the pins of the card reader and the contact pads of the card. This pressure changes over time and can cause contact problems that are not immediately evident. LeDuc Tr. 73-74. As another example, even if the products are supplied in accordance with ISO specifications, stresses affect the performance of some components to the point that over time they no longer are within ISO standards. LeDuc Tr. 74. Indeed, Dr. Bove observed that the value of the TS character is calculated in order to deal with "real world" problems proves complainant's point. Bove Tr. 1165. In summary, the fact that ISO standards exist is no substitute for checking to ensure that proper contact has been made.

#### **4. Step (c): "Displacing ..."**

If the above described "testing" carried out by the DSS receiver does not determine that there is correct electrical contact (i.e., if the TS character does not equal either 3F or 3B ) an on-screen display message that reads "Please insert a valid Access Card" is displayed to the end-user. Kelly Tr. 870, 877; Kuc Tr. 204-206; Bove Tr. 945-946; CX 17C (Whitcomb Dep.) Tr. 77-80; CX 335C at RA 25656. That message is an indication that the card should be displaced. Kuc Tr. 204-205, 240-241.

In response to the "please insert valid access card," or in some cases a "check access card connections" message, (consistent with instructions provided by customer service representatives of the

Thomson respondents), a user should remove the smart card from the receiver's connector and then reinsert the card into the connector. See Burns Tr. 686; Kuc Tr. 158, 204-205, 240-241, 256; LeDuc Tr. 99.<sup>46</sup> Removal and reinsertion of the smart card constitutes displacement of the "corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces," as called for in claim 8.<sup>47</sup>

Respondents' Dr. Bove testified at the hearing that the displacing step is not met since end-users are not "forced" to displace or later stop displacing the card. Bove Tr. 957-959. Such an argument is inconsistent with the evidence that Thomson representatives routinely instruct users to remove and reinsert smart cards in response to the "please insert valid access card message." See, e.g., CX 149C; CX 198C at ALN216921, ALN217078, ALN217095-217096.

In order to meet this claim limitation it was not necessary for complainant to demonstrate why displacing is beneficial. However, the record does demonstrate that the acts of removal and reinsertion serve

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<sup>46</sup> CX 131C at RA34040; CX 380C at RA063065; CX 366C at SR00753048, ALN2166922, ALN216564, ALN216061, SR00794849, SR00797503; CX 198C at ALN216944.

<sup>47</sup> OUII argues that "in the accused connection process, the displacement occurs before there is any testing." OUII Br. at 27. As discussed above, any movement of the smart card that occurs before testing (and is not part of the bringing step) is not properly characterized as "displacing." Rather, in accordance with the claim only movements that occur after testing qualify as "displacing."

to clean the contact surfaces which assists in establishing proper electrical contact. See Kuc Tr. 158-162; LeDuc Tr. 76-79. Indeed, a user may also manually clean away any foreign substances from the smart card's pads, as he is often instructed to do by Thomson customer service representatives. See, e.g., Burns Tr. 682-683, 702, 710-713; Compton Tr. 749-750; CX 34C (Gonzalez Dep.) Tr. 69; CX 149C; CX 197C at ALN216061, ALN217051; CX 201C; CX 198C.

If the reinserted smart card establishes proper electrical contact with the DSS receiver, then programming is displayed to the end-user. The provision of programming is an indication of proper operation of the receiver, and more specifically, shows the establishment of proper electrical contact between the smart card and the receiver. Kuc Tr. 206. The provision of programming thus signifies to a user that he or she need not continue to displace further (i.e., remove and reinsert) the smart card. See Kuc Tr. 194, 204-206, 240-241, 254-256. Thus, discontinuing removal and reinsertion of the smart card constitutes "stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact," as recited in the displacing step of claim 8.

At the hearing, Dr. Bove testified that the "displacing" step was not met since the DSS receiver does not mechanically displace smart cards or stop displacement "at the instant at which the testing succeeded." Bove Tr. at 957-959. Indeed, with respect to the

infringement issue, respondents argue that "[f]irst and foremost, Thomson's DSS receiver does not include any motor or mechanism for displacing an access card." Respondents' Post-Hearing Br. at 16.

As discussed above, there is no express or implied limitation in claim 8 that calls for mechanical displacement and stopping, or instantaneous stopping. Respondents' argument requiring displacement and instantaneous immobilization by electromechanical means is inconsistent with the proper construction of claim 8 based on the plain language of the specification which includes a simple, manual embodiment in which a consumer approaches an electrical device and then inserts and removes his or her own credit card.

Respondents also argue that the accused devices do not meet the displacing step since the "sequence of operations in claim 8 and alleged in the DSS are fundamentally different." Respondents' Post-Hearing Br. 23-25. Respondents conclude that the DSS receivers do not infringe because (a) the card is fully inserted before detection can even occur and (b) ATR "occurs after correct contact and alignment are established," which is "guaranteed by ISO 7816-2." See Thomson Post-Hearing Br. 24.

ISO 7816-2 does not guarantee correct contact and alignment. For example, as stated above, a card can be of correct dimensions but a foreign substance on a contact can preclude proper electrical contact. Therefore, even when fully inserted, proper electrical contact may not exist.

Also, as discussed in detail above, one of ordinary skill in the art would seek to establish correct alignment and electrical contact and then test to determine whether correct alignment and electrical contact had been established. The fact that testing is triggered in the DSS receiver by fully inserting the smart card is thus fully consistent with claim 8.

In the context of the displacing step, Thomson argues that there is no "stopping" pursuant to claim 8 since the DSS receiver does not "instantaneously immobilize" the smart card. Thomson Post-Hearing Br. 25-26. Again, instantaneous immobilization is not required by claim 8. Displacing and stopping are clearly used in claim 8 in accordance with their normal meaning. As such, a user may, consistent with the claim and specification, displace a removable article.

Thomson argues that the "Please insert valid Access Card" message does not always "reflect a problem of bad electrical contact" as evidenced by "overwhelming evidence." It is not clear what evidence respondents rely upon for this argument. In any event, the evidence shows that when there is no proper electrical contact, the please insert valid access card" message is always displayed. CX 141C. See Kelly Tr. 870; Kuc Tr. 204, 240; CX 142C. That there may be other instances in which this message is displayed does not avoid infringement.

### **Conclusion on Direct Infringement**

Accordingly, for the reasons discussed above, the administrative law judge finds that the accused Thomson DSS receivers in combination with the access card literally practice each of the elements required by claim 8 (and independent claim 1) of the '464 patent.

### **C. Induced Infringement**

Complainant argues that the evidence of record in this investigation demonstrates overwhelmingly that respondents have induced infringement of the '464 patent. Complainant's Post-Hearing Br. at 21.

Respondents argue that even assuming direct infringement by DSS users could be found, complainant has failed to meet its burden of proving by a preponderance of the evidence that respondents induce users of the Thomson DSS system to infringe claim 8 of the '464 patent. Respondents Post-Hearing Br. at 28.

OUII takes the position that although respondents are correct in their conclusion that the accused products do not infringe claim 8 of the '464 patent, in the event the accused products are found to infringe claim 8, the evidence supports a finding that respondents have induced their customers to infringe the claim. OUII Reply Br. at 2.

Section 271(b) of the Patent Act provides in pertinent part, as follows:

(b) Whoever actively induces infringement of a patent shall be liable as an infringer.

35 U.S.C. § 271(b).

In Water Technologies Corp. v. Calco, Ltd., 850 F.2d 660 (Fed. cir. 1988), the Federal Circuit construed the statute as follows:

Thus, a person infringes by actively and *knowingly* aiding and abetting another's direct infringement. Although section 271(b) does not use the word "knowing," the case law and legislative history uniformly assert such a requirement.

850 F.2d at 668 (citation omitted) (emphasis in original).

The evidence demonstrates that the Thomson respondents have been aware of the '464 patent since at least 1989, which is long before Thomson developed its DSS receiver for the U.S. market. See CX 4C at 13; CX 6C at 15. {

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A May 23, 1995 letter from Innovatron informed Thomson that its products fall within the scope of Innovatron's patents. A further letter of April 25, 1996 advised Thomson that it did not have a license agreement that extended to the United States. CX 163.<sup>48</sup>

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(continued...)

Consequently, there is strong evidence that the actions by the Thomson respondents have been carried out knowingly. As discussed below, it has also been established that they have actively aided and abetted infringement by their customers.

In fact, Thomson developed the smart card drive software that checks for the value of the TS character. CX 24C (Hailey Dep.) Tr. 17-18, 37. Thomson worked with NDC and DirectTV to design the overall DSS system with full knowledge of the '464 patent. CX 905C; CX 331C at RA02963, RA39218, RA39224. Additionally, Thomson supplies the smart card and the card reader to the user as part of the sale of the product.

The Thomson respondents argue that the physical design of the DSS receiver discourages card removal. Respondents' Post-Hearing Br. at 29. Yet, this argument ignores the purpose of the smart card configuration as a removable form of security. See LeDuc Tr. 67-69; CSX 4C (Stewart Dep.) Tr. 96. Thomson, NDC and DirectTV jointly designed a system dependent on removable access cards. CX 333C.

Indeed, the record evidence establishes that removal and reinsertion of the access card is an integral part of the product as presently designed and marketed. Thomson's marketing materials show the access card out of the receiver, and tout the flexibility offered by smart cards. CX 171C ("**Smart Card Technology Provides system**

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<sup>48</sup> (...continued)

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*flexibility and security.* CX 171C at RA 36910 (bold and italics in original)). Furthermore, Thomson's manuals describe replacement procedures. See, e.g., CX 105C; CX 370C.

Complainant argues that Thomson could have provided an alternative design that did not rely on smart card technology. Indeed, there is evidence that the decryption function could have been included on a circuit board within the receiver. Kuc Tr. 194-195, 242-243. In any event, Thomson chose a smart card system with the features of the '464 patent, and provides the software, the hardware, and the instructions to end-users.<sup>49</sup>

Thomson argues that it does not encourage end-users to remove the access card from the DSS unit "except when issued a new card as a replacement for the original." Respondents' Post-Hearing Br. at 29. Yet, even that assertion admits that Thomson does in fact instruct users on how to remove cards and reinsert replacement cards.

Furthermore, in the discussion above on direct infringement, it is shown that there has been at least one large-scale replacement of access cards to all authorized DSS users. That replacement involved roughly 2.5 million units. See, e.g., CSX 4C (Stewart Dep.) Tr. 220. The replacement procedure involved three removal/reinsertion operations, involving roughly 7.5 million instances of insertion of

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<sup>49</sup> Thomson states that it has in the past used a door and a security clip to discourage removal of the card. However, the latest DSS model does not use the retaining clip. RPX 5; Burns Tr. 688.

cards into receivers. Compton Tr. 741; CSX 4C (Stewart Dep.) Tr. 221;  
CX 34C (Gonzalez Dep.) Tr. 80; CX 194C. {

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In addition to large scale upgrades, the replacement of access cards by Thomson occurs on a continual basis with numbers in the tens of thousands per year. CX 11C at 5; CX 129C; CX 113C; CX 130C. Replacement of receivers also occurs continually at even higher rates. See Compton Tr. 742; CX 11C at 5; CX 130C. In response to customer service requests Thomson replaced more than { } cards and receivers during 1996. Bove Tr. 957; CX 130C. These replacements require removal and insertion of an access card into a receiver by the end-user. Compton Tr. 742; CX 22C (Compton Dep.) Tr. 43-44.

Respondents' end-users are also instructed by their agents to insert access cards into DSS receivers in connection with service calls.

Thomson, through a contract with Norcross,<sup>50</sup> maintains an extensive customer service call center that responds to inquiries from

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<sup>50</sup> The fact that the customer service representatives are not directly employed by Thomson does not effect Thomson's liability for inducement. See Crowell v. Baker Oil Tool, Inc., 143 F.2d 1003 (9th Cir.), cert. denied, 323 U.S. 760 (1944); Free Standing Stuffer, Inc. v. Holly Development Co., 187 U.S.P.Q. 323, 335 (N.D. Ill. 1974) (interposing an agent or independent contractor between the principal and the infringing act does not absolve the principal from liability).

end-users encountering difficulties. Removal and reinsertion of the access card is a standard and frequent instruction given to the end-users.

For example, removal and reinsertion of the access card is typically part of the so-called "soft reset" or "hard reset" procedures. See, e.g., CX 22C (Compton Dep.) Tr. 48-50; Burns Tr. 674-675; CX 149C; CX 131C; CX 106C. Soft and hard resets are common instructions to end-users to attempt to resolve problems with the DSS receivers. CX 106C; CX 201C; CX 195C; CX 197C; CX 198C; CX 199C. These reset procedures are set forth in Thomson's training manuals. CX 131C; CX 145C.

Also, Mr. Burns, a Norcross representative, testified that he frequently instructs end-users to remove the access card and wipe it off to clean the pad surfaces. Burns Tr. 682-687. In addition, the sample customer service documents submitted into evidence show that numerous other customer service representatives issue similar instructions. See Compton Tr. 721; CX 22C (Compton Dep.) Tr. 48; CX 197C; CX 198C. Customer service personnel have received no instructions to cease advising end-users of this procedure. See Burns Tr. 672-684, 713; Compton Tr. 742-754; CX 22C (Compton Dep.) Tr. 136; CX 131C; CX 136C; CX 145C; CX 104C.

Thomson alleges that it never instructed the representatives to tell end-users to wipe off their cards, and "was unaware that any service representatives instructed customers to wipe the card off."

Respondents' Post-Hearing Br. at 32. However, the evidence adduced at the hearing required a different conclusion. Thomson's witness, Mr. Compton, testified that he was aware that customer service representatives employed by Norcross have been telling customers to wipe off the card. Compton Tr. 751-752. Furthermore, contrary to Thomson's claims that this practice reflects "inadequate training," see Respondents' Post-Hearing Br. at 31, the fact is that removing the card, wiping it off, and reinserting it often solves the problem that prompted the end-user to call. Burns Tr. 686-687.

The message "Please insert a valid access card" is one of several on-screen display messages that can result in end-users calling for assistance and being told to reinsert their access cards. See Burns Tr. 683; Kuc Tr. 204-205, 240-241; CX 136C; CX 149C. Thomson argues that since a user typically has not already removed the access card when he or she calls for assistance, the instruction is at best ambiguous. Respondents' Post-Hearing Br. at 29.

Thomson cites C.R. Bard Inc. v. Cardiovascular Systems Inc., 911 F.2d 670, 675 (Fed. Cir. 1990), for the proposition that there is no inducement where instructions are ambiguous. However, Bard involved a motion for summary judgment, and evidence was ambiguous regarding when infringement might occur. In this case, the evidence of underlying infringement by end-users, as well as the instructions given by customer service representative are clear. Furthermore, even if some end-users have doubts as to whether they should remove their access

cards based on the on-screen message, any uncertainty is eliminated by the instructions provided by the customer service representatives who often tell end-users to remove (and sometimes wipe off) and reinsert the access card into the DSS receiver.<sup>51</sup>

Each time an access card is inserted into an accused Thomson DSS unit all the steps of claim 8 are carried out. Thus, the instances in which the cards have been removed and reinserted in the DSS receivers establish widespread infringement of the patent.

