

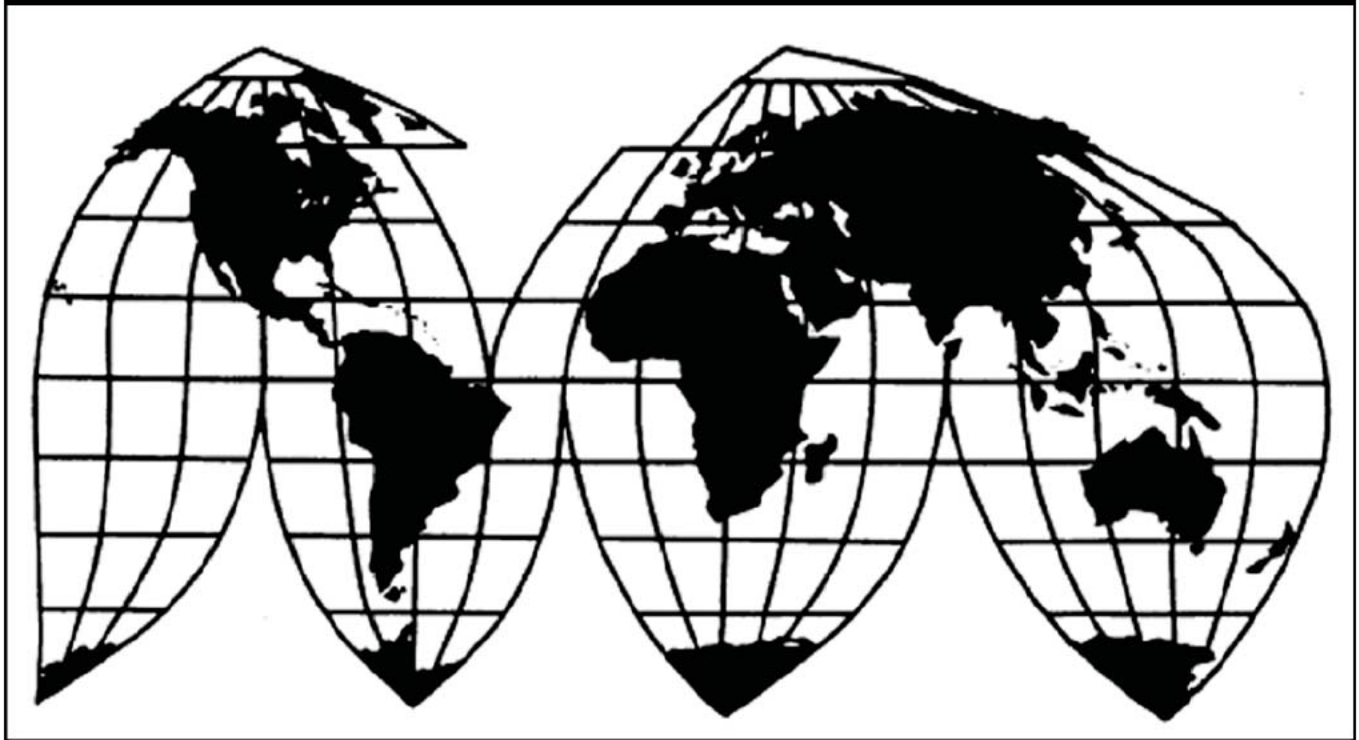
*In the Matter of*  
**CERTAIN DIGITAL IMAGING DEVICES AND  
RELATED SOFTWARE**

Investigation No. 337-TA-717

**Publication 4358**

**November 2012**

**U.S. International Trade Commission**



Washington, DC 20436

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

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**Washington, DC 20436**

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

Washington, DC 20436  
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*In the Matter of*

## **CERTAIN DIGITAL IMAGING DEVICES AND RELATED SOFTWARE**

Investigation No. 337-TA-717







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

**In the Matter of**

**CERTAIN DIGITAL IMAGING DEVICES  
AND RELATED SOFTWARE**

**Investigation No. 337-TA-717**

**NOTICE OF COMMISSION DECISION NOT TO REVIEW THE ALJ's FINAL  
INITIAL DETERMINATION FINDING NO VIOLATION OF SECTION 337;  
TERMINATION OF INVESTIGATION**

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

**ACTION:** Notice.

**SUMMARY:** Notice is hereby given that the U.S. International Trade Commission has determined not to review the presiding administrative law judge's ("ALJ") final initial determination ("ID") issued on May 12, 2011, finding no violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, in this investigation.

**FOR FURTHER INFORMATION CONTACT:** Panyin Hughes, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-3042. Copies of non-confidential 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. General information concerning the Commission may also be obtained by accessing its Internet server at <http://www.usitc.gov>. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at <http://edis.usitc.gov>. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

**SUPPLEMENTARY INFORMATION:** The Commission instituted this investigation on May 19, 2010, based on a complaint filed by Apple Inc. of Cupertino, California ("Apple"). 75 *Fed. Reg.* 28058 (May 19, 2010). The complaint alleged violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain digital imaging devices and related software by reason of infringement of various claims of United States Patent Nos. 6,031,964 and RE 38,911. The complaint named Eastman Kodak Company of Rochester, New York ("Kodak") as respondent.


On May 12, 2011, the ALJ issued his final ID, finding no violation of section 337 by Kodak with respect to any of the asserted claims of the asserted patents. Specifically, the ALJ found that the accused products do not infringe the asserted claims of the '964 patent. The ALJ also found that none of the cited references rendered the asserted claims obvious, and that Kodak is not a co-owner of the patent. Regarding the '911 patent, the ALJ found that the accused products do not infringe its asserted claims. The ALJ also found that the prior art anticipates and invalidates the asserted claims and that Kodak is not a co-owner of the patent. The ALJ concluded that an industry exists within the United States that practices the '911 patent but that a domestic industry does not exist with respect to the '964 patent as required by 19 U.S.C. § 1337(a)(2).

On June 1, 2011, Apple filed a petition for review of the ALJ's findings related to the '964 patent. Apple did not petition for review of any of the ALJ's findings related to the '911 patent. On June 9, 2011, the Commission investigative attorney ("IA") and Kodak filed respective responses to Apple's petition for review. Neither the IA nor Kodak filed petitions or contingent petitions for review of the ID.

Having examined the record of this investigation, including the ALJ's final ID, the petition for review, and the responses thereto, the Commission has determined not to review the subject ID.

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.42-46 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.42-46).

By order of the Commission.

  
James R. Holbein  
Secretary to the Commission

Issued: July 18, 2011

**CERTAIN DIGITAL IMAGING DEVICES AND RELATED SOFTWARE**

**337-TA-717**

**CERTIFICATE OF SERVICE**

I, James R. Holbein, hereby certify that the attached **NOTICE** has been served by hand upon the Commission Investigative Attorney, Aarti J. Shah, Esq., and the following parties as indicated, on July 18, 2011.



James R. Holbein, Secretary  
U.S. International Trade Commission  
500 E Street, SW  
Washington, DC 20436

**On Behalf of Complainant Apple Inc., f/k/a Apple Computer, Inc.:**

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**On Behalf of Respondent Eastman Kodak Company:**

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UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

In the Matter of

CERTAIN DIGITAL IMAGING DEVICES  
AND RELATED SOFTWARE

Inv. Nos. 337-TA-717

NOTICE REGARDING INITIAL DETERMINATION ON VIOLATION OF SECTION  
337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

(May 12, 2011)


On this date, I issued an initial determination on violation of section 337 and recommended determination on remedy and bond in the above-referenced investigation. Below are the conclusions of law from said filing, which are a matter of public record. A complete public version of the Initial Determination and Recommended Determination on Remedy and Bond will be issued when all the parties have submitted their redactions and I have had an opportunity to review the redactions.

**CONCLUSIONS OF LAW**

1. The Commission has subject matter jurisdiction, *in rem* jurisdiction, and *in personam* jurisdiction.
2. There has been an importation into the United States, sale for importation, or sale within the United States after importation of the accused digital imaging devices and related software, which are the subject of the alleged unfair trade allegations.
3. An industry does not exist in the United States that exploits U.S. Pat. No. 6,031,964, as required by 19 U.S.C. § 1337(a)(2).

4. Claims 1, 3, 5, 7, and 8 of U.S. Pat. No. 6,031,964 are not invalid.
5. The accused Kodak products do not infringe claims 1, 3, 5, 7, and 8 of U.S. Pat. No. 6,031,964.
6. Kodak is not a co-owner of U.S. Pat. No. 6,031,964.
7. There is no violation of 19 U.S.C. § 1337(a)(1) with respect to U.S. Pat. No. 6,031,964.
8. An industry exists in the United States that exploits U.S. Pat. No. RE38,911, as required by 19 U.S.C. § 1337(a)(2).
9. Claims 15, 27, 30, and 38 of U.S. Pat. No. RE38,911 are invalid pursuant to 35 U.S.C. § 102.
10. The accused Kodak products do not infringe claims 15, 27, 30, and 38 of U.S. Pat. No. RE38,911.
11. Kodak is not a co-owner of U.S. Pat. No. RE38,911.
12. There is no violation of 19 U.S.C. § 1337(a)(1) with respect to U.S. Pat. No. RE38,911.

**SO ORDERED.**



---

Robert K. Rogers, Jr.  
Administrative Law Judge

**CERTAIN DIGITAL IMAGING  
DEVICES AND RELATED SOFTWARE**

Inv. No. 337-TA-717

**PUBLIC CERTIFICATE OF SERVICE**

I, James R. Holbein, hereby certify that the attached **ORDER** was served upon **Aarti J. Shah, Esq.**, Commission Investigative Attorney, and the following parties via first class mail delivery on May 12, 2011



James R. Holbein, Acting Secretary  
U.S. International Trade Commission  
500 E Street SW, Room 112A  
Washington, D.C. 20436

**FOR COMPLAINANT APPLE INC., F/K/A/ APPLE COMPUTER:**

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**PUBLIC CERTIFICATE OF SERVICE PAGE 2**

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**PUBLIC VERSION**

**UNITED STATES INTERNATIONAL TRADE COMMISSION**

**Washington, D.C.**

**In the Matter of**

**CERTAIN DIGITAL IMAGING DEVICES  
AND RELATED SOFTWARE**

**Inv. Nos. 337-TA-717**

**INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND  
RECOMMENDED DETERMINATION ON REMEDY AND BOND**

Administrative Law Judge Robert K. Rogers, Jr.

(May 12, 2011)

**Appearances:**

*For Complainant Apple Inc.:*

Mark G. Davis, Esq.; Brian E. Ferguson, Esq.; Anish R. Desai, Esq.; Edward S. Jou, Esq. of  
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Matthew D. Powers, Esq.; Jacqueline T. Harlow, Esq. of Weil, Gotshal & Manges LLP,  
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*For Respondent Eastman Kodak Company:*

Eric C. Rusnak, Esq. of K&L Gates LLP, Washington, DC

Michael J. Abernathy, Esq.; Alan L. Barry, Esq.; Jason A. Engel, Esq.; Robert J. Barz, Esq.;  
Benjamin E. Weed, Esq. of K&L Gates LLP, Chicago, Illinois

Michael J. Bettinger, Esq.; Rachel R. Davidson, Esq.; Curt Holbreich, Esq. of K&L Gates LLP,  
San Francisco, California

*For the Commission Investigative Staff:*

Lynn I. Levine, Esq., Director; Anne Goalwin, Esq., Supervisory Attorney; Aarti Shah, Esq.,  
Investigative Attorney; of the Office of Unfair Import Investigations, U.S. International Trade  
Commission, of Washington, DC

PUBLIC VERSION

TABLE OF CONTENTS

I. BACKGROUND	1
A. Procedural History	1
B. The Private Parties	3
1. Apple	3
2. Kodak	3
C. Overview Of The Patents At Issue	3
D. Products At Issue	4
II. JURISDICTION	4
A. Subject Matter Jurisdiction	4
B. Personal Jurisdiction	5
C. In Rem Jurisdiction	5
III. CLAIM CONSTRUCTION	5
A. Applicable Law	5
B. The '964 Patent	7
1. "Memory Device"	8
2. "Random-Access Memory Disk"	22
3. "Power Management System"	49
C. The '911 Patent	64
1. "Image Processors"	65
2. "Digital Image Capture Device"	69
3. "Software Modules"	76
4. "Parametric Control(s)"	80
5. "Linking...to Form an Image Processing Chain" & "Forming an Image Processing Chain"	83
6. "Image Processing Backplane"	85
IV. INVALIDITY	87
A. Applicable Law	87
1. Anticipation	88
2. Obviousness	89
B. The '964 Patent	91
1. The '107 Patent In Combination With the '663 Patent	91
2. The '107 Patent In Combination With the '663 Patent & The QuickTake 150	120
3. The '107 Patent In Combination With the '663 Patent, The QuickTake 150, & The '845 Patent	125
C. The '911 Patent	129
1. Anticipation	129
a. PhotoFlash System	129
b. HIPS 1	141
c. The '509 Application	145
d. RFS 2035 System	153
e. McCubbrey	156
2. Obviousness	160
3. Claim 38	163
A. Applicable Law	165

PUBLIC VERSION

B. The '964 Patent .....	167
C. The '911 Patent .....	194
V. INFRINGEMENT.....	208
A. Applicable Law.....	208
B. The '964 Patent .....	209
1. Claim 1 .....	209
2. Claim 3 .....	263
3. Claims 5 & 7 .....	266
4. Claim 8 .....	268
C. The '911 Patent .....	270
1. Claim 15 .....	270
a. { } .....	270
b. { } .....	293
2. Claim 27 .....	298
a. { } .....	298
b. { } .....	299
3. Claim 30 .....	300
a. { } .....	300
b. { } .....	301
4. Claim 38 .....	302
a. { } .....	302
b. { } .....	303
VI. DOMESTIC INDUSTRY .....	305
A. Applicable Law.....	305
B. Economic Prong .....	306
C. Technical Prong .....	313
1. The '964 Patent .....	313
2. The '911 Patent .....	336
VII. REMEDY & BONDING .....	351
A. Limited Exclusion Order.....	351
B. Cease & Desist Order .....	354
C. Bonding .....	360
VIII. MATTERS NOT DISCUSSED.....	363
IX. CONCLUSIONS OF LAW .....	363
XI. ORDER .....	364

**PUBLIC VERSION**

Pursuant to the Notice of Investigation and Rule 210.42 of the Rules of Practice and Procedure of the United States International Trade Commission, this is the Administrative Law Judge's Final Initial Determination in the matter of Certain Digital Imaging Devices and Related Software, Investigation No. 337-TA-717.

The Administrative Law Judge hereby determines that a violation of Section 337 of the Tariff Act of 1930, as amended, has not been found in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain digital imaging devices and related software, in connection with U.S. Patent No. 6,031,964.

Furthermore, the Administrative Law Judge hereby determines that a domestic industry in the United States does not exist that practices U.S. Patent No. 6,031,964.

The Administrative Law Judge hereby determines that a violation of Section 337 of the Tariff Act of 1930, as amended, has not been found in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain digital imaging devices and related software, in connection with U.S. Patent No. RE38,911.

Furthermore, the Administrative Law Judge hereby determines that a domestic industry in the United States exists that practices U.S. Patent No. RE38,911.

**PUBLIC VERSION**

The following abbreviations may be used in this Initial Determination:

<b>CDX</b>	Complainant's demonstrative exhibit
<b>CIB</b>	Complainant's initial post-hearing brief
<b>CPX</b>	Complainant's physical exhibit
<b>CRB</b>	Complainant's reply post-hearing brief
<b>CX</b>	Complainant's exhibit
<b>Dep.</b>	Deposition
<b>JSRCC</b>	Joint Statement Regarding Claim Construction
<b>JSCI</b>	Joint Stipulation of Contested Issues
<b>JX</b>	Joint Exhibit
<b>RDX</b>	Respondent's demonstrative exhibit
<b>RIB</b>	Respondent's initial post-hearing brief
<b>RPX</b>	Respondent's physical exhibit
<b>RRB</b>	Respondent's reply post-hearing brief
<b>RX</b>	Respondent's exhibit
<b>SIB</b>	Staff's initial post-hearing brief
<b>SRB</b>	Staff's reply post-hearing brief
<b>Tr.</b>	Transcript
<b>CPHB</b>	Complainants' pre-hearing brief
<b>RPHB</b>	Respondents' pre-hearing brief
<b>SPHB</b>	Staff's pre-hearing brief

## PUBLIC VERSION

### I. BACKGROUND

#### A. Procedural History

On May 14, 2010, the Commission issued a Notice of Investigation in this matter to determine:

[W]hether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain digital imaging devices and related software that infringe one or more of claim 1-3 and 5-8 of U.S. Patent No. 6,031,964<sup>1</sup> and claims 15-22, 27, 30-32, 38, and 39 of U.S. Patent No. RE 38,911,<sup>2</sup> and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

(See Notice of Investigation.) The investigation was instituted upon publication of the Notice of Investigation in the *Federal Register* on May 19, 2010. See 75 Fed. Reg. 28058 (2010). 19 CFR § 210.10(b).

The complainant is Apple Inc., f/k/a Apple Computer, Inc. ("Apple"), 1 Infinite Loop, Cupertino, CA 95014. The respondent is Eastman Kodak Company ("Kodak"), 343 State Street, Rochester, NY 14650. The Commission Investigative Staff of the Office of Unfair Import Investigations ("Staff") is also a party in this investigation.

On December 9, 2010, I issued an Initial Determination granting Apple's unopposed motion to terminate the investigation in part. Specifically, claims 2 and 6 of the '964 patent and claims 16-22, 31-32, and 39 of the '911 were terminated from the investigation. On December 29, 2010, the Commission issued a notice indicating that it declined to review that determination.

On December 16, 2010, I issued an Initial Determination granting Apple's motion for summary determination regarding the importation requirement. Specifically, I found that Apple

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<sup>1</sup> U.S. Patent No. 6,031,964 will be referred to as "the '964 patent."

<sup>2</sup> U.S. Patent No. RE38,911 will be referred to as "the '911 patent."

## PUBLIC VERSION

has satisfied the importation requirement of Section 337 for the following Kodak products: Z915, Z950, Z981, Z1012 IS, Z1015 IS, Z1085 IS, Z1485 IS, M340, M341, M380, M381, M530, M550, M575, M580, M1033, M1093 IS, C142, C180, C182, C190, C913, SLICE, Zx1, Zx3-PLAYSPORT, Zi6, Zi8, ZxD, and Mini Video Camera. On January 5, 2011, the Commission issued a notice indicating that it declined to review that determination.

All other motions for summary determination were denied.

An evidentiary hearing was conducted before me from January 31, 2011 through February 2, 2011. Apple, Kodak, and Staff participated in the hearing. In support of its case-in-chief and rebuttal case, Apple called the following witnesses:

- Douglas M. Smith. (Director of Finance at Apple);
- George E. Williams (Software Development Engineer at Apple);
- Peter T. Westen (Software Engineering Manager at Apple);
- Richard M. Goodin (expert witness);
- Dr. Edward Delp (expert witness);
- Eric Anderson (named inventor on the '964 and '911 patents); and
- Richard J. Lutton, Jr. (Senior Director of Patents at Apple).

In support of its case-in-chief and rebuttal case, Kodak called the following witnesses:

- Dr. Robert L. Stevenson (expert witness);
- Steven J. Sasson (Consultant to Kodak); and
- Dr. Vijay Madiseti (expert witness);

In addition, various deposition transcripts were received into evidence in lieu of direct witness statements or live testimony.

After the hearing, post-hearing briefs and reply briefs were filed on February 25, 2011

PUBLIC VERSION

and March 4, 2011, respectively.

**B. The Private Parties**

**1. Apple**

Complainant Apple is a California corporation with its principal place of business at 1 Infinite Loop, Cupertino, California 95014.

**2. Kodak**

Kodak is a New Jersey corporation with its principal place of business at 343 State Street, Rochester, New York 14650.

**C. Overview Of The Patents At Issue**

The '964 patent is entitled "System and Method For Using a Unified Memory Architecture to Implement a Digital Camera Device." (JX-1.) The named inventor is Eric C. Anderson, and the assignee is Apple Computer, Inc. (*Id.*) The '964 patent was filed on June 20, 1996 and it issued on February 29, 2000. (*Id.*) The Abstract of the '964 patent states:

A system and method for using a unified memory architecture to implement a digital camera device comprises a dynamic random-access memory for storing captured image data during processing and compression, a memory manager routine for allocating storage space within the dynamic random-access memory, a power management system for protecting the stored image data in case of a power failure, and an input/output interface for allowing an external host computer system to access the dynamic random-access memory.

(*Id.*)

The '911 patent is entitled "Modular Digital Image Processing Via an Image Processing Chain With Modifiable Parameter Controls." (JX-2.) The named inventors are Eric C. Anderson and Gary Chin, and the assignee is Apple Computer, Inc. (*Id.*) The '911 patent was filed on November 21, 2001 and it issued on December 6, 2005. (*Id.*) The '911 patent is a reissue of U.S. Patent No. 5,991,465, which was filed on August 29, 1996 and issued on November 23, 1999. (*Id.*) The Abstract of the '911 patent states:



## PUBLIC VERSION

Aspects for allowing variably controlled alteration of image processing of digital image data in a digital image capture device include forming an image processing chain with two or more image processors to process digital image data, and providing one or more parametric controls within each of the two or more image processors. The aspects further include accessing chosen controls of the one or more parametric controls to modify the two or more image processors for alteration of the image processing.

(*Id.*)

### D. Products At Issue

Apple accuses various Kodak digital cameras and digital video cameras of infringing the asserted patents. Apple has grouped the products according to the provider of the system-on-chip ("SoC") for each camera, a grouping that the parties used during the hearing.

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}

Apple alleges that its iPhone 4 product is a domestic industry product that practices at least one claim of the '964 patent. Apple alleges that its Mac line of computers are domestic industry products that practice at least one claim of the '911 patent.

## II. JURISDICTION

### A. Subject Matter Jurisdiction

The complaint alleges that Kodak has violated Subsection 337(a)(1)(B) by the importation and sale of products that infringe the asserted patents. I find that Kodak imports into the United States, sell for importation, or sell within the United States after importation products that Apple has accused of infringement in this investigation. (*See* Order No. 21; JX-10C.003-

## PUBLIC VERSION

005.) Thus, I find that the Commission has subject matter jurisdiction over this investigation under Section 337 of the Tariff Act of 1930. *See Amgen, Inc. v. United States Int'l Trade Comm'n*, 902 F.2d 1532, 1536 (Fed. Cir. 1990).

### B. Personal Jurisdiction

Kodak responded to the complaint and notice of investigation, participated in the investigation, made an appearance at the hearing, and submitted post-hearing briefs. Thus, I find that Kodak submitted to the personal jurisdiction of the Commission. *See Certain Miniature Hacksaws*, Inv. No. 337-TA-237, Initial Determination, 1986 WL 379287 (October 15, 1986).

### C. In Rem Jurisdiction

The Commission has *in rem* jurisdiction over the products at issue by virtue of the finding that accused products have been imported into the United States. *See Sealed Air Corp. v. United States Int'l Trade Comm'n*, 645 F.2d 976, 985 (C.C.P.A. 1981).

## III. CLAIM CONSTRUCTION

### A. Applicable Law

“An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996) (citation omitted). Claim construction “is a matter of law exclusively for the court.” *Id.* at 970-71. “The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims.” *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000). “[O]nly those [claim] terms need be construed that are in controversy, and only to the extent necessary to resolve the

## PUBLIC VERSION

controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Claim construction focuses on the intrinsic evidence, which consists of the claims themselves, the specification, and the prosecution history. *See generally Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). The Federal Circuit in *Phillips* explained that in construing terms, courts must analyze each of these components to determine the “ordinary and customary meaning of a claim term,” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313.

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Id.* at 1312 (citations omitted). “Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claim terms.” *Id.* at 1314. For example, “the context in which a term is used in the asserted claim can be highly instructive,” and “[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term.” *Id.*

“[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Id.* (citation omitted). “The longstanding difficulty is the contrasting nature of the axioms that (a) a claim must be read in view of the specification and (b) a court may not read a limitation into a claim from the specification.” *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1117 (Fed. Cir. 2004). The Federal Circuit has explained that there are certain instances when the specification may limit the meaning of the claim language:

[O]ur cases recognize that the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs. In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope

## PUBLIC VERSION

by the inventor. In that instance as well, the inventor has dictated the correct claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive.

*Phillips*, 415 F.3d at 1316.

In addition to the claims and the specification, the prosecution history should be examined if in evidence. "The prosecution history...consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent. Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent." *Id.* at 1317 (citation omitted). "[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

If the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence may be considered. Extrinsic evidence consists of all evidence external to the patent and the prosecution history, including dictionaries, inventor testimony, expert testimony and learned treatises. *Id.* at 1317. Extrinsic evidence is generally viewed "as less reliable than the patent and its prosecution history in determining how to read claim terms[.]" *Id.* at 1318. "The court may receive extrinsic evidence to educate itself about the invention and the relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with the construction mandated by the intrinsic evidence." *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999).

### **B. The '964 Patent**

The parties have stipulated that a person of ordinary skill in the art (PHOSITA) of the '964 patent at the time of the invention would have had a bachelor's degree in electrical

## PUBLIC VERSION

engineering or computer science with two years of working experience or equivalent academic or work experience in the field of image processing. (Corrected Joint Stipulation Regarding the Person of Ordinary Skill in the Art; RX-10C at Question 292, Tr. at 23:12-24:10, and SIB at 57.)

### 1. "Memory Device"

The term "memory device" appears in asserted claims 1, 3, 5 and 7.

**Apple's Position:** Apple contends that its construction is based on the plain language of the claim and reflects the common and ordinary meaning of the term. Apple says that Kodak's construction incorrectly limits this term to a specific disclosed embodiment.

Apple argues that, in 1996, a PHOSITA would have understood the common and ordinary meaning of "memory device" to be any device capable of storing and reading out data. Apple reasons that, because the '964 patent describes a digital device, the PHOSITA would have also understood that a "memory device" associated with such a digital device is a semiconductor memory device, i.e., one that stores data in the form of electrical charge. (Citing CX-425C at Q. 401.) Apple contends that its construction captures the common and ordinary meaning of the term "memory device." (Citing *Weddingchannel.com, Inc. v. Knot, Inc.*, 2005 U.S. Dist. LEXIS 991 (S.D.N.Y. Jan. 26, 2005).)

Apple argues that Kodak's construction unnecessarily limits the term to only a specific category of memory, i.e., "volatile" memory. (Citing CX-425C at Q. 407.) Apple says the term "memory device" is specified generically. Apple asserts that Kodak's construction violates the long-stated position of the Federal Circuit that generic claim terms should not be limited to specific examples in the specification. (Citing *Phillips*, 415 F.3d at 1314.) Apple contends that the term in question is "memory device" which strongly implies that it is not limited to only "volatile" memory devices. (Citing *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 986-87

## PUBLIC VERSION

(Fed. Cir. 1988); *Virginia Panel Corp. v. MAC Panel Co.*, 133 F.3d 860, 865-66 (Fed. Cir. 1997).) Apple adds that, had the inventors intended to limit the “memory device” to volatile memory, they could have easily included the term “volatile” in the claim language. Apple concludes that the inventor clearly knew how to claim specific memory types when desired, as shown by claim 2 of the ‘964 patent, which specifies a “removable *non-volatile* memory.” (Citing JX-1 at 8:54-55; *Phillips*, 415 F.3d at 1314.)

Next, Apple argues that Kodak’s construction is an attempt to limit the claim term to the preferred embodiment described in the specification. (Citing CX-425C at Q. 402.) Apple concedes that in the ‘964 patent the preferred embodiment shows the memory device as a “DRAM;” but contends that the ‘964 patent consistently refers to this as the “preferred embodiment.” (Citing JX-1 at 2:35-36, 2:39-41, 4:46-47, 1:61-62.) Apple asserts that the law is clear that it is improper to limit the meaning of a claim term to only the preferred embodiment. (Citing *Brookhill-Wilk I, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1301 (Fed. Cir. 2003); *Linear Tech. Corp. v. USITC*, 566 F.3d 1049, 1058 (Fed. Cir. 2009).)

Apple continues that there is intrinsic evidence that strongly contradicts Kodak’s proposed construction. (Citing CX-425C at Q. 403-409.) Specifically, Apple says that during prosecution, the Examiner applied different prior art patents in rejecting the pending claims and pointed to these different references as having the claimed “memory device.” Apple avers for example, in the September 26, 1997 Office Action, the Examiner relied on U.S. Patent No. 5,631,701 to Miyake (JX-92). Apple asserts that the Examiner stated that “Miyake discloses a system (Figs. 1-2) for implementing a digital camera device comprising a memory device (120) coupled to the digital camera device for storing sets of image data.” (Citing JX-4.062.) Apple says that the Miyake patent teaches that “[t]he memory card 120 is a card-line recording medium

## PUBLIC VERSION

loaded with an SRAM (Static Random Access Memory), EEPROM (Electrically Erasable Programmable Read Only Memory) or other similar semiconductor memory.” (Citing JX-92 at 4:21-25, Fig. 1.) Apple argues that this demonstrates that the Examiner considered the claimed “memory device” in the pending ‘964 claims to encompass any type of semiconductor memory, whether volatile or non-volatile. Apple says that nowhere in the prosecution history did the inventor distinguish the prior art on the grounds that the memory used in the prior art was not volatile.

In its reply brief, Apple argues that as support for its position, Kodak can only point to the “unremarkable fact” that the preferred embodiment disclosed in the ‘964 patent uses a DRAM, which is volatile memory. (Citing RIB at 23.) Apple argues that Kodak does not cite to any precedent that supports limiting this particular term to the preferred embodiment. Apple asserts that the law clearly counsels against such “unduly limiting constructions,” quoting: “we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.” (Citing *Phillips*, 415 F.3d at 1323.)

Apple says that Kodak argues that the specification compels its proposed construction, because the patent references the DRAM in connection with “all embodiments.” (Citing RIB at 24.) Apple asserts that is not factually accurate. Apple states that the specification describes the “invention” as containing a “memory device,” and does not limit the invention to only a DRAM, quoting:

The present invention discloses a system and method for using a unified memory architecture to implement a digital camera device and comprises a unified memory device for storing sets of image data and a central processing unit for executing a memory manager routine with allocates storage locations within the memory device to store the sets of image data.

## PUBLIC VERSION

(Citing JX-1 at 2:64-3:3.)

Apple says, in contrast, the specification repeatedly describes the DRAM as part of the preferred embodiment, even in the “Summary of the Invention” section. (Citing JX-1 at 1:61-66, 2:35-36, 2:39-41, 3:46-52.) Apple adds that this is so even in the section of the specification cited by Kodak, which addresses the memory manager 410. Apple avers that the memory manager 410 is part of the “control application 400,” which in turn is part of “Read-Only Memory (ROM) 350.” (Citing JX-1 at 4:56-67.) Apple asserts that Kodak ignores the portion of the specification that describes the specific configuration of the ROM 350 as part of the “preferred embodiment” rather than the invention itself. (Citing JX-1 at 4:54-57.)

Apple continues that, even if the ‘964 patent referred to the DRAM as part of the “invention,” that does not require limiting the claims to only volatile memory, as Kodak advocates. Apple says that the Federal Circuit will only limit a claim term “if the specification manifests a *clear intent* to limit the term by using it in a manner consistent with *only* a single meaning.” (Citing *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. Jan. 20, 2011)) Apple argues that the specification uses the term “memory device” in its broad sense and there is no clear intent in the specification to limit the “memory device” to only volatile memory.

Apple contends that Kodak argues that claim 2’s reference to a “removable *non-volatile* memory device coupled to said memory device” supports its construction. Apple demurs, saying that claim 2 shows that when the inventor wanted to limit memory to a particular subset – such as non-volatile or volatile – he knew how to do so. (Citing *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1333 (Fed. Cir. 2010); *Phillips*, 415 F.3d at 1314.) Apple concludes that the dependent claims support Apple’s construction, not Kodak’s.



## PUBLIC VERSION

Apple says that Kodak, in arguing file history, ignores those portions of the file history that unequivocally demonstrate that both the inventor and the PTO examiner understood the term “memory device” to encompass both volatile and non-volatile memories. (Citing RIB at 27-28.) Apple concludes that the statements relied on by Kodak from the file history fall far short of evincing a “clear and unmistakable surrender” of any memory devices other than non-volatile memory. (Citing *Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335, 1342 (Fed. Cir. 2009).) Apple adds that the statements cited by Kodak concern an unrelated claim term – the “power management system” – not the “memory device.” (Citing *The Saunders Group, Inc. v. Comfortrac, Inc.*, 492 F.3d 1326, 1334 (Fed. Cir. 2007).)

**Kodak’s Position:** Kodak says that volatile memory stores data only if a continuous, uninterrupted power source is applied, *e.g.*, DRAM. Kodak contends that the ‘964 patent equates the claimed “memory device” with the volatile DRAM described in the specification. (Citing JX-1 at 2:3-27, 5:21-32; JX-4.) Kodak alleges that the claimed components of the memory device in claims 1 and 5 – *i.e.*, the frame buffers and the RAM disk – are exclusively described as DRAM components in the specification. (*Id.*) Kodak cites for example, that the Summary of the Invention states “[t]he DRAM includes frame buffers for storing raw image data received from the imaging device, a working memory area, and a RAM disk with a standardized file system.” (Citing JX-1 at 2:3-5.) Kodak adds that Figure 5 of the ‘964 patent illustrates a “memory map showing the preferred embodiment of the Dynamic Random-Access-Memory (DRAM) of Figure 3.” (Citing JX-1 at 2:40-42.)

PUBLIC VERSION

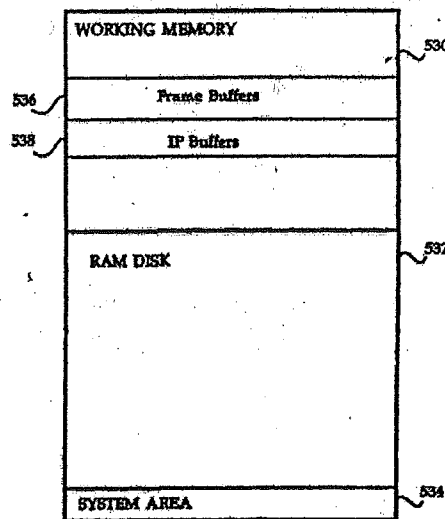


FIG. 5

(JX-4.046.) Kodak argues that Figure 5 corresponds directly to the claimed “memory device” – it includes the claimed frame buffers and RAM disk, and further illustrates the additional areas of volatile memory that could be included in the memory device. (Citing JX-1 at claims 1 and 5.)

Kodak argues that its construction is further supported by claim language that requires the memory manager to “allocat[e] storage locations to store said sets of image data within said memory device.” (*Id.*) Kodak says in the context of the ‘964 Patent, all allocated and de-allocated memory is volatile memory. (Citing JX-1.) Kodak quotes:

[m]emory manager 410 is controlled by control application 400 and responsively allocates DRAM 346 storage locations depending upon the needs of computer 118 and the sets of received image data.

(Citing JX-1 at 4:66-5:2.) Kodak asserts that this portion of the specification does not merely describe a preferred embodiment, rather it refers to *all* embodiments, demonstrating that all memory of the claimed “memory device” is volatile, *i.e.*, DRAM. (*Id.*)

Kodak continues that the dependent claims further support its construction. Kodak avers that claim 2 of the ‘964 patent states that the digital camera device of claim 1 further comprises

PUBLIC VERSION

“a removable non-volatile memory device coupled to said memory device.” (Citing JX-1 at claim 2.) Kodak contends that the language of claim 2 indicates that the inventor defined the “memory device” as volatile memory, and that any non-volatile memory of the system would be “coupled to” the claimed memory device – not part of the memory device. (*Id.*)

Kodak argues that the prosecution history also supports its construction. Kodak asserts that during prosecution of the '964 patent, Apple repeatedly referred to the memory device as volatile, quoting:

In contrast to the devices described in the prior art, claims 1-20 of the present application all recite a power management element or step wherein the *power supply, which powers the memory in which image data sets are stored*, is monitored and remedial action is taken to avoid loss of stored image data sets in the event that a power failure is detected.

(Citing JX-4.283.) Kodak says the “memory in which the image data sets are stored” (*i.e.*, the claimed “memory device”) requires a power supply, and adds that only volatile memory requires power. Kodak quotes Apple to say:

The power management system may include, for example, backup batteries for providing power to the volatile memory in the event that the main batteries fail, and a device for detecting the failure of the main batteries and for responsively connecting the volatile memory to the backup batteries, as described on page 12-13 in the specification.

(Citing JX-4.284.) Kodak argues that Apple explicitly “clarified” that the claimed “memory device” is “volatile memory.”

In its reply brief, Kodak says that Apple argues that a person of skill in the art would understand a “memory device” to mean “simply any device capable of storing and reading out data.” (Citing CIB at 25.) Kodak contends that Apple offer no testimony from its expert to support this “ordinary meaning,” and that Apple cannot find any reasonable support from the intrinsic record. (Citing CIB at 26-28.)

## PUBLIC VERSION

Kodak argues that despite Apple's assertions to the contrary, Kodak demonstrated, in detail, the voluminous intrinsic support for its construction, reciting portions of its Initial Brief. (Citing RIB at 22-25; JX-1 at 2:3-27, 5:21-32; JX-4.046, 283.)

Kodak says that Apple initially points to claim 2 of the '964 patent to support its construction that the claimed "memory device" should be considered a "generic" term. (Citing CIB at 26-27.) Kodak counters that claim 2 actually supports Kodak's construction. Kodak says claim 2 states that the digital camera device of Claim 1 further comprises "a removable non-volatile memory device coupled to said memory device." (Citing JX-1 at claim 2.) Kodak contends that this language indicates that the "memory device" is volatile memory because any non-volatile memory of the system would be "coupled to" the claimed memory device – not part of the memory device. (*Id.*)

Kodak says that Apple's only stated support in the intrinsic evidence is from the prosecution history stems from a September 26, 1997 Office Action where the Examiner references the Miyake reference. (Citing CIB at 27-28; SIB at 58-59.) Kodak asserts that the referenced arguments note that the Miyake reference teaches non-volatile memory; but omit that it also teaches volatile memory. Kodak argues that Miyake's disclosure does not negate Apple's subsequent statements during prosecution that the claimed memory device is volatile memory. (Citing JX-4.283.) Kodak concludes that the Miyake reference cannot change the language of the specification and the claims, which dictate that the "memory device" is volatile.

**Staff's Position:** Staff says that all three parties agree that a "memory device" stores image data. Staff states that the greatest area of difference is whether or not it is volatile. Staff notes that Kodak asserts that the memory device is volatile memory, meaning memory that loses its data if power is lost. Staff says that Kodak's main support for this position is the '964

## PUBLIC VERSION

patent's description of the preferred embodiment as using a DRAM, which is volatile memory. Staff counters that the evidence shows that this is only the preferred embodiment. (Citing CX-425C at Q. 402.) Staff asserts that during the prosecution of the '964 patent, the examiner stated that the memory device of the '964 patent was disclosed in U.S. Patent No. 5,631,701, which teaches the use of non-volatile memory. (Citing JX-4.062; CX-425C at Q. 403-406; JX-92.) Staff reasons, therefore, that the evidence does not support the limitation of "memory device" to volatile memory.

Staff notes that Apple and the Staff agree that a memory device both stores data and allows it to be retrieved. (Citing CX-425C at Q. 400-401.) Staff avers that the specification states that the patented invention comprises a "unified memory device for storing sets of image data." (Citing JX-1 at 2:67-69.) Staff continues that it also comprises an "input/output interface whereby an external host computer can access the sets of image data stored in the memory device." (Citing JX-1 at 3:5-8.) Staff concludes that the proper construction of "memory disk" is "storage device where sets of image data may be stored and retrieved."

**Construction to be Applied:** "semiconductor storage where information (e.g. sets of image data) may be stored and retrieved"

The parties' proposals for construction of this term are similar. The material difference between them is that Kodak believes that the memory device is limited to storage of volatile data, while Apple and Staff believe the memory is not limited to storage of volatile data.

From a reading of the '964 patent, it is clear on its face that the term "memory device," as used in the asserted claims and as described in the specification, is not limited to storage of volatile data.

Independent claim 1 describes a digital camera device comprising, *inter alia*:

## PUBLIC VERSION

a memory device, coupled to said CPU, for storing sets of image data, comprising frame buffers for storing unprocessed image data and a random-access memory disk for storing unprocessed image data and processed image data;

(JX-1 at 8:38-42.) Similarly, independent claim 5 teaches:

using a memory manager to allocate storage locations within a memory device comprising frame buffers for storing unprocessed image data and a random-access memory disk for storing unprocessed image data and processed image data;

(JX-1 at 9:8-12.)

Neither independent claim 1 nor independent claim 5 specifically limit the memory device to one that stores volatile data. The use of the term "comprising" in claims 1 and 5 is important to this construction. "Comprising" is an open-ended term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim. *Genentech, Inc., v. Chron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997); *Georgia Pacific Corp. v. United States Gypsum Co.*, 195 F.3d 1322, 1327 (Fed. Cir. 1999); *In Re Baxter*, 656 F.2d 679, 686 (CCPA 1981). The use of the term in this instance leaves open the possibility that types of memory other than those specifically listed in the claims could be used.

The Abstract of the '964 patent describes a "system and method for using a unified memory architecture to implement a digital camera device comprises a dynamic random-access memory for storing captured image data during processing and compression." The Summary of the Invention of the '964 patent teaches a system and method for using a unified memory architecture to implement a digital camera device. The preferred embodiment includes a digital imaging device for capturing raw image data and a computer for processing, compressing and storing the image data. The Summary specifically states:

## PUBLIC VERSION

The computer includes a dynamic random-access memory (DRAM), a central processing unit (CPU), a memory manager routine stored in a read-only memory (ROM), a power management system, an input/output interface (I/O), and an optional removable memory.

(JX-1 at Abstract, 1:60-2:2.)

The Detailed Description of the Preferred Embodiment describes “[t]he present invention” to disclose:

a system and method for using a unified memory architecture to implement a digital camera device and comprises a unified memory device for storing sets of image data and a central processing unit for executing a memory manager routine which allocates storage locations within the memory device to store the sets of image data.

(JX-1 at 2:64-3:3.) This language is consistent with that of asserted claims 1 and 5, in that it uses the inclusive term “comprises.” This language does not attempt to limit the type of image data to be stored in the memory device.

Kodak argues incorrectly that the ‘964 patent, at JX-1, 4:66-5:2, refers to all embodiments rather than a preferred embodiment. In fact, the paragraph in question follows a more general description of the preferred embodiment of read-only memory (ROM) 350. The lead paragraph, which begins at JX-1, 4:54, refers to FIG. 4, a memory map showing the preferred embodiment of ROM 350. Among other things, that paragraph describes Toolbox 402 to contain “memory manager 410.” The paragraph on which Kodak relies then describes memory manager 410, including the language quoted by Kodak, as part of the preferred embodiment.

Kodak also misses the mark when it argues that the language of claim 2 indicates that the inventor defined the “memory device” as volatile memory, and that any non-volatile memory of the system would be “coupled to” the claimed memory device – not part of the memory device.

## PUBLIC VERSION

Claim 2 specifically teaches “a *removable* non-volatile memory device coupled to said memory device.” (JX-1 at 8:55-56) (emphasis added). The Summary of the Invention teaches:

The nonvolatile removable memory serves as a storage area for additional image data. A camera user who possesses several removable memories may thus replace a full removable memory with an empty removable memory to effectively expand the picture-taking capacity of the digital camera.

(JX-1 at 2:20-25.) The description of the preferred embodiment also refers to the removable memory, in a manner nearly identical to the Summary of the Invention. That description ends with the equivocal notation, “[i]n the preferred embodiment of the present invention, removable memory 354 is *typically* implemented using a flash disk.” (JX-1 at 3:46-47, 3:51, 4:11-20) (emphasis added). The description of the preferred embodiment specifically notes that, “[a]lternately, camera 110 may be implemented without removable memory 354 or buffer/connector 352.” (JX-1 at 3:54-55.)

The entire focus of the discussion in the specification is on the removable nature of the described non-volatile memory, and the preferred embodiment allows for the invention to exist without a removable non-volatile memory. I find that the addition of “removable non-volatile memory” in claim 2, does not indicate that the digital camera device of claim 1 is limited to volatile memory. Rather it demonstrates a narrowing of the claimed invention to include a limitation that the mentioned non-volatile memory be “removable.” The presence or absence of this feature, taught in claim 2, does not in any way impact whether or not the invention’s memory is volatile, non-volatile or both.

Kodak’s focus on the prosecution history to demonstrate that the inventor claimed that the memory device is limited to volatile memory is also unconvincing. The quote used by Kodak is one in which the inventor discussed the power management element of the invention, which understandably treated a potential loss of power and focused on the power supply to the



## PUBLIC VERSION

memory in which image data sets are stored. Kodak's contention that only volatile memory requires power is followed by a logical leap that the "memory device" is "volatile memory." While the quoted language may indicate that *some* memory in the invention is "volatile," it does not follow from the quoted passage that *all* memory in the invention is "volatile." (JX-4.283.)

Even less convincing is the second example provided by Kodak. Describing the power management system, the inventor's choice of words is quite equivocal "may include, for example, backup batteries for providing power to the volatile memory" and "responsively connecting the volatile memory to the backup batteries." In addition, the inventor continually refers to "volatile memory" rather than just memory. This leaves one to question why the inventor needed to use the term "volatile" to describe the memory to be protected if all of the memory in the invention is volatile and subject to the protection of the power management system. (JX-4.284.)

In *Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335 (Fed. Cir. 2009), the Federal Circuit held that initial statements in the file history of the patent in suit did not constitute "a clear and unmistakable surrender of subject matter." In that case, the claim taught the use of products that consist essentially of PAA<sup>3</sup> as an antimicrobial agent for sanitizing fowl. The claim language in question taught, "[a] method for sanitizing fowl that has been killed, plucked and eviscerated, comprising contacting the fowl with an aqueous peracetic acid solution, which consists essentially of a sanitizing concentration of at least a 100 ppm peracetic acid ..." The applicant argued that its invention uses sanitizing solutions containing PAA as the *only* antimicrobial agent.

In reviewing the construction of the claims *de novo* the court noted that, following the argument by the applicant, the Examiner noted that the claims are directed to the use of a

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<sup>3</sup> "PAA" stands for peracetic acid solution.

## PUBLIC VERSION

composition "which consists essentially of" PAA and are thus not limited to compositions containing PAA as the sole antimicrobial agent. The court also pointed out that following the Examiner's clarification, FMC never repeated the allegedly disclaiming statements and instead offered alternative reasons to overcome the Greenley and Oakes prior art. The Court said:

The Examiner eventually allowed the claims over the cited prior art, without any change to the claims' "consists essentially of" language. For these reasons, a reasonable reader of this prosecution history could conclude that FMC's initial statements that PAA is the sole antimicrobial agent used in its claimed method were hyperbolic or erroneous, that the Examiner corrected FMC's error in the following communication, that FMC recognized its error and never again repeated or relied upon the erroneous rationale, and that the claims were allowed for reasons independent of the allegedly disclaiming statements. Thus, when FMC's statements are considered in the context of the prosecution history as a whole, they simply are not clear and unmistakable enough to invoke the doctrine of prosecution history disclaimer.

*Id.* at 1343.

I conclude that the statements relied on by Kodak from the file history fall far short of demonstrating a clear and unmistakable intent to limit the claimed memory to volatile memory or to disclaim non-volatile memory.

Based upon the foregoing, I find that the term "memory device" as used in asserted claims 1, 3, 5 and 7, is clearly to be construed as "semiconductor storage where information (e.g. sets of image data) may be stored and retrieved." I find that examination of the extrinsic evidence (such as expert testimony) offered by the parties is unnecessary because the intrinsic evidence is sufficient to understand the meaning of "memory device." *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) ("In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.")

## PUBLIC VERSION

### 2. "Random-Access Memory Disk"

The term "random-access memory disk" appears in asserted claims 1 and 5.

**Apple's Position:** Apple argues that its construction is based on the plain language of both the claim and the specification, and that Kodak's construction of "RAM disk" limits the claims to the preferred embodiment.

Apple recites that asserted claim 1 states in relevant part:

a memory device, coupled to said CPU, for storing sets of image data, comprising frame buffers for storing unprocessed image data and a *random-access memory disk for storing unprocessed image data and processed image data*;  
a memory manager for *allocating storage locations* to store said sets of image data within said memory device...

(Citing JX-1 at 8:35-53) (emphasis added by Apple). Apple says that "all of the '964 patent's claims" incorporate "a random-access memory disk for storing unprocessed image data and processed image data." Apple says that all of the claims also incorporate a memory manager "for allocating storage locations" within the memory device, of which the RAM disk is a part. Apple says its proposed construction of "random-access memory disk" makes clear that the memory allocation for the random-access memory disk is for storage of unprocessed image data and processed image data, language that comes directly from the patent claims. (Citing CX-425C at Q. 384.) Apple contends that its construction is also consistent with the specification, which defines the "RAM disk" as: "RAM disk 532 is a *memory area* used for storing raw and compressed image data... ." (Citing JX-1 at 5:33-34) (emphasis added by Apple).

Apple argues that a RAM disk is not merely any area of a memory device that may at one time or another store raw or processed image data. Apple says such a construction would eliminate the word "disk" from the construction. Then Apple states that "[a]s an initial matter,

## PUBLIC VERSION

all parties agree that the word 'disk' in the term 'RAM disk' does not actually mean a disk."<sup>4</sup>

(Citing Tr. at 409:13-410:1, 669:15-670:18.) Apple argues that, in the context of the '964 patent, the use of the word "disk" refers to the intelligent allocation of storage regions in the memory device for storing image data. (Citing CX-425C at Q. 386; Tr. at 408:22-409:2, 411:5-11, 411:23-412:20.) Apple asserts that this is similar to the concept of using a file allocation table that maps memory locations (called clusters, which constitute a group of sectors) on a hard disk. (Citing CX-425C at Q. 390-391.)

Apple avers that consistent with this, the '964 patent specification repeatedly states that a memory manager allocates storage locations in the digital camera's DRAM for storing image data, quoting:

In the preferred embodiment, the CPU executes a *memory manager routine which selectively allocates storage locations within the DRAM*, depending on the requirements of the system and the current image data.

DRAM 346 is a contiguous block of dynamic memory which may be *selectively allocated to various storage functions*...

*Memory manager 410* is controlled by control applications 400 and *responsively allocates DRAM 346 storage locations* depending upon the needs of computer 118 and the sets of received image data.

(Citing JX-1 at 2:5-9, 3:64-65, 4:65-5:2.) (Emphasis added by Apple) Apple avers that this memory manager allocates locations in the DRAM depending on the needs of the digital camera's computer and the sets of image data that need to be stored, an allocation that is directly reflected in Apple's construction of "random-access memory disk."

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<sup>4</sup> Apple says that the use of the word "disk" in the '964 patent is analogous to a person saying they are "taping" a video even when they are recording digital video. (Citing Tr. at 409:13-410:1.) Apple reasons that the use of the word "taping" is meant to convey the concept of recording, but does literally mean the use of tape. (*Id.*) Apple says the use of the word "disk" in the '964 patent is intended to convey the concept of intelligent allocation of storage space, not the use of a hard disk, which is the origin of the term. (*Id.*)

## PUBLIC VERSION

Apple argues its construction is also consistent with the extrinsic evidence, including U.S. Patent No. 5,519,857 to Kato et al. (“Kato patent”). Apple alleges that the Kato patent uses the term “RAM disk” to describe the use of conventional RAM to store and retrieve contractual text, a use consistent with Apple’s construction of the term, reciting:

[T]he RAM disk device 2510b comprises a semiconductor memory 7100 (RAM) for storing contracted text, and a[] RAM disk controller 7200 for controlling the reading of contracted texts on the semiconductor memory 7100.

(Citing JX-136 at 33:9-13; CX-425C at Q. 394-395.) Apple asserts that the Kato patent does not describe using the RAM disk to emulate a hard disk drive or using a file system, as Kodak advocates. (Citing CX-425C at Q. 394-395.)

Apple contends that Kodak’s construction is neither supported by the claims nor required by the specification. Apple begins that Kodak’s construction contradicts the claim language because Kodak’s expert Dr. Madisetti opined that Kodak’s construction of “RAM disk” requires the use of a file system. (Citing Tr. at 668:24-669:7.) Apple counters that claim 3, which depends from claim 1, already has the limitation “wherein said memory device uses a standardized file system for storing said sets of image data.” (Citing JX-1 at claim 3.) Apple concludes that Kodak’s construction renders claim 3 redundant. (Citing *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007); *Sunrace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003).)

Next Apple argues that Kodak’s construction improperly reads in a preferred embodiment of the invention described in the specification. (Citing *Liebel-Flarsheim v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004); *Brookhill-Wilk I, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1302 (Fed. Cir. 2003).)

## PUBLIC VERSION

Apple asserts that Kodak takes two sentences from the specification, “which undeniably use permissive language with respect to the RAM disk,” and seeks to strictly limit that term’s construction to that permissive language. Apple quotes:

RAM disk 532 is a memory area used for storing raw and compressed image data and *typically* is organized in a “sectored” format *similar* to that of conventional hard disk drives. *In the preferred embodiment*, RAM disk 532 uses a well-known and standardized file system to permit external host computer systems, via I/O 348, to readily recognize and access the data stored on RAM disk 532.

(Citing JX-1 at 5:33-39) (emphasis added by Apple). Apple says that the underlined portion of the first sentence conforms with Apple’s and the Staff’s proposed construction, in that it provides definitional language of what the RAM disk is. Apple argues that Kodak ignores that portion and reads the remainder of the sentence – “and typically is organized in a ‘sectored’ format similar to that of conventional hard disk drives” – as requiring that the RAM disk be limited to devices that “emulate a hard disk drive.” Apple says that Kodak’s expert, Dr. Madisetti, admitted that the word “typically” means “not always,” but in order to support his opinion regarding this term he has clearly taken the position that “typically” means “always.” (Citing Tr. at 664:19-666:13.) Apple argues that the use of the word “typically” leads to the opposite conclusion – that sectoring the RAM disk in a manner similar to that of a conventional hard disk drive is permissive, *not* mandatory. (Citing *Linear*, 566 F.3d at 1058.)

Apple contends that the only portion of the specification that refers to a hard disk is found in the previously-quoted section. Apple avers that the specification does not say that the RAM disk “emulates” a hard disk; but it says that the RAM disk is “typically” organized in a “sectored” format “similar” to that of conventional hard disk. Apple says that assuming that this passage defines the term “random-access memory disk,” it fails to indicate that a “random-access

## PUBLIC VERSION

memory disk" *must* "be configured to emulate a hard disk drive" as Kodak argues. (Citing CX-425C at Q. 388-89.)