Inducement can be demonstrated in a variety of ways, including advertising, training methods and instructions to end-users. See, e.g., Honeywell, Inc. v. Metz Apparaturwerke, 509 F.2d 1137 (7th Cir. 1975); Rexnord Inc. v. Laitram Corp., 6 U.S.P.Q.2d 1817, 1842, 1988 WL 141526 (E.D. Wis. 1988) (inducement of infringement can be established through the defendant's advertising or provision of instructions); D. Chisum, Patents, § 17.04[4][f], at 17-82 & n.19 (1997).

In this case, the evidence shows that the accused smart cards and DSS receivers were designed with full knowledge on Thomson's part of the '464 patent to require the insertion of an access card in a manner

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<sup>51</sup> Thomson also argues that on-screen display messages referencing the access card are frequently triggered by causes which are not related to the card itself. Respondents' Post-Hearing Br. at 30. Presumably, in those cases removal and reinsertion of the access card may not occur. In other instances, insertion of the card into the DSS reader does occur. As noted by the Federal Circuit in Bell Comm. Research Inc. v. Vitalink Comm. Corp., 55 F.3d 615, 34 U.S.P.Q.2d 1816, 1822 (Fed. Cir. 1995), "an accused product that sometimes, but not always, embodies a claimed method nonetheless infringes."

that practices claim 8, and further that for various reasons smart cards have been inserted into Thomson DSS receivers millions of times in the United States at the request and instruction of Thomson or those representing Thomson. Also, it has been overwhelmingly established that Thomson has been actively and intentionally engaged in instructing end-users to practice claim 8 of the '464 patent.

The facts and law require a finding by at least a preponderance of the evidence that Thomson has induced the infringement of claim 8 of the '464 patent.

#### **D. Contributory Infringement**

Complainant argues that respondents have contributorily infringed claim 8 of the '464 patent. Complainant's Post-Hearing Br. at 25-30.

Respondents argue that even assuming that there are instances when users of the accused Thomson DSS receivers practice claim 8, respondents cannot be liable for contributory infringement.

Respondents' Post-Hearing Br. at 33-35.

OUII takes the position that although the accused products do not infringe claim 8 of the '464 patent, in the event the accused products are found to infringe claim 8, the evidence supports a finding that respondents have contributed to the infringement of the claim. OUII Reply Br. at 2, 21-22.

The Patent Act provides in pertinent part, as follows:

Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture,

combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

35 U.S.C. § 271(c).<sup>52</sup>

Certain elements of contributory infringement have already been established in connection with the issues of direct and induced infringement. The Thomson respondents have had knowledge of the '464 patent since at least 1989, and have since 1995 been put on notice by complainant Innovatron that Innovatron believed Thomson products to be within the scope of Innovatron's patents.<sup>53</sup> Furthermore, direct infringement by end-users of the accused access cards and DSS receivers has been established by at least a preponderance of the evidence.<sup>54</sup>

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<sup>52</sup> Except for the 1994 amendment to section 271(c), which involved offers to sell and importation, the Code provision quoted above is identical in all material respects to the provision which forms the basis of the cases on contributory infringement that were relied on by the parties in their briefs and are relied on by the administrative law judge in this initial determination. See U.S.C.A., Title 35, (West Supp. 1997 at 73-75).

<sup>53</sup> See Trell v. Marlee Elec. Corp., 912 F.2d 1443, 1447-48 (Fed. Cir. 1990) (concerning the knowledge requirement of section 271(c)).

<sup>54</sup> A claim for contributory infringement or inducement of infringement will not lie without proof of direct infringement. See C.R. Bard, 911 F.2d at 673, 673; Standard Havens Prods. v. Gencor Indus., 953 F.2d 1360, 1374 (Fed. Cir. 1991); Moleculon Research Corp. v. CBS, Inc., 872 F.2d 407, 410 (Fed. Cir. 1989).

Respondents argue that they cannot be liable for contributory infringement because: (1) the DSS receiver has substantial non-infringing uses; and (2) the DSS receiver is not especially made or adapted for use in infringing claim 8. Respondents' Post-Hearing Br. at 33-35; Respondents' Post-Hearing Reply Br. at 21-23.

With respect to the question of substantial non-infringing uses, respondents argue that the DSS access cards are pre-installed and not packaged separately, and that day in and day out when consumers use their DSS receivers without repositioning their access cards, the DSS receivers are used in a manner that even complainant concedes does not infringe claim 8. Citing C.R. Bard, Inc. v. Advanced Cardiovascular Sys., Inc., 911 F.2d 670 (Fed. Cir. 1990), respondents argue that whether or not all of complainant's allegations of access card upgrades, replacements, and instructions to consumers to remove and reinsert their access cards are true, contributory infringement cannot be established. This, it is argued, is because whether the DSS systems may be used in an infringing manner is insufficient:

"Innovatron must -- but did not -- show that the DSS *cannot be used* in a noninfringing manner." Respondents' Post-Hearing Br. at 34 (emphasis in original) (citing C.R. Bard, 911 F.2d at 674-75).

In C.R. Bard, the Federal Circuit reversed a district court's grant of summary judgment of contributory infringement. The Federal Circuit noted, according to the evidence then in the record, an accused medical device (a catheter used in cardiovascular surgery) was

not used in an infringing manner in two-thirds of its applications. Therefore, the Federal Circuit held that "[w]hether the ACS catheter 'has no use except through practice of the patented method,' *Dawson Chemical Co. v. Rohm & Haas Co.*, 448 U.S. 176, 199, 100 S.Ct. 2601, 2614, 65 L.Ed.2d 696 (1980), is thus a critical issue to be decided in this case." 911 F.2d at 674-75.

In this case, the evidence is clear that in many or most instances, following insertion of the access card in Mexico, consumers can purchase their DSS receivers, install the receivers in their homes, and watch programming without insertion (or reinsertion) of the access card into the receiver. However, it is also clear from the evidence that in many cases the card will have to be reinserted or replaced because of malfunctions, and that eventually all cards will be replaced and new cards inserted as part of an upgrade, thereby causing infringement of claim 8 to occur.

Thus, the question remains as to whether these facts constitute the type of non-infringing use the Federal Circuit contemplated in C.R. Bard.

As seen from the quotation of above, the Federal Circuit based its holding on Supreme Court precedent. Furthermore, the Federal Circuit's opinion also explained that its holding was based on the rationale expressed by the Supreme Court in Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417 (1983). See C.R. Bard, 911 F.2d at

In the Sony case, the Supreme Court, explained, as follows:

When a charge of contributory infringement is predicated entirely on the sale of an article of commerce that is used by the purchaser to infringe a patent, the public interest in access to that article of commerce is necessarily implicated. A finding of contributory infringement does not, of course, remove the article from the market altogether; it does, however, give the patentee effective control over the sale of that item. Indeed, a finding of contributory infringement is normally the functional equivalent of holding that the disputed article is within the monopoly granted to the patentee. For that reason, in contributory infringement cases arising under the patent laws the Court has always recognized the critical importance of not allowing the patentee to extend his monopoly beyond the limits of his specific grant. These cases deny the patentee any right to control the distribution of unpatented articles unless they are "unsuited for any commercial noninfringing use." *Dawson Chemical Co. v. Rohm & Hass Co.*, 448 U.S. 176, 198, 100 S.Ct. 2601, 2614, 65 L.Ed.2d 696 (1980). Unless a commodity "has no use except through practice of the patented method," *ibid*, the patentee has no right to claim that its distribution constitutes contributory infringement. "To form the basis for contributory infringement the item must almost be uniquely suited as a component of the patented invention." P. Rosenberg, *Patent Law Fundamentals* S 17.02[2] (1982). "[A] sale of an article which though adapted to an infringing use is also adapted to other and lawful uses, is not enough to make the seller a contributory infringer. Such a rule would block the wheels of commerce." *Henry v. A.B. Dick*

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<sup>55</sup> It is noted that the Sony case involved alleged contributory infringement under the Copyright Act, and not the Patent Act. However, as recognized by the Federal Circuit, the Supreme Court drew the analogy between the two intellectual property Acts as a vehicle for expressing the law and rationale applicable to both. See Sony, 417 U.S. at 439-442.

Co., 224 U.S. 1, 48, 32 S.Ct. 364, 379, 56 L.Ed. 645 (1912), overruled on other grounds, Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 517, 37 S.Ct. 416, 421, 61 L.Ed. 871 (1917).

Sony, 464 U.S. at 440-442 (1983) (footnote omitted).

In this case, the patentee is not seeking to expand his monopoly beyond its proper scope in order to restrict or prohibit sales of non-infringing goods. The relief sought by assignee Innovatron will not prohibit the importation and sale of any goods other than the DSS receivers and cards which have been found to infringe the '464 patent. Although many or most DSS receivers will initially function without infringement of the '464 patent in the United States, the accused products will not continue to function except through infringement. Unlike the medical devices in C.R. Bard which may be used successfully in surgery without ever having to infringe the subject patent in that case, there is abundant evidence that the accused Thomson receivers will eventually be used for a purpose that infringes of the '464 patent.<sup>56</sup>

Even if there is no defect resulting in card reinsertion there is universal card replacement for security purposes. Therefore, because use of each DSS receiver with the card already inserted will eventually be used in an infringing manner there is no substantial

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<sup>56</sup> Nor are the facts in this case like those in the Sony case in which the accused devices (Betamax recording devices) had potential uses which were authorized.

non-infringing use that qualifies the accused products as a staple of commerce.

With respect to the question of whether the DSS receiver is especially made or adapted for use in infringing claim 8, the evidence establishes that an alternative to the smart card design could have provided access for users to DSS programming. Kuc Tr. 194-195, 242-243. Instead, Thomson developed the smart card drive software that checks for the value of the TS character, and helped to design the overall DSS system with full knowledge of the '464 patent. CX 24C (Hailey Dep.) Tr. 17-18, 37; CX 905C; CX 331C at RA02963, RA39218, RA39224.

Accordingly, for the reason discussed above the administrative law judge finds that the Thomson respondents are liable for contributory infringement of claim 8 of the '464 patent.

#### VI. DOMESTIC INDUSTRY

Section 337(a)(1)(B), which is asserted against respondents in this investigation, applies "only if an industry in the United States, relating to the articles protected by the patent. . . exists or is in the process of being established." 19 U.S.C. § 1337(a)(2).

Although there must be a domestic industry with respect to the asserted patent or patents, there is no claim correspondence requirement as between the claims asserted against respondents and those practiced by the domestic industry. Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same

Including Self-Stick Repositionable Notes, Inv. No. 337-TA-366, USITC

Pub. 2949 (Jan. 1996).

The requisite domestic industry is defined in section 337 as follows:

(3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent . . . concerned --

(A) significant investment in plant and equipment;

(B) significant employment of labor or capital; or

(C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a) (3).

The domestic industry requirement is satisfied by meeting the criteria of any one of the three factors listed above. Certain Concealed Cabinet Hinges and Mounting Plates, Inv. No. 337-TA-289, Comm'n Op. at 19-20 (1990). Complainant bears the burden of establishing that the domestic industry requirement is satisfied. Id. at 22.

The domestic industry determination is not made by the application of a rigid formula. The determination is made by an examination of the facts in each investigation, the article of commerce, and the realities of the marketplace. Thus, a domestic industry has been found to exist in a variety of circumstances. Certain Diltiazem Hydrochloride and Diltiazem Preparations, Inv. No.

337-TA-349, Initial Determination at 139 (United States Int'l Trade Comm'n Feb. 1, 1995) (domestic industry based on product finishing, quality control and packaging of imported bulk diltiazem), 60 Fed. Reg. 17366 (1995) (Comm'n determination not to review). See Certain Cube Puzzles, Inv. No. 337-TA-112, USITC Pub. 1334, 219 U.S.P.Q. 322 (Int'l Trade Comm'n 1983) (domestic industry based on quality control, repair and packaging of imported cube puzzles); Certain Plastic Fasteners and Processes for the Manufacture Thereof, Inv. No. 337-TA-248, Initial Determination (June 1987), aff'd, Comm'n Op. at 49-51 (1987) (domestic industry based in part on distribution and warehousing); Certain Airtight Cast Iron Stoves, Inv. No. 337-TA-69, USITC Pub. 1126, 215 U.S.P.Q. 963 (Int'l Trade Comm'n 1981) (domestic industry based on repair and installation activities associated with imported stoves).

To satisfy the domestic industry requirement, complainant relies on its licensee, Gemplus, and the equipment used at the Gemplus production facility located in Montgomeryville, Pennsylvania. The equipment is identified as the { } tester/handler ("the { } machine") and the GCR500 reader with on-line quality control software.<sup>57</sup>

#### **A. Technical Requirements**

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<sup>57</sup> The evidence also establishes that Gemplus pays royalties to Innovatron under the '464 patent for the production and sale of { } D'Angelo Tr. 517.

1. The { } Machine

The cards produced by Gemplus at Montgomeryville are embedded with a microprocessor chip. The cards are tested in the { } machine to determine if the microprocessor chip is properly functioning, i.e., able to read and write data. Elspass Tr. 564-566; D'Angelo Tr. 517-521; Kuc Tr. 245. The { } the microprocessor cards with information such as each card's serial number and system files. Elspass Tr. 564-566; CX 538C.

The plastic card bodies are embedded with microprocessors on { } at Montgomeryville, Pa. D'Angelo Tr. 534-536. These microprocessor cards are then moved from the embedding machine to the { } at the { } machine. See CX 524; CX 558. {

}  
The purpose of the { } machine is to determine if the memory cell of the microprocessor card is functioning properly and to { } Elspass Tr.

566-568. Yet, prior to making that determination, the { } machine  
conducts {

}

{

}

{

}

Thus, if an incorrect {                    } is returned from the card to the  
{        } machine, then the card will be displaced and retested for the  
proper response. Elspass Tr. 574, 580, 596.

If the card passes the {

}

---

58 {

}

{

}

As noted, if any of the { } tests results in an error, then the card is { } displaced { } and the card is retested. Elspass Tr. 596-597. The reason for this displacement is that an error in the contact tests could be the result of improper contact or alignment of the contact pad on the card with the { } tester. In particular, if the reset test fails due to an improper { } received, then the failure could be due to dust or debris between one or more pads and the test head which would not be detected by { } tests. Elspass Tr. 579. By displacing the contact pads { } a better contact point may be established upon retest for the receipt and comparison of the { } by the { } machine. Elspass Tr. 579, 596.

{

} This is

because proper contact has been confirmed as a result of the { }

{ } which includes comparison with the { } Thus, any error that occurs subsequent to that test would not be as a result of improper contact between the pad and the test pins. In that case, since the card did not fail because of poor contact, repositioning the card with the objective of achieving better contact would accomplish nothing. Instead, the card is immediately rejected. Elspass Tr. 580-581.