Apple says that Kodak cites to the prosecution history to support its proposed construction; but these are more attempts to improperly read a preferred embodiment into the construction. Apple asserts that Kodak points out that the '964 examiner rejected the "random-access memory disk" claim limitations based on a passage from related U.S. Patent No. 5,867,214, invented by Apple's Mr. Anderson, that reads: "RAM disk 74 is a memory area within RAM 60 organized in a 'sectored' format similar to that of conventional hard disk drives." (Citing JX-93 at 4:52-54.) Apple asserts that Kodak fails to mention that this description from the '214 patent also describes a preferred embodiment. (Citing JX-93 at 4:41-54.)<sup>5</sup>

Apple argues that Kodak's reliance on extrinsic evidence is not persuasive because the term "RAM disk" can have multiple meanings depending on the application in which it is used. (Citing CX-425C at Q. 392.) Apple says for example, the aforementioned Kato patent (JX-136) described a "RAM disk" in the context of a document search engine, and uses the term consistently with how the '964 patent uses it in the digital camera context. Apple contrasts that with the extrinsic evidence cited by Kodak, which Apple says uses the term "RAM disk" in the context of general purpose computers. (Citing CX-425C at Q. 398.) Apple adds that Kodak's expert admitted that the term "disk" as used in "RAM disk" came from the idea in the computer

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<sup>5</sup> Apple says that Kodak also cites to materials submitted to the PTO by Eric Anderson, inventor of the '964 patent, as evidence to support its proposed claim construction, but here too Kodak falls into the trap of reading a preferred embodiment into the construction. Apple argues that, while Exhibits A and B to Eric Anderson's declaration may describe Mr. Anderson's work on prototypes of the invention claimed in the '964 patent, the claimed invention is not limited to these commercial embodiments. (Citing JX-4,492-494, 498, 507.)

## PUBLIC VERSION

arts of using a spinning disk, and there is no such spinning disk in the '964 patent embodiments. (Citing Tr. at 669:15-670:18.)

Apple argues that case law clearly states that extrinsic evidence, such as that found in dictionaries and treatises, is less reliable than the patent and its prosecution history in determining how to read claim terms. (Citing *Phillips*, 415 F.3d at 1318.) Apple adds, “[t]he court may receive extrinsic evidence to educate itself about the invention and the relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with the construction mandated by the intrinsic evidence.” (Quoting *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999).)

Apple concedes that, in the context of general purpose computers, the term “RAM disk” is often used to describe treating a piece of RAM in a personal computer as a hard disk. (Citing CX-425C at Q. 392.) Apple continues that in the '964 patent, the inventors took a concept used in computers and adapted it for use in a digital camera—a new field of use and application. Apple argues that it is not required that the term “RAM disk” mean the same thing in the '964 patent that it may in the context of a personal computer or other application. (Citing CX-425C at Q. 392.) Apple argues that in the '964 patent, the term “RAM disk” is used in a digital camera and, in that context, it means “memory that is allocated for storing unprocessed image data and processed image data.” (Citing CX-425C at Q. 398.)

In its reply brief Apple says the core dispute is whether or not the term should be narrowly construed and thus limited to a specific embodiment, as Kodak advocates. Apple argues in order for Kodak's construction to be adopted, it was incumbent on Kodak to show that the inventor, in the specification, “demonstrated a clear intention to limit the claim scope using



## PUBLIC VERSION

words of [sic, or] expressions of manifest exclusion or restriction.” (Citing *Arlington*, 2011 U.S. App. LEXIS 1118, at \*14.)

Apple asserts there is nothing in the specification that constitutes a clear expression of the inventor’s intent to limit the claims to the preferred embodiment. Apple says that Kodak cites to only four sentences total from the specification, and the references fail to support Kodak’s construction.

More specifically, Apple says that the sentence at JX-1, 5:33-36 fully comports with Apple’s construction, quoting: “RAM disk 532 is a memory area used for storing raw and compressed image data and typically is organized in a ‘sectored’ format similar to that of conventional hard disk drives.” Apple asserts that the first clause of this sentence tracks almost exactly Apple’s and the Staff’s proposed constructions, *i.e.*, memory that has been allocated for storing unprocessed and processed image data. Apple adds that this clause is phrased in definitional terms as it states in express terms what the RAM disk “is.”

Apple contends that Kodak ignores this portion of the sentence, however, and relies on the second clause as supporting its construction. Apple reiterates that the use of term “typically” to describe the memory area (“...and typically is organized in a ‘sectored’ format similar to that of conventional hard disk drives”) falls far short of demonstrating a clear intention on the part of the inventor to limit the claims to only RAM disks that emulate a hard disk drive. (Citing CIB at 32-33.) Apple argues that the Federal Circuit recently rejected the same argument Kodak makes here, holding that the specification’s use of permissive language to describe a feature of an invention “does not clearly disclaim systems lacking these benefits.” (Citing *i4i L.P. v. Microsoft Corp.*, 598 F.3d 831, 844 (Fed. Cir. 2010).) Apple says in *i4i*, the specification used phrases like

## PUBLIC VERSION

“could be edited” and “ability to work,” which are not materially different from the ‘964 specification’s use of the word “typically” to describe the RAM disk.

Apple contends that Kodak attempts to explain away the specification’s use of the permissive word “typically” in describing the features of the RAM disk by arguing that “typically” refers only to the sector size of a hard disk drive. (Citing RIB at 18.) Apple says that Kodak (relying solely on its expert), asserts the “typical” sector size is 512 bytes; but other sector sizes could be used. Apple says this explanation is belied by the plain language of the specification, which does not refer to “typical” sector sizes; rather, the sentence in question states that the RAM disk itself may “typically” be organized like a hard disk drive. (Citing JX-1 at 4:34-37.) Apple concludes that the only rational interpretation of this sentence is that while the RAM disk may typically be so organized, it does not have to be. Apple avers that Kodak’s expert conceded that “in a general context, typically could mean not always....” (Citing Tr. at 664:25-665:1.)

Apple avers that the foregoing sentence from the specification constitutes the only instance that the term “hard disk drive” appears in the ‘964 patent. Apple asserts that the three remaining sentences from the specification cited by Kodak merely reference features of the preferred embodiment. Specifically, Apple says the two sentences at column six (6:46-48 and 6:58-60) are part of the discussion of Figure 7, which the ‘964 patent describes as “a flowchart of preferred method steps for performing a power-up sequence according to the present invention.” (Citing JX-1 at 6:20-22, 6:42-44.) Apple concludes that the last sentence cited by Kodak explicitly refers to the preferred embodiment: “[i]n the preferred embodiment, RAM disk 532 uses a well-known and standardized file system to permit external host computer systems, via

PUBLIC VERSION

I/O 348, to readily recognize and access the data stored on RAM disk 532.” (Citing JX-1 at 5:36-39.)

Apple notes that Kodak cites to a declaration submitted by the inventor during prosecution to overcome a rejection based on one of his own prior patents. Apple contends that the declaration contains no discussion of the meaning of any claim language and does not reference the claims at all. (Citing JX-4.492-493.) Apple argues, therefore, the file history cannot constitute grounds for narrowly construing the term. (Citing *Ecolab*, 569 F.3d at 1342.) Apple concludes that the attachment to the declaration that Kodak cites (JX-4.507) is a one-page “inventions summary,” which likewise contains no discussion of any claim language.

Apple argues that when the specification provides a clear statement of what the RAM disk is (“RAM disk 532 is a memory area used for storing raw and compressed image data. . . .,” JX-1 at 5:34-37), generalized dictionary definitions are of little if any probative value. (Citing *Phillips*, 415 F.3d at 1322.) Apple concludes that in this case the ‘964 inventor took a term of art from the computer field and applied it with a different meaning to his digital camera invention. (Citing CIB at 34-35.) Apple refers to the testimony of its expert, Dr. Delp in which he said: “[t]he term RAM disk can have multiple meanings depending on the application for which it is being used. Often the term RAM disk is used to describe treating a piece of RAM in a personal computer as a hard disk. In the ‘964 Patent, the inventors having taken a concept used in computers [and] adapted it for use in a digital camera. So it’s not necessary that the term RAM disk mean th[e] same thing in the ‘964 Patent that it does with respect to a personal computer or other application.” (Citing CX-425C at Q. 392.)

Apple contends that Kodak misquotes Dr. Delp to support its contention, arguing that Dr. Delp “admitted” that all RAM must be allocated. Apple quotes the testimony of Dr. Delp to say:

## PUBLIC VERSION

Q. Okay. And it is true, sir, that with respect to random access memory, random access memory is generally allocated memory, right?

A. No.

(Citing Tr. at 350:8-11, 411:23-412:20.) Apple concludes that Dr. Delp explained that allocating memory means setting a portion of the memory aside in order to ensure the data stored there is not overwritten during the ordinary course of operation. (Citing Tr. at 409:3-12.)

Apple says that Kodak argues that Apple's construction means that both the frame buffers and the RAM disk are "RAM disks," which Kodak describes as "illogical." (Citing RIB at 20.) Apple asserts that Kodak misstates the evidence. Apple continues, that claim 1 states that the frame buffers store "unprocessed image data," whereas the "random-access memory disk" stores both unprocessed and processed image data. (Citing JX-1 at 8:39-43.) Apple argues, even if Kodak were correct in its assumption, the frame buffers and RAM disk would still be different elements because they perform different storage functions. Apple contends that Dr. Delp's testimony concerning the frame buffers was in the context of the preferred embodiment of Fig. 5 of the patent, which Dr. Delp noted was not critical to his analysis. (Citing Tr. at 352:22-353:9, 354:14-20.) Apple concludes that as the specification repeatedly states, Fig. 5 is only a description of the preferred embodiment of the DRAM. (Citing JX-1 at 5:21-29.)

Apple says that Kodak states that Apple's construction renders redundant other language already in the claim, *e.g.*, the memory manager which "allocates" storage locations and the language in the claim that the random-access memory device store unprocessed and processed image data. Apple counters that there is no redundancy with the memory manager limitation, because the memory manager performs the allocation function and the random-access memory disk is what is allocated. (Citing JX-1 at 8:40-46.) Apple contends this claim relationship is synergistic, not redundant. Apple continues that, while the claim also states that the RAM disk

## PUBLIC VERSION

stores unprocessed and processed image data, this is not grounds to reject Apple's construction. (Citing *Netcraft Corp. v. eBay, Inc.*, 549 F.3d 1394, 1400 n.1 (Fed. Cir. 2008).) Apple asserts that concerns regarding claim redundancy typically only arise when a construction renders two claims identical. (Citing *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1357 (Fed. Cir. 2001).) Apple argues that its construction of "random-access memory disk" does not render any other portion of the claim redundant because it specifically requires that the RAM disk be a "memory area that has been allocated" for storing image data, and no other limitation in the claim already requires an allocated memory area.

**Kodak's Position:** Kodak contends that it is undisputed that the term "random-access memory disk" or "RAM disk" has an accepted and established meaning in the computer field. (Citing Tr. at 340:7-10; 669:8-9.) Kodak says that Apple's own expert, Dr. Delp, admits that "RAM disk is used to describe treating a piece of RAM in a personal computer as a hard disk." (Citing CX-425C at Q. 392.) Kodak asserts that his admission supports Kodak's construction, which also finds overwhelming support in: (1) the claim language, specification, and file history of the '964 patent; (2) definitions of RAM disk in authoritative technical dictionaries; and (3) Kodak's expert's testimony.

Kodak avers that Apple contends that the '964 patent "aimed to take features from computer systems and adapt them for use in a digital camera." (Citing CX-425C at Q. 366; Tr. at 338:19-339:3.) Kodak asserts that, to preserve its infringement case, Apple relies entirely on "Dr. Delp's unsupported, conclusory opinions derived from the inexplicable premise that RAM disk in the '964 Patent means something different from RAM disk in computer systems." (Citing CX-425C at Q. 392.) Kodak argues that Apple has no intrinsic evidence to support its construction, and Apple attempts to impermissibly broaden the scope of the asserted claims by

PUBLIC VERSION

equating "RAM disk" and "RAM" thereby eliminating the imperative "disk" requirement of "random-access memory disk."

Kodak says the claimed "random-access memory disk" is a component of DRAM in the '964 patent. (Citing JX-1 at 5:21-32.) Kodak avers that Apple does not dispute that DRAM is volatile memory. (Citing CX-425C at Q. 402.) Kodak says the parties' dispute centers on whether the claimed "random-access memory disk" must be "configured to emulate a hard disk drive." (Citing CX-425C at Q. 382-398.)

Kodak argues that the specification, claims, and file history of the '964 patent confirm that the inventors intended to claim a RAM disk in accordance with the well accepted and established meaning of the term in the computer field. Kodak cites for example, the specification to state:

RAM disk 532 is a memory area used for storing raw and compressed image data and typically is *organized in a "sectored" format similar to that of conventional hard disk drives.*

(Citing JX-1 at 5:33-36) (emphasis added by Kodak). Kodak contends that this means a RAM disk is configured to emulate a hard disk drive. Kodak continues that the specification further describes RAM disk as one would describe a conventional hard disk drive, quoting:

[C]omputer 118 boots up 754 using the system configuration 408 routine and *formats* 756 a new RAM disk 532.

\* \* \*

[C]omputer 118 boots up 766 using the system configuration 408 routine and then recovers and *mounts* 768 RAM disk 532.

(Citing JX-1 at 6:46-48, 6:58-60, Fig. 7) (emphasis added by Kodak). Kodak asserts that while computers "format" and "mount" conventional hard disk drives, they do not "format" or "mount" conventional RAM. (Citing RX-765C at Q. 194.) Kodak concludes that the "disk" requirement

PUBLIC VERSION

of RAM disk is paramount to distinguishing RAM configured to emulate a hard disk drive from conventional RAM.

Kodak argues that the preferred embodiment of RAM disk in the '964 patent further supports its construction, quoting:

In the preferred embodiment, *RAM disk 532 uses a well-known and standardized file system* to permit external host computer systems, via I/O 348, to readily recognize and access the data stored on RAM disk 532.

(Citing JX-1 at 5:36-39) (emphasis added by Kodak). Kodak asserts that an example of "a well-known and standardized file system" is DOS (*i.e.*, Disk Operating System). (Citing Tr. at 344:15-19, 376:20-22, 388:1-4.) Kodak alleges that conventional hard disk drives use file systems and most use well-known and standardized file systems to readily enable various computer systems to access the data stored on the disk. (Citing Tr. at 376:16-22; RX-765C at Q. 199.)

Kodak contends that the prosecution history of the '964 patent also supports its construction. Kodak says that to overcome an Examiner's rejection of the asserted claims, '964 patent inventor Eric Anderson submitted a declaration that included his invention disclosure for the '964 Patent. (JX-4.507.) Kodak asserts that Mr. Anderson's invention disclosure equates the claimed RAM disk with the "well established meaning of RAM Disk in the computer field." (*Id.*) Specifically, Kodak says Mr. Anderson stated that "[t]he removable disk and the RAMDisk are accessed via standard DOS commands, and maintain a standard directory and FAT structure." (*Id.*)

Kodak states that Mr. Anderson explained that such a removable disk is "typically [] a flash disk or rotating magnetic (hard) disk." (*Id.*) Kodak contends that his statements confirm

## PUBLIC VERSION

that the claimed RAM disk – described in his '964 patent invention disclosure – is configured the same as a flash disk or hard disk.

Kodak argues that Apple misreads the specification to argue that a RAM disk does not have to be configured to emulate a hard disk drive. Kodak says Apple argues that the word “typically” indicates that the RAM disk does not always have to be organized in a “sectored” format. (Citing CX-425C at Q. 389.) Kodak contends that Apple “fails to understand that all RAM disks are configured to emulate hard disk drives and that “typically” merely refers to one of the ways that this configuration can be accomplished.” Kodak continues that its expert, Dr. Vijay Madiseti, explained that the sector of a conventional hard disk drive is typically 512 bytes in size. (Citing Tr. at 665:14-25.) Kodak continues to say that a RAM disk can be configured to emulate a hard disk drive with any sector size, such as 4,000 bytes or more. (Citing Tr. at 665:16-25.)

Kodak argues that the claim construction analysis for “random-access memory disk” should begin and end with the intrinsic evidence. Kodak asserts that Apple relies on the “conclusory allegations of its expert” to circumvent the explicit definitions of RAM disk in the '964 Patent “that comport with the well understood meaning of that term.”

Kodak contends that Apple and Dr. Delp rely on the *Microsoft Press Computer Dictionary*, 2d. Ed. (Microsoft Press, 1994) for various technical definitions in this Investigation. (Citing CX-425C at Q. 73-74.) Kodak asserts that the *Microsoft Press Computer Dictionary*, supports Kodak’s construction of RAM disk. (Citing RX-491 at 5; CX-180 at 8.) Kodak avers that it defines “RAM disk” as “a *simulated disk drive* whose data is actually stored in RAM memory” and clarifies that “RAM disks usually use volatile memory, so the data stored on them disappears when power is turned off.” (*Id.*)



PUBLIC VERSION

Kodak quotes Dr. Delp to acknowledge that “RAM disk” is used to describe treating RAM as a hard disk that is formatted:

- Q. . . . And in response to the question 392, you answered that “often the term *RAM disk is used to describe* treating a piece of RAM in a personal computer as *a hard disk.*” Correct?
- A. I say that there, *yes*.

(Citing Tr. at 340:21-25) (emphasis added by Kodak).

Kodak adds that Dr. Madisetti explained why a RAM disk is organized using a file system:

- Q. So in a RAM disk, why would you need to emulate a hard disk drive?
- A. Because you like to be able to store information in a format that you can mount on your computer. You can read and write different types of files, access them. You also have the efficiency of a higher speed than a traditional disk drive by mounting it on a RAM.

(Citing Tr. at 710:17-25.)

Kodak argues that Apple’s entire construction is based on the improper conclusory testimony of Dr. Delp. Kodak says Dr. Delp relies merely on tangential extrinsic evidence and his opinions conflict with the construction mandated by the intrinsic record. (Citing *Phillips*, 415 F.3d at 1318; *Key Pharms. v. Hercon Labs. Corp.*, 161 F.3d 703, 716 (Fed. Cir. 1998).)

Kodak contends that Apple’s construction wholly ignores the “disk” requirement of this element. Kodak says Dr. Delp argues that Apple’s definition of “disk” as used in the term “random-access memory disk” is merely “allocated memory.” (Citing Tr. at 348:20-24, 411:5-10.) Kodak counters that Dr. Delp admits that all RAM – not just the “RAM disk” portion of RAM – must be allocated in the normal course of use to avoid loss of data. (*Id.* at 350:12-22.) Kodak argues that his admissions confirm that Apple is attempting to construe RAM disk as RAM. Kodak argues that Apples position is clearly wrong, because Dr. Delp admits that the

PUBLIC VERSION

DRAM 346 of the '964 patent contains allocated memory aside from the RAM disk in the form of frame buffers. (Citing Tr. at 352:22-353:9, 354:8-355:15; JX-4.046.) Kodak reasons that Apple's construction leads to the illogical conclusion that the frame buffers and RAM disk are both RAM disks even though the specification and claims refer to them separately. (Citing *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006).)

Kodak argues that Apple's construction is also inconsistent with the claim language which expressly requires "a memory manager for allocating storage locations to store said sets of image data within said memory device." (Citing JX-1 at claim 1.) Kodak says that the claim already describes a memory area "that has been allocated" obviating Apple's definition of "disk," *i.e.*, "allocated memory." Kodak reiterates that the intrinsic and extrinsic evidence, as well as Dr. Delp's admissions, makes clear that Apple improperly attempts to construe "RAM disk" as "RAM." (Citing *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1118 (Fed. Cir. 2004).)

Kodak says that Apple, through Dr. Delp, relies on the Kato patent as the only support for its construction. (Citing CX-425C at Q. 394-395.) Kodak contends that the Kato patent is unrelated to the '964 patent and has nothing to do with image processing or digital cameras. Kodak continues that despite his reliance on Kato, Dr. Delp was forced to admit that it does not refute Kodak's construction:

- Q. Now, the Kato patent doesn't say that the RAM disk is not formulated -- is not formatted, excuse me, to emulate a hard disk drive, does it?  
A. It doesn't say -- it does not say that, yes.

(Citing Tr. at 357:11-16.)

In its reply brief, Kodak says that Apple wrongly argues that Kodak's construction of "random-access memory disk" ("RAM disk") is "overly restrictive" and limits the claim to the

## PUBLIC VERSION

preferred embodiment. (Citing CIB at 31-33.) Kodak argues that its construction is dictated by the claims and intrinsic record and comports with the well-established meaning of RAM disk as understood by those of ordinary skill in the art. Kodak says that Apple merely parrots back additional claim language in an effort to provide meaning to an otherwise unsubstantiated construction. Kodak adds that Apple's construction is legally flawed because it eliminates the word "disk" from its construction of "RAM disk." Kodak asserts that under its construction, the term "disk" has meaning, which is "configured to emulate a hard disk drive."

Kodak alleges that Apple admits that "the term 'RAM disk' is often used to describe treating a piece of RAM in a personal computer as a hard disk." (Citing CIB at 35 n. 20.) Kodak continues that Apple asserts the common definition of "RAM disk" is "somehow changed in the context of digital cameras." (*Id.*) Kodak argues that this position is baseless given that the RAM disk 532 in the '964 patent is formatted and mounted by the computer 118. (Citing JX-1 at 6:45-48, 57-59.) Kodak asserts that the RAM disk 532 is part of the computer 118.<sup>6</sup> (Citing JX-1 at Fig. 3.) Kodak adds that the inventor's use of "RAMDisk" in the invention disclosure shows that the RAM disk from the computer context is the RAM disk disclosed in the '964 patent. (Citing JX-4.507.)<sup>7</sup> Kodak concludes that the RAM disk 532 in the '964 patent is identical to the RAM disk from the computer context.

Kodak cites the Microsoft Press Computer Dictionary, to reflect the "common definition of "RAM disk:"

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<sup>6</sup> Kodak says that claim 9 also includes a RAM disk and is directed to a "computer-readable medium comprising program instructions for causing a computer system to perform" certain steps. (Citing JX-1 at claim 9.) Kodak cites this as an example that the '964 patent claims the common RAM disk. (Citing Tr. at 669:11-14.)

<sup>7</sup> Kodak says that Apple attempts to explain the inventor's comments as referring to "prototypes." (Citing CIB at 34 n.19.) Kodak counters that the document shows that the inventor was intending to use the "computer" RAM disk in his invention, contrary to Apple's argument that a different RAM disk is disclosed in the '964 patent.

## PUBLIC VERSION

A simulated disk drive whose data is actually stored in RAM memory. A special program fools the operating system into believing that an additional disk drive is present.

(Citing RX-491.) Kodak adds that the intrinsic record shows that Apple and inventor, Eric Anderson, used RAM disk consistent with the common definition, quoting:

RAM disk 74 is a memory area within RAM 60 organized in a “sectored” format similar to that of conventional hard disk drives.

(Citing JX-4.483.) Kodak concludes that this is another example from the intrinsic record demonstrating a way to create a RAM disk by configuring volatile RAM memory to emulate a hard disk drive.

Kodak says that Apple is wrong when it argues that Kodak’s construction is incorrect because of “permissive” language contained in the specification, because this language merely explains ways of “fool[ing] the operating system into believing that an additional disk drive is present.” (Citing CIB at 29; RX-491 at 5.) Kodak says that Apple initially focuses on the following passage:

RAM disk 532 is a memory area used for storing raw and compressed image data and *typically is organized in a “sectored” format similar to that of conventional hard disk drives.*

(Citing JX-1 at 5:33-36.) (emphasis added by Kodak) Kodak states that Apple contends the use of “typically” in the above-cited passage means the inventor intended the definition of “RAM disk” in the ‘964 patent to differ from its well-established meaning, but offers no explanation or support. (Citing CIB at 32.) Kodak asserts that to alter the well-established meaning of RAM disk, Apple “must use a special definition of the term [that] is clearly stated in the patent specification or file history.” (Citing *Laryngeal Mask Co. Ltd. v. Ambu A/S*, 618 F.3d 1367, 1372 (Fed. Cir. 2010).) Kodak argues that the permissive language relied on by Apple does not

## PUBLIC VERSION

clearly state any special definition of "RAM disk," nor is there any other disclosure in the specification indicating that the inventor acted as his own lexicographer.

Kodak contends that invention summary's description of RAM Disk confirms it is formatted to emulate a hard disk consistent with the common definition. Kodak elaborates that the invention summary treats the "RAMDisk" and the "magnetic (hard) disk" the same in that they are both "accessed via standard DOS commands, and maintain a standard directory and FAT structure." (Citing JX-4.507.) Kodak asserts that Dr. Delp admits that DOS means disk operating system and is an example of a standardized disk file system. (Citing Tr. at 344:15-19.)

Kodak contends that Apple also failed to explain how its construction of "RAM *disk*" differs from "RAM." Kodak argues that, at best, it states that "RAM disk" does not merely mean RAM, it means allocated RAM. (Citing CIB at 29-30.) Kodak says Apple's reliance on "intelligent" allocation finds no support in the intrinsic record or the evidentiary record in this Investigation. Kodak continues that this does not distinguish "RAM disk" from RAM since Dr. Delp admitted and the intrinsic evidence confirms that all RAM – not just the "RAM disk" – must be allocated in the normal course of use to avoid loss of data. (Citing Tr. at 350:12-22.) Kodak contends that Apple's definition – allocated RAM – does not differentiate RAM from a "RAM disk." Kodak concludes that Apple's construction impermissibly eliminates "disk" from the term "RAM disk" and from the asserted claims. (Citing *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006).) Kodak says that Apple attempts to justify construing "RAM disk" as RAM by analogizing its construction to "a person saying they are 'taping' a video even though they are recording digital video." (Citing CIB at 30 n.17.) Kodak argues that the lack of precision in videography parlance is irrelevant to the legal construction of a claim term that has a

## PUBLIC VERSION

*precise* meaning to those skilled in the art as confirmed by the patent claims and intrinsic record. (Citing RX-765C at Q. 192.)

Kodak says that Apple's construction does nothing more than restate claim language while removing a key term, *i.e.*, "disk." Kodak asserts that each of the claims already requires the RAM disk to store "unprocessed image data and processed image data," yet Apple erroneously inserts this requirement into the definition of "RAM disk" "to distract from its bare construction of "RAM disk" as RAM." (Citing "JX-1 at 17".) Kodak alleges that Apple admits that the remainder of its construction, "a memory area that has been allocated," merely restates the "memory manager" limitation, which allocates storage locations within the memory device for the frame buffers and the RAM disk. (Citing "JX-1 at 17"; CIB at 29-30.)

Kodak notes that Apple asserts that "all parties agree that the word 'disk' in the term 'RAM disk' does not actually mean a disk." (Citing CIB at 30.) Kodak counters that this does nothing to salvage Apple's position, because Kodak's construction recites *emulating* a disk. Kodak adds that its expert testified that the term "RAM disk" has a special meaning in the patent and the art, but it does not require the RAM disk to be a physical "spinning disk" as Apple was trying to establish. (Citing CIB at 34; Tr. at 668:24-670:18.)

Kodak says that Staff argues that, under Kodak's construction, claims 1 and 3 are identical in scope because claim 3 requires the memory device to use a "standardized file system." (Citing SIB at 61) Kodak counters that Dr. Madisetti explained that, under Kodak's construction, "other, non-standardized, file systems [can] be used as well." (Citing RX-765C at Q. 191, 216.) Kodak says it has never required a "RAM disk" to have a "standardized file system." Kodak avers that Dr. Madisetti explained, a "file system" is one of the byproducts of

## PUBLIC VERSION

emulating a hard disk drive. (Citing RX-765C at Q. 191.) Kodak suggests a "standardized file system" might be used to ensure greater interoperability.

Kodak states that Apple also argues that the extrinsic evidence supports its construction; but then cites only an unrelated patent, the Kato patent. (Citing CIB at 30-31; JX-136.) Kodak responds that Apple's expert conceded "the Kato patent doesn't say that the RAM disk is not [] formatted [] to emulate a hard disk drive." (Citing Tr. at 357:11-16.)

**Staff's Position:** Staff says the parties disagree on whether the "random-access memory disk" ("RAM disk") must be volatile and whether it must be configured to emulate a hard drive.

The Staff submits that the evidence shows that the term RAM disk is properly construed as volatile memory. Staff asserts that the specification of the '964 patent describes the working memory as including frame buffers for initial storing raw image data and image processing buffers for temporary storage. (Citing JX-3 at 5:25-29.) Staff argues that the evidence shows that the working memory is volatile, and that the RAM disk is identified as being part of the working memory. (Citing JX-4.046.) Staff says that Kodak asserts that the term should be construed as "volatile memory that has been configured to emulate a hard drive," and that Kodak's main support for this position is the following portion of the specification of the '964 patent:

Referring now to FIG. 5, a memory map showing the preferred embodiment of dynamic random-access-memory (DRAM) 346 is shown. In the preferred embodiment, DRAM 346 includes working memory 530, RAM disk 532 and system area 534. Working memory 530 includes frame buffers 536 (for initially storing sets of raw image data received from imaging device 114) and image processing (IP) buffers 538 (for temporarily storing image data during the image processing and compression 420 process). Working memory 530 may also contain various stacks, data structures and variables used by CPU 344 while executing the software routines used within computer 118.

RAM disk 532 is a memory area used for storing raw and compressed image data and typically is organized in a "sectored" format similar to that of conventional

## PUBLIC VERSION

hard disk drives. In the preferred embodiment, RAM disk 532 uses a well-known and standardized file system to permit external host computer systems, via I/O 348, to readily recognize and access the data stored on RAM disk 532. System area 534 typically stores data regarding system errors (for example, why a system shutdown occurred) for use by CPU 344 upon a restart of computer 118.

(Citing “Ex. A at 5:21-43”) (emphasis added by Staff).

Staff asserts that the passage above states that in the preferred embodiment the RAM disk typically is organized in a format similar to that of conventional hard disk drives, and uses a standard file system to permit ready access to the data stored upon it. Staff posits that the evidence demonstrates that this description applies only to the preferred embodiment rather than the entire claimed invention. (Citing CX-425C at Q. 389.) Staff argues that claims are not limited to what is shown in the embodiments in the specification. (Citing *C.R. Bard, Inc. v. United States Surgical Corp.*, 388 F.3d 858,865 (Fed. Cir. 2004); *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009).) Staff adds, “[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using ‘words or expressions of manifest exclusion or restriction.’” (Citing *Libel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004).) Staff does not believe that the evidence shows that any such expressions of restriction are present in the specification. Staff concludes that by using the word “typically,” this passage indicates that even in the preferred embodiment, the RAM disk will not always be organized in a format similar to that of a hard disk drive.

Staff argues that, under Kodak’s proposed construction, the RAM disk must have a standardized file system. (Citing RX-765C at Q. 191, 198, 199.) Staff asserts that claim 3 of the ‘964 patent depends from claim 1 and is directed to the same memory device which “uses a standardized file system for storing said sets of image data.” Staff reasons that if Kodak’s



## PUBLIC VERSION

construction were adopted, claims 1 and 3 of the patent would have the identical scope, which is impermissible for parent and dependent claims. For these reasons, the Staff disagrees with Kodak's proposed construction of "random-access memory disk."

Finally, Staff notes that the specification repeatedly states that the memory manager allocates storage locations in the DRAM and also refers to the DRAM as "selectively allocated." (Citing JX-1 at 2:5-9, 3:64-65, 4:56-5:2.) Staff avers that each of the asserted claims includes the limitation of "a random-access memory disk for storing unprocessed image data and processed image data." Staff submits that the evidence demonstrates that the proper construction of "random-access memory disk" is "volatile memory that has been allocated for storing unprocessed and processed data."

### **Construction to be Applied:** "volatile memory that emulates a hard disk drive"

The language of the asserted claims is clear when it teaches, "a random-access memory disk." That term is clearly understood to have a definite meaning within the computer industry, and the intrinsic evidence does not indicate that the inventor disclaimed or otherwise changed that meaning.

The parties do not disagree about whether or not random-access memory is "volatile." Both Kodak and Staff include that term in their proposed constructions, and while Apple does not advocate the term, it also does not dispute it in its initial or reply briefs. The issue in contention is whether or not the random-access memory disk in the '964 patent is properly construed as one that "emulates" a hard disk drive as Kodak proposes.

The parties contest the meaning and import of one portion of the description of the preferred embodiment, which reads:

Referring now to FIG. 5, a memory map showing the preferred embodiment of dynamic random-access-memory (DRAM) 346 is shown. In the preferred

## PUBLIC VERSION

embodiment, DRAM 346 includes working memory 530, RAM disk 532 and system area 534. Working memory 530 includes frame buffers 536 (for initially storing sets of raw image data received from imaging device 114) and image processing (IP) buffers 538 (for temporarily storing image data during the image processing and compression 420 process). Working memory 530 may also contain various stacks, data structures and variables used by CPU 344 while executing the software routines used within computer 118.

*RAM disk 532 is a memory area used for storing raw and compressed image data and typically is organized in a "sectored" format similar to that of conventional hard disk drives.* In the preferred embodiment, RAM disk 532 uses a well-known and standardized file system to permit external host computer systems, via I/O 348, to readily recognize and access the data stored on RAM disk 532. System area 534 typically stores data regarding system errors (for example, why a system shutdown occurred) for use by CPU 344 upon a restart of computer 118.

(JX-1 at 5:21-43) (emphasis added). The parties' arguments focus primarily on the emphasized portion of the foregoing description.

Apple contends that the use of the word "typically" leads to the conclusion that sectoring the RAM disk in a manner similar to that of a conventional hard disk drive is permissive, not mandatory. Apple characterizes Kodak's argument as an improper attempt to read into the claims a preferred embodiment of the invention described in the specification. While Apple's argument is correct when viewed alone, I must consider the entire context of the specification in light of the claims themselves.

Kodak argues more persuasively that the specification supports its definition when it describes the RAM disk as one would describe a conventional hard disk drive, teaching at one point that the "computer" boots up using the system configuration routine and "formats" a new RAM disk and at a second place that the "computer" boots up using the system configuration routine and then recovers and "mounts" the RAM disk. (JX-1 at 6:46-48, 58-60, Fig. 7.) Dr. Madisetti testified that both "formatting" and "mounting" are terms associated with RAM disks or devices emulating them. (RX-765C at Q. 194.)

## PUBLIC VERSION

I note that the specification describes that the RAM disk permits external host computers to readily recognize and access the data stored on the RAM disk.

Dr. Madisetti explained, “[s]ince the RAM disk emulates a hard disk drive, the external host computer system can interact with the RAM disk as if it were a hard disk drive. This is the ready recognition and access discussed in the package.” Dr. Madisetti testified that the term “RAM disk” is a term of art, and that term means “volatile memory that has been configured to emulate a hard disk drive.” (RX-765C at Q. 184-188, 191; and Tr. at 668:24-669:14) Dr. Madisetti cited the *Microsoft Press Computer Dictionary* to support his opinion regarding the correct understanding of “random-access memory disk” as a term of art in the industry. (RX-765C at Q. 203, 204.)

The *Microsoft Press Computer Dictionary, Second Edition, 1994*, defines the two terms

RAM and RAM disk as follows:

**RAM** Pronounced “ram.” Acronym for random access memory. Semiconductor-based memory that can be read and written by the microprocessor or other hardware devices. The storage locations can be accessed in any order. Note that the various types of ROM memory are capable of random access. The term *RAM*, however, is generally understood to refer to volatile memory, which can be written as well as read. *Compare* core, EPROM, flash memory, PROM, ROM.

(RX-491 at 4.)

**RAM disk** A simulated disk drive whose data is actually stored in RAM memory. A special program fools the operating system into believing that an additional disk drive is present. The operating system reads and writes to the simulated device, and the program stores and retrieves data from memory. RAM disks are extremely fast, but they require that system memory be given up for their use. Also, RAM disks usually use volatile memory, so the data stored on them disappears when power is turned off. Many portables offer RAM disks that use battery-backed CMOS RAM to avoid this problem. *Compare* disk cache; *see also* CMOS RAM.

(RX-491 at 5.)

## PUBLIC VERSION

I find that the language in the specification quoted, *supra*, does not add any limitations to the claim term “random-access memory disk.” In fact, it serves to support the well recognized definition of that term in the computer field as evidenced by the Microsoft dictionary definition.

Apple concedes that, in the context of general purpose computers, the term “RAM disk” is often used to describe treating a piece of RAM in a personal computer as a hard disk; but Apple argues that the term “RAM disk” can have multiple meanings depending on the application in which it is used. (CX-425C at Q. 392.) Apple argues that in the ‘964 patent, the term “RAM disk” is used in a digital camera and, in that context, it means “memory that is allocated for storing unprocessed image data and processed image data.” (CX-425C at Q. 398.) The testimony of Dr. Delp, however, indicates that the term RAM disk as used in computers describes treating a piece of RAM in a personal computer as a hard disk. Dr. Delp opines, “[i]n this ‘964 patent, the inventors have taken a concept used in computers adapted it for use in a digital camera. So it’s not necessary that the term RAM disk mean the same thing in the ‘964 patent that it does with respect to a personal computer or other application.” (CX-425C at Q. 392.) Dr. Delp offers no reference to intrinsic evidence to support his opinion. His response to Question 398 is merely a restatement of the language of the claim, and his unsupported opinion is unhelpful in arriving at a construction of those terms. *See Phillips*, 415 F.3d at 1318

I find that Apple has not offered clear evidence that the patentee acted as his own lexicographer and defined “random-access memory disk” in any way other than its customary and normal definition. *See Mars, Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1375 (Fed. Cir. 2004) (noting that the specification must include a “clear definition” of a claim term in order to find that the patentee acted as his own lexicographer); *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (“[T]he claim term will not receive its ordinary meaning if the

## PUBLIC VERSION

patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.”)

Apple offers no evidence in the intrinsic record to support its position that the well established meanings of computer terms used in the ‘964 patent are somehow changed by the fact that the patent focuses on memory for a digital camera device. A review of the ‘964 patent and file history support the view that the opposite is true.

The specification of the ‘964 patent is rife with references to a “computer” that is included within the digital camera device and to a “central processing unit” (CPU) included within the computer. The Summary of the Invention notes that “the computer includes a dynamic random-access memory (DRAM), a central processing unit (CPU), a memory manager routine stored in read-only memory (ROM), a power management system, an input/output interface (I/O), and an optional removable memory.” (JX-1 at 1:65-2:2.) Significantly, the Summary of the Invention details the DRAM to include, *inter alia*, “a RAM disk with a standardized file system.” This clearly indicates that the “DRAM” and the “RAM disk” are not intended by the inventor to refer to the same thing. (JX-1 at 2:3-4.)

In Figure 6 of the ‘964 patent, a block diagram shows preferred data paths for transmitting image data “between selected computer 118 components.” That diagram clearly shows the existence of “RAM disk 532.” (JX-1 at 5:44-55, Fig. 6.) In Figure 7, the ‘964 patent displays “a flowchart of preferred method steps for performing a power-up sequence according to the present invention.” Among other things, the flowchart teaches:

CPU 344 then starts 746 normal DRAM 346 operation and determines 748 whether a RESUME bit has been set in power manager 342. In the preferred embodiment, CPU 344 sets the RESUME bit in response to a power failure in order to indicate that CPU 344 should not be reset in a subsequent powerup of camera 110. If the RESUME bit has been set, CPU 344 resumes 750 the current process with was interrupted by the intervening power failure.

## PUBLIC VERSION

If the RESUME bit has not been set, CPU 344 then determines 752 whether a MSAVE bit has been set in power manager 342. In the preferred embodiment, CPU 344 sets the MSAVE bit to specify that RAM disk 532 contains image data that should be saved upon restart of the computer 118. If the MSAV bit has not been set, computer 118 boots up 754 using the system configuration 408 routine and formats 756 a new RAM disk 532. CPU 344 then runs 760 control applications 400 for normal operation of the camera.

(JX-1 at 6:32-49, Fig. 7) The foregoing clearly demonstrates that the "RAM disk" is a separate and distinct item within the DRAM.

Based upon a thorough review of the intrinsic evidence, I find that it contains no language that would lead a person of ordinary skill in the art to believe that the term "random-access memory disk," as used in the asserted claims, is defined in any way other than its ordinary and customary meaning as a term of art in the computer field. Therefore, the correct and succinct construction for the term "random-access memory disk" as used in the '964 patent is "volatile memory that emulates a hard disk drive."

### 3. "Power Management System"

The term "power management system" appears in asserted claims 1 and 5.

**Apple's Position:** Apple argues that its construction is based on the plain language of the claim and is supported by the intrinsic evidence. Apple disagrees with Kodak's construction, which requires a "backup power supply."

Apple contends that claim 1 requires a "power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected." Apple asserts that the claim language specifies that the "power management system" must (1) communicate with the power supply, (2) and prevent the irreversible loss of sets of image data stored in the memory device in the event of a power failure. (Citing CX-425C at Q. 414.)

## PUBLIC VERSION

Apple says its construction is fully supported by the specification and file history. Apple contends that the specification states that “the present invention also includes a power management system for protecting the sets of image data in the event of a power failure to the digital camera device.” (Citing JX-1 at 3:3-5.) Apple argues that this does not include any requirement of a backup power supply, as Kodak’s expert admitted. (Citing Tr. at 677:3-22.) Apple asserts that, as set forth in the ‘964 patent, a “power manager 342 communicates via line 366 with power supply 356 and coordinates power management operations for camera 110 as disclosed below in conjunction with FIGS. 7-10.” (Citing JX-1 at 3:56-59.) Apple concludes that this also does not refer to a backup power supply, as conceded by Kodak’s expert. (Citing Tr. at 678:5-16.)

Apple argues that while the preferred embodiment shows the use of backup batteries 360, there is nothing in the claim that requires that limitation be read into the term. Apple says that claim 1 specifies that the power management system is used for “monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected.” Apple reasons that a person of ordinary skill in the art would understand that the claimed power management system encompasses a system capable of performing the two recited functions – i.e., monitoring the power supply, and protecting image data stored in memory. Apple concludes that a person of ordinary skill in the art would have understood this could be accomplished without using a “backup power supply.” (Citing CX-425C at Q. 414-416.) Apple says that Kodak’s expert conceded this as well. (Citing Tr. at 672:23-673:9.)

Apple argues that the file history of the ‘964 patent also supports its construction. Apple asserts that in response to a rejection, the inventor stated in the December 10, 1997 Response the following:

## PUBLIC VERSION

In contrast to the devices described in the prior art, claims 1-20 of the present application all recite a power management element or step wherein the power supply, which powers the memory in which image data sets are stored, is monitored and remedial action is taken to avoid loss of stored image data sets in the event a power failure is detected. For example, independent claim 1 recites “a power management system for protecting said sets of image data in the event of a power failure... .” This element or step provides the substantial advantage, which is neither taught nor suggested by any of the prior art references cited by the Examiner, *of preventing the irreversible loss of image data sets already stored in memory in the event of a power failure.*

(Citing JX-4.283-284) (emphasis added by Apple). Apple reasons that the file history shows that the inventor believed the power management system was a system that communicates with the power supply and prevents the irreversible loss of sets of image data stored in the memory device in the event of a power failure. (Citing CX-425C at Q. 419.)

Apple argues that Kodak’s construction is unnecessarily narrow and is another effort to import the preferred embodiment into the claims. Apple argues that the preferred embodiment describes using a backup power supply in the form of backup batteries as part of the power management system; but that does not justify reading a “backup power supply” into the claims when the inventor specifically chose to leave that limitation out of the independent claim. (Citing *Phillips*, 415 F.3d at 1323; *Certain Laser Bar Code Scanners*, 2007 ITC LEXIS 135 at \*32.) Apple adds that Kodak’s construction is also at odds with claim 4, which depends from claim 1. Apple contends that claim states that the power management system comprises “backup batteries for providing operating power to said memory device during a power failure.” (Citing JX-1 at claim 4.) Apple concludes that Kodak is attempting to import a limitation from a dependent claim into claim 1, in contravention of well-established precedent. (Citing *Phillips*, 415 F.3d at 1315.)

Apple asserts that the file history defeats Kodak’s proposed construction. Apple says that in discussing the “power management” limitation, the inventor made it very clear that the use of



## PUBLIC VERSION

a backup power supply or backup batteries was not a requirement of the term, only an option, quoting: “the power management system *may* include, *for example*, backup batteries for providing power to the volatile memory in the event that the main batteries fail... .” (Citing JX-4.284, 316) (emphasis added by Apple). Apple argues that this language does not constitute a “clear and unmistakable surrender” of subject matter. (Citing *Martek*, 579 F.3d at 1377.)

Finally Apple contends that, while the parties did not proffer definitions of “power failure,” Kodak argues that the term means a complete loss of all power, *i.e.*, the batteries dropping out of the camera. (Citing Tr. at 692:6-24.) Apple avers that Dr. Madisetti admitted that such an event was not consistent with normal usage of a camera. (Citing Tr. at 692:18-24.) Apple continues that Kodak argues that its construction is required because the ‘964 patent discusses power failures only in the context of a complete loss of main battery power. Apple adds that Kodak argues that the ‘964 patent does not describe a power management system that senses an imminent power failure and takes steps to process and save images prior to the complete loss of battery power. Apple demurs, stating that the ‘964 patent explicitly discloses the latter approach to power management, and quotes:

If CPU 344 detects 874 a user shutdown or a time out event, then the FIG. 8 process goes 876 to the normal power down sequence of FIG. 9. If CPU 344 does not detect 874 a user shutdown or a time out event, then power manager 342 determines 878 whether the voltage of the main batteries 358 is greater than a selected threshold value. The threshold value may be selected as a minimum camera 110 operating voltage, *or alternately may be incrementally higher than the minimum operating voltage*. If the voltage of the main batteries 358 is *not greater than the selected threshold value*, then the FIG. 8 process goes 880 to the *power failure sequence* of FIG. 10.

(Citing JX-1 at 7:6-17) (emphasis added by Apple). Apple argues that the specification clearly states that the camera goes into the “power failure” sequence even though there is still some power left in the main battery, *i.e.*, the voltage is incrementally higher than the minimum

## PUBLIC VERSION

operating voltage. (Citing CX-425C at Q. 416.) Apple says that Kodak's expert admitted that "incrementally higher" does not have any predetermined limits. (Citing Tr. at 687:25-688:16.)

In its reply brief, Apple argues that while the preferred embodiment discusses use of a backup battery, Kodak omits any discussion of the case law that prohibits limiting terms to the specification-disclosed embodiments. (Citing *Phillips*, 415 F.3d at 1323.) Apples concludes that Kodak has failed to show that the specification evidences a clear intention by the inventor to limit the claims to only a backup power supply or backup battery embodiment of the claimed power management system. (Citing *Arlington*, 632 F.3d 1246, 1254)

Referring to the file history, Apple argues that Kodak "cherry-picks" a portion of the inventor's discussion of a prior art reference (Kaneko), in which the inventor explained that Kaneko did not disclose a battery with a backup function. (Citing JX-4.284-285.) Apple avers that the inventor did not refer to the claim language while discussing Kaneko. Apples says that in the paragraphs preceding the one upon which Kodak relied, the inventor explained that the claimed "power management system" was not disclosed in the prior art upon which the Examiner relied. Apple adds that this paragraph confirms that a backup power supply was an optional feature of the claims (and indeed is found in dependent claim 3), not a mandatory one: "the power management system *may* include, *for example*, backup batteries for providing power to the volatile memory in the event that the main batteries fail." (Citing JX-4.284) (emphasis added by Apple).

**Kodak's Position:** Kodak argues that the only mechanism disclosed in the '964 patent for protecting image data following a power failure requires applying a backup power supply to the volatile memory, which contains the image data. Kodak recites that the '964 patent discloses:

## PUBLIC VERSION

[t]he power management system includes a power manager which controls a power supply that is powered by main batteries and which is also *connected to backup batteries, in case of a power failure in the main batteries. If the main batteries fail* to provide sufficient power for operating the entire digital camera, the power manager maintains operating power to itself, the CPU and the DRAM *using the backup batteries.*

(Citing JX-1 at 2:9-16) (emphasis added by Kodak). Kodak continues that the '964 patent further discloses:

Power supply 356 is connected to main batteries 358 and *also to backup batteries 360*. In the preferred embodiment, a camera 110 user may also connect power supply 356 to an external power source. During normal operation of power supply 356, the main batteries 358 provide operating power to power supply 356 which then provides the operating power to camera 110 via both main power bus 362 and secondary power bus 364.

*During a power failure mode* in which the main batteries 358 have failed (when their output voltage has fallen below a minimum operational voltage level) *the backup batteries 360 provide operating power* to power supply 356 which then provides the operating power only to the secondary power bus 364 of camera 110. Selected components of camera 110 (including DRAM 346) are thus protected against a power failure in main batteries 358.

(Citing JX-1 at 4:29-44) (emphasis added by Kodak). Kodak contends that the only "protecting" of image data disclosed in the '964 patent is achieved by applying backup power from a backup power supply to volatile memory (containing the image data) following a power failure in the main batteries.

Kodak argues that the asserted claims require the claimed power supply to protect image data if a power failure is detected. (Citing JX-1 at claim 1.) Kodak alleges that the only way to protect image data following a power failure is to apply a backup power source to the volatile memory containing the image data.

Kodak asserts that during prosecution of the '964 patent, Apple admitted that the claimed invention maintains image data stored in volatile memory after power failure. (Citing JX-4.282-285.) Kodak says that Apple distinguished its invention from the prior art based on such a

PUBLIC VERSION

backup power supply, and argued that protecting image data with backup power is the “substantial advantage” of its invention. (*Id.*)

Kodak avers that, in a December 10, 1997 Response to Office Action, Apple distinguished the claims of the ‘964 patent from the Kaneko reference, quoting:

[T]he onboard battery (51) [of Kaneko] does not have a backup function; rather, it represents the sole power source for the volatile memory (54) . . . . Further, Kaneko et al. does not disclose a secondary power source or means for switching from a main to a secondary power source to prevent an interruption of power to the volatile memory (and the consequent loss of image data stored therein) in the event of a failure or insufficient voltage condition of the main power source.

(Citing JX-4.284-285.)

Kodak says its construction is also consistent with a declaration submitted by inventor Eric Anderson to the USPTO during prosecution of the ‘964 patent. Kodak states that, according to Mr. Anderson, “*The key invention* is to utilize a single bank of *battery-backed up* (self refresh) DRAM for multiple purposes.” (Citing JX- 4. 507.) Kodak argues it is disingenuous for Apple to read “*the key invention*” out of Asserted Claims.

Kodak says its construction requires the power management system to include a backup power *supply* – not necessarily a backup *battery* – to apply power to volatile memory, which contains the sets of image data. Kodak asserts that the term “power supply” is broader than the term “battery.” (Citing Tr. at 364:3-14.) Kodak concludes that its construction of independent claim 1, which includes a “backup power supply,” is broader than the requirement in dependant claim 4 that the backup power supply be “backup batteries.” (Citing *Phillips*, 415 F.3d at 1314-15; JX-1 at claim 4.)

In its reply brief, Kodak says that Apple argues that a person of skill in the art would understand a “memory device” to mean “simply any device capable of storing and reading out data.” (Citing CIB at 25.) Kodak says Apple offer no testimony from its expert to support this

## PUBLIC VERSION

“ordinary meaning.” Kodak argues that Apple focuses on Kodak’s construction and argues that it limits the claim to the preferred embodiment. (Citing CIB at 26-28.) Kodak contends that Apple is incorrect. Kodak says its construction – which requires that the “memory device” be volatile memory – is mandated by the context of the claims and the intrinsic record including, most importantly, the prosecution history. (Citing RIB at 22-25.)

Kodak argues that it demonstrated, in detail, the voluminous intrinsic support for its construction. (Citing RIB at 22-25; JX-1 at 2:3-27, 5:21-32; JX-4.46, 283.) Kodak argues that the context of the claims makes it clear that the “memory device” is “volatile memory.” Kodak contends that if the memory device was not volatile (*i.e.*, could store data without continuous power), the claimed power management system would be superfluous; *i.e.*, it would not need to protect the image data.

Kodak argues that Apple’s construction finds no reasonable support in the intrinsic record. Kodak says Apple initially points to claim 2 of the ‘964 patent to support its construction that the claimed “memory device” should be considered a “generic” term. (Citing CIB at 26-27.) Kodak counters that claim 2 actually supports Kodak’s construction when it states that the digital camera device of claim 1 further comprises “a removable non-volatile memory device coupled to said memory device.” (Citing JX-1 at claim 2.) Kodak contends that this language indicates that the “memory device” is volatile memory because any non-volatile memory of the system would be “coupled to” the claimed memory device – not part of the memory device. (*Id.*)

Kodak says Apple’s only alleged intrinsic support from the prosecution history stems from a September 26, 1997 Office Action where the examiner references the Miyake reference. (Citing CIB at 27-28; SIB at 58-59.) Kodak asserts that Miyake’s disclosure does not negate Apple’s subsequent statements during prosecution that the claimed memory device is volatile

## PUBLIC VERSION

memory. (Citing JX-4.283.) Kodak adds that the Miyake reference cannot change the language of the specification and the claims, which dictate that the “memory device” is volatile. (Citing RIB at 22-24.)

Regarding whether or not the asserted claims require a “backup power supply,” Kodak says that Apple asserts that Kodak’s construction is “improperly limit[ed] to a preferred embodiment.” (Citing CIB at 35.) Kodak counters that construing a claim term consistent with the prosecution history and the sole disclosed embodiment, however, is proper. (Citing *Abbott Labs v. Sandoz, Inc.*, 566 F.3d 1282, 1290 (Fed. Cir. 2009)(en banc).)

Kodak says that Apple selectively cites an excerpt from the specification and argues that because the phrase “backup power supply” is not explicitly mentioned, the claimed “power management system” does not require it. (Citing CIB at 36.) Kodak continues that Apple makes a similar argument with respect to Figures 7-10; but Kodak asserts the intrinsic record supports Kodak’s construction. (Citing RIB at 25-27.) Kodak contends that the “power management system” in the ‘964 patent “protects” the sets of image data in the event of a power failure, which by necessity requires a backup power supply. (*Id.*) Kodak states that Apple’s reliance on Figure 10 is “curious,” because there must be a backup power supply to protect image data in volatile memory when the user replaces the main batteries at step 1046. (Citing RIB at 46-47.) Kodak argues that Apple’s construction improperly broadens the scope of the claims by effectively removing the requirement that the power management system protect image data in the volatile memory.

Kodak contends that Apple’s citation to the prosecution history is inapposite. (Citing CIB at 38) Kodak says that Apple contends that the “inventor made it very clear that the use of the backup power supply or backup batteries was not a requirement of the term, only an option.”

## PUBLIC VERSION

(*Id.*) Kodak argues that the language cited by Apple states that “the power management system may include, for example, *backup batteries . . .*” (Citing JX-4.284; CIB at 38.) Kodak asserts that this shows that while the use of backup batteries, which are a type of backup power supply, may be an option, it does not establish that the use of a backup power supply is merely an option. Kodak clarifies that its construction requires a “backup power supply,” not backup batteries. Kodak says that backup batteries are one option, as required by claim 4; but not the only option. (Citing Tr. at 364:3-14; JX-1 at claims 1 and 4.) Kodak asserts that Apple’s “repeated attempts to conflate ‘backup batteries’ with ‘backup power supply’ demonstrates Apple’s lack of intrinsic support.” Kodak says its support is irrefutable because Apple explicitly distinguished its claims from the prior art because the prior art lacked a “backup” or “secondary power supply.” (Citing JX-4.284-285.)