After the memory cells of the card have been examined (i.e., written to and read from) and after the card has been {

}

As described above, the { } machine performs each element of claim 8 of the '464 patent. In summary, the { } machine utilizes a method of connecting the removable microprocessor cards to the { } machine (an electric device). See Kuc Tr. 246-247. The microprocessor card and the { } machine cooperate in that both have to be present for the { } testing and { } operations to occur. See Tr. Kuc Tr. 245-247. The { } machine then compares the { } to an expected value to confirm whether there is a

proper electrical contact. See Elspass Tr. 568-569. Specifically,  
the {

}

The predetermined { } is used for the purpose of determining whether proper contact has been established in accordance with the testing step of claim 8 of the patent. See Elspass Tr. 568-569. The { } is compared with the expected value of the { } Id. If the card returns an incorrect { } then the test head is raised, the card is displaced { } and the card is retested in accordance with the displacing step of claim 8 of the patent. See Elspass Tr. 568-569; Kuc Tr. 247-249. The retesting again compares the value of the { } received with the expected value of { } Elspass Tr. 568-569, 596. If an incorrect value of { } is received upon retest, then the card is rejected; otherwise, the { } proceeds to the intended operation of the machine, i.e., { } testing of the memory cells of the chip and { } See Elspass Tr. 610; Kuc Tr. 245.

Both respondents and OUII argue that the operation of the { } machine cannot be covered by the '464 patent because the test for the

{ }  
Yet, the fact that additional steps may be utilized in addition to the claimed steps does not avoid coverage by the claim. Certainly, such additional steps could not be used to avoid a finding of infringement if Gemplus were not complainant Innovatron's licensee. The fact remains that the steps of claim 8 of the patent are carried out by the Gemplus equipment.

The Montgomeryville facility includes a {  
} Elspass Tr. 588-589. This {

} that test every microprocessor card produced.

See Elspass Tr. 588-589. Thus, it also practices claim 8 of the '464 patent.

## 2. The GCR500

The Montgomeryville facility also uses Gemplus GCR500 card reader equipment along with an on-line computer to conduct quality control testing. D'Angelo Tr. 545-546. The evidence presented by Professor Kuc and the Gemplus witnesses described the operation of the GCR500 on-line control system for quality control of the microprocessor cards produced at the Montgomeryville facility.

After each card is tested and programmed using the { } machine, { } is selected for manual inspection as part of quality control. Elspass Tr. 583. The cards

are manually inserted into the GCR500 card reader -- in a manner similar to the insertion of the smart cards in the Thomson DSS receiver.<sup>59</sup> See Bove Tr. 979-980; LeDuc Tr. 81-83.

The card and the reader device correspond to the removable article and electric device required by the patent (and present in the Thomson DSS units). See Kuc Tr. 249-250, 357. The card reader includes a series of pins or terminals which correspond to the contact pads on the microprocessor cards to be tested. LeDuc Tr. 610. The insertion of the card in the GCR500 card reader is the bringing step of claim 8 of the '464 patent. See Kuc Tr. 250. This insertion triggers a card detection switch in the reader. LeDuc Tr. 117-118. A reset signal is sent to the card, and an answer-to-reset is sent from the card. LeDuc Tr. 101-102. {

}

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<sup>59</sup> {

}

Gemplus uses this { } to establish whether there is proper contact between the card and card reader. Elspass Tr. 584; LeDuc Tr. 81-83. If the reader receives a good answer to reset, then additional quality control tests are performed { } CX 525C at 9. {

} Thus, these personnel can determine from examining the { } whether proper contact has been achieved. CX 525C at 11. Accordingly, for the reasons discussed above, the GCR500 practices claim 8 of the '464 patent.

**B. Economic Requirements**

Beginning with Gemplus' initial purchase of the Montgomeryville facility in 1995 for { } Gemplus has invested { } in U.S. facilities. D'Angelo Tr. 515-517; CX 504C. This investment would not have been made unless Gemplus intended {

} CX 504C. Gemplus has over { } individuals in the United States engaged in production, technical support, customer service and development activities at the various Gemplus locations. D'Angelo Tr. 515. At least { }

machines and { } GCR500 readers are used at Montgomeryville for these purposes. It has also made investments elsewhere in the United States for developing the market for its microprocessor cards.

D'Angelo Tr. 522; Elspass Tr. 564-566, 588-589, 610. The annual U.S. payroll for individuals who spend most of their time on microprocessor card production, development and servicing exceeds { } and includes over { } individuals.<sup>60</sup> D'Angelo Tr. 525-530.

For 1997, sales of microprocessors produced at Montgomeryville will be roughly { } of the revenue of the facility, and this percentage is increasing.<sup>61</sup> D'Angelo Tr. 526, 531, 543-544. Thus, a proper current allocation of expenses attributable to microprocessor cards would include roughly { } percent of all of the expenses of the

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<sup>60</sup> Development for microprocessor cards is performed by several individuals in other Gemplus locations in the United States, and the development expenditures for these individuals alone total more than { } D'Angelo Tr. 527-530.

<sup>61</sup> The record is clear that Gemplus' investments are sufficiently large so that any reasonable allocation more than satisfies the domestic industry requirement. For example, during 1997, Gemplus will produce roughly { } microprocessor cards valued at { } at the Montgomeryville facility. D'Angelo Tr. 531. Indeed, Gemplus recently, produced { } microprocessor cards for { } at a price of roughly { } D'Angelo Tr. 532-533.

Furthermore, regarding capital investment, Gemplus invested roughly { } in smart card manufacturing equipment in 1996, and an additional { } in smart card manufacturing equipment in 1997. D'Angelo Tr. 515-516. As set forth in Gemplus' annual budget, identified as CX 508C, Gemplus budgeted revenues from the sale of microprocessor cards produced at Montgomeryville during 1997 to be { } D'Angelo Tr. 544-545.

Montgomeryville facility, including the payroll, lease commitments and equipment.

Respondents argue that Gemplus has not satisfied a value-added standard which Thomson argues is applicable to this investigation. However, cases cited by respondents involved situations where the domestic industry imported the product covered by the intellectual property at issue.<sup>62</sup> Value-added activities such as customer support and packaging with respect to the article covered by the intellectual property were therefore relevant to the domestic industry issue. This case involves production in the United States of the product covered by the '464 patent. The subject microprocessor cards are produced in large volumes at the Montgomeryville facility. See, e.g., Elspass Tr. 566. Thus, the cases relied upon by respondents are not applicable.

In summary, there is substantial production of microprocessor cards at Montgomeryville. The testing and programming that is a necessary part of that production practices the '464 patent, with respect to both the { } machine and the GCR500 on-line control system. Whether from the standpoint of investment in capital and equipment, in labor, or in engineering and development, the investment made by Gemplus in the United States is substantial and is more than sufficient to establish the existence of a domestic industry.

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<sup>62</sup> See Cabinet Hinges, Inv. No. 337-TA-289, Initial Determination (Sept. 28, 1989), Comm'n Op. (Jan. 9, 1990); Cube Puzzles, 219 U.S.P.Q. 322.

**Conclusion on the Domestic Industry Issue**

For the reasons stated above, the administrative law judge determines that the domestic industry requirement of section 337 is satisfied.

## Findings of Fact

### I. Background

1. The complainant is Innovatron S.A. ("Innovatron" or "complainant"), located at 1 rue Danton, Paris, France 75006. See 62 Fed. Reg. 15728 (1997); RX 257C at 2.
2. Respondents Thomson Multimedia, S.A. is located at 9 place des Vosges, Paris La Défense Cedex, France. See 62 Fed. Reg. 15728 (1997); CX 3 (Response to the Complaint) at 4.
3. Respondent Thomson Consumer Electronics, Inc. is located at 10330 North Meridian Street, Indianapolis, IN 46290. See 62 Fed. Reg. 15728 (1997); CX 3 at 4.
4. No party contests in personam or subject matter jurisdiction in this investigation.
5. The smart card is a plastic card that is often roughly the size of a credit card which contains an integrated circuit and some contacts that are meant to access that integrated circuit. Kuc Tr. 156; CX 3, ¶16.
6. The integrated circuit is connected to contact pads on the surface of the card, and when the card is inserted into a reader, these surfaces make contact with a connector. Kuc Tr. 156. The pins in the card reader are often elongated wires that have a little dip in them that allow a particular contacting surface to

be made in contact with the card. Kuc Tr. 156-157.

7. In a system such as the accused DSS system, bits that are coming out of the tuner are encrypted. In order to be decrypted they have to be run through a mathematical process which turns them into bits which can then be viewed as video or listened to as audio. The smart card provides the key to unlock that encrypted information. The smart card will only provide that key for programs that have previously been authorized or channels that it has previously been authorized to view. Tutorial Tr. 86; Kuc Tr. 194-195.

## II. Importation and Sale

8. Respondents manufacture the accused DSS receivers in Mexico and import the receivers into the United States for sale and use by U.S. consumers. These receivers are imported as a part of a package that also includes the accused smart card. Although respondents do not manufacture the smart cards, they procure them from other sources, package them with the receivers, and import both the receivers and the smart cards into the United States. See CX 3 (Response to Complaint), ¶¶ 36, 37, 40, 47, and 50.
9. Thomson Televisiones de Mexico manufactures and assembles Digital Satellite System ("DSS") receivers in Juarez, Mexico for import by Thomson Consumer Electronics, Inc. These Thomson DSS receivers are manufactured, assembled, and imported under an agreement with DirectTV, Inc. CX 4C ¶13; CX 21C (de Russé Dep.)

at 74.

10. Thomson has sold approximately {            } DSS units in the United States. Hailey Tr. 813.
11. Thomson Consumer Electronics purchases access cards from News Datacom Limited for the DSS system. CX 5C at 18-19; Hailey Tr. 802.
12. Thomson Consumer Electronics purchases, or may in the future purchase access card readers from others. CX 5C at 19.

**III. Claim Construction**

13. Claim 1 and claim 8 are as follows:

1. Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric device, which cooperates with said removable article, said removable article having electrically conductive terminals and said electric device having conductor elements, both said electrically conductive terminals and said conductor elements having corresponding contact surfaces, the method comprising the steps of:

(a) bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into contacting relationship with said corresponding contact surfaces of said conductor elements;

(b) testing said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces; and

(c) displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said

testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

8. Method as defined by claim 1 wherein said step of testing said corresponding contact surfaces for said existence of correct electrical contact comprises: performing predetermined operations which provide a predetermined expected response from the removable article upon the existence of correct alignment and electrical contact; and comparing the actual response of said removable article with the predetermined expected response.

CX 1 ('464 Patent) at col. 9, line 54 through col. 10, line 10; col. 10, lines 51-59.

14. Dr. Kuc testified that "method for electrically connecting" means that there are two things that are to be connected, and "[y]ou want to end up in a condition where they operate, so 'electrically connecting' means that you are going to bring one device in electrically operating -- in a condition such that they operate. This is the process of making the connection so that it can then do the things it's intended to do." Kuc Tr. 164-165.
15. In its discussion of the preferred embodiment, the specification contains a lengthy discussion of dangers posed by the counterfeiting or simulated operation of certain types of credit cards, as well as ways in which the claimed invention might be applied to detect and thwart counterfeiting or simulated operation. See CX 1 ('464 Patent) at col. 8, line 38 through

col. 9, line 46.

16. Electrical connection between the removable article and the electric device must be established in advance of any function that relies upon electrical connection with the removable article. For example, in the preferred embodiment drawn to the use of a particular kind of credit card and the temporary exchange of information between the credit card and a transfer device, it is clear that electric connection must be established between the credit card and the transfer device before the exchange of information will take place. See CX 1 ('464 Patent) at col. 3, lines 29-48.

17. Dr. Kuc testified as follows:

Q Is it your understanding that prior to the intended operation of an electric device, one has to successfully complete each of the steps in claim 8?

A Yes. The steps have to be completed. Then we can say that the device is properly connected.

Kuc Tr. 165.

18. Dr. Kuc testified on direct examination, as follows:

Q The next term that we see is highlighted is the term "cooperates"; is that correct?

A Yes.

Q What does that mean to a person of ordinary skill in the art?

A It means that both devices have to be present for the system to operate as intended.

Q Excuse me. When you say "both devices," what devices are you referring to?

A We're talking about an electric device and a removable article. And so the electric device will not work without the removable article and the removable article needs the electric device in order to perform the functions that are intended.

Q You say that the word "cooperate" implies that without the cooperation of the electric device will not work; is that your view?

A Yes, it is.

Q How do you come to that conclusion using the word "cooperate"?

A Well, if you -- the previous phrase talks about connecting things and so if you connect something with another thing, it works. So we have this additional phrase, which cooperates, so it must mean that it has this additional feature that both are necessary.

Kuc Tr. 165-166.

19. "Cooperate" is defined as follows:

1: to act or work with another or others to a common end : operate jointly (marines and navy men cooperated in the attack) (the police force always ~s with the fire department) 2: to act together : produce an effect jointly (heavy rains and rapid thaws cooperated to bring disastrous floods) 3: to associate with another or others for mutual often economic benefit (many nations cooperated in the trade agreement) **syn** see UNITE

Webster's Third New World International Dictionary 501

(1976) ("Webster's").

20. As set forth in a May 4, 1981 Office Action response, application claim 19, which matured and issued as claim 1, stated in part, as

follows:

Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric apparatus, which cooperates with said removable article, said removable article having at least one terminal and said electric apparatus having at least one conductor element, both said at least one terminal and said at least one conductor elements having corresponding contact surfaces ....

CSX 25 at II00124.

21. There is no limitation in the claim language as to how the "bringing ... into contacting relationship" is to be accomplished. This aspect of the claim should be read broadly, especially given the fact that the specification teaches that the contacting relationship may be brought about by a system that relies on an electric motor, on a non-electric mechanism, or manually by a person inserting a card. See, e.g., CX 1 ('464 Patent) at col. 8, lines 12-25.

22. The specification provides in pertinent part, as follows:

In a general fashion, whatever the nature of the electric or electronic circuits which are used in the card, it is possible to test for the proper electrical contact indicating the existence of correct alignment and electrical contact by making the card carry out predetermined operations for which it is known which response predetermined it must furnish (the test must be chosen in a fashion so as to operate all the electrical contacts).

CX 1 ('464 Patent) at col. 7, lines 12-20 (emphasis added).

23. Respondents' expert stated:

Clearly, if there are contacts that don't further connect to any circuitry on the other side, it wouldn't be necessary to test them, but contacts where, in some cases, lack of proper contact and alignment would result in improper operation or no operation, I think should be tested. Certainly, that's the nature of this invention overall.

Bove Tr. 901.

24. Because one has a removable article one must bring it to the electric device. One of ordinary skill in the art would understand "bringing" the removable article to mean that the removable article is inserted into the electrical device so that it is in "a contacting relationship so that it's capable of working." Kuc Tr. 166.
25. One skilled in the art wants to make sure that the removable article is in the position that is most favorable for making a contact. So, for example, with a modern smart card with pins and pads, one would want the pins to be approximately in the center of the pads. That would be the contacting relationship. Once a "contacting relationship" has been achieved between the removable article and the electrical device, one is not sure whether there is electrical contact; that must be tested for later. Id. at 167.
26. In reference to the preferred embodiment, the specification provides a flow chart, and explains in part as follows:

The drive system of the card is then started (73). The card advances and the contact surfaces face one another (contacts facing one another 74) and then

approach (approach surfaces 75) until they touch (mechanical contact of the surfaces 76).

If the card has not attained its maximal front position (end of passage? 77) it continues to advance 78).

CX 1 ('464 Patent) at col. 7, lines 31-38 (emphasis added).

27. Thus, as seen from the portion of the specification quoted above, in all cases the card must advance until the card has attained its maximal front position, even though mechanical contact has already been achieved between the contacts ("until they touch").
28. A person skilled in the art would not apply power until the contacts on the removable article are in a contacting relationship with their corresponding contacts in the electrical device. Otherwise, power may be applied to the wrong contacts and that could damage the chip on the removable article. For example, if power commenced with the "bringing" step, power might be applied from the electrical device to contacts on the removable device that are used for signal leads and which therefore should not have power applied to them at all. This is a problem that would have been understood by one of ordinary skill in the art in 1978. In fact, the adverse consequences of indiscriminately applying power to the contacts in the removable article might have been greater in the late 1970s due to the fragility of integrated circuitry in use then as compared to the circuitry used today. Kuc Tr. 168-169.
29. A good engineer in 1978, as well as today, would want a reliable

system that operates with some tolerance in the contacting relationship between the removable article and the electrical device, and which would not rely on edge contacts. Kuc Tr. 169-170.

30. Step (b) of claim 1, and claim 8 require a test for the existence of correct alignment and electrical contact. CX 1 ('464 Patent) at col. 9, line 54 through col. 10, line 10; col. 10, lines 51-59; Kuc Tr. 171.
31. Correct alignment and electrical contact is the condition that has to be satisfied for the device to operate as intended. See Kuc Tr. 175-178.
32. Correct alignment and electrical contact are indicated by a test for proper electrical contact. CX 1 ('464 Patent) at col. 7, lines 12-21.
33. One skilled in the art is not interested in the possible ways a card could fail. He or she is interested in knowing when the smart card is correctly inserted, so that is what the test does. The test informs of the existence of correct alignment and proper electrical contact. Kuc Tr. 312. Step (b) of claim 1 involves some procedure that is carried out which can indicate affirmatively when the article and the device are correctly aligned and when there is proper electrical contact between the corresponding contact surfaces. Bove Tr. 897.
34. Claim 8 specifies how to test for the existence of correct

alignment and electrical contact in two basic steps. First, predetermined operations are performed which cause the removable article to provide a predetermined expected response, which will happen only upon the existence of correct alignment and electrical contact. The second step involves comparing the actual response from the smart card with the expected predetermined response. If the responses match, then correct alignment and electrical contact has been achieved. See Kuc Tr. 163-164, 179.

35. A person of ordinary skill in the art understands that the clause "nonalignment and nonexistence of correct electrical contact" means the failure of the test in step (b) of claim 8. Kuc Tr. 183.
36. A person of ordinary skill in the art understands the term, "predetermined operations" to mean those operations that are established at the time of the design of the system and that do not change over time. The predetermined expected response is expected in that it does not change over time, and it is expected in that it is the response that the card produces. Kuc Tr. 179-180.
37. A person of ordinary skill in the art understands the term "response from the removable article" to mean that the card has to respond. The response is generated by the integrated circuit contained on the removable article. Kuc. Tr. 180.

38. The '464 patent does not require that the predetermined expected response be used exclusively for the test specified in claim 8. There is nothing in claim 8 which limits the predetermined expected response from being used for other purposes. See Kuc Tr. 180, 209.
39. The '464 patent does not require that the removable article be in motion while the testing is done. See Kuc Tr. 187.
40. Application claims 19 and 26 (issued claims 1 and 8, respectively) were added through a May 4, 1981 Amendment. CSX 25 at II00124.
41. Originally, application claim 26 simply recited "performing predetermined operations on said removable article; and comparing the actual response of said removable article with a predetermined expected response." CSX-25 at II00133. In that May 4 amendment, the assertion was made that none of the cited references disclose testing "by an electric device which tests to see if the card emits the correct predetermined response." Id.
42. In light of that assertion, application claim 26 was ambiguous given its referral to a comparison involving "a predetermined expected response" without describing the origin of that expected response in the context of "performing predetermined operations." After considering application claim 26 and the aforementioned assertion, the Examiner held that the claim is patentable, and would be allowed if certain section 112 rejections were overcome,

- i.e., the phrase "predetermined operations" as being vague and indefinite. CSX 25 at II00147.
43. To overcome that rejection, claim 19 was amended to its present form. CSX 25 at II00155-56.
44. As stated as the first objective of the invention, the '464 patent seeks "to ensure a good electrical contact while compensating for wearing down and/or crushing the contact surfaces." CX 1 ('464 Patent) at col 1, lines 34-36.
45. The fact that the electrical device is ready to accept the introduction of a credit card and to commence the movement of the drawer does not indicate when testing (including the application of power) begins. See CX 1 ('464 Patent) at col. 4, line 63 through col. 5, line 36.
46. The term "upon" need not convey the sense of immediacy, almost simultaneity, which is proposed by OUII and respondents. See Webster's at 2517-18.<sup>1</sup>
47. The Examiner's comment concerning "continuity" was his suggestion as to what he thought "electrical cooperation" was intended to mean. CX 25C at II00146. That suggested term was not found in

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<sup>1</sup> The following are among the examples given in the dictionary for the word "upon": (<~ the demand of government leaders... arrangements were made this year -- Wheeler McMillen) (<transcripts are sent ~ the request of the particular student -- *Bull. Of Meharry Med. Coll.*). Webster's at 2518.

the specification or used to replace "electrical cooperation."

Rather, the term "electrical contact" was used to replace

"electrical cooperation." CSX 25 at II00155-56.

48. "Correct electrical contact," as used in claim 8, means something more than continuity, which calls for assessing only whether any current is passing between a first and second point but not the nature of the signal voltage received at the second point.

Elspass Tr. 571-572, 593-594; see Elspass Tr. 605-06.

49. Continuity is not a sufficient test to determine that the device and card are properly connected for their intended purpose.

Elspass Tr. 568-573.

50. The term "electrical contact" was used in the claim and parts of the specification in accordance with its ordinary meaning, which is contact such that the removable card and the electric device will work as intended. Kuc Tr. 161, 175-178; CX 1, col. 5, lines 54-60; col. 1, lines 21-44.

51. The act of "displacing said corresponding surfaces relatively, in a direction tangential to said corresponding contact surfaces" requires that the contact surfaces of the removable article's terminals and the electric device's conductors be moved in relation to each other such that the area of contact between them moves. This is the plain meaning of the phrase, and would be understood in this manner by one of ordinary skill in the art.

See Kuc Tr. 181.

52. The '464 patent contemplates bringing this relative movement about in mechanized devices or manually. CX 1 ('464 Patent) at col. 8, lines 14-37; Kuc Tr. 186-87.
53. Displacement should not be continuous or limited to mechanical displacement. The plain language of the claim calls simply for displacement, which ordinarily requires movement but not continual or motor-driven movement. See, e.g., Bove Tr. 1131.
54. In this case, the specification describes a motorized embodiment in detail yet also teaches other embodiments, including embodiments that use non-continuous, manual movement of a removable article such as a credit card. See Kuc Tr. 186; CX 1, col. 8, lines 14-37.
55. For example, the specification provides in part:

In the embodiment of the invention described with reference to the figures, the card and the connection mechanism are activated by an electric motor. In other embodiments, it may be activated differently, in particular the displacement of the card and of the drawer can be due to the carrier of the card who introduces it. In this latter case, the relative movements of the contact surfaces will be essentially guided by guiding means, particularly ramps.

In a like fashion the translationally movable drawer may be replaced by a jointed shutter which is rotationally and translationally movable (in the same fashion as introduction mechanisms for magnetic cassettes in tape readers).

CX 1 ('464 Patent) at col. 8, lines 12-25 (emphasis added).

56. Nothing indicates that the word "stopping" in claim 8 is used other than in its accepted and normal meaning. The term

"stopping" does not have any special engineering meaning. See Bove Tr. 1142-1143.

57. The teachings in the specification concerning instantaneous immobilization present the feature as an option. See CX 1 ('464 Patent) at col. 8, lines 26-37.

#### IV. Validity

58. United States Letters Patent No. 3,859,634 ("Perron patent"), entitled Digital Lock System Having Electronic Key Card, issued on January 7, 1975, to Perron and Fowler. RX 24.
59. The claimed invention of the Perron patent relates to lock systems, "particularly to an electronic lock system employing active digital electronic circuitry in both the key and the lock." Id. at col. 1, lines 10-14.
60. It is not disputed that the Perron patent is prior art to the '464 patent.
61. Although the Perron patent teaches a comparison of a response from the circuitry on the key with information stored in the master register, the success or failure of the user's key to match an expected response contained in the master register is not designed to provide information about correct alignment and electrical contact or (lack thereof) nor is such information implied. See Bove Tr. 982-985; Kuc Tr. 1218.
62. In all cases, a lack of identify between the response received from the key and the expected response results in the

identification of an unauthorized attempt to unlock the device.

For example, as seen from the teachings of the specification:

If, during comparison of any bit of the key code, a lack of identity is found between this bit and the associated bit of the master code in register 48, the output signal from comparator 46 will cause enabling of AND gate 60 and consequent resetting of flip-flop 58 which causes removal of the flip-flop output signal to gate 62. No actuation signal can be provided by reason of the disabling gate 62. An output signal from gate 60 is provided only upon detection of an error between the bit of the key code and a corresponding bit of the master code, and this output signal is also employed to activate an alarm circuit 64 to indicate detection of an erroneous key code. Upon sensing of an alarm condition, a stop signal can be generated by alarm circuitry 64 to stop clock 52 and discontinue the decoding process and to prevent the release of the key clamped in the lock by clamp 33.

RX 24 (Perron Patent) at col. 7, lines 48-65. See also Id. at col. 1, lines 42-46 ("In the event that there is not proper comparison between the master code and the key code, an alarm can be actuated and the key can also be seized within the lock to prevent its removal therefrom.").

63. In one embodiment of the claimed Perron invention, the code residing in each key's shift register and the master code can be replaced from time to time or even immediately after use of a key, for example, to permit use of a key only once a day. RX 24 (Perron Patent) at col. 1, lines 34-39; col. 3-46. However, these teachings of the Perron patent do not differentiate the comparison of a key code as taught therein from the element of

claim 8 of the '464 patent which requires comparison of an actual response from the removable article with the predetermined expected response.

64. Complainant argues with respect to the Perron patent that the administrative law judge should defer to the decision of the Examiner to allow the '464 patent to issue over United States Letters Patent 3,637,994, entitled "Active Electrical Card Device," which issued on January 25, 1972 to Ellingboe ("Ellingboe patent"). RX 32 (Ellingboe Patent); Complainant's Post-Hearing Br. at 36.
65. The Perron and Ellingboe patents are not identical. Nevertheless, it appears from an examination of the Ellingboe patent, and from the expert testimony at the hearing that the Ellingboe and Perron patents have many similarities which are pertinent to the '464 patent. See Bove Tr. 1195-1196.
66. The Ellingboe patent teaches, among other things, the use of a card, such as a credit card, with microelectric circuitry that is inserted into a reading device. The circuit on the card may provide a unique identification code. In one embodiment of the claimed invention of the Ellingboe patent, a series of clock pulses causes the code pattern to proceed to the reader "where it is sensed and compared with the corresponding codes in the memory bank of reader." See, e.g., RX 32 (Ellingboe Patent) at col. 1, line 30 through col. 2, line 24; col. 6, lines 39-43; col. 6,

lines 64-72.

67. The Texas Instruments ("TI") calculator offered into evidence at the hearing was marked by respondents as a physical exhibit, RPX 1. The casing of the calculator indicates that it is a "TI Programmable 59" with "Solid State Software." RPX 1; RX 225.
68. The calculator marked as RPX 1 was not manufactured before the January 24, 1978 priority date of the '464 patent. According to respondents' expert it appears to have been manufactured in 1979. Bove Tr. 1168.
69. Consequently, respondents did not produce a physical exemplar of a TI 58/59 calculator which could invalidate the '464 patent or any claim thereof.
70. Each of the TI calculator manuals produced at the hearing states on its cover that it is for the "TI Programmable 58C/59."<sup>2</sup> Each of the manuals produced at the hearing bears copyrights that include the year 1979. RX 68; RX 69; RX 70 (TI58C/59 Quick Reference Guide).
71. Respondents seek to describe the function of the TI 58/59 calculator as it allegedly operated before the priority date of the '464 patent, by reference to: 1)U.S. Letters Patent 4,139,893, entitled "Calculator Program Security System," which issued on February 13, 1979 (based on applications filed in 1977

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<sup>2</sup> It is not clear from the record what the significance is of the model numbers "58C" and "59" or whether there was a model "58".

and 1976), to Sidney W. Poland; and 2) U.S. Letters Patent 4,153,937, entitled "Microprocessor System Having High Order Capability, which issued on May 8, 1979 (based on applications filed in 1977 and 1976) to Sidney W. Poland (collectively the "Poland patents"). Respondents rely particularly on the '937 patent to Poland. See RPF 513-521.

72. Respondents' expert believes that the calculator disclosed therein is identical in appearance and operational description to the TI 58/59 calculator. See RPF 521 (citing Bove Tr. 1003).
73. There was little or no evidence concerning the electronic design of the TI calculator, especially if the Poland patents are not taken into account. Therefore, it is not possible to determine the situations when a blinking display might appear on the TI calculator. See Bove Tr. 1185-1190.
74. Although use of the "Diagnostic/Library Module Check" or the "Library Module Check" is identified by respondents as a way of satisfying the "testing" requirement, there is very little evidence of record concerning those tests and what occurs in the circuitry of the TI calculator during those tests, especially if one does not rely on the Poland patents. See Bove Tr. 889-1000.
75. However, it is clear that those "tests" are only performed after the user presses a sequence of buttons on the calculator to initiate the diagnostic routine. Furthermore, the user need not perform a diagnostic routine before attempting to use the module.

The TI calculator may be used immediately upon insertion of a module into the back of the calculator. Testing "occurs after the module is electrically connected to the calculator." Bove Tr. 1172-1179.

76. In the case of the TI calculator, the fact that the calculator is turned off when the module is inserted and then turned on with the module fully powered up for use, highlights the fact that the "check" or testing which may be performed is not a test for correct alignment and electrical contact, which under the '464 patent would be performed before an attempt is made to exchange information between the removable article and the electrical device. Bove Tr. 1172-1179.
77. In Dr. Bove's experiments on the TI calculator, he covered in turn each of the eight contacts of the calculator's removal module. With seven of the terminals a user would not perceive a problem until that user attempted to access a function on the module. However, in the case of the eighth terminal, the calculator locked up. Thus, rather than testing for good connection, the TI calculator proceeds to connect without testing and can experience the consequences of not having a good electrical connection. Bove Tr. 1190-1192.
78. OUII argues in its reply brief that if claim 8 of the '464 patent is construed in the manner proposed by complainant, it is anticipated by U.S. Letters Patent 4,055,754 ("Chesley patent"),

entitled "Memory Device and Method of Testing the Same," which issued on October 25, 1977 to Gilman D. Chesley. See OUII Reply Br. at 15-20; RX 50 (Chesley Patent).