Kodak concludes that Apple’s answer to Kodak’s ownership claim to the ‘964 patent undercuts its own claim construction of “power management system.” Specifically, Kodak says that Apple argues that the “June 1994 specification discloses the power management system claimed in the ‘964 patent” and describes that system as “including main batteries for powering a digital camera, backup batteries for powering a memory device during a main battery power failure, and a *power manager device for sensing a power failure and responsively connecting the memory device to the backup batteries . . .*” (Citing CIB at 84-85) (emphasis added by Kodak). Kodak argues that this shows that Apple concedes that a backup power supply of some form is required by the claims of the ‘964 patent.

**Staff’s Position:** Staff recites that claim 1 of the ‘964 patent claims “a power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected,” and Staff says this indicates that

PUBLIC VERSION

the power management system monitors power supply and, if a power failure is detected, acts to protect the image data. Staff asserts that during prosecution the applicants stated that

claims 1-20 of the present application all recite a power management element or step wherein the power supply, which powers the memory in which image data sets are stored, is monitored and remedial action is taken to avoid loss of stored image data sets in the event a power failure is detected.

(Citing JX-4.283; CX-425C at Q. 419.) Staff asserts that the applicants characterized the power management system as monitoring power supply to memory and, in the case of a power failure, acting to prevent the loss of data. Staff notes that the Summary of Invention describes the actions taken to prevent the loss of image data as follows: “[i]f the main batteries fail to provide sufficient power for operating the entire digital camera, the power manager maintains operating power to itself, the SPU and the DRAM.” (Citing JX-1 at 2:13-16; CX-425C Q. 414-415.) Staff submits the evidence demonstrates that the proper construction for “power management system...configured to protect said sets of image data” is “a system that manages the supply of power and continues the supply of power after a power failure is detected to prevent the irreversible loss of sets of image data stored in the memory device.”

**Construction to be Applied:** “a system that monitors the supply of power and continues the supply of power after a power failure is detected, thereby preventing irreversible loss of sets of image data stored in the memory device.”

Asserted claims 1 and 5 clearly state that the power management system’s function is monitoring a power supply to detect a power failure, and that it is configured to protect sets of image data if a power failure is detected. Asserted claims 1 and 5 do not mention the use of a back-up power supply to accomplish the power management system’s purpose.

In describing the preferred embodiment of the invention as shown in Figure 3, the ‘964 patent teaches that “[p]ower manager 342 communicates via line 366 with power supply 356 and



## PUBLIC VERSION

coordinates power management operations for camera 110 as discussed below in conjunction with FIGS. 7-10." (JX-1 at 3:56-59.)

Two events described in the preferred embodiment demonstrate the specific function of the power management system. First, Figure 9, is a flowchart showing preferred method steps for performing a normal power-down sequence. In the event of a user shutdown or a time out event:

CPU 344 waits 900 until processing of any image data is completed and then determines 902 whether any images are saved on RAM disk 532. If no images are saved on RAM disk 532, then CPU 344 sets the MSAVE bit and clears 916 the RESUME bit in power manager 342 ... CPU 344 then signals 922 power manager 342 to shut down and power manager 342 responsively directs power supply 356 to remove 924 power from the main power bus 362.

\* \* \* \* \*

If CPU 344 determines, in step 902, that images are saved on RAM disk 532, then CPU 344 sets the MSAVE bit and clears 916 the RESUME bit in power manager 342. Next, CPU 344 forces 918 a full refresh of DRAM 346 and then forces 920 DRAM 346 into a self-refresh mode. CPU then signals 922 power manager 342 to shut down and power manager 342 responsively directs power supply 356 to remove 924 power from the main power bus 362.

(JX-1 at 7:6-8, 7:24-32, 7:36-43.)

Second, Figure 10 is a flowchart showing preferred method steps for performing a power failure sequence. Figure 10 teaches:

[i]nitially, power manager 342 sets 1028 its PFAIL bit. The PFAIL bit records the occurrence of a power failure so that computer 118 software routines may subsequently access this information when needed. Next power manager 342 responsively directs power supply 356 to remove 1030 power from the main power bus 362. Power manager 342 then signals 1032 CPU 344 with an interrupt and CPU 344 responsively stops 1034 the current process.

Next, CPU 344 sets 1036 the RESUM bit in power manager 342. CPU 344 then forces 1038 a full refresh of DRAM 346 and then forces 1040 DRAM 346 into a self-refresh mode. Next, CPU 344 signals 1042 power manager 342 to shut down and halts 344 its operation.

## PUBLIC VERSION

(JX-1 at 7:48-62.)

The foregoing two examples show ways in which the power manager works to protect image data stored in the DRAM by controlling power and partially removing power from certain CPU and camera functions. The power manager does not, in the two examples, switch to a back-up power supply.

The doctrine of claim differentiation provides further support for the position that the “backup power supply” limitation should not be read into the asserted claims. Claim differentiation is the doctrine that “create[s] a presumption that each claim in a patent has a different scope.” *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998). “In the most specific sense, ‘claim differentiation’ refers to the presumption that an independent claim should not be construed as requiring a limitation added by a dependent claim.” *Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1380 (Fed. Cir. 2006).

The Federal Circuit has stated that the “presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim.” *SunRace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003); *see also Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (“[W]here the limitation that is sought to be ‘read into’ an independent claim already appears in a dependent claim, the doctrine of claim differentiation is at its strongest.”)

In the ‘964 patent, unasserted claim 4, which depends from claim 1, specifically teaches the added limitation that the power management system comprises:

- main batteries for providing operating power to said digital camera during normal operations;
- backup batteries for providing operating power to said memory device during a power failure in said main batteries; and

PUBLIC VERSION

a power manager device for sensing said power failure and responsively connecting said memory device to said backup batteries.

Claim 1 does not mention that the power management system protects image data by use of either a backup power supply or backup batteries. It merely teaches “a power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected[.]” The two passages from the description of the preferred embodiment, *supra*, further demonstrate that backup power supply is not the sole means of protecting image data in the event of a power failure.

I turn to Kodak’s argument that file history supports its argument that a backup power supply is the sole means by which the invention of the ‘964 patent protects against loss of image data upon the occurrence of a power failure; thereby disclaiming other means to protect against such loss of image data.

In *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241 (Fed. Cir. 2000) the court said, at page 1251, that it would find that the applicant disclaimed protection during prosecution only if the allegedly disclaiming statements constitute “a clear and unmistakable surrender of subject matter.” Even if an isolated statement appears to disclaim subject matter, the prosecution history as a whole may demonstrate that the patentee committed no clear and unmistakable disclaimer. *Elbex Video, Ltd. v. Sensormatic Elecs. Corp.*, 508 F.3d 1366, 1372-73 (Fed. Cir. 2007).

Kodak avers that, in a December 10, 1997 Response to Office Action, Apple distinguished the claims of the ‘964 Patent from the Kaneko reference, quoting:

[T]he onboard battery (51) [of Kaneko] does not have a backup function; rather, it represents the sole power source for the volatile memory (54) . . . . Further, Kaneko et al. does not disclose a secondary power source or means for switching from a main to a secondary power source to prevent an interruption of power to

## PUBLIC VERSION

the volatile memory (and the consequent loss of image data stored therein) in the event of a failure or insufficient voltage condition of the main power source.

(JX-4.284-285.) Kodak says that Apple distinguished its invention from the prior art based on such a backup power supply, and argued that protecting image data with backup power is the “substantial advantage” of its invention. (*Id.* at 282-285.)

Apples argues persuasively that in the paragraphs preceding the one upon which Kodak relied, the inventor explained that the *claimed* “power management system” was not disclosed in the prior art upon which the Examiner relied. A review of the paragraphs preceding the one to which Kodak refers reveals that the applicants distinguished Kaneko on the basis that “it lacks any features which protect image data already stored in a volatile memory; rather, the user is simply prospectively warned prior to using the camera that the output voltage of the onboard battery is insufficient to allow image data to be stored in the memory.” (JX-4.283) (emphasis in original). Citing claims 6, 11 and 16 in the application, the applicants demonstrate that the invention includes a power management system for protection of image data.

Apple argues correctly that these paragraphs confirm that a backup power supply was an optional feature of the claims, not a mandatory one, quoting: “the power management system may include, for example, backup batteries for providing power to the volatile memory in the event that the main batteries fail.” (Citing JX-4.284.)

Kodak argues unconvincingly that a statement made by the inventor prior to submittal of the application for the ‘964 patent supports a finding that backup power is required. Attached to a declaration supporting his status as the inventor of the ‘964 patent, Mr. Anderson included an “Inventions Summary,” prepared prior to the application date. In that summary, Mr. Anderson stated, *inter alia*, that, “[t]he key invention is to utilize a single bank of battery-backed up (self

## PUBLIC VERSION

refresh) DRAM for multiple purposes.” (JX- 4.507.) Kodak argues it is disingenuous for Apple to read “the key invention” out of asserted claims.

Kodak errs, because Apple does not read the key invention out of the asserted claims. As noted, *supra*, unasserted claim 4 clearly teaches the use of backup power in the form of backup batteries. This does not establish, however, that the inventor has disclaimed or abandoned other means of using the power management system to protect image data as a result of a power failure. (See, e.g., JX-1 at 7:6-8, 7:24-32, 7:36-43, 48-62, Figs. 9-10.)

After examining the claim language, the specification and the prosecution history, it is clear to me that the term “power management system” as used in asserted claims 1 and 5 of the ‘964 patent should be given its plain and ordinary meaning, to wit: “a system that monitors the supply of power and continues the supply of power after a power failure is detected, thereby preventing irreversible loss of sets of image data stored in the memory device.” I find that examination of the extrinsic evidence (such as expert testimony) offered by the parties is unnecessary because the intrinsic evidence is sufficient to understand the meaning of “power management system.” *Vitronics Corp.*, 90 F.3d at 1583 (“In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.”)

### C. The ‘911 Patent

The parties have stipulated that a person of ordinary skill in the art (PHOSITA) of the ‘911 patent at the time of the invention would have had a bachelor's degree in electrical engineering or computer science with two years of working experience or equivalent academic or work experience in the field of image processing. (Corrected Joint Stipulation Regarding the Person of Ordinary Skill in the Art at ¶ 4.)

## PUBLIC VERSION

### 1. "Image Processors"

The term "image processors" appears in asserted claims 15, 27, 30, and 38.

**Apple's Position:** Apple contends that "image processors" means "software modules which each apply algorithms on image data to obtain a particular type of image transformation."

Apple asserts that the parties originally agreed on this construction, and that Kodak has now retreated from this construction in order to salvage its non-infringement argument. Apple states that Kodak now argues that the agreed-to construction requires that software actually apply algorithms, which are embodied in the software itself. (Citing RX-765C at Q. 107.)

Apple argues that Kodak's re-writing of the agreed-to construction is not supported by the '911 patent specification. Apple asserts that the specification is consistent with the agreed-to construction in that it describes the image processing software as applying algorithms on image data, but does not require that the algorithms be embodied in the software itself. (Citing JX-2 at 5:41-44.)

Apple argues that the file history does not support Kodak's re-writing of the agreed-to construction. Apple argues that there was no disclaimer of devices like the accused Kodak cameras. Apple states the inventors distinguished the McCubrey reference during prosecution based on the fact that McCubrey disclosed identical, hardwired processors which did not have parametric controls that allowed the user to individually adjust the different image processors. (Citing JX-6.110-11.) Apple asserts that the language at issue from the file history does not mandate that the image processors be software modules where the algorithms themselves are embodied in the software. Apple claims that the relevant passages from the file history instead go to a different issue, i.e. McCubrey's lack of parametric controls that allow a user to individually adjust each of the image processors.

## PUBLIC VERSION

**Kodak's Position:** Kodak contends that the parties have stipulated that "image processors" means "software modules which each apply algorithms on image data to obtain a particular type of image transformation."

Kodak claims that Apple now attempts to back away from this agreed-to construction because it does not fit Apple's infringement theory. Kodak asserts that regardless of the interpretation of the stipulated construction, Apple cannot avoid the claim language that requires the "image processors" to be "stored in memory" and to "each perform[] a particular type of image transformation [or processing]." (Citing JX-2.016-027 at claims 15, 23, 27, 30.)

In its reply brief, Kodak argues that Apple attempts to rewrite the stipulated construction. Kodak claims that the prosecution history proves that the '911 patent is directed to software image processing. (Citing JX-6.110.) Kodak explains that during prosecution, the McCubbery reference was distinguished on the basis of software versus hardware image processing. (Citing JX-6.110; RIB at 96-99.)

**Staff's Position:** Staff contends that the parties have agreed that the proper construction for "image processors" is "software modules which each apply algorithms on image data to obtain a particular type of image transformation." (Citing JX-11 at 5.)

In its reply brief, Staff asserts that it has taken the position that under the agreed-upon construction, the image processors must contain and directly apply the algorithms on image data. Staff notes that Apple claims that Staff is re-writing the agreed-upon construction. (Citing CIB at 89.) Staff disagrees, and asserts that its position is clearly in accordance with the agreed-upon construction.

Staff argues that it is Apple's claim construction position that is at variance with the agreed-upon construction and the claim language. Staff asserts that the claims require that the

## PUBLIC VERSION

image processors perform image transformation, rather than control another component which performs transformation. Staff claims that Dr. Delp's testimony acknowledged that there is a difference between controlling the overall operation of image processing and actually processing the data. (Citing Tr. at 407:7-20.)

Staff argues that the prosecution history shows that the applicants distinguished themselves from the prior art based on the argument that the prior art related to hardware or hardwired image processing. (Citing JX-6.110, 129, 131-132; RX-765C at Q. 89-90.) According to Staff, these arguments made during the prosecution of the '911 patent disclaimed hardware-based image processing.

**Construction to be Applied:** "software modules which each apply algorithms on image data to obtain a particular type of image transformation."

The parties have stipulated that "image processors" means "software modules which each apply algorithms on image data to obtain a particular type of image transformation." (JX-11.) I have adopted the parties' agreed-upon construction.

Each of the asserted claims use the term "image processors." For example, claim 15 requires: "a digital image capture device, the digital image capture device capable of processing digital image data through *two or more image processors, the two or more image processors being stored in memory, wherein said processors are software modules and each performing a particular type of image transformation* and having one or more parametric controls that are uniquely identified..." (Emphasis added).

The '911 patent specification discusses the prior art image processing found in digital cameras, and the drawbacks associated with such image processing:

In processing image data, typical digital cameras operate with exclusive and specific image processing. Thus, all the potential manipulation on image data,



## PUBLIC VERSION

such as linearization, sharpening, and compression, occur as a result of isolated preset programming and/or specifically designed hardware.

While some level of manipulation of image data is achieved with the programming or hardware, attempts to alter and improve the processing are hampered by the rigid structure of using a single file/specific components. Furthermore, camera functionality remains tied to technology available at the time of the design and is not readily replaced and updated as technology improves. Accordingly, a need exists for a more flexible, modular approach for processing digital image data that provides enhanced digital image output through an adaptable image processing system.

(JX-2 at 1:39-54.) The specification continues to discuss how the invention provides a more flexible, modular approach to image processing:

With the present invention, processing of digital image data occurs with a linked series of image processors. Each of the image processors performs some level of manipulation of the digital image data. The separation of digital image processing into a series of image processors allows a more modular approach to processing digital image data. Further, the present invention uniquely allows modification of the series through deletion of an image processor, insertion of a different image processor, or replacement of an existing image processor. In addition, aspects of an image processor, including parameter control values, are alterable in accordance with a preferred embodiment to allow greater adaptability to user-specific design preferences. Enhancements and changes to the chain are therein easily achieved, allowing greater flexibility and more convenient upgrading of digital image processing.

(*Id.* at 2:13-28.)

In the prosecution history, the applicants distinguished their software-based image processors over the prior art. In response to an Examiner rejection, the applicant amended the claims to add the requirement that the image processors are stored in memory. (JX-6.107-108.)

In distinguishing the invention from the McCubrey prior art reference, the applicant stated:

Applicant respectfully submits that the recited image processors stored in memory are in no way taught, shown, or suggested by the substantially identical stages of McCubrey, these stages being part of hardware function logic in McCubrey. Further, as hardwired, identical components, Applicant respectfully submits that the stages in McCubrey inherently lack the ability of Applicant's recited image processors to be individually formed and adjusted.

## PUBLIC VERSION

(JX-6.110; *see also* JX-6.129.)

The applicant similarly distinguished the Iverson prior art reference by stating:

Applicant respectfully submits that Iverson's pipe elements, i.e., 'image processors', are hardware elements... Thus, Applicant respectfully submits that the 'image processors' in Iverson are directly taught and shown as hardwired elements, which directly contrasts and wholly fails to teach, show, or suggest Applicant's recited invention of image processors being stored in memory.

(JX-6.132.)

The applicant explained that "the image processors are disclosed as software modules that apply algorithms on image data to obtain a special image processing result[.]" (JX-6.129.)

The Examiner ultimately allowed the claims after an Examiner's amendment to add the language "wherein said processors are software modules." (JX-6.138.)

Based on the foregoing, I find that there is sufficient support in the intrinsic record for the parties' agreed-upon construction of "software modules which each apply algorithms on image data to obtain a particular type of image transformation." I see no reason to further limit or define that construction, as it is fully consistent with the statements made in both the specification and prosecution history.

### 2. "Digital Image Capture Device"

The term "digital image capture device" appears in asserted claims 15, 27, 30, and 38.

**Apple's Position:** Apple contends that a "digital image capture device" is "a device that generates digital image data using an image sensor."

Apple claims that in 1996, "digital image capture device" had a well-understood meaning. A "digital image capture device" was a device that recorded and preserved a scene or image occurring in front of the device. (Citing CX-425C at Q. 47.) According to Apple, the use of the word "digital" means that the preserved image is saved in a digital format. (Citing CX-

## PUBLIC VERSION

425C at Q. 48.) Apple asserts that one of ordinary skill in the art in 1996 would have understood a “digital image capture device” to include an image sensor for generating digital image data. (Citing CX-425C at Q. 47-50.)

Apple claims that the specification is fully consistent with the proposed construction. (Citing JX-2 at 1:31-37, 3:21-32; CX-425C at Q. 51-52.) Apple states that the specification shows use of an image sensor in the “digital image capture device.” (Citing CX-425C at Q. 53; Tr. at 613:9-615:19, 616:14-617:1.) Apple claims that the file history is fully consistent with the proposed construction. Apple notes that the examiner cited the Iverson patent as disclosing a “digital image capture device,” and that the “digital image capture device” of Iverson is a CCD camera that contains an image sensor. (Citing JX-56.003; Tr. at 621:3-23.)

Apple argues that Kodak’s construction is inconsistent with the understanding of a person of ordinary skill in the art. According to Apple, a “digital image capture device” under Kodak’s construction is any computer with Internet access. Apple claims that the term “image capture” as used in the art has always meant capturing a scene or image occurring in real-time in front of the device. (Citing CX-425C at Q. 46-47.) According to Apple, a computer that downloads an already-existing digital image from the Internet is merely copying the image, and is not “capturing” the image. (Citing Tr. at 628:23-629:13; CX-425C at Q. 56.)

Apple notes that Kodak relies on a sentence from the specification to support its construction. (Citing JX-2 at 2:65-3:10.) Apple argues that the sentence at issue does not evidence a clear intent by the patentee to offer a special definition of the term. Apple claims that the sentence does not constitute the type of definitional language that would support a finding that the patentee acted as his own lexicographer and provided a special definition for “digital image capture device.” (Citing CX-425C at Q. 57-58.)

## PUBLIC VERSION

Apple argues that extrinsic evidence in the form of other patents from the relevant time period show that a “digital image capture device” includes an image sensor. (Citing JX-75 at 3:3-51; JX-50 at 5:51-53.) Apple asserts that these extrinsic patents show that an Internet-connected computer does not constitute a “digital image capture device,” as Kodak claims.

In its reply brief, Apple claims that Kodak relies on a single sentence from the specification to define “digital image capture device.” (Citing JX-2 at 3:1-6.) Apple argues that Kodak offers no analysis of why this sentence from the specification constitutes a clear definition of the term. (Citing RIB at 82.)

Apple states that Kodak is wrong to assert that Dr. Delp believes that a scanner cannot be a “digital image capture device.” (Citing RIB at 84.) According to Apple, Dr. Delp testified that an image scanner is a “digital image capture device” because it contains an image sensor. (Citing CX-473C at Q. 64-65; CDX-5-19; CIB at 98.)

Apple asserts that the specification supports the conclusion that the “digital image capture device” is a single device that both captures the image data and processes the image data. (Citing JX-2 at 2:65-3:3; CIB at 129-131.) Apple argues that the claims language of claim 15 further supports such a conclusion. (Citing CX-473C at Q. 11-13; CDX-5.1, 5.2.)

**Kodak’s Position:** Kodak contends that a “digital image capture device” is a “device that performs digital image data capture and processing including digital cameras and computer systems, including computer systems used to capture digital images accessible from Internet sites and image scanner equipment.”

Kodak argues that the inventors of the ‘911 patent specifically defined “digital image capture device” in the specification to encompass “a digital camera device” or “computer systems, including those used to capture digital images accessible from Internet sites and image

## PUBLIC VERSION

scanner equipment.” (Citing JX-2 at 2:65-3:6.) According to Kodak, the inventors’ clear definition should apply.

Kodak notes that Dr. Delp admitted that the ‘911 patent uses “capture” when it is referring to a computer system that accesses digital images from the Internet. (Citing Tr. at 297:3-7.) Kodak states that despite this admission, Dr. Delp insists that “capture” in the ‘911 patent claims can only mean using an image sensor to generate digital image data. (Citing Tr. at 292:14-18.) Kodak claims that Apple’s construction improperly excludes embodiments specifically described in the specification.

Kodak asserts that Dr. Delp’s insistence that a “digital image capture device” must be a single component is at odds with the specification. (Citing Tr. at 299:6-10, 299:25-300:3, 300:10-16; JX-2 at 2:65-3:6.) Kodak claims that Dr. Delp’s trial testimony is also at odds with his deposition testimony, where he agreed that an Apple MacBook Pro computer and an external Apple iSight camera together form a “digital image capture device.” (Citing Tr. at 758:16-767:8.)

In its reply brief, Kodak argues that Apple and Staff seek to improperly limit the claims of the ‘911 patent to one of several embodiments disclosed in the specification, even though the inventors mandated that their invention should not be so limited. (Citing CIB at 94-101; SIB at 10-12.) Kodak argues that the inventors specifically defined “digital image capture device” in the specification. (Citing JX-2 at 2:65-3:6; RIB at 82-84.) Kodak argues that the language used in the specification is exactly the clear and unambiguous language that one expects to see when a patentee acts as his own lexicographer.

Kodak criticizes Apple’s reliance on unrelated patents as extrinsic evidence, claiming that such evidence is irrelevant. (Citing JX-75; JX-50.) In addition, Kodak asserts that Apple never

## PUBLIC VERSION

tried to distinguish the prior art during prosecution on the basis that the “digital image capture device” must be an integrated device having both an image sensor and processing capabilities. (Citing SIB at 38.)

**Staff’s Position:** Staff contends that a “digital image capture device” is a “device for generating digital image data using an image sensor and processing digital image data.”

Staff states that the main difference between the parties’ constructions is that Apple and Staff believe that the “digital image capture device” must generate the image data itself, while Kodak believes that the “digital image capture device” does not need to generate the image data. Staff asserts that the specification describes a camera with an image sensor as the “digital image capture device.” (Citing JX-2 at Fig. 1, Fig. 2, 3:22-31, 3:38-40, 3:48-52.)

Staff claims that Dr. Delp’s testimony shows that a person of ordinary skill in the art would define a “digital image capture device” as a device that captures a digital image using an image sensor. (Citing CX-425C at Q. 47, 60.) Staff asserts that Kodak’s definition is inconsistent with how one of ordinary skill in the art would have defined “digital image capture device” in 1996. (Citing CX-425C at Q. 55-56.)

**Construction to be Applied:** “a device that performs digital image data capture and processing.”

The term “digital image capture device” appears in each of the asserted claims. For example, claim 15 states, *inter alia*, “a digital image capture device, the digital image capture device capable of processing digital image data through two or more image processors...”

The term is used in the specification of the ‘911 patent. The Summary of the Invention states that “the present invention meets these needs and provides a method and system for allowing variably controlled alteration of image processing of digital image data in a digital

PUBLIC VERSION

image capture device.” (JX-2 at 1:57-60.)

The specification describes the “digital image capture device” as a digital camera, but includes the following language to make clear that the invention is not limited to a digital camera: “[a]lthough the following describes processing of digital image data captured through a digital camera device, it is meant as an illustrative embodiment of the features of the present invention.” (JX-2 at 2:65-3:1.) The specification goes on to describe other examples of a “digital image capture device:”

The present invention is equally capable of utilization with other devices that perform digital image data capture and processing, including, but not limited to, computer systems, including those used to capture digital images accessible from Internet sites and image scanner equipment.

(*Id.* at 3:1-6.)

Based on the foregoing, I find that a “digital image capture device” is “a device that performs digital image data capture and processing.”

Apple and Staff contend that a “digital image capture device” must capture an image via an image sensor. I find that such a restriction is overly narrow and excludes an embodiment expressly disclosed in the specification. “A claim construction that excludes the preferred embodiment ‘is rarely, if ever, correct and would require highly persuasive evidentiary support.’” *Adams Respiratory Therapeutics, Inc. v. Perrigo Co.*, 616 F.3d 1283, 1290 (Fed. Cir. 2010) (quoting *Vitronics*, 90 F.3d at 1583-1584). Under the constructions proposed by Apple and Staff, a computer system used to capture digital images accessible from Internet sites and image scanner equipment would not qualify as a “digital image capture device” because it lacks an image sensor. Such a result is clearly contrary to the language of the specification. (JX-2 at 3:1-6.)

Apple relies on the specification’s description of a digital camera device as support the

## PUBLIC VERSION

conclusion that a “digital image capture device” must include an image sensor. (CIB at 95-97.)

While the digital camera described in the ‘911 patent includes an image sensor, the specification is clear that the invention is not limited to a digital camera device. (JX-2 at 2:65-3:1.)

Therefore, this description of the digital camera embodiment cannot serve to limit the claim language. *Phillips*, 415 F.3d at 1323 (“[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.”)

Apple also cites to the prosecution history, specifically referring to the fact that examiner cited the prior art Iverson patent as disclosing a “digital image capture device.” (JX-6.121.) The “digital image capture device” of Iverson is a camera that contains an image sensor. (JX-56.003; Tr. at 621:3-23.) This fact alone does not serve to restrict the meaning of “digital image capture device,” and the adopted construction is fully consistent with the conclusion that Iverson discloses a “digital image capture device.”

Apple also relies heavily on extrinsic evidence in the form of expert testimony. Apple’s expert Dr. Delp testifies that Apple’s proposed construction is consistent with the ordinary meaning of “digital image capture device” according to one of ordinary skill in the art as of 1996. (CX-425C at Q. 46-53.) Dr. Delp further testifies that Kodak’s construction of the term conflicts with the understanding that one of ordinary skill in the art would have had in 1996. (*Id.* at Q. 54-58.) When the intrinsic evidence is sufficient to understand the meaning of a claim term, reliance on extrinsic evidence is unnecessary. *Vitronics*, 90 F.3d at 1583 (“In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.”)

Moreover, Dr. Delp’s testimony is at odds with the specification’s clear statement that a



## PUBLIC VERSION

computer system used to capture digital images accessible from Internet sites and image scanner equipment is a “digital image capture device.” *Network Commerce, Inc. v. Microsoft Corp.*, 422 F.3d 1353, 1361 (Fed. Cir. 2005) (stating that “expert testimony at odds with the intrinsic evidence must be disregarded.”) While Dr. Delp believes that the ordinary meaning of an “image capture device” is a device “that records and preserves a scene or image that is within range of the device,” that is not how the term “capture” is used in the specification. (CX-425C at Q. 47.) The specification makes clear that a computer downloading an image from the Internet or from a scanner is “capturing” the image. (JX-2 at 3:1-6.)

Finally, Apple relies on two patents that are unrelated to the ‘911 patent in an attempt to support its construction of “digital image capture device.” (JX-50; JX-75.) In view of the intrinsic evidence addressed *supra*, it is unnecessary to consider these extrinsic sources. *Vitronics*, 90 F.3d at 1583 (“In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.”)<sup>8</sup>

### 3. “Software Modules”

The term “software modules” appears in asserted claims 15, 27, 30, and 38.

**Apple’s Position:** Apple contends that “software modules” are “machine-readable instructions that perform a particular task.”

Apple states that the term “software modules” was well-known and in common use in 1996. Apple claims that the term “software” means machine-readable instructions that cause hardware, such as a CPU or other integrated circuit, to perform work. (Citing CX-180.010; CX-425C at Q. 72.) Apple claims that it is well-known that a “module” of software is a set of

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<sup>8</sup> Staff’s argument that a “digital image capture device” must contain an image sensor relies on the same evidence already discussed with respect to Apple’s argument. (See SIB at 10-12.)

## PUBLIC VERSION

instructions for performing a particular task, as contrasted with software as a whole, which might perform many different tasks. (Citing CX-180.007; CX-425C at Q. 72.) Thus, Apple claims that a “software module” is one that contains a block or blocks of code for performing a specific task or function. (Citing CX-425C at Q. 72-75; CDX-4.12; CX-180.007, 010.) Apple asserts that the intrinsic record is consistent with its proposed construction of “software modules.” (Citing JX-2 at 5:40-44; JX-6.129.)

Apple argues that Kodak’s construction seeks to limit the claims to a single embodiment disclosed in the specification. Apple notes that Kodak believes that a “software module” must have “a common functional interface that enables them to be independently inserted, deleted, and replaced.” Apple states that the specification makes clear that this is a feature of a preferred embodiment, and not the invention as a whole. (Citing JX-2 at 8:21-28.) Apple argues that another Apple patent related to the ‘911 patent shows that when the inventors intended to limit the claims based on the embodiment identified by Kodak, they made such a limitation clear. (Citing CX-425C at Q. 78-83; CDX-4.15; JX-51 at claims 13, 15, and 16.)

In its reply brief, Apple reiterates that Kodak’s construction is based on a description of a preferred embodiment. (Citing JX-2 at 8:21-24.) Apple argues that Kodak has failed to explain why the specification’s reference to a preferred embodiment should be ignored.

Apple argues that, contrary to Kodak’s position, Apple’s proposed construction does not ignore the word “module.” Apple notes that Dr. Delp explained that the word “module” means that a collection of software instructions performs a particular task. (Citing Tr. at 418:1-18.)

**Kodak’s Position:** Kodak contends that “software modules” are “individually formed software objects, each having a common functional interface that enables them to be independently inserted, deleted, and replaced.”

## PUBLIC VERSION

Kodak asserts that Staff's and Apple's proposed construction improperly reads the term "modules" out of the claim. Kodak claims that its construction gives meaning to the term "modules," and that meaning is supported by the specification. (Citing JX-2 at 6:67, 8:24-28.)

Kodak reiterates that Apple's construction reads the term "modules" out of the claim. Kodak asserts that Dr. Delp admitted that the definition of the word "module" means "an interface" that can "interact with something else." (Citing Tr. at 303:7-12.) Kodak claims that Apple's construction lacks this interface. Kodak states that its construction is consistent with the specification and the dictionary definition of "modules." (Citing CX-180.007; JX-2 at 6:67, 8:24-28.) Kodak asserts that Apple is wrong to claim that Kodak is limiting the meaning of "software modules" based on a preferred embodiment. (Citing CIB at 103; JX-2 at 8:21-28.)

**Staff's Position:** Staff contends that "software modules" are "machine-readable instructions that perform a particular task."

Staff asserts that the added limitations proposed by Kodak are taken from a description of a preferred embodiment in the specification. (Citing JX-2 at 8:19-31; CX-425C at Q. 79.) Staff states that a patent that is related to the '911 patent specifically claims the features that Kodak attempts to read in to the construction – insertion, deletion, and replacement of image processors. (Citing CX-425C at Q. 79; JX-51 at claims 1-4.) According to Staff, this related patent demonstrates that the inventors knew how to claim software capable of being independently inserted, deleted, and replaced, yet did not do so in the '911 patent.

**Construction to be Applied:** "machine-readable instructions that cause a particular task to be performed."

The term "software modules" is found in each of the asserted claims and is used to further describe the "image processors." For example, claim 15 states "two or more image

## PUBLIC VERSION

processors being stored in memory, *wherein said processors are software modules* and each performing a particular type of image transformation and having one or more parametric controls that are uniquely identified[.]” (JX-2 at 11:37-42) (emphasis added).

The specification explains that “[i]mage processors suitably refer to software modules that apply algorithms on image data to obtain a special image processing result, specific examples of which are described below with reference to FIG. 7.” (JX-2 at 5:40-44.) The prosecution history states that “the image processors are disclosed as software modules that apply algorithms on image data to obtain a special image processing result (see p. 11, lines 1-3).” (JX-6.129.)

Because the intrinsic record does not assign or suggest a particular definition for the term “software modules,” it is appropriate to consult a dictionary definition. *Comaper Corp. v. Antec, Inc.*, 596 F.3d 1343, 1348 (Fed. Cir. 2010) (consulting a dictionary definition of the term “case” after the intrinsic evidence did not disclose any specific definition); *Phillips*, 415 F.3d at 1322 (“Dictionaries or comparable sources are often useful to assist in understanding the commonly understood meaning of words and have been used both by our court and the Supreme Court in claim interpretation.”)

The term “software” refers to “computer programs; instructions that cause the hardware – the machines – to do work.” (CX-180.010.) The term “module” refers to “a collection of routines and data structures that performs a particular task or implements a particular abstract data type.” (CX-180.007.) It follows that “software modules” can be understood to mean “machine-readable instructions that cause a particular task to be performed.” The intrinsic evidence is fully consistent with this definition.

Kodak seeks a construction that would require that the software modules can be

## PUBLIC VERSION

independently inserted, deleted, and replaced. Kodak bases this requirement on the following passage from the specification: “[u]pdating of an IPC 500 includes insertion of an image processor 502 to the IPC 500, deletion of an image processor 502 from the IPC 500, or replacement of an image processor 502 with an alternate image processor 502.” (JX-2 at 8:24-28.) As Apple notes, this passage is referring to a preferred embodiment, and not the invention as a whole. (*Id.* at 8:21-28.) Narrowing the meaning of “software modules” based on this description of a preferred embodiment is contrary to established law. *Trading Techs. Int’l, Inc. v. eSpeed, Inc.*, 595 F.3d 1340, 1352 (Fed. Cir. 2010) (“When consulting the specification to clarify the meaning of claim terms, courts must not import limitations into the claims from the specification.”); *Phillips*, 415 F.3d at 1323 (“[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.”)

#### 4. “Parametric Control(s)”

The terms “parametric control” or “parametric controls” appear in asserted claims 15, 27, 30, and 38.

**Apple’s Position:** Apple contends that “parametric control(s)” are “range type or enumerated list type of values that affect how an image processor processes image data.”

Apple states that Kodak has adopted Staff’s proposed construction, and notes that the differences between the proposed constructions are slight. Still, Apple believes its construction is correct because it is based on an unambiguous definition of this term provided on multiple occasions during prosecution. (Citing JX-6.067, 068, 110-111, 132.) Apple asserts that the specification also provides support for its construction. (Citing JX-2 at 9:8-10.) Apple argues that Staff’s and Kodak’s proposed construction is overly narrow. (Citing CX-425C at Q. 89.)

## PUBLIC VERSION

In its reply brief, Apple asserts that Kodak ignores the explicit definition of “parametric controls” found in the prosecution history. (Citing JX-6.067, 068, 110-111, 132.) Apple reiterates that its proposed construction is more accurate than Staff’s proposed construction.

**Kodak’s Position:** Kodak contends that “parametric control(s)” are “portions of the image processor that permit modification of the image processor for alteration of image processing.”

Kodak notes that it has adopted Staff’s proposed construction, and that Apple has admitted that Staff’s construction is “acceptable.” Kodak claims that whatever construction is adopted, it should include the requirement that “parametric control(s)” are “portions of the image processor...” Kodak asserts that such a requirement is supported by Apple’s disclaimers in the prosecution history regarding the relationship between “parametric controls” and “image processors.” (Citing JX-6.068, 088-089, 111-112, 132-133.)

**Staff’s Position:** Staff contends that “parametric control(s)” are “portions of the image processor that permit modification of the image processor for alternation of image processing.” Staff states that Kodak has withdrawn its proposed construction and adopted Staff’s proposed construction. Staff claims that Apple has stated that Staff’s proposed construction acceptable to Apple.

**Construction to be Applied:** “range type or enumerated list type of values that affect how an image processor processes image data.”

The terms “parametric control” or “parametric controls” appear in each of the asserted claims. For example, claim 15 requires “said processors are software modules and each performing a particular type of image transformation and having one or more *parametric controls* that are uniquely identified” and “the central processing unit facilitates access of chosen

## PUBLIC VERSION

*controls of the one or more parametric controls* within each of the two or more image processors for modification of the two or more image processors and alteration of the image processing.” (emphasis added).

The applicants expressly defined “parametric control(s)” during the prosecution of the ‘911 patent. In responding to an Office Action, the applicants stated that “parametric controls are enumerated list or range type of values that affect how an image processor processes image data.” (JX-6.067.) The applicants made this statement to distinguish the parametric controls of the claims from the prior art cited by the examiner. (JX-6.067-068.) The applicants explained that the “recited parametric controls are described as being of a range or enumerated list type. There is nothing in the register control of Forslund et al. that teaches or suggests that the data in the register is a range or enumerated list type.” (JX-6.068.) The definition of “parametric controls” provided in the prosecution history was repeated at least two other times during the prosecution of the ‘911 patent. (See JX-6.110-111, 132.) These passages from the prosecution history clearly demonstrate the inventors’ intention to define the meaning of “parametric controls.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (explaining that a patentee may act as his own lexicographer by “clearly set[ting] forth a definition of the disputed claim term in either the specification or prosecution history.”)

The specification is consistent with this definition. When describing parametric controls, the specification explains:

Parameter control values include two types, a range type and an enumerated list type. Range types of parameter control values are appropriately confined between the minimum and maximum settings for the range. Enumerated list parameter control values assign different enumerated numbers to different settings with a 32-character null terminated string used to provide an ASCII name for each enumerated list number. Examples of parameter controls include sharpening values (range type), color specification control values (range type), and compression control values (enumerated list type).

PUBLIC VERSION

(JX-2 at 9:8-19.)<sup>9</sup>

**5. “Linking...to Form an Image Processing Chain” & “Forming an Image Processing Chain”**

The phrases “linking...to form an image processing chain” or “forming an image processing chain” appear in asserted claims 15, 27, 30, and 38.

**Apple’s Position:** Apple contends that “linking...to form an image processing chain” and “forming an image processing chain” mean “instructing two or more image processors to manipulate digital image data in a stage by stage fashion.”

Apple states that Kodak has adopted Staff’s proposed construction, and notes that the differences between the proposed constructions are slight. Still, Apple believes its construction is correct because it is based on the claim language and fully supported by the specification. Apple states that claims 15 and 27 make clear that the “linking” of the image processors is occurring via instructions issued by the CPU. (Citing CX-425C at Q. 98-99.) Because the claims specify that the linking occurs through the CPU, Apple asserts that its proposed construction is correct because it requires “*instructing* two or more image processors to manipulate image data in a stage by stage fashion.” (Citing CX-425C at Q. 99.)

**Kodak’s Position:** Kodak contends that “linking...to form an image processing chain” and “forming an image processing chain” mean “connecting two or more image processors such that the image processors manipulate digital image data in a stage by stage fashion.”

Kodak states that its proposed construction is similar to the proposed construction offered by Apple. Kodak claims that Apple’s only complaint is with Kodak’s and Staff’s use of the term “connecting.” Kodak argues that there is support in the specification for the idea that software

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<sup>9</sup> While the specification uses the term “parameter controls,” it has not been argued that this has a different meaning than “parametric controls.”



## PUBLIC VERSION

image processors can be connected. (Citing JX-2 at 6:65, 7:56-57.)

**Staff's Position:** Staff contends that "linking...to form an image processing chain" and "forming an image processing chain" mean "connecting two or more image processors such that the image processors manipulate digital image data in a stage by stage fashion."

Staff states that its construction differs from Apple's construction in that Staff's construction requires the image processors to be connected to one another. Staff submits that its construction is consistent with the common use of the term "linking," particularly in the context of forming a chain.

**Construction to be Applied:** "connecting two or more image processors such that the image processors manipulate digital image data in a stage by stage fashion."

The parties' only dispute with respect to this claim construction issue is whether to use "instructing" or "connecting." Apple relies on testimony from its expert to explain why "instructing" is the most accurate term, while Kodak relies on the specification to explain why "connecting" is the most accurate term. (CIB at 106-107; RIB at 87.)

The specification uses the term "connection" when discussing the formation of the image processing chain ("IPC"). For example, the specification states:

Coordination of the image processors 502 to form the IPC 500 is preferably done via an image processing backplane (IPB). In a preferred embodiment, the image processing backplane provides processing support in a broad manner to allow varying algorithms to be incorporated as image processors 502. The features of the processing support by the IPB are described in more detail with reference to FIG. 8 and include performing image scan line buffer input/output (I/O), *IPC construction and connection*, image processor parameter control setting, single pass through image data, procedural interface to the image processors, circular data pipeline support, and ring-pixel handling, with minimal memory requirements and overheads.

(JX-2 at 6:57-7:2) (emphasis added). In addition, the specification states:

Preferably, the data pipeline required by an image processor 502 is indicated

## PUBLIC VERSION

during the installation of the image processor 502 in the IPC 500. Installation of an image processor 502 suitably occurs when the camera first starts up with an IPC 500 constructed from all of the default image processors 502 stored in the system ROM. Suitable functions to coordinate the construction and deconstruction of the IPC 500 include four functions, an initialization function, e.g., IPCInit, an installation function, e.g., IPCInstallImageProcessor, *a connection function, e.g., IPCConnect*, and a destruction function, e.g., IPCDestroy.

(*Id.* at 7:47-57) (emphasis added).

Apple's argument relies on Dr. Delp's testimony. Dr. Delp testified that because the claim language states that the CPU is capable of linking the image processors, one of ordinary skill in the art would understand that the linking is occurring based on instructions from the CPU. (CX-425C at Q. 98-99.) Apple and Dr. Delp thus assert that "instructing" is a more accurate term.

Kodak's use of the word "connecting" is based on intrinsic evidence from the specification, while Apple's use of the word "instructing" is based on expert testimony from Dr. Delp. Because "the intrinsic record is the primary source for determining claim meaning," I find Kodak's argument relying on the specification to be more persuasive than Apple's argument relying on Dr. Delp's testimony. *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861-862 (Fed. Cir. 2004). Thus, I find that "connecting" is the more accurate term to use in the construction of that "linking...to form an image processing chain" and "forming an image processing chain."

### 6. "Image Processing Backplane"

The term "image processing backplane" appears in asserted claim 38.

**Apple's Position:** Apple contends that "image processing backplane" means "software that provides support for forming an image processing chain and controls the flow of data through the image processing chain."

## PUBLIC VERSION

Apple states that Kodak has adopted Staff's proposed construction, and that it does not believe that any differences between the parties' proposed constructions impact the infringement or validity analyses. (Citing CX-425C at Q. 101-103.) Apple asserts that the "image processing backplane" is software that provides support for forming the image processing chain. (Citing CX-425C at Q. 102.) Apple points to the specification to support its construction. (Citing JX-2 at 2:1-12, 6:57-7:2.)

**Kodak's Position:** Kodak contends that "image processing backplane" means "software for coordinating image processors to form an image processing chain and providing processing support to the image processors in the image processing chain."

Kodak states that its construction comports with the description of "image processing backplane" in the '911 patent specification. (Citing JX-2 at 6:57-66.) Kodak asserts that the parties agree that the "image processing backplane" is software, but disagree as to the exact role of the "image processing backplane." Kodak claims that its construction tracks the specification. (*Id.*)

**Staff's Position:** Staff contends that "image processing backplane" means "software for coordinating image processors to form an image processing chain and providing processing support to the image processors in the image processing chain."

Staff asserts that the specification makes clear that the image processing backplane supports more than "forming the image processing chain," as the specification specifically states that the backplane provides processing support, including support image scan line buffer input/output and image processor parameter control setting. (Citing JX-2 at 6:57-66.)

**Construction to be Applied:** "software for coordinating image processors to form an image processing chain."

## PUBLIC VERSION

Asserted claim 38 requires, *inter alia*, “a digital image capture device having an image processing backplane for forming an image processing chain with a plurality of image processors...” The specification provides the following description of the “image processing backplane:”

Coordination of the image processors 502 to form the IPC 500 is preferably done via an image processing backplane (IPB). ***In a preferred embodiment, the image processing backplane provides processing support in a broad manner to allow varying algorithms to be incorporated as image processors 502.*** The features of the processing support by the IPB are described in more detail with reference to FIG. 8 and include performing image scan line buffer input/output (I/O), IPC construction and connection, image processor parameter control setting, single pass through image data, procedural interface to the image processors, circular data pipeline support, and ring-pixel handling, with minimal memory requirements and overheads.

(JX-2 at 6:57-7:2) (emphasis added).

Based on the claim language and the specification, I find that an “image processing backplane” is “software for coordinating image processors to form an image processing chain.”

All of the parties rely on the above-quoted emphasized language to assert that the image processing backplane also provides processing support. As is clearly seen above, the passage begins with the phrase “[i]n a preferred embodiment...” To include the processing support language in the construction would be to import a limitation from a preferred embodiment into the claim, which is not permitted. *Trading Techs.*, 595 F.3d at 1352; *Phillips*, 415 F.3d at 1323.<sup>10</sup>

## IV. INVALIDITY

### A. Applicable Law

It is the respondent’s burden to prove invalidity, and the burden of proof never shifts to the patentee to prove validity. *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d

<sup>10</sup> I note that Apple’s expert testified that he found no material difference between Apple’s proposed construction and the construction supported by Kodak and Staff. (CX-425C at Q. 103.)

## PUBLIC VERSION

1365, 1380 (Fed. Cir. 2008). “Under the patent statutes, a patent enjoys a presumption of validity, *see* 35 U.S.C. § 282, which can be overcome only through facts supported by clear and convincing evidence[.]” *SRAM Corp. v. AD-II Eng’g, Inc.*, 465 F.3d 1351, 1357 (Fed. Cir. 2006).

The clear and convincing evidence standard placed on the party asserting the invalidity defense requires a level of proof beyond the preponderance of the evidence. Although not susceptible to precise definition, “clear and convincing” evidence has been described as evidence which produces in the mind of the trier of fact “an abiding conviction that the truth of a factual contention is ‘highly probable.’” *Price v. Symsek*, 988 F.2d 1187, 1191 (Fed. Cir. 1993) (citing *Buildex, Inc. v. Kason Indus., Inc.*, 849 F.2d 1461, 1463 (Fed. Cir. 1988).)

### 1. Anticipation

“A patent is invalid for anticipation if a single prior art reference discloses each and every limitation of the claimed invention. Moreover, a prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is necessarily present, or inherent, in the single anticipating reference.” *Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003) (citations omitted).

“When no prior art other than that which was considered by the PTO examiner is relied on by the attacker, he has the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job[.]” *Am. Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984). Therefore, the challenger’s “burden is especially difficult when the prior art was before the PTO examiner during prosecution of the application.” *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1467 (Fed. Cir. 1990).

## PUBLIC VERSION

### 2. Obviousness

Section 103 of the Patent Act states:

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. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. § 103(a) (2008).

“Obviousness is a question of law based on underlying questions of fact.” *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1379 (Fed. Cir. 2008). The underlying factual determinations include: “(1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) objective indicia of non-obviousness.” *Id.* (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)). These factual determinations are often referred to as the “*Graham* factors.”

“When no prior art other than that which was considered by the PTO examiner is relied on by the attacker, he has the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job[.]” *Am. Hoist & Derrick Co.*, 725 F.2d at 1359. Therefore, the challenger’s “burden is especially difficult when the prior art was before the PTO examiner during prosecution of the application.” *Hewlett-Packard Co.*, 909 F.2d at 1467.

The critical inquiry in determining the differences between the claimed invention and the prior art is whether there is a reason to combine the prior art references. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-418 (2007). In *KSR*, the Supreme Court rejected the Federal Circuit’s rigid application of the teaching-suggestion-motivation test. The Court stated that “it can be

## PUBLIC VERSION

important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* at 418. The Court described a more flexible analysis:

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue...As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

*Id.*

Since *KSR* was decided, the Federal Circuit has announced that, where a patent challenger contends that a patent is invalid for obviousness based on a combination of prior art references, “the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, . . . and would have had a reasonable expectation of success in doing so.” *PharmaStem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007).

In addition to demonstrating that a reason exists to combine prior art references, the challenger must demonstrate that the combination of prior art references discloses all of the limitations of the claims. *Hearing Components, Inc. v. Shure Inc.*, 600 F.3d 1357, 1373-1374 (Fed. Cir. 2010) (upholding finding of non-obviousness based on the fact that there was substantial evidence that the asserted combination of references failed to disclose a claim limitation); *Velander v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003) (explaining that a requirement for a finding of obviousness is that “all the elements of an invention are found in a combination of prior art references”).

## PUBLIC VERSION

### B. The '964 Patent

Kodak does not allege that any reference anticipates the asserted claims of the '964 patent. Kodak instead argues that the asserted claims are invalid as obvious pursuant to 35 U.S.C. § 103. Kodak focuses on the following three combinations of prior art references as invalidating the asserted claims of the '964 patent: (a) U.S. Patent No. 5,016,107 ("the '107 patent") in combination with U.S. Patent No. 5,321,663 ("the '663 patent"); (b) the '107 patent in combination with the '663 patent and the QuickTake 150; and (c) the '107 patent in combination with the '663 patent and the QuickTake 150 or U.S. Patent No. 5,585,845 ("the '845 patent").

#### 1. The '107 Patent In Combination With the '663 Patent

**Kodak's Position:** Kodak argues that it has proven that the combination of the '107 and '663 patents reveals each and every element of claim 1 of the '964 patent, therefore rendering that asserted claim invalid as obvious under 35 U.S.C. § 103.

Regarding the disputed elements of claim 1 of the '964 patent, Kodak argues that the evidence presented at the hearing made clear that the '107 patent discloses the first element of claim 1 including the "concurrently processing" limitation. Kodak avers that the parties have agreed that "concurrently processing" means "simultaneously processing, which includes interleaving the execution steps of two or more processes." (Citing JX-11 at 5.) Kodak asserts that its expert, Dr. Stevenson, applied this construction in forming his opinions that the processes that are concurrently performed are not limited to image processing steps. (Citing Tr. at 466:13-15.)



## PUBLIC VERSION

Kodak says that during prosecution of the '964 patent, Apple provided examples of simultaneous processing to the USPTO. (Citing RX-10C at Q. 311.) Kodak avers that, in a November 3, 1998 response, Apple explained this processing feature, quoting:

*A digital camera capable of concurrently running multiple software routines allows the processing, data compression, transmission and storage of image data to occur simultaneously with the capture of additional image data.* This capability allows an interactive control of the digital camera based on previously transmitted images and avoids the loss of critical image data by significantly increasing the percentage of time the digital camera is available to capture additional image data. A digital camera device capable of concurrently running multiple software routines can support a background spooling function when the built-in computer is not busy with more important tasks such as capturing additional sets of image data.

(Citing JX-4.418-419; RX-10C at Q. 314; RDX-2-129) (Emphasis added by Kodak).

Kodak continues later, in a March 24, 1999 response, Apple distinguished its pending claims over the prior art Baumeister reference:

Baumeister does not disclose or teach a method wherein multiple unprocessed images can be concurrently processed. *A digital camera capable of concurrently processing multiple images allows the processing, data compression, transmission and storage of image data to occur simultaneously with the capture of additional image data.* This capability allows an interactive control of the digital camera based on previously transmitted images and avoids the loss of critical image data by significantly increasing the percentage of time the digital camera is available to capture additional image data. A digital camera device capable of concurrently processing multiple images can support a background spooling function when the built-in computer is not busy with more important tasks such as capturing additional sets of image data.

(Citing JX-4.457; RX-10C at Q. 315; RDX-2-130) (Bold emphasis added by Kodak, and underline in original).

Kodak quotes Apple's March 24, 1999 response to amend the first element of claim 1 to read as it ultimately issued in the '964 patent:

PUBLIC VERSION

1. *(Three Times Amended)* A digital camera device comprising:  
a CPU capable of concurrently [running] processing multiple [software routines]  
unprocessed images into processed images;

(Citing JX-4.452.) Kodak argues that this amendment and the arguments regarding this claim language are crucial to the scope of the claims. Kodak avers that Apple told the USPTO that the first element of claim 1 “allows the processing, data compression, transmission and storage of image data to occur simultaneously with the capture of additional image data.” (Citing JX-4.457.) Kodak says Apple argued that claim 1 was patentable over Baumeister, because Baumeister did not disclose, for example, a digital camera that could compress data and transmit and store data simultaneously with the capture of additional image data. Kodak asserts that the ‘107 patent, which was not cited to the USPTO, unquestionably discloses that functionality.

Kodak argues that the ‘107 patent discloses a digital camera that captures multiple images and simultaneously processes them for storage in a memory card. (Citing RX-21.008; RX-10C at Q. 317; RDX-2-131.) Kodak says the ‘107 patent describes the basic operation of the processor 22, or CPU, and its role in the compression and storage of digital image signals. (Citing RX-21 at 4:14-22; RDX-2-131.) Kodak asserts it also discloses an image sensing device 12 that captures analog image data which is converted to an unprocessed digital image data by A/D converter 16. (Citing RX-21 at Fig. 3; RX-10C at Q. 318; RDX-2-132.) Kodak says this unprocessed image data is received by the processor 22 and placed into one of the image buffers 78 a, b, c, or d. (*Id.*) Kodak alleges that further processing of the image is performed by the same processor 22 by taking the image data out of the image buffer, performing image compression and finally storing the image data in the memory card 24. (*Id.*)

## PUBLIC VERSION

Kodak alleges that the '107 patent also discloses that data compression and transmission and storage of image data are performed concurrently. Kodak says that lines D, E, and F of the timing diagram in the '107 patent illustrate concurrent processing on a single timeline. (Citing RX-21 at Fig. 2A; Tr. at 467:2-10.) Kodak says line D shows when the images are captured by the image sensor 12; line E shows when the processor moves the image data from the sensor into an image buffer; and line F shows when the processor is performing image compression on one of the captured images. (*Id.*; RX-10C at Q. 319.) Kodak says this diagram shows that when the processor moves the second image from the image sensor into the image buffer (Line E), the first image is compressed (processed) simultaneously (Line F). (*Id.*) Kodak adds that this diagram shows that those processes occur simultaneously with the capture of additional image data (Line D). (Citing RX-21 at Fig. 2A; RX-10C at Q. 319-320; RX-21 at Fig. 2B.) Kodak concludes that the '107 patent therefore discloses “a CPU capable of concurrently processing multiple unprocessed images into processed images” under the parties’ stipulated construction of “concurrently processing.”

Kodak asserts that Dr. Delp admitted that Apple’s arguments to the USPTO in its March 24, 1999 Response supported the allowance of Claim 1. (Citing Tr. at 733:10-735:2) Kodak adds he also admitted that Dr. Stevenson’s application of the phrase “concurrently processing” to the prior art is identical to Apple’s arguments to the USPTO. (*Id.*)

Kodak recites that the fifth element of claim 1 requires “an interface coupled to said memory device whereby an external host computer can access said sets of image data stored in said memory device.” (Citing JX-1.017.) Kodak contends that an interface for a digital camera device was well-known in the art by at least June 20, 1995, the '964 patent’s filing date. (Citing

## PUBLIC VERSION

RX-10C at Q. 342.) Kodak says such well-known interfaces allowed users to extract image data from the digital cameras using, for example, a personal computer. (*Id.*)

Kodak argues that the '107 patent discloses an example of this common interface. Kodak asserts that the '107 patent incorporates U.S. Patent No. 4,772,956 ("the '956 patent") by reference. Kodak alleges that the entire disclosure of the '956 patent is included in the disclosure of the '107 patent. (Citing RX-21 at 6:13-20; RX-24.001; RX-21.009; RDX-2-140; RX-10C at Q. 342; *Ultradent Prods., Inc. v. Life-Like Cosmetics, Inc.*, 127 F.3d 1065, 1068-1069 (Fed. Cir. 1997).) Kodak argues that the '107 patent, through the '956 patent at Figure 1, discloses the well-known idea that a digital camera can include an interface that uses a serial port to connect to an external computer, thereby enabling image data to be acquired by the computer. (Citing RX-10C at Q. 342; RX-24 at Fig. 1; RDX-2-141.)

Kodak recites that the fourth element of claim 1 requires "a power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected." (Citing JX-1; RX-10C at Q. 332.) Kodak argues that the '663 patent discloses the "power management system" of claim 1 under any parties' construction. (Citing RX-10C at Q. 334-335; RDX-2-137.)

Kodak says the '663 patent discloses the fourth element under Kodak's construction because it teaches providing a backup power supply to volatile memory containing image data. Kodak says specifically, it discloses a backup battery (or backup power supply), and further discloses comparing the determined voltage of a power source battery to a predetermined level. Kodak concludes that the '663 patent also discloses that if the power supply to the memory is terminated, a switch is changed so that power will be supplied to the memory by the backup battery. (Citing RX-22 at 3:26-29, 4:37-45, 6:21-28; RX-10C at Q. 335-336; RDX-2-137-139.)

## PUBLIC VERSION

Kodak contends that the location of the memory within the system is not critical to the analysis of the '663 patent. (Citing RX-10C at Q. 336.) Kodak says the '663 patent discloses applying backup power to any volatile memory in the event of a power failure, regardless of whether it is removable volatile memory or internal volatile memory. (*Id.*) Kodak argues that one of ordinary skill in the art would understand that the disclosure applies to internal volatile memory and not just removable volatile memory. (*Id.*)

Kodak says that Apple's construction requires a power management system "that communicates with the power supply and prevents the irreversible loss of sets of image data stored in the memory device in the event of a power failure." (Citing RX-10C at Q. 338; JX-11.006.) Kodak asserts that the '663 patent teaches the use of a backup battery that communicates with the main power supply by monitoring whether a power failure has occurred and provides power from the backup battery in the event of a power failure. (Citing RX-22 at 3:26-29, 4:37-45, 6:21-28; RX-10C at Q. 338.) Kodak says this prevents the loss of image data in the event of a power failure. (*Id.*)

Kodak says Staff's construction requires the power management system to "manage[] the supply of power and continues the supply of power after a power failure is detected to prevent the irreversible loss of sets of image data stored in the memory device." (Citing RX-10C at Q. 339; JX-11.006.) Kodak asserts that the '663 patent teaches a system that manages the supply of power by monitoring the voltage of the main battery and by switching the power source to the backup battery, thus continuing the supply of power with a backup battery if a power failure is detected in the main power supply. (Citing RX-22 at 3:26-29, 4:37-45, 6:21-28; RX-10C at Q. 339.) Kodak says this prevents the loss of image data in the event of a power failure. (*Id.*)

## PUBLIC VERSION

Kodak asserts that the '107 patent and the '663 patent are both in the field of digital camera devices. (Citing RX-21.001; RX-22.001; RX-10C at Q. 301, 307, 337.) Kodak argues that one of ordinary skill in the art of digital camera devices would have looked to art in the same field when designing a digital camera device. (Citing RX-10C at Q. 337.) Kodak says the combination of the '107 patent and the '663 patent involves the use or variation of prior art elements according to their established functions to yield predictable results. (*Id.*) Kodak concludes, therefore, one of ordinary skill in the art would have been motivated to combine the '107 patent and the '663 patent to, for example, prevent the loss of image data in the volatile memory of the '107 patent with the power management features of the '663 patent. (Citing RX-22 at 3:26-29; RX-10C at Q. 335.s)

In its reply brief, Kodak says Apple's primary challenge to Kodak's invalidity position is that the cited prior art "**sequentially** processes image data from unprocessed to processed, and therefore, cannot disclose the **concurrent** processing limitation of claim 1 of the '964 Patent." (Citing CIB at 71) (Emphasis in original). Kodak reasons that Apple believes that the claims of the '964 patent require concurrent image processing (*e.g.*, compression), not just concurrent processing. Kodak says Apple is wrong in view of the plain language of the claims, the stipulated construction, and the prosecution history of the '964 patent.

Kodak alleges that Kodak and Apple do not dispute the teachings of the '107 patent. Kodak says for example, Apple admits that the '107 patent discloses concurrent processing. (Citing CIB at 74.) Kodak says analyzing Fig. 2A of the '107 patent, Apple correctly concludes that "the '107 patent discloses that an image can be captured while another image is being processed (or that an image can be stored in a buffer while another image is being processed) . . ." (Citing CIB at 74.) Kodak says on this point, it and Apple agree.

## PUBLIC VERSION

Kodak says that Apple contends that two different images in the '107 patent cannot be compressed at the same time, a point Kodak says it has never disputed. (Citing CIB at 71-75.) Kodak says where it and Apple disagree is that Apple believes that concurrent processing in the '964 patent can only be satisfied by the prior art teaching concurrent image processing. Kodak says nothing in the agreed construction, patent claim language, or prosecution history limits the claims to concurrent image processing.

Kodak says that Apple asserts that applying the concept of backing up volatile memory with a backup battery (from the '663 patent) to the internal volatile memory of the '107 patent would not result in the claimed "power management system." (Citing CIB at 76.) Kodak says Apple asserts that the claimed power management system, "presumably under Kodak's construction," must protect image data stored on "internal RAM." (Citing CIB at 76.) Kodak asserts that under its construction, which is a "system that includes a backup power supply to apply power to volatile memory which contains the sets of image data," the memory to which the backup power supply applies power need not be "internal" volatile memory.

Regarding motivation to combine the references, Kodak argues that a strong motivation exists to combine references to incorporate the well known and desirable features of one reference into another where the references are in the same field and the combination would not require any special adaptations to accomplish the desired and expected result. (Citing *Translogic Corp. v. Tele Engr., Inc.*, 1997 WL 727527 at \*7 (Fed. Cir. Nov. 19, 1997).) Kodak reiterates that all of the references on which Kodak relies are within the field of digital cameras. Kodak's combination of references with the '107 patent is unquestionably the predictable incorporation of desirable features known in the art (such as applying backup power to volatile memory and using an interface to enable an external host computer to access data on the digital camera). (*Id.*)

## PUBLIC VERSION

Kodak adds that claim 5 of the '964 patent is a method claim whose steps correspond with the elements claimed in claim 1. (Citing JX-1 at 17-18; RX-10C at Q. 372; CX-473C at Q. 136.) Kodak alleges that the prior art combinations discussed above also disclose the steps of the method of claim 5 for the same reasons. (Citing RX-10C at Q. 372.)

Kodak asserts that claim 8 of the '964 patent is rendered obvious by a combination of the '107 patent and the '663 patent.

Kodak recites that claim 8 depends from claim 5 and includes the additional limitation of "wherein said CPU can instruct said memory manager to allocate said storage locations." (Citing JX-1.018; RX-10C at Q. 375.) Kodak reiterates that digital processor 22 (*i.e.*, the CPU) instructs the memory manager in the '107 patent to allocate storage locations in the memory device. (Citing RX-21 at 7:66-8:3; RX-10C at Q. 376-378.) Kodak concludes that the '107 patent discloses the additional limitation of claim 8, and the prior art combinations discussed above in RIB Sections III.D.1-2, 4 disclose the underlying steps of claim 5.

**Apple's Position:** Apple argues that Kodak has not met its burden of showing that one of ordinary skill in the art would have been motivated to combine these references. Apple also contends that the combination of the '107 patent and the '663 patent fails to disclose: (1) a capability of concurrently processing multiple unprocessed images into processed images (claims 1 and 5); (2) an interface coupled to the memory device whereby an external host computer can access sets of image data (claims 1 and 5); and (3) the claimed power management system (claims 1 and 5).

Apple alleges that the evidence establishes that the '107 patent sequentially processes image data from unprocessed to processed, and therefore, cannot disclose the concurrent



## PUBLIC VERSION

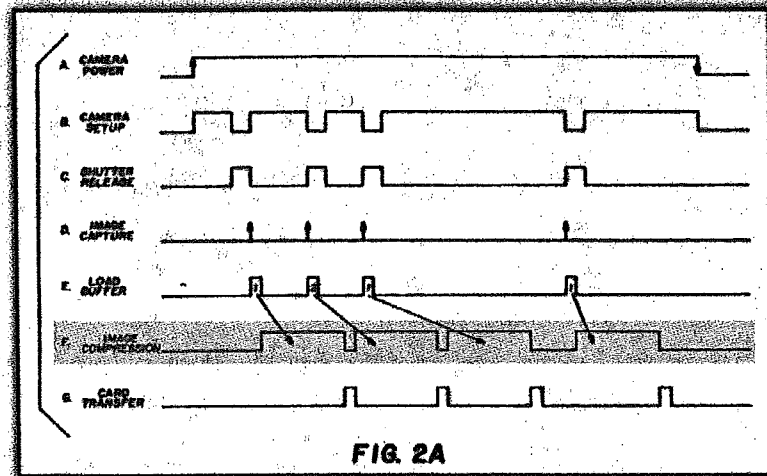
processing limitation of claim 1 of the '964 patent.<sup>11</sup> Apple asserts that the parties agreed construction of "concurrently processing" is "simultaneously processing, which includes interleaving the execution steps of two or more processes." Apple says that applying this construction to the claim language, means that the claim requires simultaneously processing (which includes interleaving) multiple unprocessed images into processed images. (Citing CX-473 at Q. 106.) Apple uses a demonstrative (CDX-5.29) to illustrate variations on how the processing of multiple images can be sequenced. (Citing CX-473 at Q. 107.) Apple says the first example is called "Sequential," and clearly falls outside the scope of the claim, because the images are processed one after another. (*Id.*) Apple continues that the other two examples, called "Concurrent (interleaved)" and "Concurrent (simultaneous)," are within the scope of the claim because multiple images are being processed at the same time or the execution of multiple images is interleaved. (*Id.*)

Apple states that the '107 patent is the only prior art reference that Kodak has argued discloses the "concurrent processing" claim limitation; but it clearly discloses sequential processing of images. (Citing CX-473 at Q. 108-109.) Apple asserts that the '107 patent includes a timing diagram (Figure 2A, reproduced below) that illustrates the processing of images from unprocessed to processed. (Citing CX-473 at Q. 109; RX-21 at Fig. 2A.) Apple says in the diagram, the sequence of processing of images from unprocessed to processed is specifically illustrated in the row called "Image Compression." (*Id.*) Apple alleges that Kodak's expert, Dr. Stevenson, agreed that the step of image compression, which is the only place in the digital camera disclosed by the '107 patent where images are processed from unprocessed to processed, occurs sequentially, not concurrently. (Citing Tr. at 469:18-470:17.)

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<sup>11</sup> Apple avers that Kodak has conceded that the '663 patent does not disclose concurrent processing. (Citing Tr. at 477:20-23.)

PUBLIC VERSION



'107 Patent, Fig. 2A (RX-21)

Apple says that the remaining rows in FIG. 2A, “Camera Power,” “Camera Setup,” “Shutter Release,” “Image Capture,” “Load Buffer,” and “Card Transfer,” illustrate the timing of steps that do not process image data. (Citing CX-473 at Q. 111-112.)

Apple argues that the specification of the '964 patent clearly describes the steps of “capture” and “storing” as distinct from “processing”:

“The multithreading environment may thus permit a digital camera to more efficiently *process*, compress and *store* by performing these functions in the background, when the built-in computer is not busy with more important tasks such as *capturing* additional sets of image data”

(Citing JX-1 at 1:46-51) (Emphasis added by Apple). Apple avers that Kodak’s expert, Dr.

Stevenson, confirmed that loading an image into a buffer is not an image processing step.

(Citing Tr. at 467:11-468:12.) Apple concludes that the fact that the '107 patent discloses that an

image can be captured while another image is being processed (or that an image can be stored in

a buffer while another image is being processed) does not disclose the claim limitation

“concurrently processing multiple unprocessed images into processed images.”

Apple argues that Kodak’s reliance on the '964 file history to support its argument that the '107 patent discloses concurrent processing is misplaced because the remarks in the file

## PUBLIC VERSION

history do not define the relevant claim language. Apple asserts that the first remark has no bearing whatsoever on the meaning of the “concurrently processing multiple unprocessed images into processed images” limitation, because at the time the remark was made the claim language was “concurrently running multiple software routines.” (Citing JX-4.414, 418-419.) Apple says that Kodak’s expert agreed that the earlier claim language (“running multiple software routines”) is broader than the final claim language (“processing multiple unprocessed images into processed images”). (Citing Tr. at 473:14-474:16.) Apple concludes that a definition of the earlier broad claim language is not applicable to the narrower amended claim language. Apple asserts that the second remark, while occurring after the claim was amended, does not define “concurrently processing multiple unprocessed images into processed images.” (Citing JX-4.457; CX-473 at Q. 116.) Apple says the remark generally refers to “concurrently processing multiple images” whereas the claim language specifically requires concurrency during the act of going from unprocessed image to processed image. (*Id.*)

Apple contends that Kodak concedes that the ‘107 and ‘663 patents do not disclose the claimed “interface.” (Citing Tr. at 474:22-475:4, 477:11-19, 478:10-12.) Apple says that Kodak relies on a third patent, U.S. 4,772,956 (“the ‘956 patent”), as disclosing this limitation. (Citing Tr. at 477:11-19; CX-473 at Q. 117-120.) Apple says that Kodak contends that the ‘107 patent incorporates the ‘956 patent by reference, and therefore, all of the teachings of the ‘956 patent are considered to be a part of the ‘107 patent. Apple argues that Kodak is wrong as a matter of law.

Apple concedes that the ‘107 patent does incorporate the ‘956 patent by reference; but Apple avers that the ‘956 patent is incorporated solely for its disclosure of cosine transform coefficients, which relates to image compression. (Citing RX-21 at 6:3-27; Tr. at 475:11-476:12;

## PUBLIC VERSION

CX-473 at Q. 119-120.) Apple contends that, because the incorporation by reference in the '107 patent has nothing whatsoever to do with an external interface, Kodak's reliance on the '956 patent is improper. (Citing *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000); *Zenon Envtl., Inc. v. United States Filter Corp.*, 506 F.3d 1370, 1379 (Fed. Cir. 2007).)

Apple states that Kodak concedes the '107 patent does not disclose a power management system, and instead argues that the '663 patent when combined with the '107 patent discloses this limitation. (Citing Tr. at 476:23-477:1.) Apple contends that Kodak's argument is both incorrect and a rehash of an argument that was considered during prosecution of the '964 patent.

Apple alleges that the '663 patent discloses a backup battery on a memory card. (Citing CX-473 at Q. 123; RX-22 at 1:19-26, 3:26-29.) Apple says that the '107 patent discloses a digital camera with both a memory card and an internal RAM. (Citing CX-473 at Q. 123; RX-21 at 3:60-62, 4:14-22.) Apple argues that, if a person of ordinary skill in the art were to combine the '107 patent and the '663 patent, the result would be a backup battery on the memory card in the '107 patent. (Citing CX-473 at Q. 125.) Apple argues that such a combination would do nothing to protect image data in the internal RAM, which is required by the claimed power management system. (*Id.*) Apple adds that it would not have been obvious to a person of ordinary skill in the art to place a backup battery on the internal RAM in the '107 patent. (Citing Tr. at 747:21-749:12.)

Apple asserts that Kodak's argument is also an argument that was considered during prosecution of the '964 patent. (Citing CX-473 at Q. 126-132.) Apple says that during prosecution, the claims were rejected in view of U.S. 5,631,701 ("Miyake") in combination with U.S. 5,262,868 ("Kaneko"). Apple says that similar to the '107 patent, Miyake discloses a

## PUBLIC VERSION

digital camera with both an internal memory and a memory card. (Citing CX-473 at Q. 126; JX-92 at Fig. 1.) Apple states that, similar to the '663 patent, Kaneko discloses a memory card with a backup battery. (Citing CX-473 at Q. 126; JX-85 at Fig. 1.) Apple concludes, therefore, the same combination Kodak relies on to disclose the power management limitation of the '964 patent was considered during prosecution.

In its reply brief, Apple says there is no dispute that the '964 claims require "concurrently processing multiple unprocessed images into processed images." Apple argues that Kodak disregards this claim language and argues that the claimed "concurrent processing" is not limited to processing of images. (Citing RIB at 57.) Apple says that Kodak's argument attempts to change the claim language from "concurrently processing multiple unprocessed images into processed images" to "concurrently capturing, processing, and storing images." Apple concludes there is no support for this novel position, citing *DSW, Inc.*, 537 F.3d at 1347.

Apple says that in its opening brief, Apple cited Federal Circuit case law proving that Kodak's reliance on the '956 patent is incorrect as a matter of law because the incorporation by reference in the '107 patent is directed towards functionality that has nothing whatsoever to do with an external interface. Apple states that Kodak did not address the cited cases, and instead cited to *Ultradent Prods., Inc. v. Life-Like Cosmetics, Inc.*, 127 F.3d 1065, 1068-69 (Fed. Cir. 1997). Apple argues that the *Ultradent* case cited by Kodak is not on point because it merely states that incorporation by reference is permitted, but does not address the requirements for incorporating material by reference. Apple contends that the cases cited by Apple, which were decided after the *Ultradent* case, do address this particular issue.

Apple elaborates on its reference to *Zenon Envtl., Ltd.*, 506 F.3d at 1379. Apple says its facts are directly on point. Apple contends that in that case, the issue was whether the primary

## PUBLIC VERSION

reference incorporated by reference the “gas distribution system” disclosed in another patent. *Id.* The Federal Circuit held that the gas distribution system was *not* incorporated by reference because the plain language of the incorporation by reference “pertain[ed] to the details relating to the construction and deployment of a vertical skein” and “the gas distribution system disclosed in the [other patent] is not a detail that relates to the construction and deployment of a vertical skein.” *Id.* at 1379-1380.

Apple says in the present case, the plain language of the incorporation by reference in the ‘107 patent pertains to “cosine transform coefficients”:

The *cosine transform coefficients* are then rearranged in serial order by a block-to-serial conversion step (block 34) described and illustrated in U.S. Pat. No. 4,772,956, “Dual Block Still Video Compressor Processor,” issued Sept. 20, 1988 to Roche et al., and which is assigned to the assignee of the present invention and incorporated by reference into the present patent application.

(Citing RX-21 at 6:13-20) (Emphasis added by Apple). Apple argues that because “cosine transform coefficients” have nothing to do with an interface coupled to a memory device, it is incorrect as a matter of law for Kodak to argue that the disclosure of an interface in the ‘956 patent is incorporated into the ‘107 patent. (Citing CX-473 at Q. 119-120.)

**Staff’s Position:** Staff contends that claims 1, 5 and 8 of the ‘964 patent all require “a CPU capable of concurrently processing multiple unprocessed images into processed images” and “a power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected.” Staff believes that the evidence does not show that the ‘107 patent discloses either of these limitations.

Staff avers that the parties have agreed that “concurrently processing” means “simultaneously processing, which includes interleaving the execution steps of two or more processes.” (Citing JX-11 at 5.) Staff contends that the evidence shows that in the invention of

## PUBLIC VERSION

the '107 patent, the processor moves images from the image sensor to the image buffer, at the same time image compression is being performed on other images. (Citing RX-21 at Fig. 2A; RX-10C at Q. 318-319.) Staff says that while compression is properly considered processing, the evidence does not show that moving images from the image sensor to the buffer constitutes processing, and Staff reasons the only form of image processing that is disclosed in the '107 patent is compression. (Citing CX-473C at Q. 109.) Staff concludes that Kodak has not shown that the '107 patent discloses this limitation of claims 1, 5 and 8 of the '964 patent.

Staff says that the '107 patent discloses the use of a removable memory card, such as a Mitsubishi Corp. SRAM. (Citing RX-21 at 4:19-24.) Staff asserts that the evidence shows that an SRAM (static random access memory) card includes a battery to protect the data stored in the volatile SRAM memory while the card is not inserted into a camera. Staff says Kodak contends that this battery in the SRAM card meets this limitation because, if the camera battery fails, the SRAM card battery will still act to protect the image data on the SRAM card. (Citing RIB at 175.) However, Staff's construction of this element requires "a system that manages the supply of power and continues the supply of power after a power failure is detected to prevent the irreversible loss of sets of image data stored in the memory device." Staff argues that Kodak does not allege, and did not provide evidence demonstrating, that the battery in the SRAM card manages the supply of power in any way.

Staff says that Kodak states that the '663 patent discloses "the second and fourth elements of claim 1." (Citing RIB at 178; RX-10C at Q. 327, 335.) Staff notes that these are the "memory device" and "power management system" limitations. Staff reasons, therefore, Kodak appears to concede that the '663 patent does not disclose the "CPU capable of concurrently processing" element that was also missing from the '107 patent.

## PUBLIC VERSION

**Discussion and Conclusion:** Based on the evidence in the record, I find that Kodak has failed to offer clear and convincing evidence that the combination of the '107 patent and the '663 patent renders obvious any of the asserted claims of the '964 patent.

First, I find that Kodak has shown by clear and convincing evidence that a PHOSITA would be motivated to combine the '107 reference with the '663 reference in attempting to solve the problems addressed in the '964 patent. (RX-10C, Qs. 295, 337) Both prior art references treat problems in the digital camera field. The '107 patent solves problems in digital processing of images, including compression, and storage of the processed images in a removable static random access memory card, all of which are quite similar to the problems addressed in the '964 patent. (RX-10C, Qs. 301-302; RX-21 at Abstract.) The '663 patent focuses on protecting the data stored on a memory card, using a backup battery to provide power when the main battery voltage is low, and provides for means of notifying the operator of low voltages in the backup battery. (RX-10C, Qs. 307, 308; RX-22 at Abstract) This is directly relevant to the issues treated in the '964 patent.

Treating the substance of the combined patents, I note that Kodak's expert, Dr. Stevenson admitted that the '663 patent does not disclose a capability of concurrently processing multiple unprocessed images into processed images, as required by asserted claims 1 and 5. (Tr. at 477:20-23.) Kodak attempts, unsuccessfully, to demonstrate that the '107 patent discloses this limitation when it "discloses a digital camera that captures multiple images and simultaneously processes them for storage in a memory card."

The portion of the '107 patent upon which Kodak relies reads,

Once a certain number of digital image signals have been accumulated in the image buffer 18, the stored signals are applied to a digital signal processor 22, which controls the throughput processing rate for the compression and recording section 4 of the camera. The processor 22 applies a compression algorithm to the



PUBLIC VERSION

digital image signals, and sends the compressed signals to a removable memory card 24 via a connector 26.

(RX-21 at 4:14-22.)

In discussing the foregoing language, Kodak's expert, Dr. Stevenson testified that the "simultaneous processing" is demonstrated by lines D, E and F of Figure 2A of RX-21. Dr. Stevenson said that two steps of processing were performed by the processor when it "takes the unprocessed image from the image processor" concurrently with performing the step of "further processing to perform image compression." (RX-10C at Q. 318-320.) This is consistent with Kodak's argument that the processes that are concurrently performed are not limited to image processing steps. (Tr. at 465:14-467:15, 469:18-470:17.)

Kodak quotes Apple's March 24, 1999 response to amend the first element of claim 1 to read as it ultimately issued in the '964 patent:

1. *(Three Times Amended)* A digital camera device comprising:  
a CPU capable of concurrently [running] processing multiple [software routines]  
unprocessed images into processed images;

The quoted language illustrates the difference between the two sides in this dispute. Kodak focuses on the original language, which spoke of "capable of concurrently running multiple software routines." Apple urges that the changed language teaches the actual limitation "capable of concurrently processing multiple unprocessed images into processed images." (See JX-4.452.)

Claims 1 and 5 both contain the limitation "a CPU capable of concurrently processing multiple unprocessed images into processed images." (JX-1 at 8:36-37, 9:6-7.)<sup>12</sup> It is crystal

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<sup>12</sup> Claim 5 is a method claim that teaches "using a CPU to concurrently process..." Nevertheless, the substance of the limitation in claim 5 is identical to that of claim 1.

## PUBLIC VERSION

clear that the limitation contemplates action taken upon the image to change it from “unprocessed” to “processed” (e.g. compression of the data). Mere movement of the data from the load buffer to a removable memory card does not perform a process on the image data that achieves the required change. There is no mention in the claim of action by the digital camera to capture additional image data.

Kodak invites attention to the applicant’s comment that refers to processing images “simultaneously with the capture of additional image data.” While this argument may well have been made by the applicant and may occur in the subject digital image camera device, it does not address the limitation in claims 1 and 5 which focuses on the specific of a “CPU capable of concurrently processing multiple unprocessed images into processed images.” The claims make no reference to a CPU’s performance “simultaneously” with action by the image capture function of the digital camera device. (JX-4.457.) The arguments made by the applicant in response to office actions in this case do not change or detract from the language of the claims as they finally appear in the ‘107 patent.

I find that Kodak has failed to meet its burden to demonstrate by clear and convincing evidence that the ‘107 patent, in combination with the ‘663 patent, discloses the “concurrent processing” limitation in the first element of claims 1 and 5 of the ‘964 patent. Therefore, asserted claims 1 and 5 are not rendered invalid as obvious by the combination of the ‘107 patent and the ‘663 patent. *Hearing Components, Inc. v. Shure Inc.*, 600 F.3d 1357, 1373-1374 (Fed. Cir. 2010); *Velandar v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003).

Next, the fifth element of asserted claim 1 requires “an interface coupled to said memory device whereby an external host computer can access said sets of image data stored in said memory device,” and the sixth element of claim 5, teaches “communicating with said memory

PUBLIC VERSION

device via an interface whereby an external host computer can access said sets of image data.”  
(JX-1 at 8:51-53, 9:20-22.)

Kodak makes no argument that either the ‘107 patent or the ‘663 patent reveal this limitation. Kodak relies, instead, on the 956 patent, which it argues was incorporated by reference into the ‘107 patent. Kodak’s argument is based on *Ultradent*, which restates the general rule that the rules of practice permit incorporation of prior art by reference.

Apple is correct when it argues that Kodak’s reliance on *Ultradent* is misplaced. In *Ultradent*, the court clearly stated that the entire prior art patent was incorporated into the patent in suit and applied the general rule allowing incorporation of prior art by reference. 127 F.3d at 1069. More to the point in the case at bar are *Advanced Display Systems, Inc., v. Kent State University*, 212 F.3d 1272 (Fed. Cir., 2000); *In re Saunders*, 444 F.2d 599 (C.C.P.A. 1971); and *Zenon Environmental, Inc., v. United States Filter Corporation*, 506 F.3d 1370 (Fed. Cir. 2007).

In *Advanced Display Systems*, the Court outlined the law related to incorporation by reference, and said, *inter alia*, that a rejection for anticipation is appropriate only if one reference “expressly incorporates a particular part” of another reference. 212 F.3d at 1282. The Court cited *Saunders*, in which the it was said:

To incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents.”

The first issue, therefore, is what was specifically identified and incorporated by reference in the ‘107 patent. The court in *Zenon* considered the scope of incorporation by reference in a patent that said,

The vertical skein is not the subject matter of this invention and any prior art vertical skein may be used. Further details relating to the construction and deployment of a most preferred skein are found in the parent U.S. Pat. No.

PUBLIC VERSION

5,639,373, and in Ser. No. 08/690,045, the relevant disclosures of each of which are included by reference thereto as if fully set forth herein.

506 F.3d at 1379.

The Federal Circuit panel disagreed with the trial court's finding that the foregoing language incorporated by reference the entire disclosures of the referenced patents. The court stated:

The plain language expressly limits the incorporation to only relevant disclosures of the patents, indicating that the disclosures are not being incorporated in their entirety. Moreover, the plain language indicates that the subject matter that is being incorporated by reference pertains to the details relating to the construction and deployment of a vertical skein. Thus, we must look, as one reasonably skilled in the art would, to the grandparent patents to determine what the patentees meant by details relating to the construction and deployment of a vertical skein.

*Id.*

In *Saunders*, the court reviewed a patent denial issued by the Patent Office Board of Appeals, based upon the theories of anticipation and obviousness. The subject matter of the patent was a family of methods for preparing cellular polyurethane foam by what the court characterized as a "one shot" technique. *Saunders*, 444 F.2d at 600. In connection with the anticipation issue, the court examined incorporating language that said,

The above-described siloxane-oxyalkylene block copolymers can be prepared in accordance with the procedures described and claimed in the copending application of D. L. Bailey and F. M. O'Conner, Serial No. 417,935, filed December 14, 1953.

*Id.* at 603.

The court found that the incorporation by reference was limited to the specific method of making surfactants of this general type in which the oxyalkylene chains were composed entirely of one type of oxyalkylene, and would not expressly indicate that other compounds which the Bailey reference also taught how to make could also be employed as surfactants in the

PUBLIC VERSION

applicant's process. *Id.*

Applying the foregoing principles to the case at bar, I find that the incorporation by reference of the '956 patent into the '107 patent is limited to a specifically identified portion of the '956 patent, which does not include reference to the required interface with an external host computer.

The relevant paragraph of the '107 patent states:

The digital signal processor 22 compresses each still video image stored in the image buffer 18 according to a known image compression algorithm shown in FIG. 1B. The compression algorithm begins with a discrete cosine transformation (block 33) of each successive block of the image data to generate a corresponding block of cosine transformation coefficients. It is well-known that compression techniques are greatly enhanced when applied to image data which has been previously transformed in accordance with a discrete cosine transform algorithm. ***The cosine transform coefficients are then rearranged in serial order by a block-to-serial conversion step (block 34) described and illustrated in U.S. Pat. No. 4,772,956, "Dual Block Still Video Comander Processor," issued Sept. 20, 1988 to Roche et al., and which is assigned to the assignee of the present invention and incorporated by reference into the present patent application.*** The block-to-serial conversion step consists of arranging the discrete cosine transform coefficients in order of increasing spatial frequency, which corresponds to a zig-zag pattern illustrated in the Roche et al patent. The resulting serial string of transform coefficients is then subjected to thresholding, normalization, and quantization (block 36) and minimum redundancy encoding (block 38).

(RX-21 at 6:13-20) (emphasis added). Taken in context, the incorporating language of the '107 patent is embedded in a paragraph that details a compression algorithm. One sentence of the paragraph incorporates by reference a specific "block-to-serial conversion step described and illustrated in U.S. Pat. No. 4,772,956." The '107 patent then emphasizes the language of that portion of the '956 patent that is being incorporated, and clearly separates other steps from the one incorporated by reference.

## PUBLIC VERSION

In the '956 patent, the incorporated "block-to-serial conversion step" reference is found in two paragraphs of the description of preferred embodiment<sup>13</sup> that disclose:

The compression algorithm of FIG. 2 begins with the discrete cosine transforming of each successive block of the video data to generate a corresponding block of cosine transform coefficients. *The cosine transform coefficients are then rearranged in serial order by a block-to-serial conversion step best illustrated in FIG. 3. The block-to-serial conversion step consists of arranging the discrete transform coefficients in order of increasing spatial frequency, which corresponds to the zig-zag pattern of FIG. 3.* The resulting serial string of transform coefficients is then subject to thresholding, normalization, quantization and minimum redundancy encoding (describe previously on page 1 hereof).

(RX-24 at 4:32-45) (Emphasis added); and

The compression algorithm is applied to a block consisting of 16 columns and 16 rows of 8-bit video data bytes, each having a range of 0-255. Referring to FIG. 2, this block is transformed into a corresponding array of discrete cosine transform coefficients, comprising 16 rows and 16 columns of such coefficients. Each of the coefficients comprises a 16 bit word having nine integer bits and seven fractional bits, having a range of -256 to +255.

*The block-to-serial conversion step of FIG. 2 consists of fetching each of the 16-bit transform coefficients from the dual port memory 22 in the order corresponding to the zig-zag pattern of FIG. 3, beginning with the lowest order coefficient and ending with the highest order coefficient.*

(RX-24 at 8:56-9-2) (Emphasis added).

Figure 3, of the '956 patent, shown below, is a block diagram illustrating the block-to-serial data conversion performed in the algorithm of FIG. 2:<sup>14</sup>

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<sup>13</sup> Claims 4, 9 and 15 of the '956 patent each contain a separate element that teaches "means for rearranging data" of blocks of transform coefficients into serial order.

<sup>14</sup> Figure 2 of the '956 patent does not provide any details of the "block-to-serial conversion" step. It merely lists it as one step in its algorithm.

PUBLIC VERSION

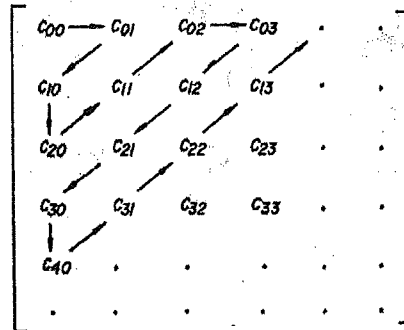


FIG. 3

I find that the '107 patent's incorporation by reference of a portion of the '956 patent is limited to a "block-to-serial conversion" step specifically listed in the incorporating language. Nowhere in the incorporated portion of the '956 patent is there reference to "an interface coupled to said memory device whereby an external host computer can access said sets of image data stored in said memory device."

Based upon the foregoing, I find that Kodak has failed to meet its burden to demonstrate by clear and convincing evidence that the '107 patent, in combination with the '663 patent, discloses the interface limitation of the fifth element of claim 1 and the sixth element of claim 5 of the '964 patent. Therefore, asserted claims 1 and 5 are not rendered invalid as obvious by the combination of the '107 patent and the '663 patent. *Hearing Components, Inc. v. Shure Inc.*, 600 F.3d 1357, 1373-1374 (Fed. Cir. 2010); *Velandar v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003).

Finally, the fourth element of asserted claim 1 and the fourth and fifth elements of asserted claim 5 teach a power management system that (a) monitors a power supply and detects a power failure, and (b) protects sets of image data from a power failure. The term "power management system" has been construed herein as "a system that monitors the supply of power and continues the supply of power after a power failure is detected, thereby preventing

PUBLIC VERSION

irreversible loss of sets of image data stored in the memory device.”

Dr. Stevenson testified that the ‘663 patent teaches the use of a backup battery which communicates with the main power supply by monitoring whether a power failure has occurred and to provide power from the backup battery in the event of a power failure. (RX-10C at Q. 338, 339.) He testified that the ‘663 patent teaches providing a backup power supply to volatile memory containing image data. Dr. Stevenson said that this teaching can be applied to any volatile memory regardless of the location. He opined that one of skill in the art would understand that this is applicable to internal volatile memory, not just removable volatile memory. (RX-10C at Q. 335-336.)

The testimony of Apple’s expert on this issue, Dr. Delp, is less credible. He said that if a PHOSITA were to combine Figure 1A of the ‘107 patent with Figure 1 of the ‘663 patent, the result would be a backup battery being placed on the memory card. Using a diagram contained on CDX-5.35, Dr. Delp indicated that the card memory, to which reference is made in both the ‘107 and ‘663 patents, is shown in red; but the internal memory of the ‘107 patent is shown in blue. He then opines that a PHOSITA would only be moved to insert the ‘663 card into the place designated for the memory card in Figure 1A of the ‘107 patent. (CX-473 at Q. 125.) Dr. Delp held fast to his opinion despite close cross-examination highlighting various relevant passages of the ‘663 patent. (Tr. at 746:2-749:12.)

The ‘663 patent actually discloses a system within the memory card that includes a power controller that controls power supply to the memory to protect image data. The detailed description of the preferred embodiments describes,

The voltage applied at the power terminal Vcc is applied to the power controller 8 through the second terminal S2. Upon detection of the voltage applied at the second terminal S2, a power voltage detector 15 switches over a switch 16 to a position shown by a solid line. Then the memory 10 is supplied with the voltage



## PUBLIC VERSION

from the external device. So long as no voltage is applied at the second terminal S2, the switch 16 is changed over to another position shown by a dotted line, so that the memory 10 is supplied by the backup battery 12 connected to the fifth terminal S5. It is to be noted that the third terminal S3 is also connected to the negative pole of the backup battery 12.

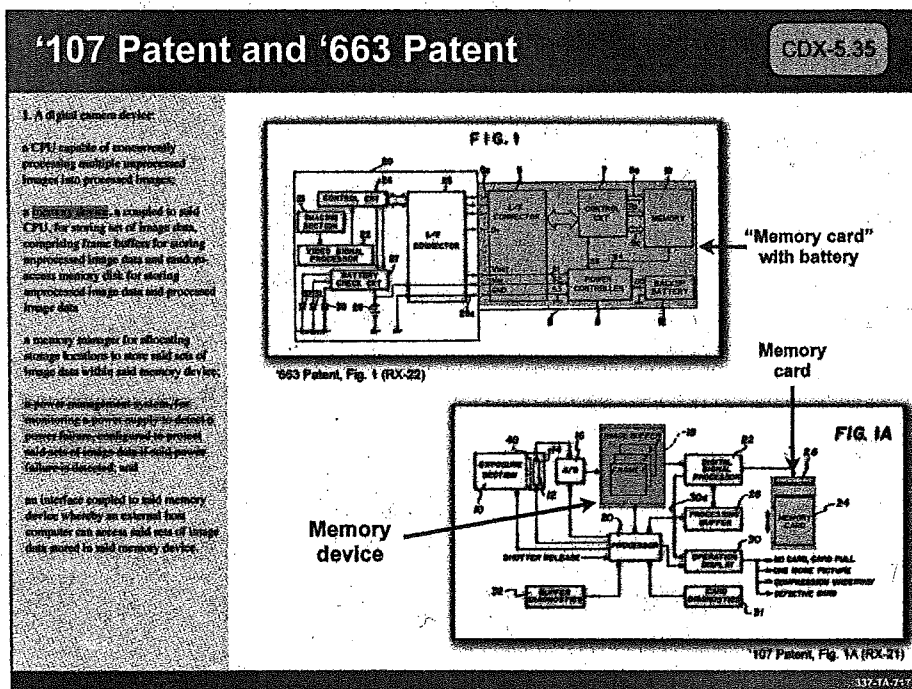
(RX-22 at 3:26-29, 3:35-49.) This clearly discloses a system in which power supply is monitored and managed so that a failure or lack of power from a main battery is managed by switching to a backup battery to protect the image data on the memory card.<sup>15</sup> The foregoing description in the '663 patent is remarkably similar to the power management system described in unasserted claim 4 of the '964 patent. (JX-1 at 8:61-9:3.)

CDX-5.35 displays the following chart comparing Figure 1A of the '107 patent with Figure 1 of the '663 patent:

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<sup>15</sup> Similar language is found at RX-22, 4:37-59 and 6:21-28. The latter reference discloses a similar process applied by the power controller based upon removal of the memory card from an electronic still camera.

PUBLIC VERSION



Turning to the issue of what a PHOSITA would discern from the foregoing similarities, it is clear to me that Dr. Delp's demonstrative exhibit comparing Figure 1A of the '107 patent to Figure 1 of the '663 patent serves to support Kodak's position. When considering whether or not prior art would lead a PHOSITA to combine references to arrive at a predictable result, one need not "seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418. One can assume that the PHOSITA is a person of ordinary creativity, not an automaton. *Id.* at 421.

In this case, it would not take a herculean effort for the PHOSITA to apply the teachings shown in CDX-5.35 to the problem of protecting volatile memory internal to the CPU and to arrive at the solution of the '964 patent. I conclude that it would be a relatively simple matter for a PHOSITA viewing the two figures side by side to combine the structure of the "memory card

## PUBLIC VERSION

with battery” in Figure 1 of the ‘663 patent with the “memory device,” shown in blue, in Figure 1A of the ‘107 patent to arrive at the power management system solution found in asserted claims 1 and 5 of the ‘964 patent. The testimony of Kodak’s expert, Dr. Stevenson, coupled with CDX-5.35 clearly supports this finding. (See RX-10C at Q. 335, 336, 338, 339.)

Apple asserts that Kodak’s argument is also an argument that was considered during prosecution of the ‘964 patent. (Citing CX-473 at Q. 126-132.) Apple says that during prosecution, the claims were rejected in view of Miyake in combination with Kaneko. Apple says that similar to the ‘107 patent, Miyake discloses a digital camera with both an internal memory and a memory card. (*Id.*) Apple states that, similar to the ‘663 patent, Kaneko discloses a memory card with a backup battery. Apple concludes, therefore, the same combination Kodak relies on to disclose the power management limitation of the ‘964 patent was considered during prosecution. (*Id.*)

A review of JX-4, pages 61-64 reveals that the examiner, *inter alia*, said that Kaneko, teaches “a power manager device (30) for sensing the power failure and responsively connecting the memory device to the backup batteries.” (JX-4.063.) The examiner, on that basis, concluded that the combination of Kaneko and Miyake would have rendered it obvious at the time of the invention to substitute the memory of Kaneko for the memory of Miyake and programming the CPU of Miyake in a manner as taught in Kaneko, because Kaneko teaches an advantage of preventing the loss of image data from a power failure and such advantage being desirable to achieve efficient system operation in Miyake. (*Id.*)

A review of Kaneko and Miyake reveals that neither reference discloses a power manager device for sensing the power failure and responsively connecting the memory device to the backup batteries. (JX-85; JX-92.) Kaneko merely discloses a battery in the memory card and an

## PUBLIC VERSION

alarm function warning of low battery. Kaneko does not mention a move from a main battery to a backup battery. There is no switch revealed. Miyake makes not mention of batteries or power control functions. Clearly those references do not render obvious the power management system ultimately adopted in the '964 patent.

Apple's argument is well off the mark. As shown, *supra*, the '107 patent and the '663 patent are markedly different from Kaneko and Miyake. I find that it would be obvious to a PHOSITA to apply the disclosures of the '107 patent combined with the '663 patent to arrive at the solution of a power management system as shown in asserted claims 1 and 5 of the '964 patent.

Notwithstanding the fact that the '107 patent combined with the '663 patent renders the power management system element of asserted claims 1 and 5 obvious, I have found that Kodak has failed to provide clear and convincing evidence that the '107 patent combined with the '663 patent renders obvious: (1) a capability of concurrently processing multiple unprocessed images into processed images (claims 1 and 5); and (2) an interface coupled to the memory device whereby an external host computer can access sets of image data (claims 1 and 5).

Based upon the evidence before me, I find that Kodak has failed to meet its burden to prove by clear and convincing evidence that claims 1 and 5 of the '964 patent are rendered obvious by the '107 patent in combination with the '663 patent.

Regarding claim 8, which depends from claim 5, I note that a patent is presumed to be valid, and each claim of a patent shall be presumed valid even though dependent on an invalid claim. 35 U.S.C. § 282. If I determined claim 5 to be obvious and invalid, I could still find that claim 8 is valid. Since, however, I have found claim 5 to be valid and *not* obvious to a person having ordinary skill in the art, claim 8 is necessarily valid, because it depends from claim 5 and

## PUBLIC VERSION

necessarily contains all of the elements of claim 5. If an independent claim is found not anticipated/not obvious, then the dependent claim is necessarily not anticipated/not obvious by the same reference or combination of references. *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992); *In re Royka*, 490 F.2d 981, 983-985 (C.C.P.A. 1974).

Nevertheless, assuming *arguendo* that claim 5 is found to be invalid as obvious, then I find that the combination of the '107 patent and the '663 patent would disclose the element of claim 8 that teaches "said CPU can instruct said memory manager to allocate said storage locations."

Dr. Stevenson's unchallenged testimony is that the element of claim 8 of the '964 patent is disclosed in the '107 patent at RX-21, 3:60-4:3, and at 6:68-7:7. Dr. Stevenson testified credibly that the foregoing language discloses that the CPU allocates memory space in the image buffer, revealing the element of claim 8. (RX-10C at Q. 376-379.)

Based upon the evidence before me, I find that Kodak has failed to meet its burden to prove by clear and convincing evidence that claim 8 of the '964 patent is rendered obvious by the '107 patent in combination with the '663 patent.

### **2. The '107 Patent In Combination With the '663 Patent & The QuickTake 150**

**Kodak's Position:** Kodak argues that the combination of the '107 patent and the '663 patent discloses all of the elements of claim 1 of the '964 patent. Addressing the issue of an interface for a digital camera device, Kodak says it was well-known in the art including in Apple's own digital camera product – the Apple QuickTake 150. Kodak asserts that the QuickTake 150 was publicly available before June 20, 1995 and qualifies as prior art under 35 U.S.C. § 102 (b). (Citing RX-10C at Q. 349.)

## PUBLIC VERSION

Kodak asserts that the QuickTake 150 included an interface in the form of a serial port that enabled images to be transferred from the camera to the computer. (Citing RX-28; RX-10C at Q. 346-347, 350.) Kodak states that this function is further described in a March, 1995 QuickTake 150 brochure, which explains that for the QuickTake 150 “[t]o load images into your Macintosh, just connect the supplied serial cable into the camera and plug the other end into the printer or modem port on your computer.” (Citing RX-28.001; RX-10C at Q. 348-350.) Kodak concludes that, the ‘107 patent and the ‘663 patent combined with the QuickTake 150 disclose all the elements of claim 1 of the ‘964 Patent under all the parties’ constructions. (Citing RX-10C at Q. 352; RDX-2-145.)

Regarding the motivation to combine the references, Kodak contends that the ‘107 patent, the ‘663 patent, and the QuickTake 150 are all in the field of digital camera devices. (Citing RX-10C at Q. 351.) Kodak argues that one of ordinary skill in the art of digital camera devices would look to art in the same field when designing a digital camera device. (*Id.*) Kodak says the combination of the ‘107 patent, the ‘663 patent, and the QuickTake 150 involves the use or variation of the prior art interface element according to its established digital camera function to yield predictable results. (*Id.*)

**Apple’s Position:** Apple does not dispute that the QuickTake 150 is a digital camera that includes an interface that allows an external computer to access image data, however, Apple argues that Kodak has failed to demonstrate how these three references would have been combined by a person of ordinary skill in the art to render claims 1 and 5 invalid.

Apple contends that the sole reason Kodak argues that a person of ordinary skill would have combined these references is because they all relate to digital cameras. Conceding that fact may be sufficient to show that a person of ordinary skill in the field may have been motivated to

## PUBLIC VERSION

combine these two references, Apple argues that it fails to demonstrate that a person of ordinary skill in the art would be capable of combining these references to achieve a predictable result.

Apple asserts that there are significant differences between the '107 patent and the QuickTake that would make it non-obvious to combine these references to yield a predictable result. (Citing CX-473 at Q. 133.) Apple says, for example, the '107 patent utilizes a removable memory card, whereas the QuickTake utilizes an internal EEPROM memory that is connected to an interface for allowing external host computer access. (*Id.*) Apple asserts that Kodak provides no explanation as to how a person of ordinary skill would have combined these references given their clear differences. (*Id.*)

**Staff's Position:** Staff reiterates that the evidence does not show that the '107 patent discloses the "CPU capable of concurrently processing multiple unprocessed images into processed images" or the "a power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data within said memory device" of the asserted claims.

Staff refers to its discussion of the QuickTake 150 in the context of the '911 patent. Staff says Kodak appears to rely on the QuickTake 150 for disclosure of the "interface coupled to said memory device whereby an external host computer can access said sets of image data" element. (Citing RX-10C at Q. 346; RIB at 183.) Staff avers that the evidence shows that the QuickTake discloses this element. Staff argues that Kodak did not present evidence showing that the QuickTake discloses the "power management system" limitation missing from the '107 patent. For this reason, Staff believes that the evidence does not show that this combination renders the asserted claims obvious.

**Discussion and Conclusion:** Although Kodak reiterates its allegation that the '107

## PUBLIC VERSION

patent in combination with the '663 patent discloses all of the elements of claim 1 of the '964 patent, in Section IV.B.1, *supra*, I have already found that those two references fail to disclose: (1) a capability of concurrently processing multiple unprocessed images into processed images (claims 1 and 5); and (2) an interface coupled to the memory device whereby an external host computer can access sets of image data (claims 1 and 5). I will not repeat my analysis here; but incorporate it by reference.

Kodak now adds to the foregoing combination, the QuickTake 150 digital camera, which it says discloses an interface in the form of a serial port that enables images to be transferred from the camera to a computer. Staff agrees that the evidence shows that the QuickTake discloses this element. Apple does not dispute that the QuickTake 150 is a digital camera that includes an interface that allows an external computer to access image data.

RX-28, which is an Apple publication describing the QuickTake 150, contains numerous references to the ability of the camera to interface with a computer using a serial connection and software. It is clear that the interface is revealed in the QuickTake 150 publication. Therefore, the combination of the '107 patent, the '663 patent and the QuickTake 150 reference render obvious an interface coupled to the memory device whereby an external host computer can access sets of image data as set forth in the 5<sup>th</sup> element of asserted claim 1 and the 6<sup>th</sup> element of asserted claim 5 of the '964 patent.

The issue that is disputed among the parties is whether or not Kodak has demonstrated by clear and convincing evidence that a PHOSITA would have been moved to combine these three references to yield a predictable result and allow the PHOSITA to create the interface contemplated in the '964 patent. First, the QuickTake 150 is in the field of electronic digital cameras, which is the same field shared by the '107 and '663 patents. Second, the QuickTake



**PUBLIC VERSION**

150 addresses an issue of concern in the '964 patent, which is creating a connection between the electronic digital camera and an external host computer. The predictable result of this combination is a cable connection between the electronic digital camera of the '964 patent and an external host computer. Dr. Stevenson testified that at the time of the '964 invention the interface element was well known in the art of digital camera devices. (RX-10C at Q. 348-353.)

Apple's argument is that the '107 patent uses a removable memory card, while the QuickTake 150 has an internal EEPROM memory that is connected to an interface for allowing external host computer access. Apple asserts that Kodak provides no explanation as to how a person of ordinary skill would have combined these references given their clear differences.

I have already found that it would be a relatively simple matter for a PHOSITA viewing the two figures side by side to combine the structure of the "memory card with battery" in Figure 1 of the '663 patent with the "memory device," shown in blue, in Figure 1A of the '107 patent to arrive at the power management system solution found in asserted claims 1 and 5 of the '864 patent. The testimony of Kodak's expert, Dr. Stevenson, coupled with CDX-5.35 clearly supports this finding. (See RX-10C at Q. 335, 336, 338, 339.)

Once a PHOSITA has combined the '107 patent with the '663 patent, it would be a simple matter to add the QuickTake 150 reference to provide an interface between the digital camera memory of the '964 patent and an external computer.

Based upon the foregoing, I find that the combination of the '107 patent, the '663 patent and the QuickTake 150 reference would lead a PHOSITA to arrive at the required interface coupled to the memory device whereby an external host computer can access sets of image data as set forth in the 5<sup>th</sup> element of asserted claim 1 and the 6<sup>th</sup> element of asserted claim 5.

Notwithstanding the foregoing, I have previously found that the '107 patent in

## PUBLIC VERSION

combination with the '663 patent fail to disclose a capability of concurrently processing multiple unprocessed images into processed images, which appears in the 1<sup>st</sup> element of asserted claims 1 and 5. Based upon the evidence before me, I find that Kodak has failed to meet its burden to prove by clear and convincing evidence that claims 1 and 5 of the '964 patent are rendered obvious by the combination of the '107 patent, the '663 patent and the QuickTake 150 reference.

### **3. The '107 Patent In Combination With the '663 Patent, The QuickTake 150, & The '845 Patent**

**Kodak's Position:** Kodak recites that claim 3 includes the elements of claim 1, with the further limitation "wherein said memory device uses a standardized file system for storing said sets of image data." (Citing JX-1.017; RX-10C at Q. 354-355; RDX-2-146.) Kodak argues that under Apple's construction of "memory device," the QuickTake 150 or the '845 patent, when combined with the '107 and '663 patents, teach the additional limitation of Claim 3.

Kodak asserts that the March 1995 QuickTake 150 brochure teaches that "[t]he QuickTake Image Access control panel mounts the camera on your desktop just like a disk, making it easy to copy images from the camera to your computer's hard disk drive or to import them within any application supporting PICT graphics." Kodak alleges that the memory in the QuickTake 150 is non-volatile memory. Kodak contends that Apple's construction of "memory device" does not require volatile memory. Kodak concludes that the QuickTake 150 teaches a non-volatile memory device that includes a standardized file system that enables it to be used with Windows and Macintosh based computers. (Citing RX-28.001-002; RX-10C at Q. 356; RDX-2-146; JX-11.006.)

Kodak argues that the '845 patent discloses an electronic still camera, or a digital camera device. Kodak asserts that the '845 patent discloses a memory device that utilizes a standardized file system because it teaches using an MS-DOS operating system and appropriate file allocation

## PUBLIC VERSION

tables on its recordable media. Kodak says file allocation tables are “an example of a component of a standardized file system.” Kodak contends that the recordable media disclosed in the ‘845 patent are non-volatile memory. (RX-25 at 1:17-24, 2:4-2:17, 5:14-19; RX-10C at Q. 365, 366; RDX-2-150; CX-473C at Q. 135.) Kodak reiterates that Apple’s construction of “memory device” does not require volatile memory. (Citing JX-11.006.) Kodak concludes that the ‘845 patent teaches a non-volatile memory device that includes a standardized file system. (Citing RX-10C at Q. 366.)