79. In the Chesley patent, the claimed invention "provides an integrated circuit memory device and method wherein test logic is included in the device for detecting the presence of predetermined patterns applied to the memory cells." RX 50 (Chesley Patent) at col. 1 lines 43-46.
80. Random access memories (RAMs) provide the background for the claimed invention, and are the memory cells used in the preferred embodiment disclosed in the specification. Id. at col. 1, lines 18-27; col. 2, lines 8-12.
81. One of the purported advantages of the method disclosed in the Chesley patent is that instead of testing each cell individually, the memory can be tested row by row. Id. at col. 1, lines 44-50.
82. There is no explicit "bringing" step in the Chesley patent. See Bove Tr. 1072-1073.
83. Respondents' expert testified with respect to he bringing step, as follows:

Q And there's some sort of action where this chip is brought into connection with a testing device; is that right?

A Or by which it's installed into a socket or printed circuit board or something.

Q But the bringing element would be met?

A It has to be connected.

Bove Tr. 1074.

84. The Chesley patent does not disclose a test to assure correct electrical contact before the RAMs are tested for memory. See Bove Tr. 1072-1073, 1076; Kuc Tr. 1222-1223.
85. There is no explicit "displacing" in the Chesley patent. See Bove Tr. 1072-1073.
86. There is no disclosure in the Chesley patent of a displacing that stops when testing determines alignment and existence of correct electrical contact, as required by independent claim 1 and dependent claim 8 of the '464 patent. See Bove Tr. 1072-1073; Kuc Tr. 1222-1223.
87. RX 3 contains a copy of U.S. Letters Patent 4,222,516, entitled "Standardized Information Card," which issued to Bernard Badet et al. ("Badet patent").
88. RX 17 contains a copy of U.S. Letters Patent 3,934,122, entitled "Electronic Security Card and System for Authenticating Card Ownership," which issued to James A. Riccitelli ("Riccitelli patent").
89. RX 45 contains a copy of U.S. Letters Patent 4,163,210, entitled "Arrangement for Checking a Contact Inserted Between a Transmitter Circuit and a Receiver Circuit to Allow Electrical Signals to Be Transmitted," which issued to Georges M. Giraud ("Giraud patent").

90. It has not been disputed that RX 3, RX 17 and RX 45 are prior art to the '464 patent.
91. The Badet patent claims to disclose, among other things, "means which ensure a good electrical connection between the device [embossed in a] card and the system which is required to cooperate with the card and the testing of the electrical connection." See RX 17 (Badet Patent) at col. 2, lines 49-65; col. 7, lines 40-44.
92. In the disclosure of the Badet patent, a voltage is applied between two electrodes located in the card reader. There are two electrodes associated with each contact on the card. Current flows from one electrode, through the contact on the card, and into the other electrode. As explained by respondents' expert, "the current is supposed to exceed a certain predetermined level and so there is a threshold, and above that threshold, if the current is measured to be above that threshold, then that suggests that there's low enough impedance connection that the connections are good." This flow demonstrates electrical continuity between the card and the reader. Kuc Tr. 1219-1220; Bove Tr. 1000-1011.
93. The Badet patent would suggest that a test of electrical impedance is adequate in assuring an electrical connection to a smart card.
94. Therefore, the Badet patent may teach away from the invention of

- claim 8 which requires a predetermined expected response from a chip on the removable article. Kuc Tr. 1219-1220.
95. The Badet patent does not expressly disclose the "displacing" step of the '464 patent. See RX 17; Bove Tr. 1011.
96. In the Badet patent, the electrodes move in a direction perpendicular to the contacts on the card and do not move in a tangential direction. Kuc Tr. 1219-1220.
97. In the Riccitelli patent, the card holder must key in a preselected sequence of digits or signals. Logic circuitry on the card is responsive to input signals. If the input signals are in a preselected sequence, an output is provided by the card. If the input signals are not in the preselected sequence, a feedback control signal is developed and applied to deactivate the logic circuitry. See, e.g., RX 17 (Riccitelli Patent) at col. 1, line 56 through col. 2, line 9; col. 3 lines 7-15; Bove Tr. 1014.
98. In the Riccitelli patent, correct electrical connection could be inferred in cases in which when the preselected sequence of signals is confirmed by the logic circuitry. See Bove Tr. 1015-1016.
99. The "test" in the Riccitelli patent is not for correct electrical connection, and it does not indicate if the electrical connection is faulty (even in the case of an authorized user), or when electrical connection is correct in cases in which the holder of

the card has entered the incorrect code. Consequently, the Riccitelli patent does not disclose a displacing step. Bove Tr. 1017; Kuc Tr. 1214-1215.

100. The Riccitelli patent does not teach or suggest displacement in order to attempt a correct electrical connection. The "test" in the Riccitelli patent is not used to help establish an electrical connection between the card and the terminal. In fact, the Riccitelli patent teaches away from the displacing step of the '464 patent. The Riccitelli patent assumes normal operation with correct electrical connection. It does not contain any teachings or disclosure of what to do in cases of incorrect electrical connection. It teaches that when the "test" fails, the logic circuitry should be inhibited from further operation until reset. See RX 17 (Riccitelli Patent) at col. 1, lines 61-65; col. 5, lines 2-5; Kuc Tr. 1214-1215.
101. The Giraud patent discloses an arrangement to check the contact between a transmitter circuit and a receiver circuit. See, e.g., RX 45 (Giraud Patent) at col. 1 line 65 through col. 2, line 39.
102. The Giraud patent teaches that a test should be conducted during the entire time signals are transmitted from the transmitter to the receiver. RX 45 (Giraud Patent) at col. 2, lines 38-41 RX 45, column 2, lines 38-41; Bove Tr. 1078-1079.
103. In the Giraud patent, good contact is confirmed by examining the currents carrying data between the transmitter and the receiver.

However, the Giraud patent does not use "predetermined operations" or a "predetermined expected response." See Kuc Tr. 1223-1224; Bove Tr. 1077-1078.

104. Although the Giraud patent states that it is generally satisfactory to ensure good contact between the two components at the start of a signal-transfer operation, it does not teach what is to be done in the case of bad contact, or how to use testing in the method of establishing contact. The Giraud patent does not suggest displacing or stopping of the displacing upon the existence of correct alignment and electrical contact. See RX 45 (Giraud Patent) at col. 1, lines 19-30; Kuc Tr. 1223-1224.
105. U.S. Patent No. 3,867,693 to Saxenmeyer concerns integrated chips that are very small. Typically there are many contacts on integrated circuits of this type. In order for the probes to make contact with the chip, they are positioned optically. The contacts on the chip are so small that there is no room for tangential motion, so Saxenmeyer does not have displacement in a tangential direction. Kuc Tr. 1220-1221; Bove Tr. 1022, 1194.
106. Furthermore, the integrated circuits in Saxenmeyer are not removable articles as that term is used in claim 8 of the '464 patent. They are not meant to be inserted and taken out and inserted. They are soldered into place. Kuc Tr. 1220-1221.
107. Additionally, the Saxenmeyer patent does not teach "a predetermined expected response from the removable article."

Rather it is basically a continuity test. Kuc Tr. 1221.

108. There are no teachings or suggestions to one of ordinary skill in the art to combine the prior art relied upon in this investigation. Nor would it be clear to one of ordinary skill in the art how to combine the prior art. See Kuc Tr. 1224-1225.

#### V. Infringement

109. The accused DSS receivers carry out the "method for electrically connecting" and also "cooperate" with the cards inserted into them because an electrical connection is made between a removable article (having at least one electrical circuit) and an electric device. See Kuc Tr. 253-254.
110. In particular, the record evidence shows that Thomson's removable smart cards have an integrated circuit embedded within them. Kuc Tr. 194, 199.
111. The accused smart cards also include electrically-conductive terminals or pads. Kuc Tr. 156, 195-196.
112. The cards are inserted within an electric device, known as a smart card connector or reader. The smart card connector has conductive elements that make contact with the smart card's pads. Kuc Tr. 193; Kelly Tr. 848.
113. The smart card pads connect to corresponding connector elements so as to allow for communication between the two to take place. Kuc Tr. 195-196; Kelly Tr. 850; CX 24C (Hailey Dep.) Tr. 58.
114. The evidence is uncontroverted and clear that thousands if not

millions of new access cards have been provided for insertion into DSS readers in the United States as part of an upgrade. See Compton Tr. 741; CSX 4C (Stewart Dep.) Tr. 87-93, 220-221; CX 34C (Gonzalez Dep.) Tr. 78; CX 11C at 4.

115. In addition, there is strong evidence that on at least some occasions, and more than likely on a regular basis (i.e., daily or weekly), end-users of accused DSS devices remove and reinsert their access cards when there is an apparent malfunction of their receiver. Burns Tr. 672-689.
116. Sometimes smart cards must be replaced. CX 34C (Gonzalez Dep.) Tr. 886-87; CX 11C at 5; CX 129C.
117. {            } of DSS receivers have been replaced. When an end-user receives a replacement receiver, he typically inserts his original access card into his replacement receiver before shipping the original receiver to Thomson. Compton Tr. 742; CX 22C (Compton Dep.) Tr. 43-44.
118. Insertion by a person of the smart card into the receiver's connector causes the card's pads to be brought into contact with the connector's pins. See Kuc Tr. 193; Kelly Tr. 848-850.
119. The reset sequence specified by ISO 7816-3 is initiated by fully inserting the smart card into the receiver such that the smart card causes actuation of the switch in the receiver's connector. Kelly Tr. 846-850; CSX 5C (Pitsch Dep.) Tr. 16; CX 24C (Hailey Dep.) Tr. 89, 99.

120. The reset sequence involves the application of certain signals to certain pads of the smart card in a well-defined and predetermined manner. Specifically, in accordance with the reset sequence, the following operations are carried out: (a) power is applied to the Vcc and Vpp pads, (b) the I/O signal is applied to the I/O pad, (c) a clock signal is provided to the clock pad (if needed), and (d) the reset signal is applied to the reset pad. Kuc Tr. 200-202, 228.
121. The application of various signals to the smart card, most especially the reset signal, constitutes the act of "performing predetermined operations" as called for by claim 8. Kuc Tr. 200.
122. In response to application of the reset signal, the smart card provides the ATR sequence to the DSS receiver, as specified by the ISO 7816-3 standard. Kelly Tr. 846-847.
123. The first character of the ATR sequence is the TS character. Kuc Tr. 219.
124. While the TS character can have either the value of 3F or 3B consistent with the ISO 7816-3 standard, smart cards used in Thomson's DSS receivers have only used the 3F value. Kelly Tr. 848; Kuc Tr. 216.
125. Comparison of the TS character to the alternative values of 3F and 3B is expressly provided for in lines of code. CSX 23C.
126. The value of the TS character reaching the receiver (from the smart card) may be a value other than 3F when there is a lack of

proper electrical contact, due for example to the presence of a foreign substance. See, e.g., Kuc Tr. 157-161, 239-240; LeDuc Tr. 72-74, 79-80, 81, 87, 95-99.

127. Reception of a TS character having a value of 3F by the DSS receiver is therefore indicative of proper electrical contact. Kuc Tr. 219, 224. The TS character value of 3F (or potentially 3B) therefore constitutes the "predetermined expected response from the removable article upon the existence of correct alignment and electrical contact" called for by claim 8. Kuc Tr. 202, 225.
128. Once received at the connector, the TS character is analyzed by Thomson's DSS receiver. The receiver compares the value of the TS character to the predetermined values of 3F and 3B. Kuc Tr. 255; CPX 26C and CPX 27C.
129. Direct comparison of the received TS character with the predetermined values of 3F and 3B is also expressed in the code describing the operation of the DSS2 and DSS3 models, which is respectively provided for in CPX 7C. Kelly Tr. 861-865, 873-875; CX 326C at K22; CSX 24C; CPX 26C; CPX 7C.
130. Comparison of the received TS character with the predetermined values of 3F and 3B therefore constitutes "comparing the actual response of said removable article with the predetermined expected response" as called for by claim 8. See Kuc Tr. 202, 225, 255-256.

131. If the received TS character does not have a value of 3F, the DSS receiver does not process any other characters of the ATR sequence. Kelly Tr. 966-867, 874-876.
132. Rather, it concludes the absence of proper electrical contact. After attempting to receive a TS character having a value consistent with the predetermined expected response on three separate occasions, the DSS receiver issues the "Please insert valid Access Card" message. Kelly Tr. 870, 877.
133. Respondents' Dr. Bove testified during the hearing that based on the TS character, one cannot infer proper electrical contact between a smart card and connector since all contacts needed for long term operation of the smart card and receiver are not tested. Bove Tr. 952, 954. For example, Vpp is not tested, and Dr. Bove testified that Vpp is necessary for proper operation of the smart cards since disconnection of Vpp may lead to long term reliability problems with the chips embedded in the smart cards. Bove Tr. at 1119-1120. Dr. Bove based his arguments on "at least one chip" included in a list of chips that may be embedded in a smart card provided to Thomson. Bove Tr. at 1120. He did not, however, state that such a chip was or is actually used in the cards provided to Thomson by NDC. Bove Tr. 1119-1120. He also admitted that he had not observed damage to a chip of a Thomson smart card by not providing Vpp. Bove Tr. 1120.
134. One of ordinary skill in the art would not read claim 8 to

include the additional limitation that the predetermined expected response must be exclusively used to assess the existence of proper electrical contact. Kuc Tr. 180.

135. The evidence adduced at the hearing demonstrates that there are different quality levels of card and card readers. See LeDuc Tr. 8-11, 72; Hailey Tr. 825; CX 118C. {

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136. Respondents have also had vendor qualification procedures, and do not qualify all potential suppliers. Hailey Tr. 825.

137. The dimensional specifications of ISO 7816-2 do not cover all of the factors that are important for good contact between the card and card reader. In particular, ISO 7816-2 does not specify the pressure that is applied between the pins of the card reader and the contact pads of the card. This pressure changes over time and can cause contact problems that are not immediately evident. LeDuc Tr. 73-74.

138. Even if the products are supplied in accordance with ISO specifications, stresses affect the performance of some components to the point that over time they no longer are within ISO standards. LeDuc Tr. 74.

139. Dr. Bove observed that the value of the TS character is calculated in order to deal with "real world" problems proves

complainant's point. Bove Tr. 1165.

140. If the above described "testing" carried out by the DSS receiver does not determine that there is correct electrical contact (i.e., if the TS character does not equal either 3F or 3B ) an on-screen display message that reads "Please insert a valid Access Card" is displayed to the end-user. Kelly Tr. 870, 877; Kuc Tr. 204-206; Bove Tr. 945-946; CX 17C (Whitcomb Dep.) Tr. 77-80; CX 335C at RA 25656.
141. That message is an indication that the card should be displaced. Kuc Tr. 204-205, 240-241.
142. In response to the "please insert valid access card," or in some cases a "check access card connections" message, (consistent with instructions provided by customer service representatives of the Thomson respondents), a user should remove the smart card from the receiver's connector and then reinsert the card into the connector. See Burns Tr. 686; Kuc Tr. 158, 204-205, 240-241, 256; LeDuc Tr. 99.<sup>3</sup>
143. Thomson representatives routinely instruct users to remove and reinsert smart cards in response to the "please insert valid access card message." See, e.g., CX 149C; CX 198C at ALN216921, ALN217078, ALN217095-217096.

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<sup>3</sup> CX 131C at RA34040; CX 380C at RA063065; CX 366C at SR00753048, ALN2166922, ALN216564, ALN216061, SR00794849, SR00797503; CX 198C at ALN216944.

144. Removal and reinsertion may serve to clean the contact surfaces which assists in establishing proper electrical contact. See Kuc Tr. 158-162; LeDuc Tr. 76-79.
145. A user may also manually clean away any foreign substances from the smart card's pads, as he is often instructed to do by Thomson customer service representatives. See, e.g., Burns Tr. 682-683, 702, 710-713; Compton Tr. 749-750; CX 34C (Gonzalez Dep.) Tr. 69; CX 149C; CX 197C at ALN216061, ALN217051; CX 201C; CX 198C.
146. If the reinserted smart card establishes proper electrical contact with the DSS receiver, then programming is displayed to the end-user. The provision of programming is an indication of proper operation of the receiver, and more specifically, shows the establishment of proper electrical contact between the smart card and the receiver. Kuc Tr. 206.
147. The provision of programming thus signifies to a user that he or she need not continue to further displace, i.e., remove and reinsert, the smart card. See Kuc Tr. 194, 204-206, 240-241, 254-256.
148. When there is no proper electrical contact, the "please insert valid access card" message is always displayed. CX 141C. See Kelly Tr. 870; Kuc Tr. 204, 240; CX 142C.
149. Thomson respondents have been aware of the '464 patent since at least 1989, which is long before Thomson developed its DSS receiver for the US market. See CX 4C at 13; CX 6C at 15.

150. {

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151. {

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152. A May 23, 1995 letter from Innovatron informed Thomson that its products fall within the scope of Innovatron's patents. A further letter of April 25, 1996 advised Thomson that it did not have a license agreement that extended to the United States. CX 163.

153. Thomson developed the smart card drive software that checks for the value of the TS character. CX 24C (Hailey Dep.) Tr. 17-18, 37. Thomson worked with NDC and DirectTV to design the overall DSS system with full knowledge of the '464 patent. CX 905C; CX 331C at RA02963, RA39218, RA39224.

154. The smart card configuration is a removable form of security. See LeDuc Tr. 67-69; CSX 4C (Stewart Dep.) Tr. 96.

155. Thomson, NDC and DirectTV jointly designed a system dependent on removable access cards. CX 333C.

156. Thomson's marketing materials show the access card out of the receiver, and tout the flexibility offered by smart cards. CX 171C ("**Smart Card Technology Provides system flexibility and security.** CX 171C at RA 36910 (bold and italics in original)).

157. Thomson's manuals describe replacement procedures. See, e.g., CX

105C; CX 370C.

158. There has been at least one large-scale replacement of access cards to all authorized DSS users. That replacement involved roughly 2.5 million units. See, e.g., CSX 4C (Stewart Dep.) Tr. 220.

159. The replacement procedure involved three removal/reinsertion operations, involving roughly 7.5 million instances of insertion of cards into receivers. Compton Tr. 741; CSX 4C (Stewart Dep.) Tr. 221; CX 34C (Gonzalez Dep.) Tr. 80; CX 194C.

160. {

}

161. In addition to large scale upgrades, the replacement of access cards by Thomson occurs on a continual basis with numbers in the tens of thousands per year. CX 11C at 5; CX 129C; CX 113C; CX 130C.

162. Replacement of receivers also occurs continually at even higher rates. See Compton Tr. 742; CX 11C at 5; CX 130C.

163. In response to customer service requests Thomson replaced more than { } cards and receivers during 1996. Bove Tr. 957; CX 130C.

164. These replacements require removal and insertion of an access card into a receiver by the end-user. Compton Tr. 742; CX 22C

(Compton Dep.) Tr. 43-44.

165. Removal and reinsertion of the access card is typically part of the so-called "soft reset" or "hard reset" procedures. See, e.g., CX 22C (Compton Dep.) Tr. 48-50; Burns Tr. 674-675; CX 149C; CX 131C; CX 106C. Soft and hard resets are common instructions to end-users to attempt to resolve problems with the DSS receivers. CX 106C; CX 201C; CX 195C; CX 197C; CX 198C; CX 199C.
166. These reset procedures are set forth in Thomson's training manuals. CX 131C; CX 145C.
167. Mr. Burns, a Norcross representative, testified that he frequently instructs end-users to remove the access card and wipe it off to clean the pad surfaces. Burns Tr. 682-687.
168. The sample customer service documents submitted into evidence show that numerous other customer service representatives issue similar instructions. See Compton Tr. 721; CX 22C (Compton Dep.) Tr. 48; CX 197C; CX 198C.
169. Customer service personnel have received no instructions to cease advising end-users of this procedure. See Burns Tr. 672-684, 713; Compton Tr. 742-754; CX 22C (Compton Dep.) Tr. 136; CX 131C; CX 136C; CX 145C; CX 104C.
170. Thomson's witness, Mr. Compton, testified that he was aware that customer service representatives employed by Norcross have been telling customers to wipe off the card. Compton Tr. 751-752.

171. Removing the card, wiping it off, and reinserting it often solves the problem that prompted the end-user to call. Burns Tr. 686-687.
172. The message "Please insert a valid access card" is one of several on-screen display messages that can result in end-users calling for assistance and being told to reinsert their access cards. See Burns Tr. 683; Kuc Tr. 204-205, 240-241; CX 136C; CX 149C.
173. "Remove access card" and "reinsert the access card" are two actions consistent with his understanding of how to perform a soft reset. Burns Tr. 675-676; CX 104C at N76.
174. During training, Mr. Burns learned how to perform a hard reset. Burns Tr. 676.
175. Mr. Burns was instructed that a "soft reset" should be performed by first, removing the access card from the receiver; second, depressing the down arrow key and on/off key for approximately 10 seconds; and third, turning the power back on and reinserting the card. Burns Tr. 674-675.
176. It is Mr. Stewart's understanding that the message "Insert valid access card" can represent a bad connection between the smart card and the receiver. CSX (Stewart Dep.) 4C at 113.
177. Section 5.6 of Exhibit CX 120C references On Screen Display ("OSD") messages: Several types of OSD messages provide feedback and additional information to aid the customer when problems occur, or to provide hints and warnings about the operation of



183. Message 14 - {  
} "You have inserted  
the wrong card. Please insert the proper access card." {  
} CX 120C at  
RA04096.

184. Message 16 - {  
} "This access  
card is no longer valid. Please insert your new access card."  
{ } CX  
120C at RA04097.

185. When dealing with the on-screen display message "Insert Valid  
Access Card" DSS customer service representatives are told first  
{  
} CX 131C; at RA34019, CX 145 at N00047.

186. The message "Please insert your access card" is displayed when  
CAM is not in the connector. CX 131 at RA34099; CX 161.

187. The message "Please insert a valid access card" is displayed when  
an invalid access card is inserted or there is an error in card  
reset. CX 131 at RA34099; CX 161.

188. The message "This Access Card has expired. Please install your

new Access Card" is displayed when {

} CX 161.

189. The message "This Access Card is no longer valid. Please insert your new access card" will be displayed when {

} CX 131; CX 161.

190. {

}

191. {

}

192. {

}

193. {

}

194. Thomson customer service representatives instruct users to remove their access cards and clean the contacts on their access cards with a soft cloth or an eraser. In response to certain access card-related On-Screen Display ("OSD") messages such as "Insert

your access card," "Please insert a valid Access Card," and "Please call ext. 745." CX 366C at SR00753048, ALN216692, ALN216564, ALN216061, SR00794849, SR00797503.

195. In response to these access card-related messages, Thomson customer service representatives sometimes apparently believe that it may help to wiggle the access card. CX 366C at ALN216442, SR00562709.

196. DirecTV's website under the heading "Customer Service" provides the text of each on-screen display message, a description of each message and comments relating to each message. CX 191.

197. The on-screen display message "Please insert your access card" is described as "No access card in DSS receiver." DirecTV advises "Check that the access card is fully inserted into the slot." CX 191.

198. The on-screen display message "Please insert a valid access card" is described as "Access card is invalid or defective. DirecTV advises "Access Card is defective or not a legitimate a DSS card. The card may need to be replaced. The DSS unit is still under warrant, call the manufacturer. If not, call customer service." CX 191.

199. The on-screen display message "You have inserted the wrong card" is described as "This card belongs to another DSS unit." This may occur if you have multiple boxes and the cards get swapped. It may occur if the DSS unit is swapped out do to hardware

problems. DirectTV advises "Match card to box or call customer service." CX 191.

200. The on-screen display message "This access card is no longer valid. Please insert your new access card" is described as "All of access card inserted after { } to new card. Use a the new card." DirectTV advises {

} After that, the old card won't work." CX 191.

201. {

}

202. The DSS Agent Concession Report for July 1997 identifies the customer service representative, Matt Burns took { } calls and created { } service requests. CX 194C; CX 150C.

203. The telephone calls Mr. Burns receives as a senior product support associate or customer service representative are typically made by an end-user, a dealer or servicer of Thomson DSS products. Burns Tr. 666.

204. There are presently over 100 customer service call representatives who handle calls concerning Thomson's DSS products. Burns Tr. 666.

205. Mr. Burns presently receives approximately 35-50 calls a day dealing with Thomson's DSS product. Burns Tr. 666.
206. When handling calls from DSS end-users the information that is provided by a caller is sometimes included in a service request note. Burns Tr. 669.
207. The information contained in those service request notes typically includes the caller's name, phone number and the model number and serial number of the Thomson DSS receiver that person has purchased. Burns Tr. 669.
208. The complaint codes are typically included in the service requests created by Mr. Burns. Burns Tr. 670.
209. Complaint codes are based on the conversation with the customer and indicate where the problem might exist, be it a symptom or a particular area. CX 22C at 73-74; Burns Tr. 670.
210. Complainant's Exhibit CX 121C at Bates number RA34084 under the title "access card codes" are the complaint codes that are associated with access cards that are used in Thomson's DSS receivers. Burns Tr. 670; CX 121C.
211. The service request notes typically include a general description of a call received and any action that was taken in response to that call. Burns Tr. 671-672.
212. It is standard operating procedure to create an service request for every call. Burns Tr. 672.
213. In practice, however, a service request is not created for every

call that Mr. Burns receives. Sometimes he does not feel that it is necessary Burns Tr. 672-673.

214. The service requests that are created are accessible to the customer service representative's supervisor. Burns Tr. 672.

215. When Mr. Burns advises callers to do a soft reset, he more often than not instructs them to remove the access card and reinsert it with the intention that they do so. Burns Tr. 675.

216. In those instances where Mr. Burns has instructed callers to perform a soft reset that included removing and reinserting an access card, he usually does not denote that removal and reinsertion on a service request. Burns Tr. 675.

217. Mr. Burns generally understands performing a hard reset to include removing the access card, unplugging the DSS receiver for at least one hour, preferably overnight, and then reinserting the access card and powering the receiver. Burns Tr. 676.

218. Mr. Burns has advised callers to perform a hard reset. Burns Tr. 676.

219. When Mr. Burns advises callers to perform a hard reset, he typically informs the caller to remove the access card with the intention that they do so. Burns Tr. 676.

220. Removing the access card is consistent with Mr. Burns' understanding of how to perform a hard reset. CX 104C; Burns Tr. 677.

221. Reinsertion of the access card is also consistent with Mr. Burns'

understanding of how to perform a hard reset given that reinsertion of the access card would be necessary to get the system back up and running. Burns Tr. 677.

222. Mr. Burns typically advises callers to perform a soft reset or a hard reset more than once a day. Burns Tr. 677-678.

223. On certain days, Mr. Burns has advised callers to perform a soft reset or hard reset several times during the course of the day. Burns Tr. 678.

224. As part of his job, Mr. Burns handles calls regarding problems with access cards of the DSS receivers. Burns Tr. 678.

225. Mr. Burns recognizes that there is a problem with the DSS receiver reading the already-inserted access card when a caller informs him that the "please insert a valid access card" on-screen display message is being displayed on their television set. Burns Tr. 680.

226. Mr Burns believes that the "please insert valid access card" message corresponds with complaint code 702. Burns Tr. 680.

227. Complaint code 702 occurs more frequently than other complaint codes associated with access cards. Burns Tr. 681.

228. The "please insert valid access card" message also be displayed when the card is not inserted correctly. Burns Tr. 682.

229. When a caller tells Mr. Burns that their television displays the "please insert valid access card" message, it has been his practice to tell that caller to remove the access card, wipe it

- off with a dry cloth and then reinsert it. Burns Tr. 682.
230. In fact, whenever a caller has called with the "please insert valid access card" message, the first command or instruction that Mr. Burns gives is to remove the access card, wipe off the card and reinsert it into the receiver. Burns Tr. 682-683.
231. When confronted with the "please insert valid access card" on-screen display message Mr. Burns virtually always instructs callers to remove the access card, wipe off the card and reinsert it into the receiver. Burns Tr. 683.
232. When Mr. Burns instructs a caller to remove the access card, wipe off the card and reinsert it, he intends for the caller to take the card out of the receiver and reinsert it. Burns Tr. 683.
233. In Mr. Burns' experience, having callers remove the access card from the receiver, wiping off the card and then replacing the card causes "insert valid access card" message to go away. Burns Tr. 683-684.
234. Mr. Burns never attempted to conceal the fact that he instructed callers to remove the access card, wipe off the access card and reinsert the access card. Burns Tr. 684.
235. When given the message "please insert a valid access card," Mr. Burns instructs callers to remove the access card, wipe it off and reinsert it. He does not always instruct callers to perform the additional steps of pressing the two buttons on the receiver. Burns Tr. 686.