Kodak argues that the ‘107 patent, the ‘663 patent, and the ‘845 patent are all in the field of digital camera devices. (Citing RX-10C at Q. 351, 357, 367.) Kodak asserts that one of ordinary skill in the art of digital camera devices would look to other art in the same field when designing a digital camera device. (*Id.*) Kodak alleges that the ‘107 patent and the ‘663 patent combined with the ‘845 patent involves the use or variation of a prior art non-volatile memory device with a standardized file system according to its established function to yield predictable results. (*Id.*)

Regarding claim 5 of the ‘964 Patent, Kodak says it is a method claim whose steps correspond with the elements claimed in claim 1. (Citing JX-1.017-018; RX-10C at Q. 372; CX-473C at Q. 136.) Kodak argues that the prior art combinations discussed in RIB Sections III.D.1-2 also disclose the steps of the method of claim 5 for the same reasons. (Citing RX-10C at Q. 372.)

Regarding claim 7, Kodak argues it is a method claim whose steps correspond to the elements of claim 3. (Citing JX-1.017-018; RX-10C at Q. 373; CX-473C at Q. 136.) Kodak argues that the prior art combinations discussed in RIB Section III.D.3 also disclose the steps of claim 7 for the same reasons. (Citing RX-10C at Q. 374; RDX-2-153.) )

## PUBLIC VERSION

**Apple's Position:** Apple argues that, regarding Kodak's argument that claims 3 and 7 of the '964 patent are rendered obvious by the three references, those claims require a memory device that utilizes a standardized file system. Apple argues that Kodak fails to present any evidence of how or why a person of ordinary skill in the art would combine these references to achieve a predictable result. (Citing CX-473 at Q. 135.)

**Staff's Position:** Referring to its arguments, *supra*, Staff believes the evidence shows that the '107 patent and the QuickTake 150 fail to disclose the "CPU capable of concurrently processing" and "power management system" elements of the asserted claims, and that the '663 patent does not disclose the "CPU capable of concurrently processing" element. Staff argues that if the '845 patent does not disclose the "CPU capable of concurrently processing" element, no combination of these references can render the asserted claims obvious.

Staff says that Kodak only relies upon the '845 patent for the element of claim 3 that teaches "memory device uses a standardized file system for storing said sets of image data." (Citing RX-10C at Q. 366.) Accordingly, Staff reasons that Kodak has not demonstrated that any combination of the asserted references renders the asserted claims obvious.

**Discussion and Conclusion:** A patent is presumed to be valid, and each claim of a patent shall be presumed valid even though dependent on an invalid claim. 35 U.S.C. § 282. If I determined claim 1 to be obvious and invalid, I could still find that claim 3 is valid. Similarly, if I found claim 5 to be obvious and invalid, I could still find that claim 7 is valid. Since, however, I have found claims 1 and 5 to be valid and *not* obvious to a person having ordinary skill in the art, claims 3 and 7 are necessarily valid, because they depend from claims 1 and 5, respectively, and necessarily contain all of the elements of their respective independent claims. If an independent claim is found not anticipated/not obvious, then the dependent claim is necessarily

## PUBLIC VERSION

not anticipated/not obvious by the same reference or combination of references. *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992); *In re Royka*, 490 F.2d 981, 983-985 (C.C.P.A. 1974).

Notwithstanding the foregoing, assuming *arguendo* that claims 1 and 5 are found to be invalid as obvious, then I find that the combination of the '107 patent, the '663 patent, the QuickTake 150 reference and the '845 patent would disclose the element of claims 3 and 7 that teaches "said memory device uses a standardized file system for storing said sets of image data."

All of the prior art references forwarded by Kodak are in the field of electronic digital camera devices. The '107, '663 and '845 patents all focus, in part, on data storage. In addition, both the '663 and '845 patents treat issues related to power failure and potential loss of image data as a result. The '663 patent teaches a method for use of a backup battery to supply power to protect image data in the case of a main battery power failure, and the '845 patent teaches methods for storing data and to properly record data in cases where the electronic camera experiences unexpected operational irregularities. (RX-21; RX-22; RX-25.)

Dr. Stevenson testified credibly that the '845 patent clearly discloses the use of a standardized file system, when it describes using the MS-DOS operating system and appropriate allocation tables. Dr. Stevenson said that file allocation tables are an example of a component of a standardized file system. (RX-10C at Q. 366, 373-374; RX-25 at 1:56-2:17.)

I find that Kodak has met its burden to prove by clear and convincing evidence that the combination of the '107 patent, the '663 patent, the QuickTake 150 reference, and the '845 patent would render obvious the element of claims 3 and 7 that teaches "said memory device uses a standardized file system for storing said sets of image data."

Based upon all of the foregoing, I find that Kodak has failed to show by clear and convincing evidence that claims 3 and 7 of the '964 patent are rendered obvious to a person

## PUBLIC VERSION

having ordinary skill in the art by the combination of the '107 patent, the '663 patent, the QuickTake 150 reference, and the '845 patent.

### C. The '911 Patent

#### 1. Anticipation

##### a. PhotoFlash System

**Kodak's Position:** Kodak contends that the PhotoFlash System anticipates the asserted claims of the '911 patent. Kodak states that the PhotoFlash System includes an Apple Macintosh computer running version 7.0 or higher of the Apple Macintosh Operating System, and the PhotoFlash 2.0 software. (Citing RX-32; RPX-3; RPX-4; RX-516C; RX-10C.008-011, 013-014.)

Kodak asserts that the PhotoFlash System anticipates claim 15 of the '911 patent. Kodak argues that the computer of the PhotoFlash System constitutes a "digital image capture device" under Kodak's proposed construction. (Citing JX-2 at 3:4-6; RX-10C at Q. 74, 92-94, 107; RDX-2-9.)

Kodak argues that under Apple's and Staff's proposed constructions, the computer connected to an Apple QuickTake 150 camera satisfies the "digital image capture device" limitation. (Citing RX-10C at Q. 75-76, 89; 99-101, 108.) Kodak notes that Apple criticizes Kodak's use of the QuickTake 150's image sensor in the invalidity analysis. (Citing Tr. at 756:18-757:4.) Kodak claims that there is nothing in Apple's construction that requires a single component to house both the image sensor and the image processing components. (Citing JX-11.007; RX-10C at Q. 101.) Kodak notes that Dr. Delp testified at his deposition that a laptop connected by a cable to an external camera together formed a "digital image capture device." (Citing Tr. at 762:13-763:3, 764:21-765:4.) Kodak asserts that Dr. Delp's trial testimony that a

## PUBLIC VERSION

computer and attached camera cannot comprise a “digital image capture device” contradicts his deposition testimony. (Citing Tr. at 298:25-299:10.) Kodak argues that Dr. Delp’s attempt to recant his deposition testimony renders his opinion unreliable. (citing Tr. at 758:19-760:14.)

Kodak asserts that the PhotoFlash System includes the two or more “image processors” as required by claim 15. (Citing RX-10C at Q. 112-114; RX-516C; RPX-3.) Kodak points to the Enhancements feature of the PhotoFlash 2.0 software as containing the image processors. (Citing RX-10C at Q. 117-118.) Kodak points to the “Save as JPEG” feature in PhotoFlash 2.0 as another example of an “image processor.” (Citing RX-10C at Q. 120-121.) Finally, Kodak points to the plug-in image processors that may be used with PhotoFlash as “image processors” of claim 15. (Citing RX-10C at Q. 122-124; RX-30.)

Kodak asserts that the image processors of the PhotoFlash System are “software modules.” Kodak states that under Apple’s proposed construction of the term, the enhancement processors and the plug-in processors are “software modules,” *i.e.* machine readable instructions that perform particular tasks. (Citing RX-10C at Q. 127.) Kodak asserts that under its own proposed construction of “software modules,” the plug-in processors meet this limitation. (Citing RX-10C at Q. 128-129; RDX-2-20.)

Kodak argues that the PhotoFlash System has the “parametric controls” of claim 15. Kodak states that the PhotoFlash System satisfies this element because it provides the option to alter the image processing performed by, for example, controlling the amount of sharpening or the amount of compression. (Citing RX-10C at Q. 131-135.) Kodak states that the plug-ins that run on PhotoFlash also include the claimed parametric controls. (Citing RX-10C at Q. 136-137; RX-32.145; RX-30.)

Kodak asserts that the PhotoFlash System includes the claimed “central processing unit”

## PUBLIC VERSION

of claim 15. Kodak claims that the PowerMac 8100 and PowerMac 8150 computers each contain a PowerPC 601 chip as a central processing unit. (Citing RX-10C at Q. 141.) According to Kodak, the PowerPC CPU performs the operations enabled by the PhotoFlash System. (Citing RX-10C at Q. 142.) Kodak claims that the PowerPC processor both connects and instructs two or more image processors to form an image processing chain in the PhotoFlash System, thereby meeting the “linking...to form an image processing chain” under all proposed constructions. (Citing RX-10C at Q. 144, 152.) Kodak further asserts that the PhotoFlash software is AppleScript-able, and AppleScript facilitates linking image processors to form an image processing chain. (Citing RX-10C at Q. 153-155.)

Kodak asserts that the CPU of the PhotoFlash System facilitates access of chosen controls, as required by claim 15. (Citing RX-10C at Q. 156.) Kodak states that the PowerPC CPU enables a user to input different amounts of enhancements, such as sharpening, contrast, or brightness. (Citing RX-10C at Q. 141, 157.) Kodak states that the CPU executes software that allows the user to select an amount of compression during the Save as JPEG processing. (Citing RX-10C at Q. 157.) Kodak states that the CPU then applies these setting to the image processing operations performed on the image captured by the Mac computer. (*Id.*)

Kodak argues that claims 27, 30, and 38 are also anticipated by the PhotoFlash System for the same reasons as offered with respect to claim 15. (Citing RX-10C at Q. 160-162, 164.) Kodak notes that claim 38 additionally requires an “image processing backplane.” Kodak states that under any construction of that phrase, the PhotoFlash System discloses that claim element. (Citing RX-10C at Q. 154, 164; RX-516C.007-008.)

In its reply brief, Kodak reiterates that the PhotoFlash System includes a “digital image capture device.” (Citing RX-10C at Q. 107-108.) Kodak argues that Apple is incorrect to assert



## PUBLIC VERSION

that the claims require that a “digital image capture device” is a single device that performs both digital image capture and image processing. Kodak argues that Apple still misunderstands the meaning of “capture” as used in the ‘911 patent.

**Apple’s Position:** Apple contends that the PhotoFlash System does not anticipate any of the asserted claims of the ‘911 patent.

Apple argues that the asserted claims require a single device that performs both digital image capture and image processing. (Citing CX-473 at Q. 12-13.) Apple claims that it is inappropriate to find that a “digital image capture device” may be composed of multiple devices. Apple asserts that the claims and specification support a finding that a “digital image capture device” must be a single device that performs both the image capture and processing. (Citing JX-2 at claim 15, 2:65-3:3, 3:21-34.)

Apple argues that the “PhotoFlash System” offered by Kodak is really a group of separately sold devices – an Apple QuickTake 150 digital camera, and Apple PowerMac desktop computer with AppleScript, and PhotoFlash software installed on the PowerMac computer. (Citing CX-473 at Q. 16.) Apple states that the PhotoFlash System discloses a capture device tethered to a general purpose computer, where the computer has all of the image processing capabilities. (Citing CX-473 at Q. 43-45.) Apple states that the capture device – the QuickTake 150 digital camera – does not perform any of the image processing required by the claims. (Citing CX-473 at Q. 26, 28-29.) Apple states that the general purpose computer – the PowerMac – has no ability to capture images. (Citing CX-473 at Q. 17-19, 25-27; Tr. at 440:3-441:5.)

**Staff’s Position:** Staff contends that the PhotoFlash System anticipates all of the asserted claims of the ‘911 patent.

## PUBLIC VERSION

Staff argues that the PhotoFlash System is a “[a] system for allowing variably controlled alteration of image processing of digital image data,” as required by claim 15. Staff asserts that the PhotoFlash System was designed to allow users to capture digital images and to process and alter the digital image data in various ways. (Citing RX-29.14.)

Staff claims that the PhotoFlash System discloses a “digital image capture device” under Staff’s construction. According to Staff, the QuickTake 150 generates digital image data by using a sensor, and the PowerMac 8100 running PhotoFlash 2.0 processes image data. (Citing RX-29.14, 44; RX-10C at Q. 108.)

Staff notes that Apple makes much of the fact that the PhotoFlash System has multiple components, and argues that for this reason it is not a “digital image capture device.” (Citing CPH. at 119-24; CX-473C at Q. 33-37, 78-81.) Staff submits that the evidence does not show that a “device” is limited to components within a single housing. Staff asserts that during prosecution, when responding to rejections over multi-component systems such as McCubbrey, the applicants never distinguished their invention on the basis of it being a unitary device. Staff claims that Dr. Delp admitted that a MacBook Pro laptop connected to an external iSight camera, is a “digital image capture device” indicating that even Apple’s own expert does not believe the term “digital image capture device” to be limited to unitary components. (Citing RX-10C at Q. 106.) Staff asserts that the evidence shows that the components of the PhotoFlash System were clearly meant to be used, and were used, as a single system, *i.e.*, the evidence shows that the QuickTake 150 and PhotoFlash were sold for use together, and sold for use with Macs, and that the users of the QuickTake were specifically instructed to use them with the Macs, the Macintosh operating system, and PhotoFlash.

## PUBLIC VERSION

Staff asserts that the PhotoFlash System includes the claimed image processors. Staff states that the evidence also shows that using PhotoFlash, a user may alter images in various ways, such as by removing scratches, altering brightness, altering contrast and zooming, and that each of these image transformations is called an "Enhancement." (Citing RX-32.87; RX-10C at Q. 117-119.) Staff claims that as PhotoFlash is software, the image processors, the portions which create each Enhancement, are stored in memory. (Citing RX-10C at Q. 119.) Staff avers that the PhotoFlash software contains the algorithms needed to perform the various image processing operations. (Citing RX-10C at Q. 116.)

Staff claims that the image processors in the PhotoFlash System, *i.e.*, the portions of PhotoFlash that perform each Enhancement, are machine readable instructions that perform a particular task, and therefore meet the "software modules" limitation. (Citing RX-10C at Q. 119, 127.) Staff states that the evidence also shows that when a particular image Enhancement is selected, such as "Sharpen," the user can choose a value from 1 to 10 to select the amount of sharpness that the user would like to apply. (Citing RX-32.96-97; RX-10C at Q. 133.) Staff explains that once a sharpness level is selected, the value is stored within the sharpening image processor and applied so that a Sharpen operation corresponding to a value of 8 is performed. (Citing RX-10C at Q. 139.) Staff states that these parametric controls are specific to each particular Enhancement. (Citing RX-10C at Q. 133-135.)

Staff asserts that the PhotoFlash System includes the claimed central processing unit. Staff states that the QuickTake 150's User's Guide specifies that in order to be used with the QuickTake, the Macintosh must have a central processing unit, and the PowerMac 8100 contains a PowerPC 601 central processing unit. (Citing RX-29.11; RX-10C at Q. 141.)

## PUBLIC VERSION

Staff claims that the PowerPC 601 is capable of linking the two or more image processors to form an image processing chain. Staff asserts that the evidence demonstrates that using AppleScript or other programs, the user of the PhotoFlash System could record and run a script, which is a series of instructions. (Citing RX-32.121; RX-10C at Q. 153.) Staff claims that by using such a script, the user could perform multiple, sequential, transformations upon an image, by, for example, recording a script that “rotates an image, adjusts its brightness and contrast, creates a new page in a pane layout document, and places the image on that page.” (Citing RX-32.121.)

Staff asserts that the PhotoFlash System meets the requirement that the “central processing unit facilitates access of chosen controls of the one or more parametric controls...” Staff states that the evidence shows that when a user of the PhotoFlash System chooses a particular Enhancement, she is allowed to input different amounts of sharpening, contrast, brightness, etc, and then these settings are applied to the image. Staff claims that the evidence also shows that the CPU of the PowerMac executes the PhotoFlash software.

Staff notes that Apple’s primary argument for why the PhotoFlash System does not anticipate claim 15 is that it is not a unitary product, *i.e.*, that the image sensor is in the QuickTake while the image processors are in the PowerMac. (CPHB at 123.) Staff believes the evidence shows that because the components were sold together, and users were specifically instructed to use them together, that treatment of the PhotoFlash System as a single “digital image capture device” is appropriate, and the PhotoFlash System anticipates claim 15. Staff submits that to the extent the PhotoFlash System is not found to be a unitary device, the PhotoFlash System, as a collection of components, renders claim 15 obvious.

## PUBLIC VERSION

Staff argues that the PhotoFlash System anticipates claims 27, 30, and 38 for the same reasons as stated with respect to claim 15.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Kodak has offered clear and convincing evidence that asserted claims 15, 27, 30, and 38 of the '911 patent are anticipated by the PhotoFlash System.

The PhotoFlash System consists of a Apple PowerMac computer (such as the PowerMac 8100)<sup>16</sup> loaded with (1) the Macintosh Operating System, version 7.1 through 7.5.2; and (2) PhotoFlash 2.0 software. (RX-10C at Q. 56-63, 66-74.) Kodak asserts that the PhotoFlash System was in public use in the United States prior to August 29, 1995,<sup>17</sup> making it prior art under 35 U.S.C. § 102(b). (RIB at 109; RX-10C at Q. 56, 63, 71; RX-32.) Neither Apple nor Staff dispute this contention.

The PhotoFlash System is a system for allowing variably controlled alteration of image processing of digital image data. (RX-10C at Q. 91.)

The parties dispute whether or not the PhotoFlash System includes a "digital image capture device." I construed "digital image capture device" to mean "a device that performs digital image data capture and processing." Based on this construction, and on the guidance provided in the specification of the '911 patent, I find that the PhotoFlash System includes a digital image capture device.

The '911 patent specification states that "[t]he present invention is equally capable of utilization with other devices that perform digital image data capture and processing, including,

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<sup>16</sup> Kodak's expert Dr. Stevenson relied on a PowerMac 8100 for his prior art analysis, but explained that other PowerMac models such as the PowerMac 7100 or PowerMac 8150 would have been sufficient. (RX-10C at Q. 56, 60-62.)

<sup>17</sup> August 29, 1995 is the critical date for the '911 patent. *See Orion IP, LLC v. Hyundai Motor Am.*, 605 F.3d 967, 974 (Fed. Cir. 2010) ("The critical date is defined as the date one year prior to the filing date of the patent application.")

## PUBLIC VERSION

but not limited to, computer systems, including those used to capture digital images accessible from Internet sites and image scanner equipment.” (JX-2 at 3:1-6.) Kodak offered undisputed testimony that the Apple PowerMac 8100 computer, which is part of the PhotoFlash System as described *supra*, is a computer system that performs digital image data capture and processing, and is capable of capturing digital images accessible from Internet sites or image scanner equipment. (RX-10C at Q. 94, 107.) Based on this testimony, the PhotoFlash System includes a “digital image capture device.”

Apple offers a single argument to explain why the PhotoFlash System does not anticipate the asserted claims. Apple claims that a “digital image capture device” must be a single device that performs both digital image capture and image processing. As described *supra*, Apple argues that a “digital image capture device” must include an image sensor, meaning that Apple does not believe that the PowerMac 8100 computer alone is a “digital image capture device.” Kodak asserts that under Apple’s construction of “digital image capture device,” the limitation is met by tethering an Apple QuickTake 150 camera to the PowerMac computer. (RX-10C at Q. 99.) Apple argues that while the QuickTake camera performs the image capture and the PowerMac performs the image processing, there is no single device that performs both functions. (CX-473 at Q. 33-34.)

Because the adopted construction of “digital image capture device” does not require a device with an image sensor, I find Apple’s argument unpersuasive. The PowerMac loaded with the appropriate software is sufficient to meet the “digital image capture device” limitation, and it is unnecessary to include the QuickTake camera. (RX-10C at Q. 94.) Apple’s understanding of image capture ignores the passage of the specification that states that digital image capture devices include “computer systems, including those used to capture digital images accessible

## PUBLIC VERSION

from Internet sites and image scanner equipment.” (JX-2 at 3:1-6.)

The next limitation requires that the digital image capture device is “capable of processing digital image data through two or more image processors, the two or more image processors being stored in memory, wherein said processors are software modules and each performing a particular type of image transformation[.]” I construed “image processors” to mean “software modules which each apply algorithms on image data to obtain a particular type of image transformation.” I construed “software modules” to mean “machine-readable instructions that cause a particular task to be performed.”

I find that the PhotoFlash System includes the “image processors” limitation. (RX-10C at Q. 113-129.) Kodak describes three different types of “image processors” in the PhotoFlash System. First, there are the Enhancements functionality that is part of the PhotoFlash software. This is described as follows: “[y]ou can use commands in the Enhance menu to adjust the color balance, exposure, brightness, and contrast of an image; to blur or sharpen it; and to remove dust or scratches.” (RX-32.087.) Dr. Stevenson notes that these are all examples of software image processing. (RX-10C at Q. 118.)

Next, Kodak identifies the “Save as JPEG” functionality of the PhotoFlash software as an “image processor.” The “Save as JPEG” function processes an image by compressing it according to a user’s setting. (RX-10C at Q. 120.) I find that this functionality meets the “image processors” limitation. (*Id.* at Q. 120-121.) Finally, Kodak identifies Adobe Photoshop plug-ins on the PhotoFlash System as an “image processor.” (*Id.* at Q. 122-123.) According to Dr. Stevenson, PhotoFlash can take a Photoshop plug-in and apply it to image data captured by the PowerMac 8100. (*Id.* at Q. 122-125.)

The next limitation requires each image processor to have “one or more parametric

## PUBLIC VERSION

controls that are uniquely identified[.]” I construed “parametric controls” to mean “range type or enumerated list type of values that affect how an image processor processes image data.” I find that the PhotoFlash System meets the “parametric controls” limitation. (RX-10C at Q. 131-139.)

In each of the image processors described *supra*, the user is given a choice of either range type or enumerated list type of values that will affect how the image processor processes the data. (*Id.*)

The parametric controls are uniquely identified for each image processor. (*Id.*) For example, the “Save as JPEG” functionality allows the user to choose compression quality in the range of “excellent,” “high,” “good,” and “fair.” (RX-10C at Q. 133; RX-516C.008; RDX-2-22.)

Another example is the sharpen feature of the Enhancement functionality, which allows a sharpness selection ranging from 1 to 10. (RX-10C at Q. 133; RX-516C.006-007; RDX-2-21.)

Claim 15 next requires a “central processing unit within the digital image capture device[.]” This limitation is met by the PowerPC 601 processor chip found in the PowerMac 8100. (RX-10C at Q. 141-142.)

The central processing unit must be “capable of linking the two or more image processors to form an image processing chain[.]” I construed “linking...to form an image processing chain” to mean “connecting two or more image processors such that the image processors manipulate digital image data in a stage by stage fashion.” I find that the PowerPC 601 processor meets this limitation. (RX-10C at Q. 144-155.) Dr. Stevenson uses the brightness and contrast image processors as examples of the central processing unit performing the processing in a stage by stage fashion. (*Id.* at Q. 148-150.) Dr. Stevenson also explains how a user could use the AppleScript software that came as part of the Macintosh Operating System to process image data in a stage by stage fashion. (*Id.* at Q. 153-155.)

Finally, claim 15 requires that the central processing unit “facilitates access of chosen



## PUBLIC VERSION

controls of the one or more parametric controls within each of the two or more image processors for modification of the two or more image processors and alteration of the image processing.”

Dr. Stevenson offers undisputed testimony that the central processing unit of the PowerMac 8100 facilitates access of the chosen controls as required by claim 15. (RX-10C at Q. 157.)

Therefore, Kodak has presented clear and convincing evidence that the PhotoFlash System discloses all of the elements of claim 15.

Claims 15 and 27 are almost identical. Dr. Stevenson testified that the minor differences in the claims do not change his analysis, and that the claim 15 analysis applies equally to claim 27. (RX-10C at Q. 161.) Apple offers no argument specific to claim 27. For the reasons described with respect to claim 15, I find that Kodak has offered clear and convincing evidence that the PhotoFlash System anticipates claim 27 of the '911 patent.

Claim 30 is a method claim that contains similar limitations to those found in claim 15. Dr. Stevenson does not offer a separate analysis; instead, he testifies that claim 30 is anticipated for the same reasons as offered for claim 15. (RX-10C at Q. 162.) Apple offers no argument specific to claim 30. I find that Kodak has offered clear and convincing evidence that the PhotoFlash System anticipates claim 30 of the '911 patent.

Claim 38 is similar to the prior asserted claims, but adds the limitation of “a digital image capture device having an image processing backplane for forming an image processing chain with a plurality of image processors...” I construed “image processing backplane” to mean “software for coordinating image processors to form an image processing chain.” Dr. Stevenson offers un rebutted testimony that the PhotoFlash System meets the “image processing backplane” limitation because it includes “a system that allows the coordination of the image processors in the image processing chain.” (RX-10C at Q. 164; RX-516C.010; RDX-2-35, 36.) Dr. Stevenson

**PUBLIC VERSION**

then offers two examples of the “image processing backplane” in the PhotoFlash System. (*Id.*)

Based on the foregoing, I find that Kodak offered clear and convincing evidence that the PhotoFlash System meets the “image processing backplane” limitation of claim 38.

Based on the foregoing, I conclude that Kodak offered clear and convincing evidence that the PhotoFlash System anticipates asserted claims 15, 27, 30, and 38 of the ‘911 patent.

**b. HIPS 1**

**Kodak’s Position:** Kodak contends that an article entitled “HIPS: A Unix-Based Image Processing System” by Michael S. Landy, Yoav Cohen, and George Sperling (“HIPS 1”) anticipates the asserted claims of the ‘911 patent.

Kodak argues that HIPS 1 anticipates claim 15. Kodak states that HIPS 1 discloses a “digital image capture device” under any proposed construction offered in this investigation (Citing RX-33.002; RX-10C at Q. 170-173.) Kodak asserts that HIPS 1 discloses two or more software “image processors” that are referred to as “Filters.” (Citing RX-10C at Q. 174-176; RX-33.002, 009-010.) Kodak claims that the “Filters” also satisfy the “software modules” limitation. (Citing RX-10C at Q. 174.)

Kodak argues that HIPS 1 discloses “parametric controls.” Kodak claims that HIPS 1 teaches using UNIX command line arguments to provide user adjustable parameters that control the image processors. (Citing RX-10C at Q. 177.) Kodak states that the parametric controls of HIPS 1 satisfy Apple’s construction because the user of HIPS 1 can input values from a range of numerals. (Citing RX-10C at Q. 177-178; RX-33.011-012.)

Kodak argues that HIPS 1 discloses the claimed “central processing unit.” Specifically, Kodak claims that HIPS 1 discloses a VAX 11/750 including a central processing unit. (Citing RX-33.002; RX-10C at Q. 179.) Kodak states that HIPS 1 describes a central processing unit

## PUBLIC VERSION

capable of “linking...two or more image processors to form an image processing chain” under all parties’ constructions. (Citing RX-10C at Q. 180; RX-33.002-003.) According to Kodak, the CPU described by HIPS 1 also “facilitates access of chosen controls of the one or more parametric controls within each of the two or more image processors for modification of the two or more image processors and alteration of the image processing,” as required by claim 15. (Citing RX-10C at Q. 181.)

Kodak asserts that the anticipation analysis for claim 15 applies equally to claims 27, 30, and 38. (Citing RX-10C at Q. 183-187; RDX-2-55-57; RDX-2-60.) Kodak argues that HIPS 1 discloses the additional requirement of an “image processing backplane” found in claim 38. (Citing RX-33.002-003; RX-10C at Q. 187.)

**Apple’s Position:** Apple contends that HIPS 1 fails to anticipate any of the asserted claims of the ‘911 patent.

Apple asserts that the system disclosed in HIPS 1 is comprised of three devices – an analog video camera connected to a Grinnell GMR 27-30, which is connected to a VAX 11/750 computer. (Citing CX-473 at Q. 49-51.) Apple argues that HIPS 1 does not disclose a single “digital image capture device” under any of the proposed constructions of that term. (Citing CX-473 at Q. 58.) Apple claims that HIPS 1 fails to disclose a CPU within a digital image capture device for linking image processors because the CPU is contained in the VAX, and the VAX is not a digital image capture device. (Citing CX-473 at Q. 59.)

Apple asserts that HIPS fails to disclose other various limitations in claims 30 and 38 that require an image processing backplane and software modules that are part of the digital image capture device. (Citing CX-473 at Q. 59.) Because Kodak points to software in the VAX to meet these claim limitations, Apple argues that the software is not part of the digital image

## PUBLIC VERSION

capture device. (*Id.*)

**Staff's Position:** Staff contends that HIPS 1 anticipates the asserted claims.

Staff explains that prior to the hearing, it took the position that HIPS 1 lacked the "digital image capture device." Staff explains that the evidence presented at the evidentiary hearing demonstrated that, contrary to Staff's earlier understanding, the HIPS 1 system includes a video camera. (Citing RX-10C at Q. 172; Tr. at 446:9-447:4.) Staff asserts that the evidence demonstrates that the video camera generates image data using an image sensor. (Citing RX-10C at Q. 172-174.) Staff claims that this analog image data generated by the video camera is converted to digital data by a Grinnell image processor, which has the ability to digitize video frames. (Citing CX-33C at 2; CX-473C at Q. 52.) For this reason, Staff submits that the evidence demonstrates that the HIPS 1 reference discloses a "digital image capture device."

Staff claims that the evidence shows that HIPS 1 discloses the other elements of the asserted claims. Staff asserts that HIPS 1 discloses the use of multiple "filters" which are UNIX programs that perform simple image transformations, such as reducing, enlarging, and rotating 180 degrees. (Citing RX-33 at 1; RX-10C at Q. 174-175.) According to Staff, the filters are programs, and thus are individually formed and stored in memory, and executed by a CPU. (Citing RX-33 at 1; RX-10C at Q. 174-175.) Staff claims that the filters have parametric controls, as setting the parameters for the filters is a required step. (Citing RX-33 at 3.)

Staff claims that the evidence demonstrates that the filters may be linked together using a UNIX pipeline, so that the output of one filter is used as the input for the next filter. (Citing CX-10 at Q. 180.) Thus, Staff believes that HIPS 1 discloses image processors linked together to form an image processing chain.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Kodak has

## PUBLIC VERSION

failed to offer clear and convincing evidence that the HIPS 1 reference anticipates any of the asserted claims of the '911 patent.

I find that the HIPS 1 reference lacks a “digital image capture device” required in asserted claims. The parties dispute whether or not the “digital image capture device” must be a single device. Kodak and Staff assert that there is no requirement that the “digital image capture device” be a single device, while Apple asserts that a “digital image capture device” must be a single device. A device will only be limited to a unitary structure when there is an indication in the intrinsic record that it should be so limited. *See Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1309 (Fed. Cir. 2005) (rejecting an attempt to limit the term “channel” to a unitary structure when the intrinsic evidence did not require doing so).

Here, I find that the claim language provides an indication that the “digital image capture device” of the asserted claims must be a single device. Claims 15 and 27 each require “a central processing unit *within the digital image capture device.*” (emphasis added). Claims 30 and 38 each require “memory located *within the digital image capture device.*” (emphasis added). The requirement that the CPU or memory is located “within the digital image capture device” conflicts with a finding that the digital image capture device can be comprised of multiple devices. The definition of “within” is “in or into the inner part; inside.” AMERICAN HERITAGE DICTIONARY 1387 (2d college ed. 1985). If the “digital image capture device” is comprised of two separate devices attached by a cable, then the CPU or memory can only be located within one of the two components, and cannot be said to be located within the digital image capture device.<sup>18</sup>

The evidence shows that the HIPS 1 reference discloses at least two separate devices

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<sup>18</sup> To be clear, this finding is limited to the meaning of “digital image capture device” in the context of the four asserted claims.

## PUBLIC VERSION

connected to each other – the VAX 11/750 computer and the Grinnell GMR 27-30 image processor. (RX-33.002; CX-473 at Q. 54-55; CX-470; CX-471.) Kodak and its expert identify both the VAX computer and Grinnell image processor as parts of the “digital image capture device.” (RIB at 119; RX-10C at Q. 170-171, 179.) Because these are two separate devices, I find that Kodak has failed to demonstrate by clear and convincing evidence that the HIPS 1 reference discloses “a central processing unit within the digital image capture device” or “memory located within the digital image capture device.”

Based on the foregoing, I find that Kodak failed to offer clear and convincing evidence that the HIPS 1 reference anticipates any of the asserted claims of the ‘911 patent.

### c. The ‘509 Application

**Kodak’s Position:** Kodak contends that European Patent Application No. 0 544 509 A2 (“the ‘509 application”) anticipates asserted claims 15, 27, 30, and 38.

Kodak asserts that the ‘509 application anticipates claim 15. According to Kodak, the ‘509 application discloses a “digital image capture device” because it discloses digital image processing on images that are scanned in directly or imported from software or memory. (Citing RX-20.002-003; RX-10C at Q. 196; RDX-2-65.) Kodak claims that under all the parties’ constructions, the computer of the ‘509 application is a “digital image capture device” because it captures image data acquired by an image scanner (which includes an image sensor) and performs various image processing operations. (*Id.*)

Kodak claims that under all parties’ proposed claim constructions, the ‘509 application discloses the claimed “image processors.” Kodak explains that the term “Filter” is used to describe image processors in the ‘509 application. (Citing RX-20.003; RX-10C at Q. 197-198;

## PUBLIC VERSION

RDX-2-66.) Kodak argues that each of these disclosed filters is an image processor under all parties' constructions. (*Id.*)

Kodak claims that the image processors disclosed in the '509 application have "one or more parametric controls that are uniquely identified" because the filters of the '509 application allow for user control. (Citing RX-10C at Q. 199-200.) Kodak asserts that the control features of the '509 application are parametric controls under all the parties' constructions. (Citing RX-10C at Q. 200-201.)

According to Kodak, the '509 application discloses the "central processing unit" requirement of claim 15 under all parties' constructions. (Citing RX-10C at Q. 202.) Kodak states that the '509 application is designed to operate in an image processing system, specifically, the MacImage shell, available from the Xerox corporation. (Citing RX-20.003; RDX-2-72.) Kodak states that that system includes a central processing unit. (Citing RX-10C at Q. 203.) Kodak argues that the central processing unit of the '509 application is "capable of linking the two or more image processors," *i.e.*, filters, to form an image processing chain under all the parties' constructions. (Citing RX-10C at Q. 204; RX-20.003.)

Finally, Kodak claims that the '509 application satisfies the limitation "wherein the central processing unit facilitates access of chosen controls of the one or more parametric controls within each of the two or more image processors for modification of the two or more image processors and alteration of the image processing," of claim 15 by disclosing a control feature 36 that controls the filters being applied and allows the effect of the image to be manipulated. (Citing RX-10C at Q. 205; RX-20.004.)

Kodak argues that the '509 application anticipates claims 27, 30, and 38 for the same reasons as discussed with respect to claim 15. (Citing RX-10C at Q. 210-213.) Kodak notes that

## PUBLIC VERSION

claim 38 also requires an “image processing backplane.” Kodak states that under all parties’ constructions, the “image processing backplane” requirement is satisfied by the ‘509 application’s disclosure of functionality that permits stacking of filters which allow a user to adjust, among other things, the brightness, contrast, and sharpening. (Citing RX-10C at Q. 210-213; RX-20.004, 009.)

**Apple’s Position:** Apple contends that the ‘509 application fails to anticipate any of the asserted claims of the ‘911 patent.

Apple asserts that the ‘509 application discloses a scanner connected to a general purpose computer, where the general purpose computer performs all of the image processing. (Citing CX-473 at Q. 60, 74-77.) Apple argues that the ‘509 application fails to disclose a single “digital image capture device” that captures a digital image and performs image processing. (Citing CX-473 at Q. 66-67, 74-77.)

Apple asserts that the ‘509 application fails to disclose other various limitations in claims 30 and 38 that require an image processing backplane and software modules that are part of the digital image capture device. (Citing CX-473 at Q. 68-70, 74-77.) Because Kodak points to software in a general purpose computer to meet these claim limitations, Apple argues that the software is not part of the digital image capture device. (*Id.*)

**Staff’s Position:** Staff contends that the ‘509 application does not anticipate any of the asserted claims of the ‘911 patent.

Staff notes that each of the asserted claims of the ‘911 patent requires a “digital image capture device.” Staff explains that Kodak contends that the ‘509 application meets this limitation because a scanner is a device that creates digital image data using an image sensor and the program can receive images “scanned in directly or imported from software or memory,” and



## PUBLIC VERSION

because the software on the computer contains a number of image processors. (Citing RX-20 at 1:5-9; RX-10C at Q. 196.) Staff claims that Kodak treats the '509 application's disclosure of a computer, the image processing software, and a scanner as a single system and device, like the PhotoFlash System.

Staff believes that the evidence shows that the components of the PhotoFlash system were sold together, intended for use together, and that purchasers of the product were explicitly directed to use the components in connection with each other, such that treating these separate components as a unified device is appropriate. Staff asserts that similar evidence was not provided to show that treatment of the computer, software and scanner disclosure of the '509 application as a disclosure of a single device is appropriate. For this reason, Staff submits that the evidence does not show that the '509 patent discloses a "digital image capture device" under Staff's proposed construction, and, therefore, does not show that the '509 patent anticipates the asserted claims of the '911 patent.

Staff notes that the evidence demonstrates that the '509 application discloses all the other elements of the asserted claims. Staff asserts that the '509 application discloses the use of a number of filters, such as gamma, halftone and convolution filters, that are selected by the user to perform specific image transformations. (Citing RX-20 at 2:55-3:10, 4:38-50; RX-10C at Q. 196-198.) Staff states that the filters are based on the MacImage shell system and are stored as files. (Citing RX-20 at 4:16-19, 5:42-6:11; RX-10C at Q. 203.) Staff asserts that the evidence shows that multiple filters can be laid upon each other, and that the filters contain controls for the user to modify the operation of the filter. (Citing RX-20 at 3:38-59, 7:8-16, 8:42-44, fig 2c; RX-10C at Q. 200-201, 204.)

**Discussion and Conclusion:** Based on the evidence in the record, I find that Kodak has

PUBLIC VERSION

offered clear and convincing evidence that the '509 application anticipates asserted claims 15, 27, 30, and 38 of the '911 patent.

The '509 application was published on June 2, 1993, making it prior art under 35 U.S.C. § 102(b). (RX-20.) The application is directed to an image processing system. Specifically, the application explains:

The present invention provides an interface for continuously operating on an image displayed on a display device comprising a mechanism for displaying the image on the display device, a mechanism for selectively, successively modifying a portion of the image, a mechanism for storing the original image and each modification of the image and a mechanism for retrieving the original image and each separate successive modification of the image.

(RX-20.002.) The '509 application distinguishes the invention from prior art systems that permanently altered an image when performing image processing modifications. (*Id.*)

The '509 application discloses a system for allowing variably controlled alteration of image processing of digital image data. (RX-10C at Q. 194.) The '509 application discloses a "digital image capture device." I construed "digital image capture device" to mean "a device that performs digital image data capture and processing." The '509 application discloses a system to perform digital image data capture and processing that includes a computer: "[d]igital image processing is designed to manipulate images, scanned in directly or imported from software or memory, which are displayed on a display device such as the screen of a personal computer." (RX-20.002.) I find that the computer disclosed as part of the system in the '509 application acts as the "digital image capture device." (RX-10C at Q. 196.)

The '509 application discloses the two or more "image processors" of claim 15. I construed "image processors" to mean "software modules which each apply algorithms on image data to obtain a particular type of image transformation." The '509 patent discloses the use of filters, where each filter performs a particular type of image processing. The '509 application

PUBLIC VERSION

states:

The mechanism for selectively, successively modifying a portion of the image may comprise a filter which overlays the portion of the image to be modified. The filter may be a gamma filter which modifies contrast; or a halftone filter which modifies brightness; or a convolution filter which modifies sharpness; or a rotation filter which rotates a portion of the image; or a scaling filter; or a skewing filter; or an error diffusion filter; or a mixing filter having a plurality of source images.

(RX-20.003.) Each filter is stored in memory and constitutes an "image processor." (RX-10C at Q. 197-198; RX-20.003-004, 008.) Each filter is a "software module" under the construction adopted for that term. (*Id.*)

Claim 15 requires that each image processor have one or more parametric controls that are uniquely identified. I construed "parametric controls" to mean "range type or enumerated list type of values that affect how an image processor processes image data." The '509 application discloses image processors with parametric controls. The '509 application explains:

The control feature 36 of image processing 28 provides the type of control function to be used with the filter. For example, dials, numeric, preset or graphic controls may be chosen. The control selection is dependent on the selected function option, that is, the type of filter, as shown in Figure 2.

(RX-20.004.)

These control features constitute parametric controls. (RX-10C at Q. 199-201.) An example of a specific parametric control disclosed in the '509 application is the control angle for the rotation filter, which "can be controlled by the user with slide pots, with numeric controls or with graphic handles that form an angle." (RX-20.006.)

The '509 application discloses a "central processing unit" within the digital image capture device. Dr. Stevenson provided un rebutted testimony that "the filter system of the '509

## PUBLIC VERSION

Patent<sup>19</sup> is designed to operate in an image processing system, specifically, the MacImage shell, available from the Xerox corporation...Such a system has a central processing unit.” (RX-10C at Q. 202-203.)

The central processing unit of the ‘509 application is capable of linking the two or more image processors to form an image processing chain. I construed this limitation to mean “connecting two or more image processors such that the image processors manipulate digital image data in a stage by stage fashion.” The ‘509 application discloses that “‘Filters’ can be placed over the images like pieces of glass over a photograph,” and that “[m]ultiple filters can be active over the image and over each other.” (RX-20.003.) In addition, the ‘509 application discloses the concept of “stacking” filters:

In using the filter system 10, multiple filters may be “stacked” over an image to achieve the desired effect without changing the original image or deleting the previous modifications. A graphic window, which depicts a side view, presents the current stacking of images and filters. This feature allows the user to rearrange filters without repeated use of the menu items.

(RX-20.004.) I find that these disclosures demonstrate that the central processing unit of the ‘509 application is capable of linking the two or more image processors to form an image processing chain. (RX-10C at Q. 204.)

Finally, the ‘509 application discloses that the central processing unit “facilitates access of chosen controls...” as required by claim 15. This is demonstrated by the description of the control feature 36 in Figure 2 of the ‘509 application. (RX-10C at Q. 205; RX-20.004, 009.) Therefore, Kodak has presented evidence that the ‘509 application discloses all of the elements of claim 15.

Apple’s only argument is that the ‘509 application fails to disclose a “digital image

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<sup>19</sup> The parties refer to the ‘509 application as “the ‘509 Patent,” even though the document is clearly entitled “European Patent Application.” (RX-20.)

## PUBLIC VERSION

capture device.” Apple asserts that a general purpose computer connected to a scanner is not a “digital image capture device.” (CIB at 134-135.) For the reasons discussed in Sections III.C.2 and IV.C.1.a *supra*, I find that Apple’s construction of “digital image capture device” is incorrect. The computer system running the image processing software disclosed in the ‘509 application is a “digital image capture device.” (RX-10C at Q. 196.)<sup>20</sup>

Claims 15 and 27 are almost identical. Dr. Stevenson testified that the minor differences in the claims do not change his analysis, and that the claim 15 analysis applies equally to claim 27. (RX-10C at Q. 210.) Apple offers no argument specific to claim 27. For the reasons described with respect to claim 15, I find that Kodak has offered clear and convincing evidence that the ‘509 application anticipates claim 27 of the ‘911 patent.

Claim 30 is a method claim that contains similar limitations to those found in claim 15. Dr. Stevenson does not offer a separate analysis; instead, he testifies that claim 30 is anticipated for the same reasons as offered for claim 15. (RX-10C at Q. 211.) Apple offers no argument specific to claim 30. I find that Kodak has offered clear and convincing evidence that the ‘509 application anticipates claim 30 of the ‘911 patent.

Claim 38 is similar to the prior asserted claims, but adds the limitation of “a digital image capture device having an image processing backplane for forming an image processing chain with a plurality of image processors...” I construed “image processing backplane” to mean “software for coordinating image processors to form an image processing chain.” Dr. Stevenson offers un rebutted testimony that the ‘509 application meets the “image processing backplane” limitation. (RX-10C at Q. 213; RX-20.004, 009.)

Based on the foregoing, I conclude that Kodak offered clear and convincing evidence that

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<sup>20</sup> Staff also argues that the ‘509 application does not disclose a “digital image capture device” based on its incorrect claim construction. (SIB at 47-48.) Staff’s arguments are not persuasive for the same reasons as discussed with respect to Apple.

## PUBLIC VERSION

the '509 application anticipates asserted claims 15, 27, 30, and 38 of the '911 patent.

### d. RFS 2035 System

**Kodak's Position:** Kodak contends that under Apple's interpretation of the asserted claims, the Kodak RFS 2035 System anticipates the asserted claims. Kodak explains that the RFS 2035 System is comprised of a Kodak RFS 2035 Professional Film Scanner and a computer such as a Macintosh computer. (Citing RX-10C at Q. 229.)

Kodak argues that the RFS 2035 System anticipates claim 15. Kodak states that The RFS 2035 System enables the capture of digital image data thereby satisfying the "digital image capture device" limitation under all the parties' constructions. (Citing RX-10C at Q. 238; RX-37.023.) Kodak asserts that an image sensor inside the RFS 2035 Scanner creates a digital representation of a slide or film negative which can be processed and stored within the RFS 2035 System. (Citing RX-10C at Q. 239; RX-37.022.)

Kodak states that the RFS 2035 System includes the "image processors" of claim 15 under Apple's interpretation of the agreed claim construction of "image processors." (Citing RX-10C at Q. 239.) Kodak claims that the RFS 2035 System can process digital image data through two or more image processors. (Citing RX-10C at Q. 239; RDX-2-89.)

Kodak asserts that the RFS 2035 System further discloses image processors that "hav[e] one or more parametric controls that are uniquely identified," as required by claim 15. (Citing RX-10C at Q. 240-241; RX-37.039-040.) Kodak states that the RFS 2035 System's image processors have parametric controls that allow a user to adjust parameters of the image processors. (*Id.*)

Kodak argues that the computer portion of the RFS 2035 System includes a central processing unit thereby satisfying the claimed "central processing unit within the digital image

## PUBLIC VERSION

capture device” limitation of claim 15. (Citing RX-10C at Q. 242; RX-37.012.) Kodak states that the central processing unit disclosed by the RFS 2035 System is further “capable of linking the two or more image processors to form an image processing chain.” (Citing RX-10C at Q. 242-243; RX-37.039, 043.)

Finally, Kodak asserts that the RFS 2035 System discloses “the central processing unit facilitates access of chosen controls of the one or more parametric controls within each of the two or more image processors for modification of the two or more image processors and alteration of the image processing” under any construction. (Citing RX-10C at Q. 244; RX-37.039.) Kodak claims that the software running on the central processing unit provides the interface which displays the parametric controls that allow a user to alter parameters of image processing. (*Id.*)

Kodak argues that the RFS 2035 System anticipates claims 27, 30, and 38 for the same reasons as discussed with respect to claim 15. (Citing RX-10C at Q. 248-252.) Kodak notes that claim 38 contains the additional requirement of an “image processing backplane.” Kodak argues that under all parties’ constructions, the “image processing backplane” requirement is satisfied by the RFS 2035 System which includes software that coordinates image processors and controls the flow of data through the image processing chain. (Citing RX-37.039, 043; RX-10C at Q. 252.)

**Apple’s Position:** Apple contends that the RFS 2035 System fails to anticipate any of the asserted claims of the ‘911 patent.

Apple asserts that the RFS 2035 System discloses a scanner connected to a general purpose computer, where the general purpose computer performs all of the image processing. (Citing CX-473 at Q. 60, 74-77.) Apple argues that the RFS 2035 System fails to disclose a

PUBLIC VERSION

single "digital image capture device" that captures a digital image and performs image processing. (Citing CX-473 at Q. 66-67, 74-77.)

Apple asserts that the RFS 2035 System fails to disclose other various limitations in claims 30 and 38 that require an image processing backplane and software modules that are part of the digital image capture device. (Citing CX-473 at Q. 68-70, 74-77.) Because Kodak points to software in a general purpose computer to meet these claim limitations, Apple argues that the software is not part of the digital image capture device. (*Id.*)

**Staff's Position:** Staff contends that the RFS 2035 System does not anticipate any of the asserted claims of the '911 patent.

Staff notes that Kodak concedes that the RFS 2035 System is a hardware-based system. (Citing RPHB at 94.) Staff asserts that a hardware-based system does not meet the "image processors" limitation of the asserted claims.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Kodak has failed to offer clear and convincing evidence that the RFS 2035 System anticipates any of the asserted claims of the '911 patent.

Dr. Stevenson describes the RFS 2035 System as follows: "[t]he Kodak RFS 2035 Professional Film Scanner is a film scanner that attaches to a personal computer and can be used to capture digital image data from film. Together, these make up the RFS 2035 System." (RX-10C at Q. 229.) Dr. Stevenson asserts that the RFS 2035 Film Scanner was on sale by Kodak before July 14, 1994. (*Id.* at Q. 230.)

Kodak offers the RFS 2035 System as prior art only if the claims are interpreted to cover the hardware image processing found in the accused Kodak products. (RIB at 126-127.) Kodak admits that the RFS 2035 System is a "programmable, hardware-based system[.]" (*Id.* at 127.)



PUBLIC VERSION

Because I have concluded in Section VI.C *infra* that the asserted claims of the '911 patent do not cover the image processing found in the accused Kodak products, Kodak's conditional invalidity argument fails.

e. McCubbrey

**Kodak's Position:** Kodak contends that under Apple's interpretation of the asserted claims, the U.S. Patent No. 4,860,375 ("McCubbrey") anticipates the asserted claims.

Kodak argues that McCubbrey anticipates claim 15. Kodak states that McCubbrey teaches a process that enables the capture of digital image data thereby disclosing the claimed "digital image capture device" limitation under any construction. (Citing JX-55.011.)

According to Kodak, McCubbrey includes an image sensor inside a video camera that creates a digital representation of an image which the system processes and stores. (Citing JX-55.002 at Fig. 1; RX-10C at Q. 262.)

Kodak claims that McCubbrey discloses the "image processors" limitation of claim 15 under Apple's interpretation of the agreed claim construction of "image processors." (Citing RX-10C at Q. 263.) Kodak asserts that the system disclosed in McCubbrey includes "processing stages" which are programmed in a pipeline processor. (Citing JX-55.012; RDX-2-109.)

According to Kodak, each of these "processing stages" is an "image processor." Kodak states that under any construction, the image processors of McCubbrey include parametric controls which allow a user to adjust parameters of the image processors. (Citing RX-10C at Q. 263-265; JX-55.006 at Fig. 6; RDX-2-110.)

Kodak argues that McCubbrey discloses a system with a central processing unit (CPU). (Citing JX-55.011; RDX-2-111.) Kodak claims that the CPU disclosed by McCubbrey is "capable of linking the two or more image processors to form an image processing chain."

## PUBLIC VERSION

(Citing RX-10C at Q. 267.) Kodak avers that McCubbrey discloses a “central processing unit [that] facilitates access of chosen controls of the one or more parametric controls within each of the two or more image processors for modification of the two or more image processors and alteration of the image processing.” (Citing RX-10C at Q. 268.) Kodak claims that McCubbrey can perform a programmed sequence of one or more different image processing operations on a serial stream of digital image data. (Citing RX-10C at Q. 268; JX-55.010.)

Kodak asserts that McCubbrey anticipates claim 27 of the ‘911 patent for the reasons offered with respect to claim 15. (Citing RX-10C at Q. 273.)

Kodak asserts that McCubbrey anticipates claim 30 of the ‘911 patent for the reasons offered with respect to claim 15. (Citing RX-10C at Q. 274.) Kodak notes that claim 30 of the ‘911 patent claims “parametric controls accessible by a user of the digital image capture device.” Kodak argues that McCubbrey discloses that control registers are used to set user-defined functions. (Citing Tr. at 636:10-639:23.) Kodak explains that the user defined functions that are set in control registers are the claimed “parametric controls” of the ‘911 patent.

Kodak asserts that McCubbrey anticipates claim 38 of the ‘911 patent for the reasons offered with respect to claim 15. (Citing RX-10C at Q. 276.) Kodak notes that claim 38 contains the additional requirement of an “image processing backplane.” Kodak claims that under all parties’ constructions, the “image processing backplane” requirement is satisfied by the software of the McCubbrey system that programs the various image processing stages and sends image data through the pipeline. (Citing RX-10C at Q. 276.)

In its reply brief, Kodak reiterates that it only asserts that the McCubbrey reference anticipates the ‘911 patent to the extent that Apple’s position on the interpretation of the claims is adopted. Specifically, Kodak states that McCubbrey is only relevant if Apple’s position with

## PUBLIC VERSION

respect to the "image processors" limitation is adopted. Otherwise, Kodak agrees that McCubrey is not anticipatory prior art.

**Apple's Position:** Apple contends that McCubrey fails to anticipate any of the asserted claims of the '911 patent.

Apple states that McCubrey was considered during prosecution of the '911 patent. Apple argues that Kodak has presented no evidence that the examiner's allowance of the patent after considering McCubrey was an error. Apple argues that McCubrey does not disclose the claimed "image processors" because the image processing in McCubrey is hardwired. Apple notes that Kodak's expert agreed that McCubrey discloses a hardwired system. (Citing Tr. at 635:10-636:9.)

Apple claims that McCubrey does not disclose the claimed parametric controls that permit modification of the image processors. Apple states that the only ability to modify the image processors that Kodak points to is the possibility that Kodak's own expert could have re-programmed the device to perform different types of image transformations. (Citing Tr. at 451:11-452:23.) According to Apple, the need to re-program the McCubrey device to modify the image processing puts the McCubrey device squarely in the category of devices distinguished by the '911 patent. (Citing CX-425C at Q. 29; JX-2 at 1:39-43.)

**Staff's Position:** Staff contends that McCubrey does not anticipate any of the asserted claims of the '911 patent.

Staff claims that McCubrey discloses hardware-based image processing. Staff asserts that a hardware-based system does not meet the "image processors" limitation of the asserted claims.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Kodak has

## PUBLIC VERSION

failed to offer clear and convincing evidence that McCubbrey anticipates any of the asserted claims of the '911 patent.

Kodak offers McCubbrey as prior art only if the claims are interpreted to cover the hardware image processing found in the accused Kodak products. (RIB at 131.) Because I have concluded in Section VI.C *infra* that the asserted claims of the '911 patent do not cover the image processing found in the accused Kodak products, Kodak's conditional invalidity argument fails.

McCubbrey was cited during the prosecution of the '911 patent. (JX-2; JX-6.) During prosecution, the applicant argued that the image processing stages of McCubbrey were "hardwired," unlike the claimed "image processors" of the '911 patent. (JX-6.110.) Dr. Madisetti acknowledged during cross examination that the image processors of McCubbrey are hardwired. (Tr. at 635:10-636:9.) I construed "image processors" to mean "software modules which each apply algorithms on image data to obtain a particular type of image transformation." Because I find that the asserted claims do not cover "hardwired" image processors, an admission by Kodak's expert that McCubbrey discloses hardwired image processing demonstrates that Kodak cannot offer clear and convincing evidence that McCubbrey discloses the claimed "image processors."

I also find that Kodak failed to offer clear and convincing evidence that McCubbrey discloses "parametric controls." I construed that term to mean "range type or enumerated list type of values that affect how an image processor processes image data." In arguing that the "parametric controls" limitation is satisfied, Kodak relies on Dr. Stevenson's opinion. Dr. Stevenson testifies that the programming of the pipeline processor described in McCubbrey meets the "parametric controls" limitation. (RX-10C at Q. 265; JX-55.014.) I find that

## PUBLIC VERSION

McCubrey's disclosure regarding the need to program the image processing stages prior to image processing does not disclose the use of "range type or enumerated list type of values that affect how an image processor processes image data." There is no disclosure of providing at least one parametric control – i.e. a range type or enumerated list type of value – for modifying the image processor. McCubrey's disclosure of programming the image processing stages does not fulfill this requirement of the asserted claims.

Based on the foregoing, I find that Kodak has failed to offer clear and convincing evidence that McCubrey anticipates any of the asserted claims of the '911 patent.

### 2. Obviousness

**Kodak's Position:** Kodak contends that if the prior art references at issue are not found to anticipate the asserted claims, then they render those claims obvious.

Kodak asserts that Apple's only rebuttal to the PhotoFlash System as anticipatory prior art is its contention that the "digital image capture device" require an image sensor and CPU in a unitary device. Kodak claims that even if Apple's claim construction of "digital image capture device" is adopted, the PhotoFlash System would render the claims obvious because a person of ordinary skill in the art would have been motivated to include the image sensor within the same enclosure as the CPU. Kodak claims that design needs and market pressures to sell unitary devices would have made such a modification obvious to try. Kodak argues that putting the two components into a unitary housing would have been a very simple and straightforward modification. (Citing Tr. at 698:17-699:5; JX-2.)

In its reply brief, Kodak asserts that it has presented evidence that the '911 patent is obvious. Kodak explains that after Dr. Delp testified at his deposition that an external iSight camera connected to a MacBook Pro constituted a "digital image capture device," Kodak

## PUBLIC VERSION

believed that no obviousness analysis was necessary because Dr. Delp's testimony was consistent with Kodak's position that all of the prior art offered by Kodak contains a "digital image capture device." (Citing RX-10C at Q. 106.)

Kodak alleges that because Dr. Delp has recanted his deposition testimony, Kodak offered an obviousness argument in its initial brief. Kodak claims that it offers single-reference obviousness arguments premised on each of the five anticipatory references identified by Kodak.

**Apple's Position:** Apple contends that Kodak attempts to revive an obviousness argument that was stricken pursuant to the ruling on Apple's Motion *in Limine* No. 1. (Citing Tr. at 15:4-6.) According to Apple, Kodak's argument that the PhotoFlash System by itself renders the claims of the '911 patent obvious is clearly beyond the scope of the obviousness theories presented by Kodak in its Joint Stipulation of Contested Issues.

Apple contends that Staff also presents obviousness arguments that are outside the scope of the Joint Stipulation of Contested Issues. (Citing SIB at 50-53.) Apple additionally argues that Staff's arguments on the issue of obviousness should be disregarded because they are not accompanied by any evidence in the record and constitute pure attorney argument.

**Staff's Position:** Staff contends that to the extent that the PhotoFlash System, HIPS 1, and the '509 application are not found to anticipate the asserted claims, each reference renders the asserted claims obvious. Staff argues that to the extent that these references are not found to anticipate the asserted claims because they lack a unitary device, each of the references would render the asserted claims obvious.

**Discussion and Conclusion:** Based on the evidence in the record, I find that neither Kodak nor Staff offered clear and convincing evidence that any of the asserted claims of the '911 patent are rendered obvious by the prior art references addressed in the anticipation analysis.

## PUBLIC VERSION

Both Kodak and Staff only offer single-reference obviousness arguments. I find that such arguments have been waived pursuant to Ground Rule 8.3, which governs the Joint Stipulation of Contested Issues. That rule states, *inter alia*:

On or before the date set forth in the procedural schedule, the parties shall file a Joint Stipulation of Contested Issues. The issues to be tried are limited to those included in the Joint Statement and any amendments thereto permitted by the Presiding Judge.

The Joint Stipulation of Contested Issues submitted by the parties contains no indication that either Kodak or Staff planned to assert a single-reference obviousness argument. All obviousness arguments for the '911 patent listed in the Joint Stipulation of Contested Issues are related to combinations of references. (See JSCI at ¶¶ 15, 17, 18-23, 26.) Because the single-reference obviousness arguments are not mentioned in the Joint Stipulation of Contested Issues, Kodak and Staff have waived their right to raise them in the post-hearing briefing.

Assuming *arguendo* that Kodak's and Staff's obviousness arguments were not waived, they still fall short. Neither Kodak nor Staff cite any evidence to support their obviousness arguments. (RIB at 134; SIB at 50-53.) Instead, both Kodak and Staff rely on unsupported attorney argument when claiming that it would have been obvious to modify the prior art references at issue to reach the asserted claims of the '911 patent. (*Id.*) For example, without providing any evidentiary support, Kodak asserts that "[a] person of ordinary skill in the art would have been motivated to include the image sensor within the same enclosure as the CPU, as design needs and market pressures to sell unitary devices would have made such a modification obvious to try." (RIB at 134.) "Attorneys' argument is no substitute for evidence." *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1581 (Fed. Cir. 1989).

Based on the foregoing, I find that neither Kodak nor Staff offered clear and convincing evidence that any of the asserted claims of the '911 patent are obvious.

## PUBLIC VERSION

### 3. Claim 38

Kodak raises an invalidity argument regarding claim 38 in its reply brief. (RRB at 60-61.) Kodak claims that adoption of Apple's proposed construction of "parametric control(s)" would render claim 38 invalid for impermissible recapture.

Specifically, Kodak asserts that the specification and prosecution history make clear that the invention is limited to a set-up where the parametric controls are "within" the image processors. Claim 38, which was added during reissue, requires a parametric control "coupled" to an image processor. Kodak argues that under Apple's proposed construction of "parametric control(s)," claim 38 is not limited to a situation where the parametric control is within the image processor. Kodak thus asserts that Apple has improperly recaptured subject matter surrendered during prosecution.

Kodak's pre-hearing brief only makes mention of the recapture argument in a footnote. (RPHB at 33.) Likewise, in Kodak's initial post-hearing brief, it again limits its discussion of the recapture issue to an identical footnote. (RIB at 86.) The footnote in both the pre-hearing brief and initial post-hearing brief states the following:

Dr. Delp argues that not every Asserted Claim requires parametric controls within the image processors. If that were true, Apple would have impermissibly recaptured subject matter that it surrendered during the original prosecution of the '465 Patent and Claim 38 would be invalid.

(RPHB at 33; RIB at 86.)

Ground Rule 8.3 concerns the Joint Stipulation of Contested Issues. It provides that "[t]he issues to be tried are limited to those included in the Joint Statement and any amendments thereto permitted by the Presiding Judge." In the Joint Stipulation of Contested Issues, Kodak does not raise the recapture invalidity argument. (*See generally* JSCL.)

Kodak's recapture invalidity argument is based on Apple's proposed claim construction



PUBLIC VERSION

for “parametric control(s).” Apple offered this construction long before the deadline for the Joint Statement of Contested Issues, the pre-hearing briefs, or the initial post-hearing briefs. (See JX-11.007.) While Kodak focuses on Apple’s assertion in the parties’ Joint Claim Construction Statement that “Apple believes either its construction or the Staff’s construction is acceptable,” Kodak fails to offer evidence that Apple withdrew its own proposed claim construction during the investigation. (*Id.*)

Therefore, Kodak had sufficient notice to raise the recapture issue in the Joint Stipulation of Contested Issues. Because that issue is not raised in the Joint Stipulation of Contested Issues, I find that Kodak has waived its recapture argument pursuant to Ground Rule 8.3.

Furthermore, assuming *arguendo* that Kodak had adequately raised the recapture issue in the Joint Stipulation of Contested Issues, I find that raising the detailed argument on this issue for the first time in Kodak’s reply brief is an improper use of the reply brief.<sup>21</sup> I emphasized this to the parties at the end of the hearing, when I told them to be sure that their initial briefs included all issues on their case in chief and any anticipated issues they thought the other side would raise and on which they might want to include new argument. They were told that their reply brief would be limited to responding to what was raised by the other party in its initial brief. (Tr. at 811:2-18.)

Instead of fully addressing the recapture issue in its initial post-hearing brief, Kodak only devoted a two-sentence footnote to the issue. Kodak then devoted two pages in its reply brief to argue that claim 38 is invalid due to an impermissible recapture. To properly argue its position, Kodak should have included its detailed argument on the issue of recapture in its initial post-hearing brief. Waiting to raise specific arguments for the first time in its reply brief is precisely what Kodak was warned not to do, because that tactic did not allow Apple to properly respond in

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<sup>21</sup> Ground Rule 11.1 states that any issues not raised in the initial brief are deemed waived.

## PUBLIC VERSION

Apple's reply brief. Thus, I find that inclusion of this argument in Kodak's reply brief was improper argument, and it will not be considered.<sup>22</sup>

### OWNERSHIP DEFENSE

#### A. Applicable Law

"[T]he question of who owns the patent rights and on what terms typically is a question exclusively for state courts." *Jim Arnold Corp. v. Hydrotech Sys., Inc.*, 109 F.3d 1567, 1572 (Fed. Cir. 1997). The December 20, 1994 "Interim Letter Agreement Regarding Aspen and Phobos Projects" (hereinafter "Interim Agreement") at issue in the current dispute provides that "[t]his agreement will be governed by and construed in accordance with the laws of the State of California, excluding that body of California law concerning conflicts of law." (RX-423C at ¶ 9.)

California contract law is governed by the California Civil Code. The following provisions from the California Civil Code are relevant to the interpretation of the Interim Agreement:

- A contract must be so interpreted as to give effect to the mutual intention of the parties as it existed at the time of contracting, so far as the same is ascertainable and lawful.
- The language of a contract is to govern its interpretation, if the language is clear and explicit, and does not involve an absurdity.
- When a contract is reduced to writing, the intention of the parties is to be ascertained from the writing alone, if possible; subject, however, to the other provisions of this Title.
- The whole of a contract is to be taken together, so as to give effect to every part, if reasonably practicable, each clause helping to interpret the other.

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<sup>22</sup> Kodak's added argument in its reply brief also violates Ground Rule 11.3 regarding the content of reply briefs.

## PUBLIC VERSION

- A contract must receive such an interpretation as will make it lawful, operative, definite, reasonable, and capable of being carried into effect, if it can be done without violating the intention of the parties.
- The words of a contract are to be understood in their ordinary and popular sense, rather than according to their strict legal meaning; unless used by the parties in a technical sense, or unless a special meaning is given to them by usage, in which case the latter must be followed.
- Technical words are to be interpreted as usually understood by persons in the profession or business to which they relate, unless clearly used in a different sense.
- A contract may be explained by reference to the circumstances under which it was made, and the matter to which it relates.
- However broad may be the terms of a contract, it extends only to those things concerning which it appears that the parties intended to contract.
- If the terms of a promise are in any respect ambiguous or uncertain, it must be interpreted in the sense in which the promisor believed, at the time of making it, that the promisee understood it.

CAL. CIVIL CODE §§ 1636, 1638, 1639, 1641, 1643-1645, 1647-1649 (West 2011).

California courts interpret contracts in a way that is consistent with the above-listed provisions. For example, when describing the general principles of contract interpretation, a court has stated the following:

Contracts are interpreted so as to give effect to the mutual intention of the parties at the time of contracting, to the extent ascertainable and lawful. The mutual intent of the parties is ascertained from the contract language, which controls if clear and explicit. Where necessary, a contract may be interpreted by reference to the circumstances under which it was made or the matter to which it relates... Extrinsic or parol evidence may be used to explain ambiguity, context or related matter.

*Fireman's Fund Ins. Co. v. Workers' Compensation Appeals Bd.*, 116 Cal. Rptr. 3d 658, 665

(Cal. Ct. App. 2010) (citations omitted).

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**B. The '964 Patent**

**Kodak's Position:** Kodak contends that it is a co-owner of the '964 patent pursuant to the terms of an Interim Agreement entered into between Apple and Kodak on December 24, 1994. (Citing RX-423C.)

Kodak alleges that in the Interim Agreement, the parties agreed that Apple and Kodak would jointly own the "SYSTEM ASIC-Power Manager." Kodak says that Apple admits that claim 4 of the '964 patent covers the "Power Manager" developed during Aspen/Phobos. (Citing CX-474C at Q. 94-95.) Kodak concludes that Apple obtained a patent on technology it previously had agreed Kodak would co-own.

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Kodak argues that patents are subject to general legal rules on ownership and transfer of property. (Citing 35 U.S.C. § 261.) Kodak says that applications for patents, or any interest therein, are assignable by an instrument in writing. (*Id.*) Kodak contends that state law governs contractual obligations and transfers of property rights relating to patents. (Citing *Regents of Univ. of N.M. v. Knight*, 321 F.3d 1111, 1118 (Fed. Cir. 2003).)

{

} Kodak argues that under California law “[t]he fundamental rules of contract interpretation are based on the premise that the interpretation of a contract must give effect to the ‘mutual intention’ of the parties.” (Citing *TRB Investments, Inc. v. Fireman’s Fund Ins. Co.*, 40 Cal. 4th 19, 27 (Cal. 2006).) Kodak says a contract must be read as a whole, so as to give reasonable effect to every part, “each clause helping to interpret the other.” (Citing Ca. Civil Code § 1641; *Gardiner, Kanya & Associates, P.C. v. Jackson*, 467 F.3d 1348, 1353 (Fed. Cir. 2006).) Kodak

PUBLIC VERSION

argues “[a] party’s conduct occurring between execution of the contract and a dispute about the meaning of the contract’s terms may reveal what the parties understood and intended those terms to mean.” (Citing *City of Hope Nat’l Medical Center v. Genentech, Inc.*, 43 Cal. 4th 375, 393 (Cal. 2008).)

Kodak argues that, as a co-owner, it cannot infringe the ‘964 patent. (Citing *Corry v. CFM Majestic Inc.*, 2000 WL 1720649, at \*4 (Fed. Cir. Nov. 16, 2000.)) Kodak says that in *Corry*, the Federal Circuit held that a patent was co-owned and not infringed where the parties entered an agreement that stated that any improvement of the underlying technology would be jointly owned by the parties. {

}

In its reply brief, Kodak says that Apple mischaracterizes Kodak’s ownership defense as one “more accurately characterized as an ‘inventorship’ claim” rather than one based in contract law, as is the case here. Kodak says that inventorship and ownership are separate issues. (Citing *Beech Aircraft Corp. v. Edo Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993).) {

}

Kodak says that both Apple and Staff argue Kodak’s ownership defense is subject to the clear and convincing standard. Kodak responds that challenges to ownership are judged by the preponderance of evidence standard, not the heightened clear and convincing evidence standard.

PUBLIC VERSION

(Citing *Synopsys, Inc. v. Magma Design Automation, Inc.*, 2007 WL 322353, at \*18 (N.D. Cal. Jan. 31, 2007).)

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Kodak argues that, second, in its ownership interrogatory responses, {

} Kodak argues that Apple cannot now reverse its position to fit its current theory. Kodak says that this Court has previously held the parties may not introduce contentions not disclosed in their interrogatory responses. (Citing Order No. 20 at 5.)

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**Apple's Position:** Apple contends that Kodak's ownership argument fails for want of evidence. {

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Turning to the substance of Mr. Sasson's testimony, Apple argues it belies that Kodak owns any interest in the '964 patent. {

}

Apple contends that Kodak does not dispute that Eric Anderson, the sole named inventor of the '964 patent, validly assigned his rights in that patent to Apple. (Citing JX-1 at 2.) Apple

**PUBLIC VERSION**

asserts that, on this basis alone, Apple has standing to assert the '964 patent, and Kodak's ownership defense fails. (Citing *Pandrol USA, LP v. Airboss Railway Prods., Inc.*, 320 F.3d 1354, 1368 (Fed. Cir. 2003).)

{

} (Citing *Synopsys, Inc. v. Magma Design Auto., Inc.*, No. C-04-3923 MMC, 2007 WL 322353, at \*19 (N.D. Cal. Jan. 31, 2007) (unpublished).)

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Apple concludes that, because “Mr. Anderson of Apple alone invented the power management system claimed in the ‘964 patent, and because Kodak has not offered evidence contrary to Mr. Anderson’s invention story, much less competent to sustain Kodak’s burden, Kodak’s ownership defense should be rejected.”

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**PUBLIC VERSION**

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} Apple

responds that this is incorrect; the court struck portions of Mr. Lutton's testimony it identified as legal opinion. Apple argues that by definition, Apple is entitled to present those legal arguments in its brief, regardless of the disposition of Mr. Lutton's witness statement. {

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**PUBLIC VERSION**

} Apple asserts that an ASIC is an “application specific integrated circuit”  
– the specific physical machinery that implements certain functionality for a given product.  
Apple argues that the '964 patent does not claim a particular power manager ASIC design;  
rather, it discloses “a power management system, for monitoring a power supply to detect a  
power failure, configured to protect said sets of image data if said power failure is detected.”  
(Citing JX-1 at claim 1.) Apple states “[n]owhere does the '964 patent discuss the specific

**PUBLIC VERSION**

circuit design for implementing these features—the circuit design details are distinct from the claimed invention.”

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**Staff's Position:** Staff says that, based on the same agreement discussed in connection with Kodak's ownership defense to the '911 patent, Kodak asserts that it is a joint owner of the '964 patent. (Citing RIB at 189.) Staff reasons that as Eric Anderson is the only inventor named by the '964 patent, he is legally presumed to be the sole inventor of the invention claimed in it. Staff argues that to overcome this presumption Kodak must provide clear and convincing evidence that one of its employees contributed to the invention claimed in the patent.

Staff contends that as with the '911 patent, to support its allegation of co-ownership of the '964 patent Kodak relies on the testimony of Steven Sasson, who was not personally involved in the Apple-Kodak collaboration, and {

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**PUBLIC VERSION**

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} Staff notes that there is no mention of a memory manager,  
concurrently processing multiple unprocessed images into processed images, or even or  
protecting unprocessed image data.

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PUBLIC VERSION

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} Staff concludes that the evidence on which party first proposed the features of the power manager is ambiguous, and even Mr. Sasson admitted that he did not know who contributed which aspects of the power manager, or when they did so. (Citing Tr. at 545:4-24.)

**Discussion and Conclusion:** Based on the evidence in the record, I find that Kodak has failed to meet its burden to demonstrate by a preponderance of evidence that it is a co-owner of the '964 patent.

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} Neither the testimony cited by Kodak, nor the content of the '964 patent support Kodak's position. The cited testimony taken in context reflects that the recitation of claim 4 does embody a system in which power is switched to a backup battery by the power manager; but the witness clearly stated that this was in addition to the elements of claim 1, because claim 4 depends from claim 1. The discussion to which Kodak makes reference was about CX-452C, which was Mr. Eric Anderson's work product. It treated the power management system and encompassed features in claim 1 and claim 4 of the '964 patent. (CX-474C at Q. 81-98.) I note that Mr. Anderson is correct that claim 4 is a dependent claim that depends from claim 1. (JX-1 at claims 1 and 4.)

Based upon all of the foregoing, I find that Kodak has failed to meet its burden to prove by a preponderance of evidence that the Interim Agreement provided Kodak with intellectual property rights to the power management system taught in claims 1 and 4 of the '964 patent.

**C. The '911 Patent**

**Kodak's Position:** Kodak contends that it is a joint owner of the '911 patent, and therefore cannot infringe the '911 patent.

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Kodak notes that Apple admits that it did not invent an image processing chain or an image processor. (Citing CX-474C at Q. 117, 121, 128.) Kodak states that Apple argues that that its '911 patent does not claim specific image processing modules. According to Eric Anderson, the specifics of the image processors were not an important part of Apple's invention.

PUBLIC VERSION

(Citing CX-474C at Q. 121, 122, 125). Kodak believes that the plain language in the claims of the '911 patent contradicts this testimony.

Claim 9 of the '911 patent requires "two or more image processors . . . compris[ing] a sharpening image processor." {

}

Dependent claim 10 requires "the method of claim 9 wherein the sharpening image processor provides a sharpening parametric control." {

}

Dependent claim 11 requires "the method of claim 10 wherein the sharpening parametric control comprises a range type of control." {

} Kodak notes that claims 16 and 39 of the '911 patent similarly relate to the sharpening module or its controls.

Kodak believes that the specification of the '911 patent makes it clear that Apple claimed the intellectual property developed by Kodak. {

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**PUBLIC VERSION**

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Kodak concludes that because it jointly owns the '911 patent, it cannot be found to infringe. (Citing 35 U.S.C. § 262.)

}

**PUBLIC VERSION**

**Apple's Position:** Apple contends that it is the sole owner of the '911 patent.

Apple states that Kodak does not dispute that Eric Anderson and Gary Chin, the named inventors of the '911 patent, validly assigned their rights in that patent to Apple. Apple argues that on this basis alone, Apple has standing to assert the '911 patent, and Kodak's ownership defense fails.

Apple asserts that Kodak's '911 patent "ownership" claim turns not on any purported assignment of patent rights, but the assertion that Kodak contributed to the conception of the image processing chain claimed in the '911 patent. Accordingly, Apple believes that Kodak's "ownership" argument should be treated as an inventorship claim and rejected as inchoate in view of Kodak's failure to identify the individuals purportedly responsible for Kodak's allegedly inventive contributions to the claimed image processing chain.

## PUBLIC VERSION

Apple claims that the '911 patent makes clear that specific image processors used with the claimed invention were immaterial to that invention. (Citing JX-2 at 5:60-67.) Rather, Apple believes that the idea behind the claimed invention was, as the patent's title indicates, to provide "modular digital image processing via an image processing chain with modifiable parameter controls." (Citing JX-2; CX-474C at Q.117, 122.)

Apple argues that none of the claims in the '911 patent discloses a specific implementation of a software processing module. Apple states that although some dependent claims require the inclusion of a software module that performs a particular function, none of those claims reads on the software module's implementation of that function. Apple claims that this makes sense, because, as explained in the '911 patent's specification, "the details of such processing . . . are considered to be well understood by those skilled in the art." (Citing JX-2 at 5:62-65.) Apple asserts that the innovation of the '911 patent lay in the creation of a modular image processing chain that permitted a user to control the processing performed on a particular image, not the specific software implementation of such processing.

**PUBLIC VERSION**

**PUBLIC VERSION**

(Citing CX-474C at Q. 155-165.)

**Staff's Position:** Staff contends that Kodak failed to demonstrate that it is a co-owner of the '911 patent.

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} Staff stats

that Eric Anderson and Gary Chin are listed as the inventors of the '911 patent and are accordingly legally presumed to be the sole inventors. Staff believes that in order to overcome this presumption, Kodak must provide clear and convincing evidence that a Kodak employee contributed to the invention of the '911 patent.

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**PUBLIC VERSION**

Staff believes that, at best, the evidence provided by Kodak establishes that Kodak provided the software for certain image processors with titles similar to the image processors mentioned in the '911 patent. {

.} Staff submits that the evidence shows that the '911 patent is not directed to an image processing chain alone, or to specific image processors, but to an image processing chain where the processors contain parametric controls, and, in some claims, the use of an image processing backplane. {

} the issue has nothing to do with the ownership of the '911 patent, which relates to the idea of an image processing chain and backplane rather than to the specific software in certain image processors.

{

} Given this, the presumption that named inventors are the only inventors, and the lack of testimony from individuals with firsthand knowledge, Staff does not believe that Kodak carried its burden and demonstrated that its employees contributed to the invention claimed in, or that it is a co-owner of, the '911 patent.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Kodak has failed to meet its burden to demonstrate by a preponderance of evidence that it is a co-owner of the '911 patent.

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**PUBLIC VERSION**

**PUBLIC VERSION**

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While the '911 patent is related to image processors being linked to form an image processing chain, I find that there is a clear distinction between the intellectual property owned by Kodak and the invention disclosed in the '911 patent. {

} The '911 patent is clear that it is not claiming ownership of any specific image processors, and that image processing was already known in the art:

Further, brief descriptions of the type of image processing capable by each image processor 502 are included as examples. However, the details of such processing are not included in the present discussion and are considered to be well understood by those skilled in the art. Thus, image processing through the use of

**PUBLIC VERSION**

other image processors in the IPC 500 is within the spirit and scope of the present invention.

(JX-2 at 5:60-67.) Therefore, while the claims require use of image processors, the '911 patent is clear that the invention is not directed to the details of the image processing. The '911 patent further makes clear that any image processors that meet the requirements of the claim may be utilized.

{

{

} There is no requirement specifying the details of how the image sharpening is performed, as the '911 patent explains that the details of the image processing are considered to be well understood by those skilled in the art. (JX-2 at 5:60-67.)

Assuming *arguendo* that the Interim Agreement is found to be ambiguous and it is necessary to examine evidence beyond the Interim Agreement, I find that the extrinsic evidence offered by Kodak does nothing to change my conclusion. {

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**PUBLIC VERSION**

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} The '911 patent does not claim the specific image processors developed by Kodak, and is clear that the invention is not directed to the details of how the image processors perform their processing. (JX-2 at 5:60-67.) Thus, I find that Kodak has failed to demonstrate that it is a co-owner of the '911 patent.

## V. INFRINGEMENT

### A. Applicable Law

A complainant must prove either literal infringement or infringement under the doctrine of equivalents. Infringement must be proven by a preponderance of the evidence. *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988). A preponderance of the evidence standard "requires proving that infringement was more likely than not to have

## PUBLIC VERSION

occurred.” *Warner-Lambert Co. v. Teva Pharm. USA, Inc.*, 418 F.3d 1326, 1341 n. 15 (Fed. Cir. 2005).

Literal infringement is a question of fact. *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). Literal infringement requires the patentee to prove that the accused device contains each and every limitation of the asserted claim(s). *Frank’s Casing Crew & Rental Tools, Inc. v. Weatherford Int’l, Inc.*, 389 F.3d 1370, 1378 (Fed. Cir. 2004).

As for the doctrine of equivalents:

Infringement under the doctrine of equivalents may be found when the accused device contains an “insubstantial” change from the claimed invention. Whether equivalency exists may be determined based on the “insubstantial differences” test or based on the “triple identity” test, namely, whether the element of the accused device “performs substantially the same function in substantially the same way to obtain the same result.” The essential inquiry is whether “the accused product or process contain elements identical or equivalent to each claimed element of the patented invention[.]”

*TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1376-77 (Fed. Cir. 2008)

(citations omitted).

Thus, if an element is missing or not satisfied, infringement cannot be found under the doctrine of equivalents as a matter of law. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538-39 (Fed. Cir. 1991). Determining infringement under the doctrine of equivalents “requires an intensely factual inquiry.” *Vehicular Techs. Corp. v. Titan Wheel Int’l, Inc.*, 212 F.3d 1377, 1381 (Fed. Cir. 2000).

### **B. The ‘964 Patent**

#### **1. Claim 1**

Claim 1 recites:

A digital camera device comprising:

a CPU capable of concurrently processing multiple unprocessed images into

PUBLIC VERSION

processed images;

a memory device, coupled to said CPU, for storing sets of image data, comprising frame buffers for storing unprocessed image data and a random-access memory disk for storing unprocessed image data and processed image data;

a memory manager for allocating storage locations to store said sets of image data within said memory device;

a power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected; and

an interface coupled to said memory device whereby an external host computer can access said sets of image data stored in said memory device.

**Apple's Position:** Apple contends that the following Kodak digital cameras { “

} infringe claims 1, 3, 5, 7 and 8 of the '964 patent: Z915, M380, M381, M580,

M590, C142, C190, PLAYTOUCH, and SLICE.<sup>24</sup> Apple argues that the following Kodak

digital cameras { } infringe claims 1, 3, 5, 7 and 8 of the '964 patent:

M340, M341, M530, M550, M575, C143, C180, C182, C195, and C913.<sup>25</sup> Apple contends that

the following Kodak digital cameras { } infringe claims 1, 3, 5, 7 and

8 of the '964 patent: Zx1, Zx3 (PlaySport), Zi6, Zi8, and ZxD.<sup>26</sup> Apple avers that the

infringement analysis for the { } is the

same as the analysis for the { }<sup>27</sup> (Citing CX-425C at Q. 530, 565.) Apple

alleges that all of the limitations of the asserted claims are present both literally and under the

doctrine of equivalents in the accused cameras. (Citing CX-425C at Q. 426-571, 573-579, 581-

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<sup>27</sup> Because Apple alleges that the infringement analysis for the three classes of accused camera is identical, I have combined the arguments and citations related to each class of camera into one summary. Hereinafter they are jointly called “accused cameras.”

PUBLIC VERSION

605.)

Apple argues that the accused cameras practice the limit in element 1 of claim 1, which requires: “a CPU capable of concurrently processing multiple unprocessed images into processed images.” Apple says that the accused cameras each have a CPU capable of concurrently processing multiple unprocessed images into processed images. (Citing CX-425C at Q. 427-432, 434, 531-533, 566-571.) Apple alleges that {

} includes a CPU. (Citing JX-146C at 7.) Apple asserts that {

} that includes a CPU. (Citing JX-

24C at 7.) Apple says that {

includes a CPU. (Citing CX-425C at Q. 567-569; CX-74C at 7.)

Apple alleges that the CPU executes software that controls the flow of image data through the SoC. (Citing CX-425C at Q. 428, 532-533, 567-569.) Apple says during video capture mode, based on instructions from the CPU, multiple frames (i.e., images) of video are processed from unprocessed to processed at the same time. (Citing CX-425C at Q. 428-430, 532-533, 567-571; JX-15C at 43:14-44:16.) Apple avers that Kodak offered no expert testimony to rebut Apple’s position that {

} satisfy this limitation.

Apple argues that the accused cameras practice the limit in element 2 of claim 1, which requires: “a memory device, coupled to said CPU, for storing sets of image data...” Apple alleges that the accused cameras have a memory device coupled to the CPU for storing sets of image data. (Citing CX-425C at Q. 437-438, 535-539, 573-579, 581-585.) Apple says that the

{

} contain a memory device that includes a {

,} both

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PUBLIC VERSION

of which are coupled to the CPU. (Citing CX-425C at Q. 437-438; JX-146C at 7.) Apple states that the { } contain a memory device that includes a DRAM for storing image data and buffers in the { } for storing image data, both of which are coupled to the CPU. (Citing CX-425C at Q. 535-539; JX-24C at 7.) Apple avers that the { } contain a memory device that includes a DRAM for storing image data and buffers in { } for storing image data, both of which are coupled to the CPU. (Citing CX-425C at Q. 574; CX-74C at 7.) Apple notes that Kodak offered no expert testimony to rebut Apple's position that the accused cameras satisfy this limitation.

Apple argues that the accused cameras practice the limit in element 2 of claim 1, which requires: "a memory device...comprising frame buffers for storing unprocessed image data."

Apple alleges that the accused cameras have a memory device comprising frame buffers for storing unprocessed image data. (Citing CX-425C at Q. 438-440, 537-538, 575; JX-24C at 7.)

Apple asserts that the {

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(Citing CX-425C at Q. 438-440; JX-146C at 7.) Apple says the {

} that has not been processed. (Citing CX-425C at Q. 575; CX-74C at 7.) Regarding the {

} for storing raw image data received from the image sensor that has not been processed by { } (Citing CX-425C at Q. 537-

538; and JX-24C at 7) Apple says that the sensor interface is a standard component of a digital

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PUBLIC VERSION

camera SoC that receives raw image data from the image sensor and as a result of the image sensor and the SoC having different clocking schemes (i.e., they operate at different speeds), the sensor interface includes buffers to store raw image data received from the image sensor. (Citing CX-425C at Q. 439, 537-538, 575; JX-15C at 39:18-40:9.)

Apple says that Kodak disputed in its pre-hearing brief that the { } include the claimed frame buffers. Apple notes that, at the hearing, Kodak presented no evidence through its own expert, Dr. Madisetti, or through cross examination of Apple's expert, Dr. Delp, to rebut Apple's position that the { } include the claimed frame buffers. Apple concludes that the testimony of Dr. Delp confirmed that the sensor interface includes buffers for storing unprocessed image data. (Citing Tr. at 368:10-369:3.)

Apple argues that the accused cameras practice the limit in element 2 of claim 1, which requires: "a memory device...comprising...a random-access memory disk for storing unprocessed image data and processed image data." Apple combines its arguments regarding the existence of a "random access memory disk" in the accused cameras and whether or not "unprocessed image data" is stored thereon. Apple argues that with respect to Apple's and the Staff's proposed construction, the RAM disk limitation is literally infringed because the Kodak-Zoran cameras include a DRAM with storage locations that are specifically allocated to store unprocessed and processed image data. (Citing CX-425C at Q. 442, 455-456; CX-426C at Q.79-80.) Apple alleges that in the { } there are two different circumstances in which unprocessed image data is stored in the DRAM. First, raw image data from the image sensor is stored in the DRAM after passing through the { }

PUBLIC VERSION

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.} (Citing CX-425C at Q.443-444; JX-144C at 5, 10.)

Apple states that unprocessed image data from the image sensor is also stored directly into the DRAM { } during the creation of { } Apple says that a bad pixel map is produced by first capturing image data with the shutter closed. The image data is then stored in the DRAM and examined to determine which pixels are non-black. (Citing CX-425C at Q.445; CX-426C at Q. 66-69.) Apple concludes that processed image data is stored in the DRAM after undergoing { }

Apple asserts that the { } also include a RAM disk under Kodak's proposed construction, which requires that the RAM disk be "configured to emulate a hard disk drive." (Citing CX-425C at Q. 447-448.) Apple says that Kodak's construction is derived from the following portion of the '964 patent:

RAM disk 532 is a memory area used for storing raw and compressed image data and typically is organized in a 'sectored' format similar to that of conventional hard disk drives. In the preferred embodiment, RAM disk 532 uses a well-known and standardized file system to permit external host computer systems, via I/O 348, to readily recognize and access the data stored on RAM disk 532.

(Citing JX-1 at 5:33-39) (Emphasis added by Apple). Apple continues that, in the context of the '964 patent, "emulating hard disk drive" means that RAM disk is "sectored" in a manner "similar to that of a conventional hard disk." (Citing CX-425C at Q. 390-391.) Apple asserts that this requirement is satisfied by the DRAM in the { } because the DRAM contains storage locations that are selectively allocated on an as-needed basis by a memory manager. (Citing CX-425C at Q. 442, 447-448; CX-426C at Q. 79-80.) Apple states that the memory

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PUBLIC VERSION

manager also frees allocated storage space once that space is no longer needed by the resource that requested the space, and this managed allocation of the DRAM in the { } is similar to sectoring of a hard disk, thereby satisfying the claim limitation under Kodak's proposed construction. (Citing CX-425C at Q. 447-448.)

Apple argues that Kodak's position that the RAM disk limitation is not literally present under its construction is premised on a misreading of its own proposed construction. Apple says the plain language of Kodak's construction requires "volatile memory that has been configured to emulate a hard disk drive." Apple says it has clearly demonstrated that the Kodak cameras have DRAM that is allocated into blocks or chunks by a memory manager for storing image data, thereby "emulating a hard disk drive" as described in the '964 patent. (Citing CX-425C at Q. 447-448.) Apple says that Kodak argues that its proposed construction includes the requirement of a file system. (Citing Tr. at 668:24-669:7.) Apple concedes that the DRAM in the Kodak cameras does not use a file system; but Apple asserts that is of no moment since nothing in Kodak's proposed construction includes a file system requirement. Apple says Kodak's proposed construction simply states that the RAM disk must "emulate a hard disk drive," which is not the same as requiring that the RAM disk must "use a file system." Apple refers to the claim construction section of its argument, and says the '964 patent unambiguously describes a file system simply as a preferred embodiment. (Citing JX-1 at 5:37-40.) Apple concludes that, even if Kodak had actually proposed a construction requiring a file system, it would have been an incorrect construction, and it would violate the doctrine of claim differentiation because of claims 3 and 7 of the '964 patent.

Apple argues that if the RAM disk limitation is not literally present in the { } the { } nevertheless satisfy this limitation under the doctrine of

PUBLIC VERSION

equivalents, because the DRAM in the { } performs substantially the same function, in substantially the same way, to achieve substantially the same result as the RAM disk limitation of the claim. (Citing CX-425C at Q. 449-450.) Apple says that claim 1 sets forth the function and result of the "RAM disk," which is to store unprocessed and processed image data. (Citing JX-1 at 8:41-43.) Apple asserts that this is the exact function of the DRAM in the { } (Citing CX-425C at Q. 450.) Apple alleges that the way in which the DRAM in the { } stores image data is by selective allocation of storage locations, which Apple says is "insubstantially different from sectoring a hard disk drive." Apple says in both cases, data is stored in sectors or blocks in memory, and a memory allocation table is maintained to map the location of the data in the physical memory device. (Citing CX-425C at Q. 449-453.)

Apple alleges that, like the { } the { } and the { } include a software memory manager that selectively allocates storage space in the DRAM to store unprocessed and processed image data. (Citing CX-425C at Q. 576-577; CX-426C at Q. 90-92.) Apple says its expert, Dr. Delp, offered opinions that the { } include a DRAM with the same functionality as the { } (Citing CX-425C at Q. 540.) Apple asserts that Kodak's expert offered no testimony to rebut this opinion. Apple continues that unprocessed image data is fed into the image processing chain in the { } from the DRAM. (Citing CX-425C at Q. 541; JX-30C at 008.) Apple adds that image data that has been processed by the image processing is also stored in the DRAM. (*Id.*) Apple says that Kodak disputes that the { } and { } cameras include a RAM disk for the exact reasons set forth respect to the { } Apple concludes that, for the same reasons explained with respect to the { }

PUBLIC VERSION

{ } infringe this limitation.

Apple anticipates that Kodak may argue in its post-hearing brief that Mr. Goodin's analysis of the { } was incorrect with respect to the storage of raw image data in the DRAM. Apple says that Mr. Goodin testified that as part of performing bad pixel correction the { } capture an image with the shutter closed. (Citing CX-426C at Q. 89.) Apple states that the raw image is stored in the DRAM and analyzed to determine which pixels are defective. (*Id.*)

Apple says that Kodak may argue that the lack of a mechanical shutter in the Zi6 digital camera proves that Mr. Goodin's analysis was incorrect. (Citing Tr. at 223:4-225:16.) Apple contends that this argument is baseless, because {

}

Apple believes Kodak may argue that Mr. Goodin's testimony regarding bad pixel correction is inconsistent with the testimony of { } Apple argues that a proper analysis of { } demonstrates that there is no such inconsistency. Apple says that { } were simply testifying about different types of bad pixel correction, both of which are performed in the { } Apple refers to the figure below, saying the {

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**PUBLIC VERSION**

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In its reply brief, Apple contends that Kodak does not dispute that the accused Kodak cameras have a RAM disk under Apple's and the Staff's construction. Apple says that Kodak presents a new argument that the RAM disk in the Kodak cameras does not store unprocessed

## PUBLIC VERSION

image data. Apple asserts that this non-infringement contention was not included in Kodak's prehearing brief. (Citing RPHB at 139-144.) Apple says that Kodak's only non-infringement argument in its prehearing brief relating to the RAM disk limitation was that the limitation is not satisfied under Kodak's construction. (*Id.*) Apple argues that pursuant to Ground Rule 8.2, Kodak has waived the argument that the Kodak cameras do not store unprocessed image data in the DRAM. (Citing Order No. 2 at ¶ 8.2.)

Apple says that Kodak also argues that the accused cameras do not store unprocessed image data in the DRAM because a "bad pixel map" is not "image data." Apple says it "has never asserted that a bad pixel map is image data." Apple says it has shown the following with respect to the { :} 1) image data is captured with the shutter closed; 2) the image data is stored directly in the DRAM, without being processed; {

} (Citing CX-425C at Q. 445, 579; CX-426C at Q. 66-69, 89.)

Apple says that Kodak argues that, with respect to the storage of unprocessed image data in the DRAM in the { }, "Dr. Delp did not cite any evidence to support this unfounded conclusion, and indeed, no such evidence exists." (Citing RIB at 42.) Apple asserts that is not true, and counters that Dr. Delp submitted a demonstrative (shown below) that depicts a functional diagram of the { } image processing pipeline and clearly illustrates unprocessed image data entering the pipeline from the DRAM and processed image data exiting the pipeline and going to the DRAM. (Citing JX-30C at 8; CX-425C at Q. 541.)



PUBLIC VERSION

Apple contends that under Kodak's construction of the term RAM disk, Kodak argues that Dr. Delp conceded that there is no literal infringement. Apple demurs, saying the testimony cited by Kodak simply demonstrates that Dr. Delp conceded that the DRAM in the Kodak cameras does not use a file system:

Q: And you will agree with me that the DRAM in the {  
 } are not formatted to appear to an external computer as being a  
 hard disk drive, correct?

A: That's correct.

\*\*\*

Q: So you are saying that's not formulated [*sic*] to emulate a hard disk drive?

A: No, sir, it's not.

(Citing Tr. at 367:19-23, 410:19-411:4.) Apple asserts that the use of "formatting" in the above questions implies the use of a file system. Apple says it has never contended that the Kodak cameras have a DRAM that utilizes a file system. Apple continues that the answers to the above questions are not surprising given that Dr. Delp declared in his witness statement that "I agree that the DRAM is not formatted to appear to be a hard disk drive." (Citing CX-425C at Q. 453.)

**PUBLIC VERSION**

Apple argues that with respect to Apple's and the Staff's proposed construction, the RAM disk limitation is literally infringed because { } include a DRAM with storage locations that are specifically allocated to store unprocessed and processed image data. (Citing CX-425C at Q. 442, 455-456; CX-426C at Q.79-80.) Apple alleges that in the { } there are two different circumstances in which unprocessed image data is stored in the DRAM. First, raw image data from the image sensor is stored in the DRAM after passing through {

Apple argues that the accused cameras practice the limit in element 3 of claim 1, which requires: "a memory manager for allocating storage locations to store said sets of image data within said memory device." Apple alleges that the accused cameras include a memory manager for allocating storage locations to store sets of image data within the memory device. (Citing CX-425C at Q. 442, 454-456, 546-547, 584-585; CX-426C at Q.79-80, 90-91.) Apple asserts

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PUBLIC VERSION

that in each of the accused cameras, a software memory manager handles the allocation of storage space in the DRAM for storage of unprocessed and processed image data in the DRAM.

(*Id.*) Apple says that Kodak does not dispute that the memory manager in the accused cameras allocates space in the DRAM, which is part of the camera's memory device.<sup>32</sup>

Apple says that Kodak argues that the claim requires the memory manager allocate storage space in both the RAM disk and the frame buffers. Apple says that the plain language of the claim does not support Kodak's position. Apple recites that the claim states that the memory manager "allocate[s] storage locations to store sets of image data within said memory device."

(Citing JX-1 at 8:44-46.) Apple argues that even though the memory device is comprised of the frame buffers and the RAM disk, there is no requirement that the memory manager allocate storage space in both the frame buffers and the RAM disk. Apple continues that the claim simply requires that the memory manager allocate space within the memory device, which can be satisfied by allocating space in the frame buffers, the RAM disk, or both. Apple says that the accused cameras infringe this limitation because "the memory manager allocates storage space in the DRAM (i.e., RAM disk)."

In its reply brief, Apple cites *SanDisk Corp. v. Memorex Products, Inc.*, 415 F.3d 1278 (Fed. Cir. 2005) to be directly on point. Apple says it confirms that Kodak's argument is erroneous. Apple says in *SanDisk*, the district court ruled that the claims required "that every cell in the memory device be grouped into a sector." *Id.* at 1283. The Federal Circuit reversed and stated that "nothing in the claims precludes additional memory cell configurations, which need not contain such partitioned sectors." *Id.* at 1284.

**PUBLIC VERSION**

Apple contends that Kodak makes the same argument rejected by the Federal Circuit in *SanDisk* when it argues that because the claim includes a memory device that comprises both frame buffers and a RAM disk, the memory manager must necessarily allocate space in both. Apple reiterates that the claim language simply requires that the memory manager allocate space within the memory device, which can be satisfied by allocating space in part of the memory device or all of the memory device. Apple notes that its expert, Dr. Delp, testified that this was sufficient to satisfy the claim limitation and says that “Kodak’s expert did not contest this opinion.” (Citing CX-425C at Q. 454-456, 546-547, 584-585.)

Apple argues that the accused cameras practice the limit in element 4 of claim 1, which requires: “a power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected.” Apple argues that the accused cameras<sup>33</sup> include a power management system for monitoring a power supply to detect a power failure and configured to protect sets of image data. (Citing CX-425C at Q. 457-464, 466-467, 548-550, 586-588; CX-426C at Q.76-78, 92.) Apple says that the parties disagree regarding the construction of this claim limitation, but the limitation is nevertheless satisfied under all parties’ constructions.

Apple says its construction requires that the power manager communicate with the power supply and prevent the loss of image data in the event of a power failure. Apple states that the Staff’s construction requires that the power manager continue the supply of power after detecting a power failure to protect the sets of image data in the event of a power failure.

Apple says that the accused cameras satisfy this limitation under Apple’s and Staff’s

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**PUBLIC VERSION**

construction because they monitor the power supply to detect a power failure and upon detecting a power failure, {

}

(Citing CX-425C at Q. 457-458; CX-426C at Q. 77-78.) Apple asserts that {

}

Apple says that Kodak presents two arguments that the accused cameras do not infringe the power management limitation under Apple's and Staff's construction. Apple contends that both arguments are contrary to the '964 specification and claims. {

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**PUBLIC VERSION**

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PUBLIC VERSION

In its reply brief, Apple says that Kodak's sole argument that the accused cameras do not meet this limitation under Apple's and the Staff's construction is that the cameras cannot detect a power failure. Apple contends that Kodak's position is contrary to the specification of the '964 patent and the evidence presented at the hearing.

Apple elaborates that the Kodak cameras have a power manager that {  
} (Citing JX-130C at 010; CX-425C at Q. 459-460.) Apple asserts that "those plain words demonstrate that the Kodak cameras have a power manager that detects a power failure." (Citing CX-425C at Q. 458.) {

} Apple continues that the '964 patent describes setting a threshold value above the minimum operating voltage, detecting whether the battery is lower than the threshold, and conducting a power failure sequence if the battery is lower than the threshold. (Citing CX-425C at Q. 462.) Apple says that Kodak's only response is to draw an arbitrary and irrelevant distinction between {

} (Citing JX-1 at 7:6-21.)

Apple argues that the accused cameras practice the limit in element 5 of claim 1, which requires: "an interface coupled to said memory device whereby an external host computer can

PUBLIC VERSION

access said sets of image data stored in said memory device.” Apple argues that the accused cameras<sup>34</sup> have an interface coupled the memory device whereby an external host computer can access sets of image data. (Citing CX-425C at Q. 473-477.) Apple says that as illustrated in the Extended User Guides for the accused cameras, a user of the Kodak-Zoran cameras can connect the camera to an external computer using a USB cable and access sets of image data stored in the camera’s memory. (Citing CX-425C at Q. 474-476, 552, 590-593; CX-426C at Q. 81; CX-366 at 40; CX-25 at 37; CX-87 at 15.) {

}

(Citing CX-425C at Q. 475-476, 593; CX-426C at Q. 81.)

Apple says that Kodak presents two arguments that the “interface” limitation is not present in the accused cameras. First, Kodak “wrongly states” that the “Kodak Cameras never allow a user to access image data stored in the DRAM.” {

} (Citing CX-425C at

Q. 475; CX-426C at Q. 81; Tr. at 695:5-11.) Apple concludes that this functionality satisfies the plain language of the claim which requires an interface coupled to the memory device whereby an external host computer can access sets of image data.

Apple says that Kodak contends, too, that the accused cameras do not satisfy the

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## PUBLIC VERSION

“interface” limitation because an external host computer cannot access unprocessed image data. Apple contends that this argument is irrelevant, because the asserted claims do not require an interface for accessing unprocessed image data. Apple says instead, the claim requires an interface “whereby an external host computer can access said sets of image data.” (Citing JX-1 at 8:51-53.) Apple adds that sets of image data can include processed image data, unprocessed image data, or both. Apple concludes that, because the Kodak cameras have an interface that allows access to sets of processed image data, the cameras include an interface that allows access to sets of image data as required by the claim.

In its reply brief, Apple says that Kodak argues that {

}

**Kodak’s Position:** Kodak argues that Apple has not met its burden to prove by a preponderance of the evidence that any of the accused cameras include the following claim elements: (1) “random access-memory disk;” (2) “storing unprocessed image data;” (3) “memory manager;” (4) “power management system;” and (5) “interface.”

### **Random Access Memory Disk**

Kodak contends that none of the accused cameras includes the required “RAM disk.” Kodak avers that Dr. Delp admitted that the alleged “RAM disk” of the accused cameras are not configured to emulate a hard disk. Kodak says that, in his witness statement, Dr. Delp admitted: “. . . I agree that the DRAM is not formatted to appear to be a hard disk drive . . . .” (Citing CX-425C at Q. 453, 545, 583.) Kodak says that, when questioned at the hearing, Dr. Delp made the



## PUBLIC VERSION

amendment-based estoppel, “[a] patentee’s decision to narrow his claims through amendment may be presumed to be a general disclaimer of the territory between the original claim and the amended claim.” (*Id.*) Kodak concludes, amendment-based estoppel “bar[s] the application of the doctrine of equivalents as to that element.” (Citing *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co. Ltd.*, 535 U.S. 722, 740 (2002).)

Kodak alleges that, in the Response to Office Action dated March 24, 1999, Apple amended its claims by adding the “random-access memory disk” limitation, thereby narrowing the memory device to require a random-access memory disk. (Citing JX-4 at pages 452-453.) Kodak says, before this amendment, claim 1 merely required “a memory device, coupled to said CPU, for storing sets of image data” and could have been any type of volatile memory including, for example, standard RAM (*e.g.*, DRAM or static random access memory (“SRAM”)) or a random-access memory disk. (*Id.*) Kodak argues that Apple’s amendment is “presumed to be a general disclaimer of the territory between the original claim and the amended claim.” (Citing *Voda v. Cordis Corp.*, 536 F.3d at 1325.) Kodak reasons that, because standard RAM (including DRAM) was within the territory of the claimed memory device before the amendment, standard RAM cannot be considered an equivalent for the claimed random-access memory disk. Kodak says that allowing Apple to argue that standard RAM is equivalent to a RAM *disk* completely nullifies Apple’s claim amendment. Kodak concludes that Apple is barred from arguing that the random-access memory disk limitation is satisfied under the Doctrine of Equivalents.

Kodak asserts that “[t]he doctrine of equivalents allows the patentee to claim those insubstantial alterations that were not captured in drafting the original patent claim but which could be created through trivial changes.” (Citing *Felix v. Am. Honda Motor Co.*, 562 F.3d 1167, 1181-1182 (Fed. Cir. 2009).) Kodak says that Dr. Delp identifies the DRAM of the

**PUBLIC VERSION**

accused cameras as the claimed "random-access memory disk." (Citing Tr. at 350:23-351:5.)

Kodak adds that, even if it was not precluded from arguing the doctrine of equivalents, Apple failed to demonstrate that the DRAM in the accused cameras is insubstantially different from the claimed random-access memory disk.

Kodak alleges that the DRAM of the accused cameras is substantially different from the claimed RAM disk of the '964 patent. (Citing RX-765C at Q. 247-249.) Kodak elaborates that the RAM disk of the '964 patent enables an external host computer to readily access image data stored in the RAM disk. Kodak says the DRAM of the accused cameras, in contrast, temporarily stores image data {

} Kodak says the external computer

can only read from the DRAM if it is configured to emulate a disk, such as hard disk drive.

(Citing JX-1 at 5:33-42; Tr. at 345:8-18; RX-765C at Q. 247.)

Kodak adds that the DRAM in the accused cameras is standard RAM, which by definition is not configured to emulate a hard disk drive. Kodak says that Dr. Delp admitted as much during his cross-examination, quoting:

- Q. But RAM is not, as it is available in the '964 Patent or in the computer field, RAM is not formatted as a disk, correct?  
A. Yes, yes.

(Citing Tr. at 346:20-23.) Kodak asserts that the RAM disk of the '964 patent, on the other hand, fools a computer into believing that at least a portion of the RAM is a disk, so that the computer can easily access and extract data from that portion of the RAM. (Citing JX-1 at 5:33-42; RX-491 at page 5.) Kodak continues that another byproduct of fooling the computer into believing that the RAM is a disk is that the RAM disk can be formatted and mounted in the computer's file

PUBLIC VERSION

system – both of which are standard operations performed with disks, including hard disk drives. (Citing JX-1 at 6:40-48, 6:54-61; RX-765C at Q. 247.)

Kodak argues that Apple's assertion that the DRAM of Kodak's accused cameras is an equivalent to the RAM disk of the '964 patent would vitiate the word "disk" from the term "random-access memory disk." Kodak says the Federal Circuit has consistently held that the doctrine of equivalents cannot be used to vitiate a claim term. (Citing *Bell Atlantic Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1279-80 (Fed. Cir. 2001).) Kodak avers that Dr. Delp testified that the word "disk" means: "allocated memory. RAM disk, allocated RAM. That's the way I read it." (Citing Tr. at 411:5-11.) Kodak says that Dr. Delp testified that RAM disk means allocated RAM, yet admitted that RAM is normally allocated even when it is not used as a RAM Disk, quoting:

- Q. Well, sir, if you don't allocate random access memory in the normal course of its use, you run a risk that the data that's written to the RAM might get overwritten by other data over another program, right?
- A. Absolutely.
- Q. And you would agree with me that's not particularly good practice not to allocate RAM and risk the possibility that data gets overwritten, right?
- A. Yes.

(Citing Tr. at 350:12-22.)

In its reply brief, Kodak argues that Apple's doctrine of equivalents analysis relies on the proposition that "selective allocation of storage locations [in DRAM] is insubstantially different from sectoring a hard disk drive." (Citing CIB at 44.) Kodak asserts that the claimed "random-access memory disk," however, must be accessible by an external host computer system. (Citing JX-1 at 8:51-53, 9:19-21.) Kodak says that allocated DRAM is not accessible by an external host computer system. (Citing Tr. at 367:19-23, 382:9-16, 391:13-18, 410:19-411:4.) Kodak concludes that allocated DRAM is substantially different than a sectored hard disk drive. (Citing

PUBLIC VERSION

RX-765C at Q. 247-248.)