236. Mr. Burns has found that in some cases it is not necessary to have the caller reset the receiver in these cases because the simple act of removing the access card out, wiping it off and reinserting it is enough to solve the problem. Burns Tr. 686-687.
237. Callers frequently ask Mr. Burns how to remove an access card from their DSS receiver. Burns Tr. 687.
238. When requested, Mr. Burns instructs callers on how to remove the access card from their DSS receiver. Burns Tr. 687.
239. Mr. Burns does not generally create a service request note when asked by caller how to remove an access card. Burns Tr. 688.
240. Mr. Burns has never been instructed by a supervisor or anyone else, at Norcross not to inform a caller how to remove an access card. Burns Tr. 688.
241. When a caller indicates that he or she has received the "please call customer service extension 745" on-screen display message, it has been Mr. Burns' practice to instruct callers to perform a soft reset as the first thing that should be done to correct that complaint. Burns Tr. 689.
242. In giving those instructions, Mr. Burns typically instructs callers to remove the access card before performing a soft reset. Burns Tr. 689.
243. Complainant's Exhibit CX 199C, reflects typical advice in connection with an extension 745 on-screen display message.

Burns Tr. 690-691.

244. It is Mr. Burns' understanding that complaint code 700 corresponds with the "please insert your access card" on-screen display message. Burns Tr. 691.
245. In is Mr. Burns' understanding that the "please insert your access card" on-screen display message typically indicates that the access card has been removed from the DSS receiver or that the reader of the receiver is not recognizing the access card that is inserted within it. Burns Tr. 691.
246. When a caller informs he or she is receiving the "please insert your access card" message, and the card is still in a DSS receiver, Mr. Burns typically would verify, that the card was in the receiver. He would have them take the card out to make sure that it was flat, and if it was, he would have them reinsert it within the receiver and if it was still not reading that there was a card in there, he would replace the receiver. Burns Tr. 691-693.
247. Mr. Burns instructed the caller to remove the access card from the receiver, wipe off any material on the card and then try a soft boot of his DSS receiver. Mr. Burns then told the caller to put the card flat on the table to determine if it was warped. Those instructions, of removing the card to determine whether it was warped, were based on the advice of his supervisor. Burns Tr. 693-694; CX 107C.

248. Based on his experience, Mr. Burns is aware that the DSS2 sometimes loses its signal. Burns Tr. 695
249. When a caller informs Mr. Burns that he or she has lost the signal, he typically instructs those callers to execute a soft reset that may includes removal and reinsertion of an access card. Burns Tr. 696.
250. In order to follow the instructions in the customer service training manual (CX 104C) for performing a soft reset Mr. Burns is required to instruct the caller to remove and reinsert the access card when performing a soft reset. Burns Tr. 696.
251. Mr. Burns has determined that an access card being used by a caller needs to be replaced. Burns Tr. 696-697.
252. When Mr. Burns determines that an access needs to be replaced he instructs the caller to return it to Thomson. The instruction to remove the access card from the receiver is implicit. Burns Tr. 697.
253. Mr. Burns also receives calls regarding complaint code 701, which indicates that the access card was preactivated. In these instances, Mr. Burns informs the caller that the access card needs to be replaced before they can receive programming on the DSS receiver. Burns Tr. 697-698.
254. In Mr. Burns' experience, Thomson's DSS receivers are sometimes returned by customers to the dealer or retailer after already having been activated for programming. If the access has already

- been activated, the dealer would need a replacement card before the unit could be resold. Burns Tr. 699.
255. In fact, Thomson has set up an exchange program to handle these situations. When dealing with the dealer, Mr. Burns instructs that the activated access card be returned and arranges for another access card to be sent out. Burns Tr. 699.
256. Complaint code 703 signifies that an access card has been lost or stolen. Burns Tr. 699.
257. Provided the customer is willing to pay for a new access card, Mr. Burns arranges for a new card to be sent out. Burns Tr. 699-700.
258. Mr. Burns receives calls from time to time from caller who have received a "please call customer service extension 746" message on their television set. When so informed by callers, he instructs the caller to remove the old card from the receiver, unplug the receiver until a time he can arrange to have a replacement card sent to them. Burns Tr. 700.
259. The OSD message "you have inserted the wrong card," generally means that the program provider has a different access card number assigned to that receiver. In that case, the customer service representative instructed the caller to do a soft boot and clean the card. Burns Tr. 703; CX 198C at ALN216203.
260. C-o-n stands for consumer or customer. Burns Tr. 703-704.
261. Mr. Burns uses the soft or the hard reset in attempting to solve

a caller's problem in more situations than those specified in the manual. Burns Tr. 708.

262. In response to the "please insert valid access" message Mr. Burns' first instruction is to remove the access card, wipe off the card and reinsert it. If that does not work, then Mr. Burns arranges to have the access card replaced. Burns Tr. 710-711.
263. No one at Thomson or at Norcross has instructed Mr. Burns to discontinue instructing callers to remove the access card, wipe it off and then reinsert the access card. Burns Tr. 713.
264. Mr. Burns does occasionally discuss the recommendations made to callers with other customer service agents. Burns Tr. 713-714.
265. {

}

266. {

}

267. As part of a larger call center facility, there is a center that handles customer service calls for DSS products. This center was

set up at the time of market introduction (June 1994). Compton  
Tr. 721.

268. {

}

269. It appears from the service request notes that customers  
sometimes remove and reinsert their access cards, without  
prompting by Thomson, to fix or attempt to fix access card-  
related problems. CX 389C at SR00776363, SR00572856.

270. A service record is not created in every instance where a  
customer is instructed by a Thomson customer service  
representative to remove and reinsert a smart card. Burns Tr. at  
672-673. {

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{

}

271. Shortly after the product went to market, an eraser was used on the contacts to see if there was any film over them. Compton Tr. 733.
272. While Mr. Compton was manager of the DSS custom home theater, the volume of calls received on the DSS product had increased to at least 2000 calls a day in 1997. The volume of calls received in 1994 was much less. Compton Tr. 737.
273. Currently, between 3000 and 4000 agent-answered calls for the DSS go to the call center a day. Compton Tr. 737.
274. The "update service request notes" allows the operator to make notes or document the various transaction or information they provided to the caller. The agent is identified on the page either by a user ID number or by name. The date the record is created and the date it is updated will also appear on this page. Compton Tr. 748-749.
275. In a particular example in Exhibit CX 197C dated June 27, 1997, the instructions given state "receives a display, insert your access card, did quick hard boot and had him wipe off chip.

- Works fine now." The access card need not be in the receiver for the hard boot to work. Compton Tr. 749-750.
276. As a general course, Mr. Compton's group does not periodically review the service request notes. Compton Tr. 750.
277. Mr. Compton and his staff rely on anecdotal evidence to determine whether the operators are giving the correct advice. There is some call monitoring, but that is usually after a problem has been brought to his attention. Compton Tr. 750-751.
278. Norcross has its own quality performance that monitors calls for adherence purposes and quality control. Norcross, however, is not in a position to necessarily determine whether information is terribly accurate or not. Compton Tr. 751.
279. Mr. Compton is aware that Norcross customer service agents have been telling customers to wipe off the card, even though his group has told them not to. Compton Tr. 751-752.
280. Mr. Compton has not personally sat through a training session so he has no personal knowledge of how this issue of card wiping is discussed. Compton Tr. 752.
281. On Exhibit CX 166C, a service request note that states in part, it says "also had con. clean chip on back of card." According to Mr. Compton, "one would assume that they've told them to clean the contacts of the card." Compton Tr. 752-753.
282. On CX 166C (service request note dated 3/31/97, agent: Jason Hychs), the second line of the note states "had cons. clean the

gold foil on the back of the card with a clean pencil eraser."

Mr. Compton's understanding would be the same as the previous examples. Compton Tr. 753-754.

283. Mr. Compton is aware that a soft reset is typically performed with the smart card removed from the receiver. CX 22C (Compton Dep.) Tr. 48.

284. It is Mr. Compton's understanding that {

}

CX 22C (Compton Dep.) Tr. 49.

285. A soft reset is recommended other than simply in response to on-screen display messages. It is recommended when {

} CX 22C (Compton

Dep.) Tr. 49-50.

286. The access card related complaint codes consist of the following:

{

}

{

}

287. The access card must be installed to receive services. CX 131 at RA34099.
288. The DSS agent concession report lists { } customer service representatives. CX 150C.
289. Document ALN215641 through ALN216000 consists of an August 5, 1997 list of service requests referencing access card complaint codes. CX 106C.
290. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
291. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June

1997, and { } were received during July 1997. CX 106C.

292. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

293. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

294. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

295. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

296. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.

297. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and

- { } were received during July 1997. CX 106C.
298. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
299. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
300. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
301. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
302. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and { } were received during July 1997. CX 106C.
303. The list indicates that of the service requests referencing code { } were received during April 1997, { } were received during May 1997, { } were received during June 1997, and

{ } were received during July 1997. CX 106C.

304. On April 3, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216016-216017; CX 198C at ALN216268-216486 at CX 198C; CX 199C at ALN217225-217357; CX 200C at ALN217799-217816; CX 201C at ALN218020-218035. Please see footnote for list of { } service notes regarding soft/hard reset procedures.<sup>4</sup>

305. In the three days from April 1 to April 3, 1997, DSS customer service representatives answered { } service calls. { } of those requests concerned access cards, which had the following breakdown with respect to error messages: {

} CX 195.

306. On May 14, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these

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<sup>4</sup> CX 198C at ALN216369, 216395, 216398, 216404, 216411, 216413, 216418, 216423, 216438, 216440, 216444, 216446, 216457, 216463, 216468, 216470, 216474, 216483, 216486; CX 199C at ALN217340, 217342, 217344, 217346, 217348, 217349, 217351, 217353, 217355, 21735; CX 200C at ALN217801, 217805, 217808, 217812, 217814, 217816; CX 201C at ALN218035.

customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216018-216025; CX 198C at ALN216487-216545; CX 199C at ALN217358-217383; CX 200C at ALN217817-217836; CX 201C at ALN218036-218053.<sup>5</sup>

307. On May 15, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216026-216033; CX 198C at ALN216446-216627; CX 199C at ALN217384-217432; CX 200C at ALN217837-217899; CX 201C at ALN218054-218058 at CX 201.<sup>6</sup>

308. On May 16, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216034-216040; CX 198C at ALN216628-216728; CX 199C at ALN217433-217467; CX 200C at

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<sup>5</sup> CX 197C at ALN216021; CX 198C at ALN216491, 216495, 216497, 216501, 216505, 216507, 216510, 216512, 216516, 216524, 216528, 216532, 216543, 216545; CX 199C at ALN217359, 217361, 217365, 217367, 217369, 217371, 217373, 217375, 217377, 217379, 217381, 217383; CX 200C at ALN217820, 217822, 217824, 217826, 217828, 217833, 217836; CX 201C at ALN218043, 218053.

<sup>6</sup> CX 197C at ALN216027, 216029, 216033; CX 198C at ALN216547, 216549, 216563, 216567, 216573, 216587, 216589, 216594, 216600, 216602, 216607, 216611, 216626; CX 199C at ALN217385, 217389, 217391, 217393, 217395, 217398, 217400, 217402, 217404, 217406, 217408, 217410, 217415, 217417, 217420, 217423, 217426, 217432; CX 200C at ALN217838, 217841, 217846, 217852, 217858, 217861, 217869, 217871, 217873, 217878, 217881, 217883, 217885, 217889, 217894; CX 201C at ALN218053.

ALN217900-217924; CX 201C at ALN218059-218064.<sup>7</sup>

309. In the three days from May 14 to May 16, 1997, DSS customer service representatives answered { } service calls. { } of those requests concerned access cards, which had the following breakdown with respect to error messages: {

} CX 195C.

310. On June 25, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216041-216044; CX 198C at ALN216729-216827; CX 199C at ALN217468-217526; CX 200C at ALN217925-217926; CX 201C at ALN218065-218078 at CX 201.<sup>8</sup>

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<sup>7</sup> CX 197C at ALN216035, 216037; CX 198C at ALN216629, 216633, 216641, 216646, 216651, 216659, 216661, 216665, 216670, 216685, 216688, 216698, 216704, 216707, 216714, 216716, 216718, 216719, 216722, 216724, 216728; CX 199C at ALN217434, 217436, 217438, 217440, 217442, 217444, 217446, 217449, 217451, 217454, 217456, 217458, 217460, 217462, 217464, 217466; CX 200C at ALN217898, 217903, 217910, 217913, 217916, 217918, 217922, 217924.

<sup>8</sup> CX 198C at ALN216730, 216732, 216737, 216739, 216742, 216745, 216751, 216753, 216756, 216758, 216765, 216769, 216771, 216779, 216781, 216785, 216790, 216804, 216806, 216809, 216811, 216813, 216816, 216818, 216821, 216823, 216825; CX 199C at ALN217469, 217471, 217473, 217475, 217477, 217485, 217486, 217488, 217490, 217492,

(continued...)

311. On June 26, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197 at ALN216045-216057; CX 198C at ALN216828-216901; CX 199C at ALN217527-217589; CX 200C at ALN217927-217938; CX 201C at ALN218079-218103.<sup>9</sup>

312. On June 27, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216058-216063; CX 198C at ALN216902-216976; CX 199C at ALN217590-217631.<sup>10</sup>

313. In the three days from June 25 to June 27, 1997, DSS customer service representatives answered { } service requests. { }

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<sup>8</sup> (...continued)

217496, 217498, 217500, 217502, 217504, 217506, 217510, 217512, 217514, 217518, 217520, 217522, 217524, 217526; CX 200C at ALN217926; CX 201C at ALN218076.

<sup>9</sup> CX 197C at ALN216057; CX 198C at ALN216833, 216837, 216839, 216843, 216854, 216862, 216864, 216867, 216870, 216872, 216874, 216876, 216878, 216882, 216883, 216886, 216888, 216894, 216901; CX 199C at ALN217528, 217530, 217532, 217534, 217536, 217540, 217542, 217544, 217546, 217548, 217550, 217552, 217554, 217556, 217558, 217561, 217564, 217566, 217568, 217568, 217570, 217572, 217574, 217575, 217577, 217579, 217581, 217583, 217585, 217587, 217589; CX 200C at ALN217930, 217932, 217935; CX 201C at ALN218099.

<sup>10</sup> CX 197C at ALN216061; CX 198C at ALN216903, 216908, 216909, 216911, 216913, 216917, 216922, 216927, 216929, 216936, 216938, 216938, 216944, 216949, 216959, 216963, 216971, 216974, 216976; CX 199C at ALN217591, 217593, 217597, 217599, 217601, 217603, 217605, 217607, 217611, 217613, 217613, 217615, 217617, 217619, 217621, 217623, 217625, 217627, 217628, 217631.

{ } of those requests concerned access cards,  
which had the following breakdown with respect to error messages:

{

} CX 195C

314. On July 29, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216064-216073; CX 198C at ALN216977-217059; CX 199C at ALN217632-217692; CX 200 at ALN217939-217954; CX 201C at ALN218104-218113.<sup>11</sup>

315. On July 30, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216074-216082; CX 198C at ALN217060-217078 CX 199C at ALN217693-217714; CX 200C at

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<sup>11</sup> CX 197C at ALN216063, 216069, 216071, 216073; CX 198C at ALN216983, 216987, 216991, 216993, 216995, 217002, 217004, 217008, 217012, 217014, 217022, 217023, 217025, 217028, 217033, 217037, 217041, 217049, 217051, 217055; CX 199C at ALN217633, 217635, 217637, 217639, 217641, 217643, 217645, 217647, 217649, 217651, 217653, 217655, 217657, 217659, 217663, 217665, 217667, 217669, 217671, 217673, 217675, 217676, 217678, 217680, 217682, 217684, 217686, 217687, 217690, 217692; CX 200C at ALN217937, 217940, 217942, 217944, 217946, 217952; CX 201C at ALN218105, 218112.