**Storing Unprocessed Image Data**

Kodak asserts that the parties agree that “unprocessed image data” means “image data that has not undergone digital processing or compression.” (Citing JX-11 at page 5.) Kodak says the parties further agree that “image data” means “digital data representing a scene captured by the digital camera device” (*Id.*) Kodak reiterates that Dr. Delp alleges the DRAM in the accused cameras is the claimed “random-access memory disk.” Kodak counters that none of the accused cameras store unprocessed image data in the DRAM.

Kodak says that Apple sets forth two reasons why it believes the { } store unprocessed image data in the DRAM. First, as with the { } Apple asserts that a “bad pixel map” is unprocessed image data. (CX-425C at Q. 445.) Kodak argues that a { } is not “image data,” let alone “unprocessed image data.”

Kodak states that the second reason Apple believes unprocessed image data is stored in the DRAM relates to the functionality of the { } (Citing CX-425C at Q. 444.) Kodak says to make this argument, Apple ignores the plain language of the agreed claim construction. Kodak avers that the parties agreed that “unprocessed image data” is “image data that has not undergone digital processing or compression.” (Citing JX-11 at page 5.) Kodak argues as soon as unprocessed image data undergoes any digital processing, it ceases to be unprocessed.

Kodak says that Dr. Delp alleges that the image data output from { } is unprocessed image data. (CX-425C at Q. 444.) Kodak says that Dr. Delp admitted at the hearing that image data undergoes digital processing in the { } before being stored in DRAM,

PUBLIC VERSION

quoting:

{  
} That's digital image data, right?  
A. That's correct.

{  
}there has been  
some image processing that's taken place, correct?  
A. Yes, there has been some processing taking place. It is still raw data.

(Citing Tr. at 370:8-23).<sup>35</sup>

Kodak next argues that Dr. Delp offered unfounded, conclusory statements about the DRAM in the { } cameras storing unprocessed image data. Kodak says that when asked to explain how unprocessed image data is stored in the DRAM, Dr. Delp proclaimed that “[d]uring still capture mode, raw image data is stored in the DRAM before it is processed and compressed.” (Citing CX-425C at Q. 540-541.) Kodak asserts that Dr. Delp did not cite to any evidence to support this “unfounded conclusion and, indeed, no such evidence exists.”

Kodak asserts that Apple’s argument that the { } store unprocessed image data in the identified random-access memory disk is flawed. Kodak says that Apple alleges that {

} (Citing CX-425C at Q. 579.) Kodak continues that the construction of “unprocessed image data” is undisputed, and Apple’s insistence on referring to “raw image data” is misleading. Kodak adds Apple’s analysis of the { } is factually incorrect.

Kodak says, to support the assertion regarding unprocessed image data being stored in the

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<sup>35</sup> Kodak notes that the claim term at issue is “unprocessed image data” rather than “raw image data.” Kodak says the construction of “unprocessed image data” is undisputed.

PUBLIC VERSION

DRAM, Dr. Delp relies on Mr. Goodin, an Apple witness. (Citing CX-425C at Q. 579.) Kodak says Mr. Goodin stated:

{

}

(Citing CX-426C at Q. 89.) Kodak argues that Mr. Goodin is wrong, because {

} Kodak says this is clearly explained in {

} Kodak avers that Mr. Goodin admitted that he was mistaken:

Q. Sure. {

A. That is correct. }

(Citing Tr. at 225:2-4).

Kodak asserts that the testimony of {

}

confirms that Mr. Goodin's analysis is wrong, quoting:

{

}

(Citing JX-17 at 54:1-8.) Kodak avers that {

} (Citing JX-17 at 54:12-19.) Kodak states that Mr. Goodin admitted

that he never read the testimony of {

}. (Citing Tr. at 226:8-17.)

Kodak argues that Dr. Delp's reliance upon Mr. Goodin's erroneous analysis hurts his credibility. Kodak avers that Dr. Delp testified that he reviewed the testimony {

}. }



PUBLIC VERSION

(Citing CX-425C at Q. 570.) Kodak reasons that Dr. Delp, therefore, “knew that Mr. Goodin’s analysis of the { } was incorrect; he relied on that incorrect analysis as the sole basis for his opinion that the { } satisfy this claim element.” (Citing CX-425C at Q. 579.)

Kodak continues that Mr. Goodin admitted that Apple’s infringement theory is flawed when Apple contends that a { } (Citing CX-425C at Q. 579.) Kodak refers to the testimony of Mr. Goodin, quoting:

Q. Okay. Now, when the -- when a camera shutter is closed, no light is coming in to the camera correct? That’s why you close the shutter?

A. That’s correct.

Q. So there is no scene that you are capturing when a shutter is closed, is there?

A. I guess I would agree with that, yes.

(Citing Tr. at 235:12-19.) Kodak argues that Mr. Goodin admitted that a {“

}

**Memory Manager**

Kodak recites that claim 1 of the ‘964 patent requires “a memory manager for allocating storage locations to store said sets of image data within said memory device.” (Citing JX-1 at 8:44-46.) Kodak notes that the claim further identifies components of the “memory device” that store “said sets of image data,” which are listed as “frame buffers” and the “RAM disk.” (Citing JX-1 at 8:39-43.) Kodak asserts that Apple only identifies memory allocation in the alleged RAM disk in the accused cameras. Kodak argues that Apple does not contend that the identified

PUBLIC VERSION

memory manager allocates storage locations in the alleged frame buffers of the accused cameras.

Kodak asserts that in the '964 patent, the frame buffers and the RAM disk are part of the DRAM 346, referring to what Kodak represents as "Figure 5 of JX-1", shown below:

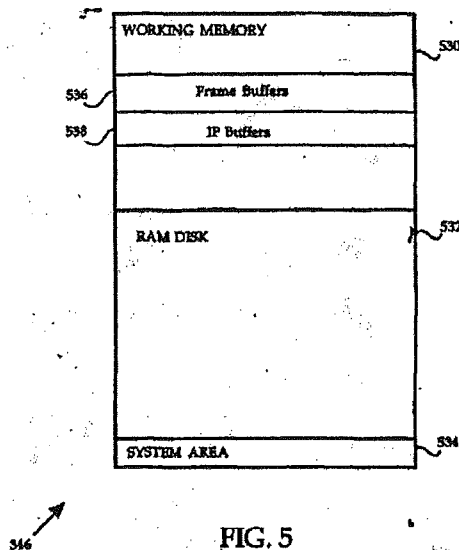


FIG. 5

(Citing JX-4 at page 46; JX-1 at 5:21-29.) Kodak says that the DRAM 346 is the "memory device" in the specification of the '964 patent. (Citing JX-1 at 2:64-3:3, 4:66-5:2.) Kodak states that the '964 patent repeatedly explains that the function of the memory manager is to allocate storage locations in the memory device/DRAM 346. (Citing JX-1 at 2:64-3:3, 3:64-67, 4:66-5:2.)

Kodak concludes that memory locations used as frame buffers must be allocated to satisfy the "memory manager" limitation of claim 1 of the '964 patent.<sup>36</sup> Kodak says this is consistent with Dr. Delp's understanding of the '964 patent, quoting:

- Q. Okay. Now, in figure 5, the memory map, we see that the DRAM has been allocated into different memory areas, right?
- A. Yes.

<sup>36</sup> Kodak adds that since the memory manager allocates storage locations for "said sets of image data," it must allocate storage locations for both the frame buffers and random-access memory disk. Kodak says when the term after "said" is plural – as in "said sets of image data" – then the use of the word "said" refers to all of the "sets of image data" from the earlier use of "sets of image data."

PUBLIC VERSION

Q. One of those memory areas is a RAM disk 532, correct?

A. It says that there, yes.

Q. And another memory area that's been allocated with DRAM 346 is the frame buffers?

A. Yes.

Q. Denoted by numeral 536. Do you see that?

A. Yes.

(Citing Tr. at 352:22-353:9.) Kodak adds that Dr. Delp also agrees that "the frame buffers have to be part of the memory device." (Citing Tr. at 379:3-5.)

Kodak contends that Mr. Goodin did not identify a memory manager that allocated storage locations in any memory other than what Apple alleges constitutes the claimed random-access memory disk. (Citing Tr. at 231:21-232:4, 238:13-16, 240:1-7.) Kodak says Dr. Delp confirmed that he did not identify a memory manager that allocated storage locations to store the sets of image data in the alleged frame buffers, quoting:

Q. And for all the accused Kodak cameras in connection with your analysis of the memory manager, you have only identified memory manager allocation for the DRAM memory area, right?

A. I believe that's correct, yes.

Q. You did not make an analysis of memory allocation for any other memory area, right?

A. I think that's correct, yes.

(Citing Tr. at 405:21-406:4.)

Kodak argues that Apple failed to contend, much less prove, that storage locations are allocated in the alleged frame buffers of the accused cameras. Kodak concludes that the claims require such allocation, and therefore the accused cameras do not have the claimed "memory manager."

In its reply brief, Kodak says that Apple admits the "memory manager" identified for

PUBLIC VERSION

each of the accused cameras does not allocate storage locations within the “memory device” for the alleged “frame buffers.” (Citing CIB at 44-45, 53, 59.) Kodak reiterates that the plain language of the asserted claims requires the memory manager to allocate storage locations within the memory device for both the frame buffers and the random-access memory disk.

Kodak says that Apple argues that the claims require “allocating space in the frame buffers, the RAM disk, or both.” (CIB at 44.) Kodak demurs, saying that the claims require “allocating storage locations to store said set of image data within said memory device.” (Citing JX-1 at claim 1).<sup>37</sup> Kodak argues that the difference is important, because the memory manager must allocate storage locations within the memory device, not within the RAM disk as Apple asserts. Kodak says this means that the memory manager allocates separate storage locations within the memory device for both the frame buffers and the RAM disk. (Citing JX-1 at 3:1-3, 3:64-67; 4:66-5:2, 5:21-29; JX-4 at page 46.)

Kodak says that Dr. Delp’s testimony supports this interpretation, when he admits that RAM is allocated, or set aside, for an intended use so that it does not get overwritten. (Tr. at 350:12-22.) Kodak avers that Dr. Delp admits the RAM disk is the result of allocating memory in the memory device. (Citing Tr. at 352:22-353:3.)

**Power Management System**

Kodak recites that claim 1 requires a “power management system . . . configured to protect said sets of image data if said power failure is detected.” (Citing JX-1 at claim 1.)

Kodak notes that under its construction, the “power management system” includes a backup power supply. Kodak avers that Apple concedes that none of the accused cameras have a backup power supply. { }

---

<sup>37</sup> Kodak notes that claim 5 similarly requires the “memory manager to allocate storage locations with the memory device” and then requires “storing sets of image data into said allocated storage locations.” (Citing JX-1 at claim 5.)

## PUBLIC VERSION

{ } Kodak says that all the parties agree that the accused cameras do not literally infringe under Kodak's construction.

Kodak says that Apple applies a doctrine of equivalents analysis. Kodak states that under Apple's and the Staff's constructions, Apple relies on the {

} document to support its allegation that the power management system of claim 1 of the '964 patent is present in the accused cameras. Kodak asserts that Apple incorrectly equates

{ } Kodak argues if the "power failure" of the asserted claims were to occur in the accused cameras, all processing would cease and any unprocessed image data would be lost. Kodak says there would be no way "to protect said sets of image data." Kodak continues that the accused cameras are unable to cope with power failure as required by the asserted claims. Kodak concludes that the power management functionality of the accused cameras cannot satisfy the claimed "power management system" under any of the parties' constructions.

Kodak says Apple alleges that the "power management system," which must have a backup power supply under Kodak's construction, is equivalent to a system that does not include a backup power supply. (Citing CX-425C at Q. 467.) Kodak contends that Apple failed to provide any credible evidence to support its incorrect and conclusory assertion.

Kodak argues that the accused cameras substantially differ from the claimed "power management system." (Citing RX-765C at Q. 263-264.) Kodak says the claimed "power management system" applies voltage from a backup power supply to volatile memory to protect data stored in volatile memory in the event of a power failure. (Citing JX-1 at 4:37-44.) Kodak contends that this substantially differs from the accused cameras, {

**PUBLIC VERSION**

} (Citing CX-425C at Q. 460-461, 464; Tr. at 242:18-22.)

Kodak says that {

.}

(Citing Tr. at 375:3-6.) Kodak concludes if a power failure event occurs and some image data remains unprocessed, that unprocessed image data is lost.

{

}

Kodak argues that under Apple's and the Staff's constructions, Apple similarly cannot prove infringement of the "power management system" limitation of the asserted claims of the '964 patent. Kodak says the '964 patent describes power failure mode as the mode "in which the

## PUBLIC VERSION

main batteries 358 have failed (when their output voltage has fallen below a minimum operational voltage level) . . .” (Citing JX-1 at 4:37-39.) Kodak says in other words, a power failure occurs when the main batteries have failed, such that the output voltage is below a minimum operational level. (*Id.*)

Kodak says that Apple alleges that a power failure occurs in the accused cameras when the battery level falls below a predetermined threshold value, at which point the camera is still capable of processing images normally. Kodak counters that failing to reach a mere threshold value is not a power failure as defined by the ‘964 patent. Kodak argues that Apple’s reliance on a specification passage that discusses threshold voltages is inapposite. (Citing CX-425C at Q. 462.) Kodak states that the specification defines the threshold value as a very small amount of voltage that can provide power for only long enough to switch from the main batteries to the backup power supply. (Citing JX-1 at 4:37-39.) Kodak continues that following the power failure contemplated by the ‘964 patent, a user can replace the main batteries without losing the data then present in the DRAM of the digital camera, as illustrated at block 1046 in Figure 10. (Citing JX-1.) Kodak asserts that in the accused cameras the user can never replace the battery of the camera without losing the image data stored in the volatile memory of the camera. (Citing RX-765C at Q. 269.)

### **Interface**

Kodak recites that claim 1 of the ‘964 patent requires “an interface coupled to said memory device whereby an external host computer can access said sets of image data stored in said memory device.” (Citing JX-1 at claim 1.) Kodak contends that Apple failed to prove that the accused cameras satisfy this limitation.

Kodak argues that the purpose of the interface element of claim 1 of the ‘964 patent is to

PUBLIC VERSION

enable a user to access image data from the volatile memory of the camera. (Citing JX-1 at 3:3-8.) Kodak says more specifically, if the user connects the camera to an external host computer via the interface, “[the] external host computer can access the sets of image data *stored in the memory device.*” (Citing JX-1 at 3:3-8) (Emphasis added by Kodak).

{

} Kodak

concludes that this temporary transfer is what Dr. Delp alleges is “image data stored in said memory device.” (Citing CX-425C at Q. 473-476.)

Kodak argues that Dr. Delp’s position is contrary to the plain language of the claims, which requires that the computer access the image data *stored* in the memory device. Kodak avers that the accused cameras never allow a user to access image data stored in “Dr. Delp’s identified frame buffers or RAM disk.” {

}

**Staff’s Position:** Staff notes that the accused cameras are grouped according to the third party which manufactured the processor used in the camera. Staff says the parties have agreed



**PUBLIC VERSION**

that all the processors produced by a single third party are identical for purposes of the infringement analysis, thus, for purposes of infringement analysis, the analysis of a single model of { } will be sufficient. (Citing CIB at 156.)

Staff says there appears to be no real dispute that the accused cameras “meet the limitation” in the preamble that says “A digital camera device comprising:”

Staff notes that Kodak does not appear to dispute that the accused cameras meet the first limitation of claim 1. Staff states that the {

}

Staff believes that the evidence shows that the system-on-chip in the {

}

**PUBLIC VERSION**

{  
.  
}  
Staff says the evidence shows that the system-on-chip in the {

}

Staff next addresses element 2 of claim 1 in its entirety, which states: “a memory device, coupled to said CPU, for storing sets of image data, comprising frame buffers for storing unprocessed image data and a random-access memory disk for storing unprocessed image data and processed image data.”

Staff says the evidence shows that the {

.} (Citing JX-146C at 7.) Staff notes

PUBLIC VERSION

that Dr. Delp explained that the sensor interface is a standard component of a digital camera SoC which receives image data from the image sensor. (Citing CX-425C at Q. 439.) Staff asserts that, because the {

} (*Id.*)

Staff adds that Zoran's corporate representative testified that the {

.}

Staff contends that the evidence shows that the {

}

Staff argues that the evidence shows that the {

}

Staff asserts that in the case of both the {

},

the image data received from the image sensor “has not been processed by the system-on-chip

---

<sup>38</sup> The reference cited is Dr. Delp's testimony, in which he refers to Mr. Fishkov.

**PUBLIC VERSION**

and is therefore raw.” (Citing JX-24C at 15; CX-74C at 7; CX 68C at 7; CX-425C at Q. 540.)

Staff concludes that the evidence demonstrates that the {

} contain frame buffers for storing unprocessed image data.

Staff is of the view that the evidence also shows that the accused cameras contain volatile memory that has been allocated for storing unprocessed and processed image data in the form of a DRAM (which is “volatile memory”). (Citing JX-146 at 7; CX-425C at Q. 438, 539, 574; CX-27 at 7.)

Staff says that Mr. Goodin's analysis of the {

}

**PUBLIC VERSION**

{

}.

Regarding element 3 of claim 1, which teaches “a memory manager for allocating storage locations to store said sets of image data within said memory device,” Staff argues that the foregoing discussion shows that the accused cameras contain software which allocates storage

**PUBLIC VERSION**

space on the DRAM. Staff concludes that the evidence shows that the accused cameras meet this limitation of claim 1. (Citing CX-425C at Q. 582.)

Staff turns to element 4 of claim 1, which teaches “a power management system, for monitoring a power supply to detect a power failure, configured to protect said sets of image data if said power failure is detected.” Staff says that under its construction, this limitation requires a system that manages the supply of power and continues the supply of power after a power failure is detected to prevent the irreversible loss of sets of image data stored in the memory device.

Staff asserts that the {

} Staff concludes that the evidence demonstrates that the accused cameras meet this limitation under the Staff's claim construction.

Staff finally focuses on element 5 of claim 1, which requires “an interface coupled to said memory device whereby an external host computer can access said sets of image data stored in

PUBLIC VERSION

said memory device.”

Staff contends that the accused cameras can be connected to an external computer using a USB cable, and then, once connected, the image data on the camera can be transferred to the computer. (Citing CX-366 at 40; CX-425C at Q. 474-476; CX-25 at 37; CX-38 at 42; CX-295 at 40; CX-43 at 43; CX-47 at 43; CX-49 at 45; CX-87 at 15; CX-90 at 15.) Staff adds that the {

.} Staff believes that the evidence shows that the accused cameras meet all the limitations of claim 1 of the ‘964 patent.

In its reply brief, Staff says that Kodak asserts that the {

} do not infringe the asserted claims of the ‘964 patent because, among other reasons, they do not store unprocessed image data in the DRAM. Staff asserts that Kodak raises the same argument with respect to both the {

} Staff argues that Kodak’s pre-hearing brief did not contain the assertion that {

} Staff concludes that Kodak’s contentions regarding this issue should be deemed waived.

Staff contends that it has cited to evidence showing that during video image processing, unprocessed image data goes from {

}

PUBLIC VERSION

{ }. Staff argues that Kodak raises an argument in its post-hearing brief that was not raised in its pre-hearing brief. Staff submits that this argument should be deemed waived.

Staff says that in its initial post-hearing brief, it took the position that {

} Staff avers that the parties' agreed-upon construction of "image data" is "digital data representing a scene captured by the digital capture device." (Citing JX-11 at 5.)

Staff says that Kodak argues that {

.} Staff

contends that Kodak did not include these assertions or this argument in its pre-hearing brief.

Staff notes that Ground Rule 8.2 of this Investigation states that:

The pre-trial brief shall set forth **with particularity** a party's contentions on each of the proposed issues, including citations to legal authorities in support thereof, and shall conform to the general outline set forth in **Appendix B** hereto. All issues, including issues not specifically named in the general outline that any party seeks to address, shall be inserted into the general outline where appropriate. . . Any contentions not set forth in detail as required herein shall be deemed abandoned or withdrawn, except for contentions of which a party is not aware and could not be aware in the exercise of reasonable diligence at the time of filing the pre-trial brief.

(Citing Ground Rule 8.2) (Emphasis in Original). Staff argues that Kodak's argument regarding

{ } is based on claim construction, rather than issues of fact. Staff adds that

Kodak says that it applies regardless of whether or not the {

} (Citing RIB at 40.) Staff concludes that there is no reason this argument

could not have been included in Kodak's pre-hearing brief. Staff urges that these contentions

and this argument should be deemed waived.



## PUBLIC VERSION

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to demonstrate that the accused Kodak cameras infringe claim 1 of the '964 patent.

The dispute regarding whether or not the accused cameras infringe claim 1 of the '964 patent centers on whether or not the accused cameras practice the following five limitations: (1) "random-access memory disk;" (2) "storing unprocessed image data;" (3) "memory manager;" (4) "power management system;" and (5) "interface."

### **Random-access memory disk**

Based upon the evidence in the record, I conclude that the accused cameras do not practice this limitation of element 2 of claim 1. I have construed the term "random-access memory disk" to have its ordinary meaning, which is "volatile memory that emulates a hard disk drive." My rationale for this construction is set forth in detail in Section III.B.2, *supra*, and I will not repeat it here; but I reaffirm my rationale and the construction applied to this term.

In his direct testimony Apple's expert, Dr. Delp, admitted that the DRAM of the accused cameras is not formatted to appear to be a hard disk. (CX-425C at Q. 453, 545, 583.) He confirmed that testimony, when I questioned him during the hearing, specifically admitting that the RAM memory inside the camera is not formulated to emulate a hard disk drive. (Tr. at 410:19-411:4.) His testimony under cross-examination was consistent. (Tr. at 367:19-23, 382:9-16, 391:13-18, 410:19-411:4.) Kodak's expert, Dr. Madiseti, independently confirmed that the accused cameras do not have any "volatile memory that has been configured to emulate a hard disk drive." (RX-765C at Q. 239-249; RX-742C; RX-743C; RX-744C.)

Regarding Apple's doctrine of equivalents argument, I find that it is barred by the doctrine of prosecution history estoppel. Prosecution history estoppel can occur during prosecution in one of two ways, either "(1) [when the applicant makes] a narrowing amendment

## PUBLIC VERSION

to the claim ('amendment-based estoppel') or (2) [when the applicant surrenders] claim scope through argument to the patent examiner ('argument-based estoppel')." *Voda v. Cordis Corp.*, 536 F.3d 1311, 1325 (Fed. Cir. 2008). Under amendment-based estoppel, "[a] patentee's decision to narrow his claims through amendment may be presumed to be a general disclaimer of the territory between the original claim and the amended claim." *Id.* (citing *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 740-41 (2002)). However, "the patentee can overcome the presumption that prosecution history estoppel bars a finding of equivalence" by showing: (1) that the equivalent was unforeseeable at the time of the patent application; (2) that the rationale underlying the amendment bore "no more than a tangential relation to the equivalent in question"; or (3) "some other reason suggesting that the patentee could not reasonably be expected to have described the insubstantial substitute in question." *Id.*

In the present case, the file history shows that claim 1 of the original application claimed, "a memory device coupled to said digital camera device for storing sets of image data."<sup>39</sup> (JX-4 at page 30.) That application also included claim 2, which taught: "the system of claim 1 wherein said memory device further comprises frame buffers for storing unprocessed image data and a random-access memory disk for storing unprocessed image data and processed image data."<sup>40</sup> (*Id.*)

The file history also reveals that, as Kodak alleges, on March 24, 1999, in response to an office action dated December 24, 1998, the applicant submitted amendments to the application that, *inter alia*, deleted claim 2 of the application and reworded claim 1 to include verbatim the language of the former claim 2. That amendment limited claim 1 by narrowing the reference to

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<sup>39</sup> Claim 6 of the original application was a method claim that tracked claim 1.

<sup>40</sup> Claim 7 of the original application was a method claim that tracked claim 2.

PUBLIC VERSION

the memory device.<sup>41</sup> (JX-4 at pages 452-453.)

Apple does not dispute the foregoing facts alleged by Kodak on this point. The record contains no effort by Apple to make the showing recited in *Voda* to overcome the presumption that the doctrine of prosecution history estoppel applies. Based upon the foregoing, I find that Apple is estopped from asserting the doctrine of equivalents to prove that the accused cameras infringe this element of claim 1.

Assuming *arguendo* that the construction proposed for the term “random-access memory disk” by Apple or by Staff is applied, I would find that the accused cameras practice this element of claim 1. Staff urged that the term be construed as “volatile memory that has been allocated for storing unprocessed and processed image data,” and Apple argued a similar definition omitting the “volatile” descriptor.

Apple’s expert, Dr. Delp, testified credibly that, using Apple’s proposed construction of the term, the RAM disk limitation is literally infringed because {

} That testimony is

undisputed, and Kodak does not argue that the accused Kodak cameras lack a RAM disk under Apple’s or Staff’s construction.

---

<sup>41</sup> In the same amendment, the applicant deleted claim 7 and inserted its language into the former claim 6, which was renumbered claim 5. That amendment narrowed the reference in claim 5 to the memory device.

PUBLIC VERSION

I find, too, that Apple is correct when it contends that Kodak did not include in its pre-hearing brief the argument that the RAM disk element is not met, because no “unprocessed image data” is received by the RAM disk. Apple’s entire argument on the issue of whether or not the RAM disk element is met, {

,} was clearly asserted in the testimony of its expert, Dr. Delp. (See, e.g., CX-425C at Q. ) Despite the fact that this information was known to Kodak two weeks prior to the date for filing pre-hearing briefs, Kodak failed to include the issue in its pre-hearing brief. I find, therefore, that pursuant to Ground Rule 8.2, Kodak is precluded from arguing that a bad pixel map does not amount to image data sent to a RAM disk.

Assuming *arguendo* that Kodak was not barred from raising that issue, I would find that Kodak is correct when it argues that {

} First, I note that the parties agree that “unprocessed image data” means “image data that has not undergone digital processing or compression.” (JX-11 at page 5.) The parties further agree that “image data” means “digital data representing a scene captured by the digital camera device” (*Id.*)

Apple’s evidence on this point is the testimony of Dr. Delp and Mr. Goodin that the “image data” “captured” by the accused cameras {  
.  
} (CX-425C at Q. 445, 529-530, 564-565; CX-426C at Q. 88-89.)

Kodak is correct when it contends that the digital data generated by the accused cameras {  
.  
} is not image data, because it is not “digital data representing a scene captured by the digital camera device.” Mr. Goodin explained in some detail how the process {  
.  
}

PUBLIC VERSION

{

Notwithstanding the fact that Kodak waived its argument regarding the bad pixel issue, it remains Apple's burden to prove by a preponderance of evidence that the accused cameras store unprocessed image data in the random access memory. Apple's argument is that this limitation is demonstrated by the testimony of Dr. Delp and Mr. Goodin cited, *supra*. I cannot find that Apple has met its burden, however, when the agreed definition of image data is "digital data representing *a scene* captured by the digital camera device." (JX-11 at page 5) (Emphasis added). The testimony of Apple's own experts shows that {

}

Apple's expert, Dr. Delp, testified that another reason why unprocessed image data is stored in the DRAM relates to the functionality of {

}  
A. ***Yes, there has been some processing taking place.*** It is still raw data.

## PUBLIC VERSION

(Tr. at 370:8-23) (Emphasis added).<sup>42</sup> Regardless of Dr. Delp's characterization of the image data as "raw," he does not dispute that it has undergone "processing." According to the parties' agreement on the meaning of this term, I find that the data about which Dr. Delp testified is processed prior to being sent { . }

Based upon the foregoing, I find that Apple has failed to prove by a preponderance of evidence that the image data sent from { } is unprocessed data. I find, too, that Apple has failed to prove by a preponderance of evidence that { } is "image data."

### **Frame Buffers For Storing Unprocessed Image Data**

Based upon the evidence in the record, I conclude that the accused cameras do not practice this limitation of element 2 of claim 1 of the '964 patent.

It is undisputed that the accused cameras contain frame buffers. I turn once again to the issues regarding the nature of the data stored in the frame buffers. I have already found, *supra*, that the {

} is not "image data." I also found, *supra*, that the data sent from { } is not "unprocessed image data." In the interest of brevity, I will not repeat the rationale for those findings here; but I reaffirm that reasoning and those findings. Because the frame buffers of the accused cameras do not receive unprocessed image data, it follows that they do not store unprocessed image data. I find, therefore, that the accused cameras do not practice this element of claim 1.

### **Memory Manager**

Based upon the evidence in the record, I conclude that the accused cameras do not

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<sup>42</sup> Kodak notes that the claim term at issue is "unprocessed image data" rather than "raw image data." Kodak says the construction of "unprocessed image data" is undisputed.

PUBLIC VERSION

practice this element of claim 1 of the '964 patent.

Kodak argues correctly that the memory manager of claim 1 must store sets of image data in both "frame buffers" and the "RAM disk" to meet the limitations of this element.<sup>43</sup> Apple, in arguing that there is no requirement that the memory manager allocate storage space in both the frame buffers and the RAM disk, incorrectly quotes the claim to state that the memory manager "allocate[s] storage locations to store sets of image data within said memory device." (Citing JX-1 at 8:44-46) Apple omits the limiting word "said" that clearly appears in the element.

In construing the term "memory device," I said "comprising" is an open-ended term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim. *Genentech, Inc.*, 112 F.3d at 501; *Georgia Pacific Corp.* 195 F.3d at 1327; *In Re Baxter*, 656 F.2d at 686. Similarly, element 3 of claim 1 requires that the accused cameras contain a memory manager for allocating storage locations to store "said sets of image data within said memory device." (Emphasis added). The clear reference in element 3 is to the sets of image data identified in element 2, which comprises "frame buffers for storing unprocessed image data and a random-access memory disk for storing unprocessed image data and processed image data." The memory manager must at least allocate the identified storage locations; but it may allocate additional storage locations within the memory device.

Apple's evidence on this point is the testimony of Dr. Delp and Mr. Goodin, neither of whom address allocation of storage on the alleged frame buffers. {

}

---

<sup>43</sup> I note, however, that Kodak's brief includes a "Figure 5" which it alleges is the Figure 5 contained in JX-1. This is in error. The Figure 5 in JX-1 is significantly different than the one represented by Kodak in its brief. The identified Figure 5, is actually a version that was included in the application for the '964 patent; but was not included in the published '964 patent. (See JX-4 at pages 46, 576; compare JX-1 at Fig. 5.)

## PUBLIC VERSION

{ ... } As a result, Apple has failed to prove by a preponderance of evidence that the accused cameras practice this element of claim 1.

Based upon all of the foregoing, I find that the accused cameras do not practice element 3 of claim 1 of the '964 patent.

### **Power Management System**

Based upon the evidence in the record, I conclude that the accused cameras do not practice element 4 of claim 1 of the '964 patent that requires a power management system.

In Section III.B.3, I construed the term "power management system" to mean "a system that monitors the supply of power and continues the supply of power after a power failure is detected, thereby preventing irreversible loss of sets of image data stored in the memory device."

First, I find that a "power failure" is evidenced at least upon the occurrence described in the specification of the '964 patent, which states:

If CPU 344 does not detect 874 a user shutdown or a time out event, then power manager 342 determines 878 whether the voltage of the main batteries 358 is greater than a selected threshold value. The threshold value may be selected as a minimum camera 110 operating voltage, or alternatively may be incrementally higher than (sic) the minimum operating voltage. If the voltage of the main batteries 358 is not greater than the selected threshold value, then the FIG. 8 process goes 880 to the power failure sequence of FIG. 10.

(JX-1 at 7:8-17.)

Figure 10 is a flowchart showing the preferred method steps for performing a power failure sequence according to the invention of the '964 patent. The specification describes the process in relevant part as:

Initially the power manager 342 sets 1028 its PFAIL bit. The PFAIL bit records the occurrence of a power failure so that computer 118 software routines may subsequently access this information when needed.

(JX-1 at 7:46-52.)



PUBLIC VERSION

The foregoing description of the preferred embodiment makes clear that a complete loss of all battery power, {  
} is not necessary to the occurrence of a "power failure" in the context of the '964 patent.

Element 4 of claim 1 requires that the power management system be "configured to protect said sets of image data if said power failure is detected." (JX-1 at 8:47-49.) This element, too, clearly refers to the sets of image data identified in element 2, which comprises "frame buffers for storing unprocessed image data and a random-access memory disk for storing unprocessed image data and processed image data."

Since "comprising" is a term of art which requires that the named elements be present, the power system manager must at least protect the identified image data; although it may protect sets of image data stored in other locations within the memory device. Following the logic that I have consistently applied in discussing alleged infringement, I find that the accused cameras do not store "unprocessed" image data in the frame buffers, and it follows that those cameras do not protect "said" image data within the frame buffers. Therefore, this element is not met in the accused cameras.

Assuming *arguendo* that the image data stored within the frame buffers is found to meet the "unprocessed" requirement, then I would find that the accused cameras practice this element of claim 1.

Apple's expert, Dr. Delp, testified credibly that {

}

{

**Interface**

Based upon the evidence in the record, I conclude that the accused cameras do not practice element 5 of claim 1 of the '964 patent that requires an "interface coupled to said memory device whereby an external host computer can access said sets of image data stored in said memory device."

As will be discussed in more detail below, the evidence supports a finding that the accused cameras have an interface coupled to the memory device whereby an external host computer can access sets of image data stored in the memory device. Nevertheless, I have consistently found in this section that the accused cameras do not store "unprocessed" image data in the frame buffers. It follows, therefore, that an external computer using said interface does not access unprocessed image data within the frame buffers. Apple's expert, Dr. Delp, conceded that this is correct. (Tr. at 405:17-20.) Therefore, this element is not met in the accused cameras.

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PUBLIC VERSION

Assuming *arguendo* that the image data stored within the frame buffers is found to meet the “unprocessed” requirement, then I would find that the accused cameras practice this element of claim 1.

Kodak concedes that if users want to access the image data, they can connect the accused cameras to a computer using a USB cable. {

} Thus, I find that the process followed by the accused cameras practices this element of claim 1.

## PUBLIC VERSION

### 2. Claim 3

Claim 3 recites:

The digital camera device of claim 1 wherein said memory device uses a standardized file system for storing said sets of image data.

**Apple's Position:** Apple argues that the accused cameras include memory that uses a standardized file system for storing sets of image data. Apple asserts that in addition to the DRAM and frame buffers discussed with respect to claim 1, the memory device in the accused cameras includes a NAND memory. Apple says the NAND memory is non-volatile memory and utilizes a DOS file system to store sets of image data. (Citing CX-425C at Q. 481-485, 553-558, 596-600; CX-365C at 7; CX-24C at 32.) Apple says that under its construction of "memory device," Kodak does not dispute that the accused cameras satisfy the additional limitation of claim 3.<sup>44</sup>

In its reply brief, Apple says that Kodak's sole argument in its post-trial brief is that Dr. Delp's analyses of infringement and validity are inconsistent with respect to the term "memory device." (Citing RIB at 48-49.) Apple summarizes Kodak's argument saying that for infringement Dr. Delp assumed the memory device could be volatile or non-volatile, whereas for validity Dr. Delp limited the memory device to volatile memory.

Apple argues that Kodak bases its argument on a single question and answer on cross-examination cited in its brief:

Q: Now you are interpreting then claim 3 to be limited to volatile memory, is that it?

A: I believe it – yes.

(Citing Tr. at 752:21-23.) Apple contends that Kodak fails to cite or discuss the questioning that

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<sup>44</sup> Apple says that Kodak's construction of "memory device" requires volatile memory. Because the NAND is non-volatile memory, Apple does not dispute that claim 3 is not infringed by the accused cameras under Kodak's proposed construction.

## PUBLIC VERSION

followed shortly after wherein Dr. Delp appears to correct a mistake in the above testimony:

Q: So with respect, again to determining and defending validity of claim 3, you have now interpreted claim 3 to be volatile memory, whereas in your infringement analysis, you applied it as non-volatile memory, right?

A: No, that's not correct. I mean, again, I just believe that Dr. Stevenson's combinations that he has here are not, are not correct.

Q: But as you said, you limited claim 3 for purposes of the invalidity analysis to volatile memory, right?

A: No, as a matter of fact, I didn't. I talked about exactly what I said here in my statement.

(Citing Tr. at 753:4-18.)

Apple argues that a proper review of Dr. Delp's witness statement verifies that he did not take opinions on infringement and validity that were inconsistent. Apple says with respect to infringement, Dr. Delp clearly indicated his opinion that the memory device is not limited to volatile memory (i.e., it could be either volatile or non-volatile). (Citing CX-425C at Q. 402.)

Apple continues that with respect to validity, which was the starting point of the questions above on cross-examination, Dr. Delp discussed why it would not have been obvious to combine the '845 patent with the '107 patent because the '845 patent was directed to non-volatile memory whereas the '107 patent utilized an internal RAM that was volatile memory. (Citing CX-473 at Q. 135.) Apple contends that at no point in his witness statement did Dr. Delp opine that the memory device was limited to volatile memory.

**Kodak's Position:** Kodak says that Apple points to the NAND flash memory in the accused cameras as satisfying this limitation. (Citing CX-425C at Q. 481, 485, 555, 558, 600.)

Kodak argues that NAND flash memory is non-volatile. (Citing Tr. at 752:24-753:3.) Kodak argues that under its construction of "memory device," which requires the memory device to be volatile memory, the accused cameras "undisputedly do not infringe Claim 3." Kodak avers that Dr. Delp contradicted Apple's construction of "memory device" at the Hearing and agreed with

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Kodak's construction:

- Q. Now, you are interpreting then claim 3 to be limited to volatile memory, is that it?  
A. I believe it -- yes.

(Citing Tr. at 752:21-23.) Kodak argues that given Dr. Delp's admission that claim 3 is limited to volatile memory, there is no dispute that the accused cameras do not infringe claims 3 and 7.

Kodak contends that Dr. Delp tried to distinguish claims 3 and 7 from the prior art '845 patent, saying that the '845 patent gives no indication that its teachings are applicable to volatile memory. (Citing CX-473C at Q. 135-136.) Kodak says in his witness statement and at the hearing, Dr. Delp only applied claim 3 to non-volatile memory in the accused cameras:

- Q. Okay. Well, Dr. Delp, in proving up infringement of claim 3, you pointed to NAND flash memory in the Kodak cameras and NAND flash memory is non-volatile memory?  
A. That's correct.

(Citing Tr. at 752:24-753:3; CX-425C at Q. 481, 485, 555, 558, 600.) Kodak argues that Dr. Delp's inconsistent testimony undermines his credibility for both invalidity and non-infringement purposes.

**Staff's Position:** Staff contends that the evidence shows that the memory device of the accused cameras contains a NAND memory that uses a DOS file system to store sets of image data. (Citing CX-425C at Q. 481, 553-555; CX-426C at Q. 81; CX-367C; CX-27C; CX-24C at 32; CX-89C.) Staff says a DOS file system is a standardized file system. (Citing CX-425C at Q. 481, 558; CX-89C.) Staff concludes that the accused cameras infringe claim 3 of the '964 patent.

**Discussion and Conclusion:** Based upon the evidence in the record, I conclude that the accused cameras practice the required element of claim 3 of the '964 patent.

Dr. Delp, Apple's expert, testified credibly that the accused cameras contain a NAND memory device, which stores sets of image data. Dr. Delp explained that the NAND memory

## PUBLIC VERSION

devices in the accused cameras use a DOS filing system, which is a standardized filing system. (CX-425C at Q. 478-485, 529, 530, 553-555, 565.)

Kodak's argument on this point is based upon its own construction that requires the memory device be "volatile;" but that is not a limitation of the term memory device as construed herein. The memory device of the '964 patent is simply "semiconductor storage where information (e.g. sets of image data) may be stored and retrieved."

Assuming, however, that the definition of "memory device" included the additional limitation that the device be "volatile," I would find that the accused cameras do not practice the element of claim 3, because it is undisputed that the NAND memory devices are "non-volatile."

Nevertheless, because I have found that the accused cameras do not infringe independent claim 1, it follows that they do not infringe dependent claim 3, which depends from claim 1. *Wahpeton Canvas Co., Inc. v. Frontier, Inc.*, 870 F.2d at 1346, 1552 n. 9, (Fed. Cir. 1989) ("One who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitations of) that claim.")

### 3. Claims 5 & 7

Claim 5 recites:

A method of implementing a digital camera device, comprising the steps of:

using a CPU to concurrently process multiple unprocessed images into processed images;

using a memory manager to allocate storage locations within a memory device comprising frame buffers for storing unprocessed image data and a random-access memory disk for storing unprocessed image data and processed image data;

storing sets of image data into said allocated storage locations;

using a power management system to monitor a power supply and detect a power failure;

## PUBLIC VERSION

using said power management system to protect said sets of image data from said power failure; and

communicating with said memory device via an interface whereby an external host computer can access said sets of image data.

Claim 7 recites:

The method of claim 5 wherein said memory device uses a standardized file system for storing said sets of image data.

**Apple's Position:** Apple argues that claims 5 and 7 of the '964 patent are method claims that correspond to claims 1 and 3. Apple asserts that for the same reasons identified above, the accused cameras infringe claims 5 and 7 of the '964 patent. (Citing CX-425C at Q. 486-487, 559-560, 601-602.) Apple says that Kodak has not presented any additional non-infringement arguments with respect to claims 5 and 7.

**Kodak's Position:** Kodak argues that claim 5 of the '964 patent is an independent method claim with scope commensurate with that of independent claim 1. (Citing CX-425C at Q. 486.) Kodak says that Apple "summarily concludes" that the accused cameras infringe claim 5 for the same reasons it alleges that the accused cameras infringe claim 1. (*Id.*) Kodak argues that, since Apple cannot prove that the accused cameras infringe claim 1 of the '964 patent, it cannot prove that the accused cameras satisfy each element of claim 5.

Kodak notes that a dependent claim cannot be infringed unless the corresponding independent claim is also infringed. Kodak reasons, therefore, the accused cameras do not infringe claim 7. Kodak also applies the same reasoning to its argument that its accused cameras do not infringe claim 7 as it applied to claim 3.

**Staff's Position:** Staff argues that since the evidence shows that the accused cameras satisfy the elements of claim 1, it also shows that they practice each of the steps of claim 5.

Staff argues that claim 7 recites the method of implementing the digital camera device of



PUBLIC VERSION

claim 3. Staff reasons that, as the evidence shows that the accused cameras satisfy the elements of claim 3, it also shows that they practice each of the steps of claim 7.

**Discussion and Conclusion:** Based upon the evidence in the record, I find that the accused products do not infringe asserted claim 5 or asserted claim 7.

Claims 5 and 7 are method claims that, while differing slightly in form, follow in substance every element of claims 1 and 3 respectively. Based upon the reasoning applied to claim 1, *supra*, I find that the accused cameras practice all of the elements of claim 5, *except* elements 2 (memory manager), 3 (storing sets of image data in allocated locations), 5 (using the power management system to protect "said" sets of image data) and 6 (an interface allowing an external computer to access "said" sets of image data).

I find, too, that the accused cameras practice the required element of claim 7.

Nevertheless, because I have found that the accused cameras do not infringe independent claim 5, it follows that they do not infringe dependent claim 7, which depends from claim 5.

*Wahpeton*, 870 F.2d at 1552 n. 9.

4. Claim 8

Claim 8 recites:

The method of claim 5 wherein said CPU can instruct said memory manager to allocate said storage locations.

**Apple's Position:** Apple argues that the accused cameras have a {

}

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{  
} Apple says that Kodak contends that claim 8 is not infringed because the accused cameras do not allocate storage locations in the frame buffers. Apple argues that as discussed with respect to claim 1, there is no requirement in the asserted claims that the memory manager allocate storage locations in the frame buffers.

In its reply brief, Apple says that Kodak only argues that dependent claim 8 is not infringed because independent claim 5 is not infringed. Accordingly, Kodak presents no independent argument that claim 8 is not infringed.

**Kodak's Position:** Kodak argues that claim 8 depends from claim 5, and cannot be infringed unless independent claim 5 is infringed. Kodak says that Apple has failed to allege that the identified "memory manager" allocates storage locations for the identified "frame buffers." Accordingly, Apple cannot prove that the accused cameras infringe claim 5, or claim 8.

**Staff's Position:** Staff contends that the accused cameras have memory manager software that allocates storage locations. {

}

**Discussion and Conclusion:** Based upon the evidence in the record, I find that the accused cameras do not practice the element of claim 8. In Section VI.B.2, above, I found that the accused cameras do not practice element 3 of claim 1, which requires a memory manager, and I found in Section VI.B.3, that based on the same reasoning as applied to that element, the accused cameras do not practice element 2 of claim 5, which requires a memory manager.

PUBLIC VERSION

Inasmuch as claim 8 depends from claim 5 and refers to “said memory manager,” it follows that the accused cameras do not practice this limitation of claim 8.

In addition, because I have found that the accused cameras do not infringe independent claim 5, it follows that they do not infringe dependent claim 8, which depends from claim 5.

*Wahpeton*, 870 F.2d at 1552 n. 9.

**C. The ‘911 Patent**

**1. Claim 15**

Claim 15 recites:

A system for allowing variably controlled alteration of image processing of digital image data, the system comprising:

a digital image capture device, the digital image capture device capable of processing digital image data through two or more image processors, the two or more image processors being stored in memory, wherein said processors are software modules and each performing a particular type of image transformation and having one or more parametric controls that are uniquely identified; and

a central processing unit within the digital image capture device and capable of linking the two or more image processors to form an image processing chain, wherein the central processing unit facilitates access of chosen controls of the one or more parametric controls within each of the two or more image processors for modification of the two or more image processors and alteration of the image processing.

a. { }

**Apple’s Position:** Apple contends that the following { } infringe claim 15 of the ‘911 patent: Z915, M380, M381, M580, M590, C142, C190 and SLICE.

Apple asserts that all of the accused cameras are “digital image capture devices” under all proposed constructions. (Citing CX-425C at Q. 112-116.)

Apple asserts that the accused cameras satisfy the “image processors” limitation of claim 15. Apple states that the cameras have software modules that apply image processing algorithms

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to obtain a particular type of image transformation. (Citing CX-425C at Q. 119-152.) Apple explains that there is a software module that corresponds to each image processor in the cameras. (Citing CX-425C at Q. 125-127; CX-426C at Q. 72-75.) Apple states that the software modules are stored in memory located within the camera. (Citing CX-425C at Q. 128.)

}  
  
Apple states that under its proposed construction of “software modules,” there is no dispute that the above identified software constitutes “machine-readable instructions that perform

## PUBLIC VERSION

a particular task.” (Citing CX-425C at Q. 120.) Apple claims that the above identified software also meets Kodak’s proposed construction of “software modules.” (Citing CX-425C at Q. 145-148.)

Apple argues that Kodak’s non-infringement theory is based on its drawing a false dichotomy between software image processing and hardware image processing and compounding that error by arguing that the ‘911 patent is limited to “software image processing.” Apple states that Kodak presented no evidence to support the conclusion that using software for image processing and using hardware for image processing are mutually exclusive. In fact, Apple claims that the very definition of “software” proves Kodak is wrong because image processing software requires hardware. Apple states that the definition of “software” in the dictionary used by Dr. Madisetti, is “instructions that cause the hardware—the machines—to do work.” (Citing CX-180.010.) Apple argues that simply because the Kodak cameras have hardware for image processing does not mean that the Kodak cameras do not have software for image processing.

Apple asserts that the ‘911 patent itself does not speak in terms of “software image processing” versus “hardware image processing.” Apple claims that the primary focus of the ‘911 patent is to implement modular and modifiable image processing as evidenced by the title of the patent and description of the invention. (Citing JX-2 at 1:50-54, 1:57-60, 1:64-67.) Apple notes that in the preferred embodiment, the execution of image processing is performed by the CPU, which is a hardware device. (Citing CX-425C at Q. 276.) Apple states that in that embodiment, just as in the Kodak cameras, the software applies image processing algorithms based on the choices made by a user and the hardware executes the processing of the image data. (Citing CX-425C at Q. 274-276.)

**PUBLIC VERSION**

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Apple states that during prosecution of the '911 patent, it distinguished the McCubrey reference because the image processing was "hardwired" and McCubrey "lack[ed] the ability to modify particular transformations." (Citing JX-6.110-111.) Apple claims that Kodak confuses the terms "hardware" and "hardwired." Apple asserts that neither Kodak nor Dr. Madisetti can point to a single portion of the file history where Apple disclaimed "hardware image processing."

Instead, Apple believes that it clearly distinguished the McCubrey reference on the grounds that it was hardwired. (Citing JX-6.110.) Apple states that the difference is critical because "hardwired" refers to functionality that is not obtained through software. (Citing RX-766.007.) Apple asserts that "hardware," on the other hand, is circuitry that can execute instructions from software. (Citing CX-180.010.) Apple thus believes that hardwired means that software is not used, whereas hardware can be used to execute software.

With the above in mind, Apple asserts that it is simple to understand why the Kodak

PUBLIC VERSION

cameras are not “hardwired” like the McCubbrey reference. {

}

Apple asserts that the cameras meet the “parametric controls” limitation. Apple states that the user guides for the { } illustrate an enumerated list type of values that affect how an image processor processes image data. (Citing CX-425C at Q.155-158; CX-366.051.) Apple asserts that there are unique parametric controls for each of the white balance, image scaling, color mode, and sharpness image processors. (*Id.*)

Apple asserts that the “parametric controls” limitation is also met under Staff’s and Kodak’s construction. Apple claims that the white balance, image scaling, color mode, and sharpness image processors each include controls that permit modification of the image processor for alteration of image data. (Citing CX-425C at Q. 155.) {

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**PUBLIC VERSION**

Apple states that claim 15 patent requires a central processing unit (CPU) capable of linking the image processors to form an image processing chain and facilitating access to the parametric controls. Apple asserts that the { } include a CPU that is capable of linking the two or more image processors to form an image processing chain. (Citing CX-425C at Q. 165-170.) Apple states that the CPU executes software that enables and disables the image processors to form an image processing chain. (Citing CX-425C at Q. 169.) {

}

In its reply brief, Apple addresses Kodak's allegation that the accused cameras lack the "image processors" limitation. Apple asserts that Kodak stakes its non-infringement position on the proposition that the Kodak cameras include hardware that executes image processing. (Citing RIB at 91-96.) {

}

Apple argues that this testimony is inconsequential to the question of whether the Kodak cameras infringe the '911 patent, which does not preclude the use of hardware to execute image processing.



**PUBLIC VERSION**

Apple states that even a cursory review of the “invention” of the ‘911 patent demonstrates that the invention was not “software” or “hardware.” Instead, Apple believes that the ‘911 patent is directed towards modifiable image processing that uses parametric controls. (Citing JX-2 at 1:57-67.) Apple explains that the ‘911 patent utilizes software modules to accomplish the modifiable image processing, however, that is quite different from saying that the ‘911 patent excludes the use of hardware. Apple asserts that the ‘911 patent expressly includes the use of hardware to execute image processing. (Citing CX-425C at Q. 276.)

Apple explains that the very nature of software is that it requires hardware to perform the work. (Citing CX-180.010.) Apples notes that in the preferred embodiment, the ‘911 patent describes the use of a central processing unit to execute image processing, but the claims are not so limited. (Citing CX-425C at Q. 276-278.) {

}

Apple asserts that the essence of Kodak’s non-infringement theory is that the ‘911 patent requires software that contains algorithms. (Citing RIB at 90; RX-765C at Q. 107.) Apple claims that there is nothing in the claims, specification or file history that requires the software contain the algorithms. (Citing CIB at 90-93.)

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PUBLIC VERSION

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**Kodak's Position:** Kodak contends that the { } do not infringe claim

15.

Kodak notes that the parties stipulated that "image processors" means "software modules which each apply algorithms on image data to obtain a particular type of image transformation."

Kodak claims that this agreed construction requires software to apply algorithms on image data.

{

}

{

} Kodak argues that the accused cameras cannot infringe the '911 patent

because they do not contain the claimed software "image processors" "stored in memory" that

"each perform[] a particular type of image transformation [or processing]."

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**PUBLIC VERSION**

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## PUBLIC VERSION

Kodak next argues that Apple is estopped from arguing that the accused camera's hardware-based image processors are equivalent to the claimed "image processors" which are software modules stored in memory and executed by a CPU. According to Kodak, Apple explicitly narrowed the scope of "image processors" during prosecution of the original application that resulted in the '911 Patent in order to avoid rejections of the claims under 35 U.S.C. §§ 102 and 103.

Kodak explains that in a June 3, 1999 "Amendment After Final Office Action," submitted to avoid patentability rejections, Apple pointedly distinguished the claimed "image processors" from prior art "hardwired elements" or "image processing instructions." (Citing JX-6.129-132.) Kodak states that Apple made these statements in response to an April 14, 1999 Final Office Action that rejected certain claims under 35 U.S.C. 102(b) as anticipated by McCubrey. (Citing JX-6.116-122.) Kodak states that Apple attempted to overcome the rejection over McCubrey by stating unequivocally that: "[T]he claims recite image processors being stored in memory. As such, Applicant respectfully submits that the interpretation to be made is that the phrase refers to the image processors, not to an image or an image processing instruction." (Citing JX-6.130) (emphasis in original).

Kodak claims that in an earlier Amendment that also distinguished McCubrey, Apple admitted that the invention of the '911 patent does not cover devices with "hardware function logic" or "hardwired . . . components." (Citing JX-6.110.) Kodak asserts that Apple distinguished the Iverson reference for the same reasons and again explained the direct contradiction between the claimed software image processors and hardwired image processing elements. (Citing JX-6.132.)

**PUBLIC VERSION**

Kodak states that after explicitly and repeatedly arguing that its invention cannot cover hardware-based image processors, Apple authorized an Examiner's Amendment to its claims to include the language "wherein said processors are software modules," making clear Apple's intention to claim only software image processors and not hardware image processors. (Citing JX-6.138-139.) Given Apple's arguments distinguishing its claims from hardware image processing, Kodak asserts that this amendment left no doubt that the claimed "image processors" are software image processors and cannot cover hardware image processing.

Kodak argues that if its proposed construction of "software modules" is adopted, the accused cameras cannot infringe any asserted claim because Apple failed to show modularity in any of the software in the accused cameras. Specifically, Kodak asserts that Apple failed to prove that the alleged "software modules" are "individually formed software objects, each having a common functional interface."

According to Kodak, proving that software constitutes "software modules" requires analysis of source code. Kodak claims that Apple did not put any of the source code into evidence. (Citing Tr. at 329:17-24.) {

} Kodak claims that Apple submitted no evidence demonstrating that the identified software in the accused cameras has "a common functional interface."

Finally, Kodak argues that Apple did not demonstrate that any of the accused cameras contain "parametric controls." (Citing CX-425C at Q. 154-163, 256-257.) {

**PUBLIC VERSION**

{

    In its reply brief, Kodak asserts that Apple also failed to identify any software that “perform[s] a particular type of image transformation” as is required by claim 15 or that “perform[s] a particular type of image processing” as is required by Claims 27, 30, and 38. (Citing JX-2 at claims 15, 27, 30, and 38.) {

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PUBLIC VERSION

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Kodak notes that Apple takes the hard-line stance that Kodak has drawn “a false dichotomy” between software image processing and hardware image processing. (Citing CIB at 113.) Kodak claims that if hardware image processing and software image processing are one and the same, then there would have been no point for the patent examiner to require that Apple amend its claims to define image processors as “software modules.”