ALN217955-217972; CX 201 at ALN218114-218120.<sup>12</sup>

316. On July 31, 1997, DSS customer service representatives received { } phone calls concerning access cards. { } of these customers { } received advice regarding soft and/or hard reset procedures. CX 195; CX 197C at ALN216083-216085; CX 198C at ALN217079-217157; CX 199C at ALN217715-217742; CX 200C at ALN217973-217990; CX 201C at ALN218121-218133.<sup>13</sup>

317. In the three days from July 29 to July 31, 1997, DSS customer service representatives answered { } service calls. { } of those requests concerned access cards, which had the following breakdown with respect to error messages:

{

} CX 195C.

318. {

}

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<sup>12</sup> CX 197C at ALN216075, 216077; CX 198C at ALN217063, 217067, 217072, 217076, 217078; CX 199C at ALN217694, 217696, 217698, 217700, 217702, 217704, 217706, 217708, 217710 217712, 217714; CX 200C at ALN217956, 217958, 217964, 217966, 217970, 217972.

<sup>13</sup> CX 198C at ALN217080, 217084, 217088, 217091, 217095, 217101, 217103, 217105, 217114, 217116, 217127, 217132, 217136, 217140, 217143, 217148, 217150, 217154, 217157; CX 199C at ALN217716, 217718, 217720, 217722, 217724, 217727, 217729, 217732, 217734, 217736, 217742; CX 200C at ALN217975, 217977, 217988, 217990.

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367. The current call center is operated by a contract agency called Norcross. Norcross manages the day-to-day operations within the call center for all Thomson products and has done so since March, 1997. Compton Tr. 722.

368. The current call center is operated by a contract agency called Norcross. Norcross manages the day-to-day operations within the call center for all Thomson products and has done so since March, 1997. Compton Tr. 722.

369. {

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370. {

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{

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371. {

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372. In January of 1996 the complaint code { } was received { } times.  
CX 140C.

373. In February of 1996 the complaint code { } was received  
{ } times. CX 140C.

374. In March of 1996 the complaint code { } was received { } times.  
CX 140C.

375. In April of 1996 the complaint code { } was received { } times.  
CX 140C.

376. In May of 1996 the complaint code { } was received { } times. CX  
140C.

377. In June of 1996 the complaint code { } was received { } times.  
CX 140C.

378. In July of 1996 the complaint code { } was received { } times.  
CX 140C.

379. In August of 1996 the complaint code { } was received { } times.

CX 140C.

380. In September of 1996 the complaint code { } was received { }  
times. CX 140C.

381. {

}

382. {

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383. {

}

384. {

}

385. It is reasonable to infer, as have some Thomson customer service representatives, that the "Please insert a valid access card" OSD message may be caused by dust or debris on the contacts of the smart card. CX 366C at ALN216692. In such instances, the removal and reinsertion of the smart card may clear the dust off the contacts from the wiping action of the smart card reader.

See Kuc Tr. 158; LeDuc Tr. 99.

386. The "Please insert a valid Access Card" message is displayed when there is an error in card reset. In such instance, the consumer may have an invalid or defective cam inserted in his or her DSS receiver. CX 400C at RA04094.

387. {

}

388. {

}

389. The DSS Agent Concession Report for July 1997 identifies { } customer service representatives. CX 194C.

390. The DSS Agent Concession Report for July 1997 states that the { } customer service representatives took { } calls, but created only { } service requests. CX 194C.

391. When the subscribers received the new P2 replacement card, they had to perform what is referred to as a { } process in order to authorize the P2 card. The { } process is as follows: There is a menu option on the DSS system that the customers initiate, and there are various on-screen prompts which guide them through the process of removing the old card, putting the new card in for some period of time. Then it prompts the consumer to put the old card back in and after some period of time it prompts the consumer to put the new card back in, and then they're free to discard the old card. Compton Tr. 741.

392. {

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{

}

393. {

}

394. As part of the changeover process the subscriber or somebody on his behalf has to remove the old access card and re-insert the new access card. CSX 4C (Stewart Dep.) Tr. 153.

395. As part of the { } process a customer receives a new card in the mail along with a simple set of instructions. The customer removes their old card and inserts their new card. {

} CSX

4C (Stewart Dep.) Tr. 157-158.

396. The { } process requires the removal of the old card, the re-insertion of the new card, the subsequent removal of the new card, the re-insertion of the old card, removal of the old card, and the final re-insertion of the new card.. CSX 4C (Stewart





408. Thomson's DSS3 product includes a DSS System Test. This test conducts diagnostics on the DSS satellite signal, the phone connection, and the access card. For the access card portion of the test, the user is instructed to "check access card connections" in the event of a failure. CX 400C at RA04056.
409. The DSS system test allows users to initiate diagnostic procedures on the DSS system. These diagnostic procedures are to be used when the DSS receiver doesn't seem to be working correctly. There are four separate tests: signal, tuning, phone, and access card. If the DSS system fails one of these tests, users are instructed to run the tests several times before concluding there is a problem. CX 405C at RA38922.
410. A series of instructions are included on every NDC access card which goes into a DSS product. The instructions are on the access cards themselves. CX 23C (Miller Dep.) Tr. 142.
411. The first instruction under the term "Important" is "Do not bend access card." CX 23C (Miller Dep.) Tr. 142.
412. These instructions are intended for the end-users, which include customers who buy the DSS product. CX 23C (Miller Dep.) Tr. 142.
413. The access card must be removed from the unit before the instructions can be seen. CX 23C (Miller Dep.) Tr. 143.
414. An alternative to the smart card design could have provided access for users to DSS programming. Kuc Tr. 194-195, 242-243.
415. Instead, Thomson developed the smart card drive software that

checks for the value of the TS character, and helped to design the overall DSS system with full knowledge of the '464 patent. CX 24C (Hailey Dep.) Tr. 17-18, 37; CX 905C; CX 331C at RA02963, RA39218, RA39224.

**VI. Domestic Industry**

416. Gemplus pays royalties to Innovatron under the '464 patent for the production and sale of these { } D'Angelo Tr. 517.

417. The cards produced by Gemplus at Montgomeryville are embedded with a microprocessor chip. The cards are tested in the { } machine to determine if the microprocessor chip is properly functioning, i.e., able to read and write data. Elspass Tr. 564-566; D'Angelo Tr. 517-521; Kuc Tr. 245.

418. The { } the microprocessor cards with information such as each card's serial number and system files. Elspass Tr. 564-566; CX 538C.

419. The plastic card bodies are embedded with microprocessors on { } at Montgomeryville, Pa. D'Angelo Tr. 534-536.

420. These microprocessor cards are then moved from the embedding machine to the { } machine. See CX 524; CX 558.

421. { }  
}

{ }

422. {

}

423. {

}

424. {

}

425. The purpose of the { } machine is to determine if the memory cell of the microprocessor card is functioning properly and to { } Elspass Tr. 566-568. Yet, prior to making that determination, the { } machine conducts {

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436. {

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437. {

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438. {

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439. Thus, if an incorrect { } is returned from the card to the { } machine, then the card will be displaced and retested for the proper response. Elspass Tr. 574, 580, 596.

440. If the card passes the {

}

441. {

}

442. {

}

- { }
443. If any of the { } tests results in an error, then the card is { } displaced { } and the card is retested. Elspass Tr. 596-597.
444. The reason for this displacement is that an error in the contact tests could be the result of improper contact or alignment of the contact pad on the card with the { } tester. In particular, if the reset test fails due to an improper { } received, then the failure could be due to dust or debris between one or more pads and the test head which would not be detected by { } tests. Elspass Tr. 579.
445. By displacing the contact pads { } a better contact point may be established upon retest for the receipt and comparison of the { } by the { } machine. Elspass Tr. 579, 596.
446. {

{ This is because proper contact has been confirmed as a result of the { } which includes comparison with the { } Thus, any error that occurs subsequent to that

test would not be as a result of improper contact between the pad and the test pins. In that case, since the card did not fail because of poor contact, repositioning the card with the objective of achieving better contact would accomplish nothing. Instead, the card is immediately rejected. Elspass Tr. 580-581.

447. After the memory cells of the card have been examined (i.e., written to and read from) and after the card has been {

}

448. {

}

449. The { } machine utilizes a method of connecting the removable microprocessor cards to the { } machine (an electric device).  
See Kuc Tr. 246-247.

450. The microprocessor card and the { } machine cooperate in that both have to be present for the { } testing and { } operations to occur. See Tr. Kuc Tr. 245-247.

451. The { } machine then compares the { } to an expected value to confirm whether there is a proper electrical contact.  
See Elspass Tr. 568-569.

452. The {

}

453. The {

}

454. The predetermined { } is used for the purpose of determining whether proper contact has been established in accordance with the testing step of claim 8 of the patent. See Elspass Tr. 568-569.

455. The { } is compared with the expected value of the { } Id. If the card returns an incorrect { } then the test head is raised, the card is displaced { } and the card is retested in accordance with the displacing step of claim 8 of the patent. See Elspass Tr. 568-569; Kuc Tr. 247-249.

456. The retesting again compares the value of the { } received with the expected value of { } Elspass Tr. 568-569, 596. If an incorrect value of { } is received upon retest, then the card is rejected; otherwise, the { } proceeds to the intended operation of the machine, i.e., { } testing of the memory cells of the chip and { } See Elspass Tr.



correspond to the contact pads on the microprocessor cards to be tested. LeDuc Tr. 610.

465. The insertion of the card in the GCR500 card reader is the bringing step of claim 8 of the '464 patent. See Kuc Tr. 250.

466. This insertion triggers a card detection switch in the reader. LeDuc Tr. 117-118.

467. A reset signal is sent to the card, and an answer-to-reset is sent from the card. LeDuc Tr. 101-102.

468. {

}

469. {

}

470. Gemplus uses this { } to establish whether there is proper contact between the card and card reader. Elspass Tr. 584; LeDuc Tr. 81-83.

471. If the reader receives a good answer to reset, then additional quality control tests are performed { }

{ } CX 525C at 9.

472. {

} Thus, these personnel can determine from examining the { } whether proper contact has been achieved. CX 525C at 11.

473. Beginning with Gemplus' initial purchase of the Montgomeryville facility in 1995 for { } Gemplus has invested { } of dollars in U.S. facilities. D'Angelo Tr. 515-517; CX 504C.

474. This investment would not have been made unless Gemplus intended to produce { } as the U.S. market expands. D'Angelo Tr. 517.

475. Gemplus has made large investments in { } expressly for the production of smart cards, with microprocessor cards being the most important component of the smart card production. CX 504C.

476. Gemplus has over { } individuals in the United States engaged in production, technical support, customer service and development activities at the various Gemplus locations. D'Angelo Tr. 515.

477. At least { } machines and { } GCR500 readers are used at Montgomeryville for these purposes. It has also made investments elsewhere in the United States for developing the market for its microprocessor cards. D'Angelo Tr. 522; Elspass Tr. 564-566,

588-589, 610.

478. The annual U.S. payroll for individuals who spend most of their time on microprocessor card production, development and servicing exceeds { } and includes over { } individuals.<sup>15</sup> D'Angelo Tr. 525-530.

479. For 1997, sales of microprocessors produced at Montgomeryville will be roughly { } of the revenue of the facility, and this percentage is increasing. D'Angelo Tr. 526, 531, 543-544.

480. During 1997, Gemplus will produce roughly { } microprocessor cards valued at { } at the Montgomeryville facility. D'Angelo Tr. 531. Gemplus recently, produced { } microprocessor cards for { } at a price of roughly { } D'Angelo Tr. 532-533.

481. Gemplus invested roughly { } in smart card manufacturing equipment in 1996, and an additional { } in smart card manufacturing equipment in 1997. D'Angelo Tr. 515-516. As set forth in Gemplus' annual budget, identified as CX 508C, Gemplus {

} D'Angelo Tr.

544-545.

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<sup>15</sup> Development for microprocessor cards is performed by several individuals in other Gemplus locations in San Mateo and Shakopee, and the development expenditures for these individuals alone totals more than { } D'Angelo Tr. 527-530.

## CONCLUSIONS OF LAW

1. The Commission has personal jurisdiction over the parties and subject matter jurisdiction over this investigation. See Op. at 2 n.1.

2. There have been importations and sales after importation of accused products. See Op. at 10.

3. It has not been demonstrated by clear and convincing evidence that claim 8 of the '464 patent is invalid due to anticipation. See Op. at 62-81.

4. It has not been demonstrated by clear and convincing evidence that claim 8 of the '464 patent is invalid due to obviousness. See Op. at 83-88.

5. It has been demonstrated by at least a preponderance of the evidence that the accused electronic cards and electronic reader devices directly infringe claim 8 of the '464 patent, and that respondents have induced infringement and contributorily infringed. See Op. at 92-120.

7. It has been demonstrated that there is a domestic industry which practices the '464 patent, whose investments and activities with respect to said patent satisfy the domestic industry requirement of section 337. See Op. at 134.

8. There is a violation of section 337(a)(1)(B) with respect to claim 8 of the '464 patent. See Conclusions of Law 1-7.

## INITIAL DETERMINATION AND ORDER

Based on the foregoing opinion, findings of fact, conclusions of law, the evidence, and the record as a whole, and having considered all pleadings and arguments as well as proposed findings of fact and conclusions of law, it is the administrative law judge's INITIAL DETERMINATION ("ID") that a violation of § 337 exists in the importation and sale of certain removable electronic cards and electronic card reader devices and products containing same by reason of infringement of claim 8 U.S. Letters Patent 4,404,464.

The administrative law judge hereby CERTIFIES to the Commission this ID, together with the record of the hearing in this investigation consisting of the following:

1. The transcript of the hearing, with appropriate corrections as may hereafter be ordered by the administrative law judge; and further,
2. The exhibits accepted into evidence in this investigation as listed in the attached exhibit lists.

In accordance with 19 C.F.R. § 210.39(c), all material found to be confidential by the administrative law judge under 19 C.F.R. § 210.5 is to be given in camera treatment.

The Secretary shall serve a public version of this ID upon all parties of record and the confidential version upon counsel who are signatories to the Protective Order (Order No. 1) issued by the

administrative law judge in this investigation, and the Commission investigative attorney. To expedite service of the public version, counsel are hereby ordered to serve on the administrative law judge by no later than March 31, 1998, a copy of this ID with those sections considered by the party to be confidential bracketed in red.

Pursuant to 19 C.F.R. § 210.42(h), this ID shall become the determination of the Commission unless a party files a petition for review pursuant to § 210.43(a) or the Commission, pursuant to § 210.44, orders on its own motion a review of the ID or certain issues herein.



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Sidney Harris  
Administrative Law Judge

Issued: March 24, 1998