{ } According to Kodak, Apple attempts to minimize the import of this fact by arguing that the title, abstract, and summary of the invention of the ‘911 patent do not use the terms “hardware” or “software.” (Citing CIB at 114.) While Kodak acknowledges that this is true, it states that the claims of the ‘911 patent are directed solely to software image processing while the Background of the Invention of the ‘911 Patent discusses the drawbacks of “specifically designed hardware” in the prior art. (Citing JX-2 at 1:39-54.) Kodak says that Apple’s arguments and amendments to the USPTO, based on the term “software,” to distinguish its claims over the prior art prove that the dichotomy between software image processing and hardware image processing indeed exists.

Kodak notes that Eric Anderson is a co-inventor (and Apple is the Assignee) of U.S. Patent No. 5,867,214 (“the ‘214 patent”). (Citing JX-4.469.) Kodak claims that the Background of the Invention of the ‘214 patent draws precisely the distinction Apple now alleges is a “false dichotomy.” (Citing JX-4.482.) Kodak says that the dichotomy between hardware image processing and software image processing was also confirmed by deposition testimony of a former Apple employee and inventor, George Dalke. (Citing JX-20C at 41:15-17, 133:3-16.)

**Staff’s Position:** Staff contends that the { } do not infringe claim 15

PUBLIC VERSION

because {

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Staff asserts that based on the language of claim 15 and the parties' agreed-upon construction, "image processors" are software that actually performs the image transformation, rather than software that defines, configures, instructs or controls the component that actually performs the image transformation. (Citing RX-765C at Q. 106-107.)

Staff states that the evidence demonstrates that there is a strong distinction between hardware-based processing, where the image processing is performed by specialized hardware, and software-based processing, where the algorithms to transform the data are contained in the software and merely executed by a generic central processing unit. As Dr. Delp explained, "[s]pecifically designed hardware refers to a device that is hardwired to perform a particular type of image transformation. In order to perform a different type of image transformation the hardware must be redesigned." (Citing CX-425C at Q. 29; RX-765C at Q. 175.) Staff asserts that hardware-based systems are often referred to as "hardwired" or as using "function logic." Staff notes that "hardwired" is specifically defined as "a function or capability that is built into a system using hardware such as logic circuits as opposed to one that is attained through programming (software)." (Citing RX-766.007; RX-765C at Q. 85.) Staff notes that software is much more flexible and only requires reprogramming to perform a different image transformation.

Staff states that Apple asserts that the accused Kodak cameras meet the "two or more image processors" limitation because they "include image processors which are machine-readable instructions that apply algorithms on image data to obtain a particular type of image



**PUBLIC VERSION**

transformation.” (Citing CX-425C at Q. 120, 242.) Staff does not believe that Apple has demonstrated that the accused Kodak cameras contain software which contains and directly applies algorithms to image data. {

}

Staff asserts that at best, the evidence demonstrates that the {

}

Staff states that with respect to the { } Apple contends that the “digital image capture device capable of processing digital image data through two or more image processors” limitation in the claims is satisfied by {

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**PUBLIC VERSION**

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}

Staff claims that the evidence shows that the { } do not meet the image processors limitation of claim 15 under the doctrine of equivalents because the evidence demonstrates that Apple is estopped from claiming a range of equivalents that would encompass { . }

## PUBLIC VERSION

In particular, Staff claims that the evidence shows that during the prosecution of the application that led to the '911 patent, the patentees clearly distinguished between hardware-based image processing and software-based image processing in order to achieve allowance of their claims. (Citing JX-2 at 2:38-54.) Staff argues that the statements made during prosecution to overcome McCubbrey demonstrate that the image processors in the invention did not include function logic or hardware. (Citing JX-6.110.) Staff states that the applicants also stated that the image processors of their invention were "stored in memory," and hardware cannot be stored in memory. (*Id.*) Staff states that the applicants made even more statements distinguishing their invention from McCubbrey later in prosecution. (Citing JX-6.129, 131.)

Staff states that when distinguishing the Iverson reference, the applicants stated "the 'image processors' in Iverson are directly taught and shown as hardwired elements, which directly contrasts and wholly fails to teach, show, or suggest Applicant's recited invention of image processors being stored in memory." (Citing JX-6.132; RX-765C at Q. 89-90.)

Staff asserts that the amendments adding the limitations requiring that the image processors are stored in memory were made in response to an Examiner rejection, and were accompanied by remarks consistent with an attempt to distinguish prior art which used hardware image processing. Staff explains that even with the narrowing of the claims and the remarks accompanying the amendment, however, the claims still had to be further amended to state that the image processors were software modules before the application was allowed to issue.

Staff argues that the evidence therefore shows that the "image processors," "image processors being stored in memory" and "image processors being software modules" limitations, and the asserted claims as a whole, were narrowed during prosecution in a manner related to patentability – *i.e.*, to distinguish the claimed invention from McCubbrey and other prior art

**PUBLIC VERSION**

which used image processing hardware rather than software. For these reasons, Staff believes that Apple is precluded from claiming a range of equivalents that would encompass hardware-based image processing.

Staff claims that the evidence demonstrates that the {  
 } do not meet the “parametric controls” limitation under Staff’s proposed claim construction. Staff states that its construction requires that the parametric controls be portions of the image processors. {

**PUBLIC VERSION**

In its reply brief, Staff addresses Apple's allegation that Kodak and Staff have created a false dichotomy between software image processing and hardware image processing. Staff asserts that "hardware image processing" does not refer to any image processing involving any piece of hardware. Rather, Staff states that it applies to image processing performed on "[s]pecifically designed hardware" which is "a device that is hardwired to perform a particular type of image transformation." (Citing CX-425C at Q. 29; RX-765C at Q. 175.)

Staff contends that the evidence clearly demonstrates that there is a dichotomy between "software image processing" and "hardware image processing." Staff reiterates that during the

PUBLIC VERSION

prosecution of the '911 patent, the applicants repeatedly distinguished between the claimed software image processors and the hardwired processors in the prior art. (Citing JX-6.132.) Staff notes that Dr. Madisetti testified that "software image processing is substantially different than hardware image processing." (Citing RX-765C at Q. 175.)

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to prove by a preponderance of the evidence that the { } infringe claim 15 of the '911 patent.

Both Kodak and Staff argue that the { } lack the "image processors" limitation. Claim 15 requires "two or more image processors being stored in memory, wherein said processors are software modules and each performing a particular type of image transformation..." I construed "image processors" to mean "software modules which each apply algorithms on image data to obtain a particular type of image transformation." As is evident from the discussion of "image processors" in Section III.C.1, *supra*, the patentee clearly distinguished the modular, flexible, software-based image processing of the invention from the more rigid, hardware-based image processing of the prior art. The inclusion of the term "software modules" must be given meaning, such that image processing algorithms embedded or fixed in hardware cannot satisfy the "image processors" limitation. *Exxon Chemical Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1557 (Fed. Cir. 1995) (explaining that "[w]e must give meaning to all the words in [the] claims.")

The parties agree that the following diagram from an internal { } document depicts the image processing chain for the { }

**PUBLIC VERSION**

**PUBLIC VERSION**

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} Dr. Delp's explanation corresponds to Apple's analogy, as he testified that the software modules control the image processor blocks and pass parameters, *i.e.* the "ingredients," to the image processor blocks to define the image processing. (CX-425C at Q. 130; Tr. at 316:19-322:1, 406:11-408:21.)

Dr. Delp admitted that each of the hardware image processor blocks carry their own algorithms. (Tr. at 313:9-15.) Dr. Delp admitted that the hardware image processor blocks use their algorithms to perform a particular type of image transformation on the image data. (Tr. at 314:19-315:19.) Dr. Delp acknowledged that the hardware image processor blocks are not stored in memory. (Tr. at 313:4-8.)

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PUBLIC VERSION

{ }  
The evidence demonstrates that the { } lack “two or more image processors being stored in memory, wherein said processors are software modules and each performing a particular type of image transformation...” Apple has not shown that the { } include “software modules which each apply algorithms on image data to obtain a particular type of image transformation.” {

}  
Kodak next argues that the { } lack the “software modules” under Kodak’s proposed construction of that term. Because I have not adopted Kodak’s proposed construction of “software modules,” I find Kodak’s argument without merit.

Finally, Kodak argues that the { } lack “parametric controls within each of the two or more image processors...” as required by claim 15. {

}  

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<sup>45</sup> While Kodak and Staff argue that Apple is precluded from asserting that the “image processors” limitation is met under the doctrine of equivalents, Apple raises no doctrine of equivalents argument for this limitation. (CIB at 108-117.)

PUBLIC VERSION

Thus, I find that Apple has not offered sufficient evidence to demonstrate that the alleged “parametric controls” are “within” the image processors.

Based on the foregoing, I find that Apple has failed to demonstrate that the {  
} infringe claim 15 of the ‘911 patent.

b. { }

**Apple’s Position:** Apple contends that the following { } infringe claim 15: M340, M341, M530, M550, M575, C143, C180, C182, C195, and C913. Apple explains that Kodak’s non-infringement position for the { } is identical to its position for the { } Apple asserts that because the image processing in the { } is performed in the same way as the image processing in the { } the infringement analysis with respect to the { } is equally applicable to the { }

Apple states that the { } are “digital image capture devices” under all proposed constructions because they generate digital image data using an image sensor and process image data. (Citing CX-425C at Q. 237.)

Apple asserts that the { } satisfy the “image processors” limitation because they include “software modules which each apply algorithms on image data to obtain a

**PUBLIC VERSION**

particular type of image transformation.” (Citing CX-425C at Q. 242-255.) {

}

Apple contends that the { } include parametric controls that are uniquely identified within the image processors as required by claim 15. (Citing CX-425C at Q. 256-261, 272.) {

}

Apple argues that the { } include a CPU that is capable of linking the two or more image processors to form an image processing chain. (Citing CX-425C at Q. 261-264.) Apple states that the CPU executes the software that enables and disables the image processors thereby linking the image processors to form a desired image processing chain.

PUBLIC VERSION

(Citing CX-425C at Q. 264.) Apple claims that in the documentation for the {  
} the “linking” of the image processors is illustrated by {

}

**Kodak’s Position:** Kodak contends that the { } do not infringe claim  
15 of the ‘911 patent. In addition to the argument already presented in Section VI.C.1.a *supra*,  
Kodak adds the following argument specific to the { }

Kodak states that the {

}

**Staff’s Position:** Staff contends that the { } do not infringe claim

**PUBLIC VERSION**

15 for the reasons described *supra*.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to prove by a preponderance of the evidence that the { } infringe claim 15 of the '911 patent.

The configuration of the { } mirrors that of the { }

The { } include hardware blocks that contain the image processors:

{

}

PUBLIC VERSION

{

Kodak next argues that the { } lack the “software modules” under Kodak’s proposed construction of that term. Because I have not adopted Kodak’s proposed construction of “software modules,” I find Kodak’s argument without merit.

Finally, Kodak argues that the { } lack “parametric controls within each of the two or more image processors...” as required by claim 15. {

46 While Kodak and Staff argue that Apple is precluded from asserting that the “image processors” limitation is met under the doctrine of equivalents, Apple raises no doctrine of equivalents argument for this limitation. (CIB at 120-122.)

PUBLIC VERSION

As described *supra*, I have found that the software in the {  
.} Dr. Delp identifies the “parametric control” software as part of the graphical user interface software of the cameras. (CX-425C at Q. 256-261; Tr. at 337:17-338:13.) Dr. Delp states that the graphical user interface is software that is executed by the CPU. (*Id.*) There is no explanation by Apple regarding how the graphical user interface software is within {

}  
Thus, I find that Apple has not offered sufficient evidence to demonstrate that the alleged “parametric controls” are “within” the image processors.

Based on the foregoing, I find that Apple has failed to demonstrate that the {  
} infringe claim 15 of the ‘911 patent.

**2. Claim 27**

Claim 27 recites:

A system for allowing variably controlled alteration of image processing of digital image data, the system comprising:

a digital image capture device, the digital image capture device capable of processing digital image data through two or more image processors, the two or more image processors being stored in memory, wherein said processors are software modules and each performing a particular type of image processing and having one or more parametric controls that are uniquely identified; and

a central processing unit within the digital image capture device and capable of linking the two or more image processors to form an image processing chain, wherein the central processing unit facilitates access of chosen controls of the one or more parametric controls within at least one of the two or more processors for modification of the image processor and alteration of the image processing.

a. { }

**Apple’s Position:** Apple offers no argument unique to claim 27. Apple’s stated position with respect to claim 15 is hereby incorporated by reference.

**Kodak’s Position:** Kodak offers no argument unique to claim 27. Kodak’s stated

PUBLIC VERSION

position with respect to claim 15 is hereby incorporated by reference.

**Staff's Position:** Staff offers no arguments unique to claim 27. Staff contends that claim 27 is not infringed for the reasons discussed *supra* with respect to claim 15.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to prove by a preponderance of the evidence that the { } infringe claim 27 of the '911 patent.

Claim 27 is almost identical to claim 15, and no party offered any arguments unique to claim 27. Based on the analysis described *supra* with respect to claim 15, I find that Apple has failed to demonstrate that the { } include "two or more image processors being stored in memory, wherein said processors are software modules and each performing a particular type of image processing" and "one or more parametric controls within at least one of the two or more processors..."

b. { }

**Apple's Position:** Apple offers no argument unique to claim 27. Apple's stated position with respect to claim 15 is hereby incorporated by reference.

**Kodak's Position:** Kodak offers no argument unique to claim 27. Kodak's stated position with respect to claim 15 is hereby incorporated by reference.

**Staff's Position:** Staff offers no arguments unique to claim 27. Staff contends that claim 27 is not infringed for the reasons discussed *supra* with respect to claim 15.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to prove by a preponderance of the evidence that the { } infringe claim 27 of the '911 patent.

Claim 27 is almost identical to claim 15, and no party offered any arguments unique to



PUBLIC VERSION

claim 27. Based on the analysis described *supra* with respect to claim 15, I find that Apple has failed to demonstrate that the { } include “two or more image processors being stored in memory, wherein said processors are software modules and each performing a particular type of image processing” and “one or more parametric controls within at least one of the two or more processors...”

3. Claim 30

Claim 30 recites:

A method of controlling processing of digital image data in a digital image capture device, comprising:

forming an image processing chain with a plurality of image processors, the plurality of image processors being software modules stored in memory located within the digital image capture device, the image processors each performing a particular type of image processing on the digital image data; and

providing one or more parametric controls within each of the two or more image processors, at least one of the parametric controls accessible by a user of the digital image capture device for modifying at least one of the two or more image processors.

a. { }

**Apple’s Position:** Apple offers no argument unique to claim 30. Apple’s stated position with respect to claim 15 is hereby incorporated by reference.

**Kodak’s Position:** Kodak offers no argument unique to claim 30. Kodak’s stated position with respect to claim 15 is hereby incorporated by reference.

**Staff’s Position:** Staff offers no arguments unique to claim 30. Staff contends that claim 30 is not infringed for the reasons discussed *supra* with respect to claim 15.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to prove by a preponderance of the evidence that the { } infringe claim 30 of the ‘911 patent.

PUBLIC VERSION

Claim 30 is similar to claim 15, and no party offered any arguments unique to claim 30. Based on the analysis described *supra* with respect to claim 15, I find that Apple has failed to demonstrate that the { } include “image processors being software modules stored in memory...the image processors each performing a particular type of image processing on the digital image data” and “one or more parametric controls within each of the two or more image processors...”

b. { }

**Apple’s Position:** Apple offers no argument unique to claim 30. Apple’s stated position with respect to claim 15 is hereby incorporated by reference.

**Kodak’s Position:** Kodak offers no argument unique to claim 30. Kodak’s stated position with respect to claim 15 is hereby incorporated by reference.

**Staff’s Position:** Staff offers no arguments unique to claim 30. Staff contends that claim 30 is not infringed for the reasons discussed *supra* with respect to claim 15.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to prove by a preponderance of the evidence that the { } infringe claim 30 of the ‘911 patent.

Claim 30 is similar to claim 15, and no party offered any arguments unique to claim 30. Based on the analysis described *supra* with respect to claim 15, I find that Apple has failed to demonstrate that the { } include “image processors being software modules stored in memory...the image processors each performing a particular type of image processing on the digital image data” and “one or more parametric controls within each of the two or more image processors...”

PUBLIC VERSION

4. Claim 38

Claim 38 recites:

A system for controlling the processing of digital image data, comprising:

a digital image capture device having an image processing backplane for forming an image processing chain with a plurality of image processors, the plurality of image processors being software modules stored in memory located within the digital image capture device, the image processors each performing a particular type of image processing on the digital image data; and

a parametric control coupled to at least one of the two or more image processors, wherein the parametric control is accessible by a user of the digital capture device for modifying at least one of the two or more image processors.

a. { }

**Apple's Position:** Apple offers no unique argument for much of the limitations found in claim 38. Apple's stated position with respect to claim 15 is hereby incorporated by reference.

Apple does offer an argument that the { } meet the "image processing backplane" limitation of claim 38. (Citing CX-425C at Q.179-180.) Apple believes that the two proposed constructions for image processing backplane are substantially the same for purposes of determining infringement.

Apple states that the { } include software that is used to form and configure the image processing chain by enabling and disabling the image processors. (Citing CX-425C at Q. 180.) {

.)

**Kodak's Position:** Kodak offers no argument unique to claim 38. Kodak's stated

PUBLIC VERSION

position with respect to claim 15 is hereby incorporated by reference.

**Staff's Position:** Staff offers no arguments unique to claim 38. Staff contends that claim 38 is not infringed for the reasons discussed *supra* with respect to claim 15.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to prove by a preponderance of the evidence that the { } infringe claim 38 of the '911 patent.

Claim 38 is similar to claim 15, and Kodak and Staff offered no argument unique to claim 38. Based on the analysis described *supra* with respect to claim 15, I find that Apple has failed to demonstrate that the { } include "image processors being software modules stored in memory...the image processors each performing a particular type of image processing on the digital image data..."

The element that distinguishes claim 38 from the other asserted claims is that it requires "a digital image capture device having an image processing backplane for forming an image processing chain with a plurality of image processors..." I construed "image processing backplane" to mean "software for coordinating image processors to form an image processing chain." Assuming *arguendo* that the { } include the claimed "image processors," I find that the { } include an "image processing backplane." Dr. Delp offers undisputed testimony that the { } meet the "image processing backplane" limitation because they "include software that is used to form and configure the image processing chain by enabling and disabling the various image processors." (CX-425C at Q. 180.)

b. { }

**Apple's Position:** Apple offers no unique argument for much of the limitations found in

PUBLIC VERSION

claim 38. Apple's stated position with respect to claim 15 is hereby incorporated by reference.

Apple does offer an argument that the { } meet the "image processing backplane" limitation of claim 38. Apple asserts that the { } include a software programmable image processing chain, similar to the { } Apple notes that although the { } source code was not produced, the software documentation demonstrates that, like the { } there is a software routine in the { } that is responsible for coordinating and supporting the image processors. (Citing CX-425C at Q. 270-271.) Apple asserts that Kodak offered no expert testimony to rebut Apple's position that the { } satisfy this limitation.

**Kodak's Position:** Kodak offers no argument unique to claim 38. Kodak's stated position with respect to claim 15 is hereby incorporated by reference.

**Staff's Position:** Staff offers no arguments unique to claim 38. Staff contends that claim 38 is not infringed for the reasons discussed *supra* with respect to claim 15.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has failed to prove by a preponderance of the evidence that the Kodak-Altek cameras infringe claim 38 of the '911 patent.

Claim 38 is similar to claim 15, and Kodak and Staff offered no argument unique to claim 38. Based on the analysis described *supra* with respect to claim 15, I find that Apple has failed to demonstrate that the { } include "image processors being software modules stored in memory...the image processors each performing a particular type of image processing on the digital image data..."

The element that distinguishes claim 38 from the other asserted claims is that it requires "a digital image capture device having an image processing backplane for forming an image

## PUBLIC VERSION

processing chain with a plurality of image processors...” I construed “image processing backplane” to mean “software for coordinating image processors to form an image processing chain.” Assuming *arguendo* that the { } include the claimed “image processors,” I find that the { } include an “image processing backplane.” Dr. Delp offers undisputed testimony that the Kodak-Altek cameras meet the “image processing backplane” limitation. (CX-425C at Q. 271.)

### VI. DOMESTIC INDUSTRY

#### A. Applicable Law

In patent-based proceedings under section 337, a complainant must establish that an industry “relating to the articles protected by the patent...exists or is in the process of being established” in the United States. 19 U.S.C. § 1337(a)(2) (2008). Under Commission precedent, the domestic industry requirement of Section 337 consists of an “economic prong” and a “technical prong.” *Certain Data Storage Systems and Components Thereof*, Inv. No. 337-TA-471, Initial Determination Granting EMC’s Motion No. 471-8 Relating to the Domestic Industry Requirement’s Economic Prong (unreviewed) at 3 (Public Version, October 25, 2002).

The “economic prong” of the domestic industry requirement is satisfied when it is determined that the economic activities set forth in subsections (A), (B), and/or (C) of subsection 337(a)(3) have taken place or are taking place. *Certain Variable Speed Wind Turbines and Components Thereof*, Inv. No. 337-TA-376, USITC Pub. No. 3003, 1996 ITC LEXIS 556, Comm’n Op. at 21 (Nov. 1996). With respect to the “economic prong,” 19 U.S.C. § 1337(a)(2) and (3) provide, in full:

(2) Subparagraphs (B), (C), (D), and (E) of paragraph (1) apply only if an industry in the United States, relating to the articles protected by the patent, copyright, trademark, mask work, or design concerned, exists or is in the process of being established.

## PUBLIC VERSION

(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, copyright, trademark, mask work, or design 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.

Given that these criteria are listed in the disjunctive, satisfaction of any one of them will be sufficient to meet the domestic industry requirement. *Certain Integrated Circuit Chipsets and Products Containing Same*, Inv. No. 337-TA-428, Order No 10, Initial Determination (Unreviewed) (May 4, 2000), citing *Certain Variable Speed Wind Turbines and Components Thereof*, Inv. No. 337-TA-376, Commission Op. at 15, USITC Pub. 3003 (Nov. 1996).

To meet the technical prong, the complainant must establish that it practices at least one claim of the asserted patent. *Certain Point of Sale Terminals and Components Thereof*, Inv. No. 337-TA-524, Order No. 40 (April 11, 2005). "The test for satisfying the 'technical prong' of the industry requirement is essentially same as that for infringement, i.e., a comparison of domestic products to the asserted claims." *Alloc v. Int'l Trade Comm'n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). The technical prong of the domestic industry can be satisfied either literally or under the doctrine of equivalents. *Certain Excimer Laser Systems for Vision Correction Surgery and Components Thereof and Methods for Performing Such Surgery*, Inv. No. 337-TA-419, Order No. 43 (July 30, 1999).

### **B. Economic Prong**

**Apple's Position:** Apple contends that it satisfies the economic prong of the domestic industry requirement for both the '964 and '911 patents.

**PUBLIC VERSION**

For the '964 patent, Apple relies on the iPhone 4 as the domestic industry product. For the '911 patent, Apple relies on Mac computers with the preinstalled Mac OS X v. 10.6 Snow Leopard operating system and Photo Booth, and the iPhone 3GS and iPhone 4 products running iOS 4.0 and higher as the domestic industry products.

Apple argues that it makes substantial investments in research and development ("R&D") relating to each of the domestic industry products. Apple states that it offered evidence to establish the following R&D investments:

{

} Apple claims that substantially all of Apple's R&D takes place in the U.S. (Citing CX-428C at Q. 79.) Apple states that its product packaging includes the label "Designed by Apple in California." (*Id.*)

According to Apple, Kodak did not contest the accuracy of these figures. Apple notes that on cross-examination of an Apple witness, Kodak attempted to elicit testimony that Apple does not track expenses at a patent level. Apple argues that that is irrelevant to the analysis and cannot be a justifiable basis for contesting Apple's domestic industry expenditures.

Apple next argues that it satisfies the economic prong of the domestic industry

---

<sup>47</sup> Apple asserts that its fiscal year ends September of each calendar year. (Citing CX-428C at Q. 50.)



**PUBLIC VERSION**

requirement via its significant investments in labor and capital relating to the domestic industry products. Apple asserts that its investments in labor and capital related to the domestic industry products are significant not only in an absolute sense, but they are also significant because these R&D-related labor investments are critically important to the domestic industry products. For example, Apple lists the following R&D-related labor investments in fiscal year 2009:

{

}

Finally, Apple argues that it makes significant investments in plant and equipment.

Apple states that its world headquarters are in Cupertino, California, where Apple employs over 10,000 people. (Citing CX-428C at Q. 7, 59.) {

}

In addition, Apple states that it has approximately 230 retail stores throughout the U.S.,

{

.) (Citing CX-428C at Q.55-56.)

Apple claims that these stores promote and sell the domestic industry products. In fiscal 2009,

PUBLIC VERSION

{

}

**Kodak's Position:** Kodak contends that Apple fails to satisfy the domestic industry requirement because none of its alleged domestic industry products practices either the '964 or '911 patents. Kodak further argues that none of Apple's alleged research and development expenditures were spent on developing either the '964 or '911 patents themselves. {

} Therefore, Kodak argues that Apple cannot estimate the amount it has spent on implementing the '964 or '911 patents. (Citing Tr. at 157:11-158:20.)

In its reply brief, Kodak asserts that Apple's economic prong analysis for the '911 patent erroneously includes the iPhone 3GS and iPhone 4 even though Apple stipulated before the hearing that it was not relying on those products to prove a domestic industry for the '911 patent.

Kodak states that Apple relies on its claimed investment in Macintosh computers with "preinstalled Mac OS X v. 10.6 Snow Leopard operating system and Photo Booth" to support its domestic industry for the '911 Patent. (Citing CIB at 144.) According to Kodak, Apple now alleges that the Quartz Composer developer toolkit is required to allegedly practice the '911 patent. Kodak claims that the Quartz Composer developer toolkit, however, is not part of the preinstalled operating system of the Mac computers. (Citing Tr. at 201:17-203:9.) Kodak asserts that Apple identifies no evidence of any domestic investment in the Quartz Composer developer toolkit.

Kodak states that the only iPhone product that Apple asserts establishes a domestic industry is the iPhone 4. Kodak claims that Apple fails to differentiate its claimed domestic investment in the iPhone 4, which it alleges practices the '964 patent, from its claimed

PUBLIC VERSION

investment in the iPhone 3GS, which Apple does not allege practices either of the patents-in-suit. Kodak asserts that Apple cites to evidence of its purported joint investment in the iPhone 3GS and iPhone 4, without identifying what, if any, portion of that investment is attributable to the iPhone 4. (Citing CIB at 146-147.) Kodak asserts that the information about the iPhone 3GS is a holdover from earlier in the investigation, before Apple stipulated its domestic industry case did not include proving the iPhone 3GS practiced either of the asserted patents.

**Staff's Position:** Staff contends that Apple has satisfied the economic prong of the domestic industry requirement for both the '964 and '911 patents.

Staff believes that Apple's investment in research and development in connection with Mac computers running Mac OS (which includes PhotoBooth) is substantial and satisfies the economic prong for the '911 patent. {

}

Staff believes that Apple's substantial investment in domestic research and development for the iPhone 4 satisfies the economic prong for the '964 patent. {

} Staff claims that Apple's research and development activities are headquartered in California, and nearly all of Apple's research and development activities have been conducted in Apple's U.S. facilities. (Citing CX-428C at Q. 22, 79.0

PUBLIC VERSION

In its reply brief, Staff addresses Kodak's argument that Apple failed to provide figures related to the investments related to developing the '964 and '911 patents. Staff argues that Kodak's argument overlooks the point that the domestic industry requirement may be determined with respect to the articles protected by the patents, and not the patents themselves.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has met its burden to prove by a preponderance of evidence that it satisfies the economic prong of the domestic industry requirement.

Apple states that its research and development activities are headquartered in Cupertino, California, and nearly all of the research, development, design, engineering, and testing for the iPhone and Mac products has been conducted in the United States. (CX-428C at Q. 79.) To illustrate this, Apple states that the packaging on every Apple product states, "Designed by Apple in California." (*Id.*)

First, I consider the '964 patent. Apple contends that the iPhone 4 product practices the '964 patent. (CIB at 61, 144.) {

} I find that Apple has satisfied the economic prong through substantial investment in research and development of the iPhone 4. 19 U.S.C. § 1337(a)(3)(C).

{  
} I find that Apple has satisfied the economic prong through significant employment of labor or capital devoted to the iPhone 4. 19 U.S.C. § 1337(a)(3)(B).

---

<sup>48</sup> Apple's fiscal year is generally 52 weeks long and starts at the end of September each calendar year. (CX-428C at Q. 50.)

PUBLIC VERSION

Next, I consider the '911 patent. Apple contends that Mac computers pre-installed with the Mac OS X operating system running Photo Booth practice the '911 patent. (CIB at 123, 144.)<sup>49</sup> {

} I find that Apple has satisfied the economic prong through substantial investment in research and development of Mac computers pre-installed with the Mac OS X operating system running Photo Booth. 19 U.S.C. § 1337(a)(3)(C).

{

} I find that Apple has satisfied the economic prong through significant employment of labor or capital devoted to the Mac OS X operating system. 19 U.S.C. § 1337(a)(3)(B).

Kodak offers two arguments in opposition. First, Kodak argues that Apple cannot prove that any of the domestic industry products practice the '964 or '911 patents. (RIB at 143.) That argument is properly reserved for the technical prong analysis. *See* Section VII.C *infra*. The economic prong analysis is limited to an inquiry regarding Apple's investments related to the alleged domestic industry products.

Next, Kodak argues that Apple offered evidence of its expenditures by product, and not by patent. (RIB at 143.) I find this argument unpersuasive. Section 337 requires an investment

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<sup>49</sup> Apple claims that the iPhone 3GS and iPhone 4 products practice the '911 patent. (CIB at 144.) That contention contradicts the parties' January 27, 2011 joint stipulation that states that "[t]he parties agree that for purposes of this Investigation only, Apple will not assert that the iPhone 3GS and iPhone 4 practice any claims of U.S. Patent No. RE38,911." (Joint Stipulation Regarding Products At Issue & The Person Of Ordinary Skill In The Art at ¶ 3.) Therefore, the iPhone 3GS and iPhone 4 will not be considered domestic industry products for the '911 patent.

**PUBLIC VERSION**

“with respect to the articles protected by the patent[.]” 19 U.S.C. § 1337(a)(3). Therefore, the relevant investments to be examined are Apple’s investments for the products that it claims are protected by the asserted patents. Apple has offered evidence of such investments, as described *supra*. It is unnecessary for Apple to provide evidence of its expenditures broken down by patent instead of by product.

Based on the foregoing, I conclude that Apple has satisfied the economic prong of the domestic industry requirement for both the ‘964 and ‘911 patents.

**C. Technical Prong**

**1. The ‘964 Patent**

**Apple’s Position:** Apple claims that the iPhone 4 (“iPhone”) practices claims 1 and 5 of the ‘964 patent. (Citing CX-425C at Q. 606-644; CX-426C at Q. 95-105; CX-427C at Q. 24-46.)

**PUBLIC VERSION**

PUBLIC VERSION

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}

Apple argues that applying the agreed construction “unprocessed image data” in the context of the ‘964 patent, it is clear that the word “processing” refers to processing done by the CPU and not to preliminary processing performed in the image sensor.<sup>50</sup> Apple notes that the claim expressly states that it is the CPU that processes images from unprocessed to processed. (Citing JX-1 at 8:37-38; Tr. at 415:1-12.) Apple adds that specification of the ‘964 patent explains that the portion of the digital camera that converts images from unprocessed into processed is the computer, which contains the CPU. (Citing JX-1 at 1:62-66; Tr. at 415:24-416:20.) Apple alleges that, in the context of the claims and specification, the parties agreed construction means that image data is “unprocessed” until it undergoes processing by the CPU.

{

}



**PUBLIC VERSION**

{

Apple continues that the iPhone also includes a RAM disk under Kodak's proposed construction, which requires that the RAM disk be "configured to emulate a hard disk drive." Apple explains that, in the context of the '964 patent, Kodak's construction simply means that the RAM disk is "sectored" in a manner similar to a convention hard disk. {

}

Apple asserts even if the RAM disk limitation is not literally present in the iPhone, it is present under the doctrine of equivalents. (Citing CX-425C at Q. 631.) {

}

Apple contends that the iPhone includes a memory manager for allocating storage

**PUBLIC VERSION**

locations to store sets of image data within the memory device. (Citing CX-425C at Q. 629-632; CX-427C at Q. 43.) {

}

Apple argues that the iPhone includes a power management system for monitoring a power supply to detect a power failure and configured to protect sets of image data. (Citing CX-425C at Q. 633-639.) {

}

PUBLIC VERSION

{

} Apple argues that Kodak contends that the iPhone does not practice this limitation and does so by repeating the same arguments made with respect to the power management feature in the accused Kodak cameras. Apple says for the same reasons explained with respect to the accused Kodak cameras, the iPhone practices this limitation.

Apple contends that under Kodak's construction of power management system, the iPhone satisfies this limitation under the doctrine of equivalents. {

}

Apple asserts that the iPhone includes an interface coupled to the memory device whereby and external host computer can access sets of image data. Apple says the iPhone includes a USB interface that allows an external host computer to access image data stored in memory, {

.} Apple says that Kodak contends that the iPhone does not practice this limitation and does so by repeating the same arguments made with respect to the accused Kodak cameras. Apple concludes that for the same reasons explained with respect to the

**PUBLIC VERSION**

accused Kodak cameras, the iPhone practices this limitation. Regarding claim 5 of the '964 patent, Apple asserts that it is a method claim that corresponds to claim 1, and for the reasons identified above with respect to claim 1, the iPhone practices claim 5 of '964 patent. (Citing CX-425C at Q. 644.)

In its reply brief, Apple says that Kodak and Staff argue that the iPhone does not include a frame buffer that stores "unprocessed image data," {

.} Apple adds that there is an apparent inconsistency between Kodak's and the Staff's analyses of infringement and domestic industry on the issue of what constitutes "unprocessed image data."

{

.}

**PUBLIC VERSION**

{

}

{

}

}

Apple says that Kodak argues that the iPhone does not include the claimed “memory manager;” but Kodak failed to include this non-infringement contention in its prehearing brief,

**PUBLIC VERSION**

and therefore, has waived this argument pursuant to Ground Rule 8.2. (Citing RPHB at 157-169.)

**Kodak's Position:** Kodak argues that Apple fails to meet the domestic industry requirement for the '964 patent because its lone domestic industry product – the iPhone 4 – does not practice the patent.

Kodak alleges that the iPhone does not have “frame buffers for storing unprocessed image data.” Kodak says the parties agree that the term “unprocessed image data” means “image data that has not undergone digital processing or compression.” (Citing JX-11 at 5.) {

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}

**PUBLIC VERSION**

PUBLIC VERSION

Kodak argues that iPhone lacks the claimed “random-access memory disk.” Kodak says for the same reasons argued in its brief at Section III.B.1 regarding the accused cameras, {

} is not a “RAM disk” under Kodak’s construction because it has not been “configured to emulate a hard disk drive.” (Citing CX-425C at Q. 631.)

In its reply brief, Kodak says that Apple’s allegation that Kodak’s construction “simply means that the RAM disk is ‘sectored’ in a manner similar to a convention [sic] hard disk” is a misrepresentation of Kodak’s construction. Kodak says that, as explained in Section II.B.1.a of its brief, Apple knows that Kodak’s construction is identical to the accepted and established meaning of RAM disk in the computer field. {

}



**PUBLIC VERSION**

Kodak refers to Section III.B.2 of its brief, and says the “memory manager” must allocate storage locations in the frame buffers and the RAM disk. {

}

Referring to Section III.B.4 of its brief, Kodak asserts that the “interface” element requires that the computer access the image data stored in the memory device. {

}

Kodak argues that as discussed in Sections III.A.3 and III.B.5 of its brief, power failure in the '964 patent occurs when a camera no longer has sufficient power to operate, and after a “power failure” occurs, no image processing can occur.

PUBLIC VERSION

Kodak alleges that Apple does not contend that the iPhone includes a backup power supply. {

} Kodak adds that the '911 patent proves that Apple believed that "[t]he processing by image processor 502b ['bad pixel replacement'] capably receives and outputs pixel data in sixteen-bit linear space Bayer format." (Citing JX-2 at 6:13-15.) {

}  
Kodak avers that when questioned by Apple's counsel as to whether "raw data" is a term of art with the same meaning as the parties' stipulated definition of "unprocessed image data," Kodak's expert Dr. Madisetti flatly answered "No." (Citing Tr. at 700:18-21.) Kodak says Dr. Madisetti clarified that: "[r]aw data means a lot of things in a lot of contexts. It means, for example, some things in digital camera [*sic*] and some things in the general computer field." (Citing Tr. at 700:14-18.) Kodak adds that Dr. Madisetti said, "I've not construed raw data, because it is not a claim term." (Citing Tr. at 700:8-9.)

PUBLIC VERSION

Kodak argues that raw data means different things in different contexts, so even if unprocessed image data was an analog to “raw data” in the context of the ‘964 patent, {

}

Kodak says that Apple argues that the CPU must perform the digital processing for the image data to shift from being “unprocessed image data” to “processed image data.” {

}

Kodak says Dr. Delp’s analysis that the “CPU” limitation is satisfied by the Kodak-Zoran cameras hinges on the statement that “the IPU and Encode blocks execute the image processing and compression.” (Citing CX-425C at Q. 430.) Kodak continues that Apple’s infringement analysis for the Kodak-Altek and Kodak-Ambarella cameras similarly hinge on the fact that hardware blocks separate from the identified CPU execute the image processing and compression. (Citing CX-425C at Q. 533, 569.) Kodak concludes if Apple’s proposition is correct, Apple effectively stipulates that none of the Accused Cameras infringe the ‘964 patent because the respective CPUs in the Accused Cameras do not “process[] images from unprocessed to processed.”

PUBLIC VERSION

Regarding Apple's doctrine of equivalents argument for the iPhone, Kodak argues that precluded from presenting that argument and refers to RIB Section III.B.1.a. {

}

Kodak argues that claims 1 and 5 of the '964 patent require the memory manager to allocate storage locations for both the frame buffers and the RAM disk. {

} Kodak concludes that the iPhone lacks the claimed "memory manager." (Citing RRB at Section II.B.2.)

**Staff's Position:** Staff argues that claim 1 and 5 each require "frame buffers for storing unprocessed image data," and the parties have agreed to construe "unprocessed image data" as "digital data that has not undergone digital processing or compression." {

}

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}

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} Staff avers that the '911 patent shares an inventor with the '964 patent. Staff reasons that, regardless of how "image processing" is generally understood in the industry at the present time, it is clear that the inventors of the '911 and '964 patents understood "bad pixel replacement" to be image processing as that term is used in the patents. {

} Accordingly, Staff submits that the evidence does not show that the iPhone meets the "unprocessed image data" limitation or practices claim 1 or 5 of the '964 patent.

**Discussion and Conclusion:** Based upon the evidence in the record, I conclude that Apple has failed to prove by a preponderance of evidence that the iPhone practices either claim 1 or claim 5 of the '964 patent.

PUBLIC VERSION

The dispute regarding whether or not the iPhone practices claims 1 and 5 of the '964 patent turns, essentially, on the same five disputed elements as the infringement issue, albeit in a somewhat different order of presentation. They are: (1) "frame buffers for storing unprocessed image data;" (2) "random access memory disk;" (3) "memory manager;" (4) "interface;" and (5) "power management system."

**Frame buffers for storing unprocessed image data**

Based upon the record before me, I find that Apple has failed to meet its burden of proof to demonstrate by a preponderance of evidence that the iPhone practices this element of claim 1.

First, Apple's assertion that any processing of image data in the digital camera device must be by the CPU is unavailing. Claim 1 clearly treats a digital camera device, which comprises "a CPU capable of concurrently processing multiple unprocessed images into processed images" and "a memory device, couple to said CPU, for storing sets of image data, comprising frame buffers for storing unprocessed image data." As I stated in Sections III.B.1 and IV.B.1, the term "comprising" is an open-ended term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim. *Genentech, Inc.*, 112 F.3d at 501; *Georgia Pacific Corp.* 195 F.3d at 1327; *In Re Baxter*, 656 F.2d at 686. There is no stated requirement that *all* processing of image data within the digital camera device by accomplished by the CPU. Unlike elements 3 through 5, element 2 does not refer to "said" sets of image data; it merely uses the term "unprocessed image data."

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Assuming *arguendo* that {

} then I would find that Apple has met its burden to show that

this element of claim 1 is practiced by the iPhone.

**Random access memory disk**

Based upon the record before me, I find that Apple has failed to meet its burden to prove by a preponderance of evidence that the iPhone practices this element of claim 1.

I have construed the term “random-access memory disk” to have its ordinary meaning, which is “volatile memory that emulates a hard disk drive.” My rationale for this construction is set forth in detail in Section III.B.2, *supra*, and I will not repeat it here; but I reaffirm my rationale and the construction applied to this term.

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<sup>53</sup> The testimony of Apple’s witness, Mr. Williams, does not contradict this finding. (See CX-427C at Q. 43.)



PUBLIC VERSION

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Regarding Apple's doctrine of equivalents argument, I find that it is barred by the doctrine of prosecution history estoppel. While I will not repeat my rationale here, I reaffirm the rationale applied in Section VI.B.1, *supra*, addressing Apple's attempt to argue the doctrine of equivalents in connection with the accused cameras. I find that the same rationale applies equally to Apple's attempt to argue the doctrine of equivalents to show that the iPhone practices this same element of claim 1.

Assuming *arguendo* that the construction proposed for the term "random-access memory disk" by Apple or by Staff is applied, I would find that the iPhone practices this element of claim 1. {

} In, Section VI.B.1, *supra*, I made a like finding regarding the accused cameras, and I found that using the construction urged by Apple or by Staff, I would find that the accused cameras practice this element of claim 1. {

.}

**Memory manager**

Based upon the record before me, I find that Apple has failed to meet its burden to prove by a preponderance of evidence that the iPhone practices this element of claim 1.

**PUBLIC VERSION**

Kodak argues correctly that this element requires that the “memory manager” allocate storage locations in the frame buffers *and* the RAM disk.<sup>54</sup> {

}

As in its infringement argument, Apple has focused on only one of the two required elements in which the memory manager must allocate storage locations to store “said sets of image data within said memory device.” Apple’s entire contention on this point is that the memory manager allocates storage locations { } Apple offers no evidence at all that the memory manager allocates storage locations in the frame buffers Apple has identified.

**Interface**

Based upon the evidence in the record, I conclude that the iPhone does not practice element 5 of claim 1 of the ‘964 patent that requires an “interface coupled to said memory device whereby an external host computer can access said sets of image data stored in said memory device.”

Apple has asserted that the interface of the iPhone works in the same manner as the interface of the accused cameras and has adopted the same argument it used in the infringement section to show that the iPhone practices this element. As will be discussed below, the iPhone does have a USB interface that allows an external host computer to access image data stored in memory. Nevertheless, following the logic that I have consistently applied on this issue in Sections III.B.1 and VI.B.1, { }

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<sup>54</sup> In Section VI.B.1, *supra*, I found that claim 1 requires that the memory manager allocate storage locations in both the frame buffers and the RAM disk. In the interest of brevity, I will not repeat my reasoning here; but I reaffirm that finding and the rationale for it.

PUBLIC VERSION

{ } It follows,

therefore, that those cameras do not contain "said" image data within the frame buffers.

Therefore, this element is not practiced by the iPhone.

Assuming *arguendo* {

} then I would find that the iPhone practices this element of claim

1.

Kodak's argument tracks its infringement argument, saying that at the time a user requests that the image data be transferred from the iPhone to the computer, the image data is

{ } The credible testimony of Mr.

Williams, however, supports a finding that the iPhone includes a USB interface that allows an

external host computer to access image data stored in memory, and when a host computer

accesses image data, { } and transferred to the host

computer. (CX-427C at Q. 46; Tr. at 179:22-181:9.)

The language of element 5 of claim 1 does not require that the image data accessed from the memory device be "stored" in that device for any minimum period of time. {

} Thus, I find that the process followed by the accused cameras practices this element of claim 1.

**Power management system**

Based upon the evidence in the record, I conclude that the iPhone does not practice

PUBLIC VERSION

element 4 of claim 1 of the '964 patent that requires a power management system.

In Section III.B.3, I construed the term "power management system" to mean "a system that monitors the supply of power and continues the supply of power after a power failure is detected, thereby preventing irreversible loss of sets of image data stored in the memory device."

Following the logic that I have consistently applied in discussing the practice of claim 1 by the iPhone, I find that the iPhone does not store "unprocessed" image data in the frame buffers, and it follows that those cameras do not protect "said" image data within the frame buffers. Apple's expert, Dr. Delp, conceded that this is correct. (Tr. at 405:17-20.) Therefore, this element is not met in the accused cameras.

Assuming *arguendo* that the image data stored within the frame buffers is found to meet the "unprocessed" requirement, then I would find that the iPhone practices this element of claim 1.

First, I have already found in Section VI.B.1, that a power failure as contemplated by the '964 patent does not require a complete loss of all battery power, such as might occur by removing all of the batteries from a camera device. In the interest of brevity I will not repeat that entire discussion here; but I reaffirm my findings and rationale on this point. (See, e.g., JX-1 at 7:8-17, 7:46-52.)

{

} Kodak does not dispute this point.

## PUBLIC VERSION

Based upon all of the foregoing, I find that Apple has failed to meet its burden to prove by a preponderance of evidence that its iPhone practices each and every element of claim 1 of the '964 patent.

Claim 5 is a method claim that, while differing slightly in form, follows in substance every element of claim 1. Based upon the reasoning applied to claim 1, *supra*, I find that the iPhone practices all of the elements of claim 5, except elements 2 (memory manager), 3 (storing sets of image data in allocated locations), 5 (using the power management system to protect "said" sets of image data) and 6 (an interface allowing an external computer to access "said" sets of image data). Therefore, I find that Apple has failed to meet its burden to prove by a preponderance of evidence that the iPhone practices claim 5 of the '964 patent.

### 2. The '911 Patent

**Apple's Position:** Apple contends that its Mac computers running Photo Booth practice claims 15 and 27 of the '911 patent.

Apple states that the following Mac computers currently sold by Apple practice the '911 patent: iMac, MacBook, MacBook Pro, and MacBook Air. (Citing CX-429C at Q. 7.) Apple explains that Photo Booth is an image processing application that comes with the operating system software provided with the Mac computers. (Citing CX-429C at Q. 5-6.)

Apple states that it is undisputed that the Mac computers are "digital image capture devices" under all parties' claim constructions. (Citing CX-425C at Q. 300.) Apple asserts that each Mac computer is a device that processes image data and includes an image sensor for generating image data. (*Id.*)

Apple claims that the Mac computers running Photo Booth have two or more image processors, which are software modules that apply algorithms on image data to obtain a

## PUBLIC VERSION

particular type of image transformation. (Citing CX-425C at Q. 301-310.) Apple explains that Photo Booth is a software application that runs on the computers and allows a user to take digital pictures and perform a variety of digital image processing operations on the pictures. (Citing CX-425C at Q. 298-299; CX-426C at Q. 111; CX-429C at Q. 5.) Apple asserts that many of the digital image processing operations that may be performed in Photo Booth are themselves comprised of multiple image processors. (Citing CX-425C at Q. 306; CX-426C at Q. 115.)

Apple claims that the effects in Photo Booth are created using a software development tool called Quartz Composer. (Citing CX-425C at Q. 307.) According to Apple, Quartz Composer is used to create what is called a composition. (Citing CX-426C at Q. 114; CX-429C at Q. 23.) Apple asserts that each composition is composed of "patches," which are the individual blocks. (Citing CX-426C at Q. 114; CX-429C at Q. 24.) Apple asserts that both the patches and compositions are software modules. (Citing CX-425C at Q. 301-308.)

Apple claims that under all proposed constructions of "software modules," the patches and compositions satisfy this limitation. Apple states that under Apple's and the Staff's proposed construction, the individual patches, such as the patches for Circle Splash Distortion and Image Crop, are machine-readable instructions that perform a particular task. (Citing CX-425C at Q. 301-308.) Apple states that under Kodak's proposed construction, the Quartz Composer framework that is executed while running Photo Booth is a common functional interface that allows the patches and compositions to be inserted, deleted, and replaced. (Citing CX-425C at Q. 310.)

Apple states that the image processors in the Photo Booth application also have parametric controls as required by claims 15 and 27 of the '911 patent. Apple claims that the image processors in the Photo Booth application have both enumerated list type and range type

## PUBLIC VERSION

of controls that affect how images are processed. (Citing CX-425C at Q. 313-315.) As an example, Apple states that the "Page" effects provides an enumerated list of image processing parameters, that allows a user to select the type of image processing effect desired. (*Id.*) Apple asserts that many of the individual effects also include a scroll bar, which is a range type control, that permits a user to modify the amount of the individual transformation. (*Id.*) Apple says that the parametric controls are within the image processors. (Citing CX-425C at Q. 315.)

Apple asserts that the Mac computers have an Intel CPU that executes the Photo Booth application. (Citing CX-425C at Q. 318-320.) Apple claims that the CPU links the image processors into an image processing chain and facilitates access to the parametric controls. (Citing CX-425C at Q. 320.) Apple states that the Photo Booth application uses image processing software patches that apply algorithms on image data to obtain a particular type of image transformation, and that the image processing patches are performed in a stage-by-stage fashion. (Citing CX-425C at Q. 318-320.)

Apple claims that PhotoBooth users can also create their own image processing chains using the Quartz Composer tool. (Citing CX-429C at Q. 30-35.) Apple states that the CPU facilitates access to the parametric controls because the controls for modifying the image processors are accessible to a user via the graphical user interface of the Photo Booth application that is running on the CPU. (Citing CX-425C at Q. 324-325.)

In its reply brief, Apple notes that Kodak's sole argument concerning the technical prong of the domestic industry for the '911 patent is that Apple has not demonstrated the presence of an image processing chain in the Photo Booth application. Apple claims that Kodak is wrong for at least three reasons. First, Apple states that the Light Tunnel effect, which is built-in to Photo Booth, is an image processing chain composed of two or more image processors. Second, Apple

PUBLIC VERSION

asserts that the Quartz Composer tool permits a user to create thousands of image processing chains in Photo Booth. Finally, Apple states that Kodak did not contest in its prehearing brief that the Light Tunnel effect or the custom effects that can be made using Quartz Composer disclose an image processing chain composed of two or more image processors. (Citing RPHB at 56-60.) Apple argues that Kodak has waived any such argument pursuant to Ground Rule 8.2.

Apple states that the Light Tunnel effect is a built-in effect included with the Photo Booth application. (Citing CX-425C at Q. 305; CX-429C at Q. 15.) Apple asserts that the evidence categorically demonstrates that the Light Tunnel effect is composed of two or more image processors that form an image processing chain. (Citing CX-425C at Q. 306; CX-426C at Q. 115.)

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}

Apple claims that it offered testimony regarding the ability to use Quartz Composer to create an image processing chain. (Citing CX-429C at Q. 25-35; Tr. at 206:11-23.) Apple states that Kodak argues that Apple cannot rely on the Quartz Composer because Apple provided little to no discovery on the subject. (Citing RIB at 107.) Apple asserts that this argument is without merit, as Kodak failed to object to the admission of evidence related to the Quartz Composer. (Citing CX-429; CX-137; Tr. at 208:1-15.) In addition, Apple claims that the Quartz Composer



**PUBLIC VERSION**

User Guide was timely produced during discovery and Apple's experts relied on it to formulate the opinions expressed in their expert reports. (Citing CX-430.002; CX-437.001.)

**Kodak's Position:** Kodak contends that Apple has failed to satisfy the technical prong of the domestic industry requirement.

Kodak states that Apple alleges that the "Page 2 Effects" – one of the four pages of pre-installed Effects in the Photo Booth application – in combination with the individual "Magnitude of Twirl" Effect, collectively satisfy the "two or more image processors" limitation of claims 15 and 27. (Citing CX-425C at Q. 305, 319-321.) Kodak asserts that even assuming the "Page 2 Effects" and "Magnitude of Twirl" Effect are "image processors" as Dr. Delp alleges, no single frame of image data is first processed in the "Page 2 Effects" box and thereafter passed to the "Magnitude of Twirl" Effect for further processing. (Citing CX-429C.006-007.) Kodak states that Dr. Madisetti explained there is no flow of image data between Stage 1 and Stage 2 as identified by Dr. Delp. (Citing RX-765C at Q. 315-316; RDX-3-65.) Rather, Kodak asserts that the "Page 2 Effects" are applied to each frame of a stream of video data. (Citing RX-765C at Q. 313-318.)

Kodak believes that Dr. Madisetti's testimony is consistent with Apple's corporate witness, Mr. Westen. {

} Kodak thus argues that Apple has failed to show that Photo Booth includes "two or more image processors [linked] to form an image processing chain."

**PUBLIC VERSION**

Kodak notes that Dr. Delp asserts that Photo Booth's Light Tunnel Effect practices claims 15 and 27 of the '911 Patent. Kodak asserts that the Light Tunnel Effect does not include the claimed "two or more image processors."

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## PUBLIC VERSION

Kodak asserts that Dr. Delp's domestic industry opinion is that "Mac computers with an integrated digital camera that have the Photo Booth application practice claims 15 and 27 of the '911 Patent." (Citing CX-425C at Q. 295.) Kodak states that for the first time in its pre-hearing brief, Apple relies on the Quartz Composer developer tool, at least in part, to establish domestic industry. Kodak claims that Quartz Composer is a developer's tool that is completely separate from Photo Booth and not part of the Mac OS X. Kodak claims that Apple provided little to no discovery on Quartz Composer as part of this Investigation. Accordingly, Kodak believes that Apple's reliance on Quartz Composer is improper.

**Staff's Position:** Staff contends that Apple has satisfied the technical prong of the domestic industry requirement.

Addressing the limitations of claim 15, Staff states that it is undisputed that the Macs are digital image capture devices under all of the parties' constructions. (Citing CPHB at 101.) Staff states that Photo Booth software allows a user to perform various digital image processing operations upon images, which are termed "effects." (Citing CX-429C at Q. 5, 9.) Staff claims that for each effect, PhotoBooth includes blocks of software that apply algorithms on image data to obtain a particular type of image transformation. (Citing CX-425C at Q. 303; CX-429C at Q. 11.) Staff asserts that these software modules are stored in the hard drive of the Mac computer, which is memory. (Citing CX-425C at Q. 308; CX-429C at Q. 13.)

According to Staff, the Quartz Composer is the tool used to create and implement the "Pages" of effects and the individual effects. (Citing CX-425C at Q. 307.) Staff states that the Quartz Composer allows the user to create software "patches" which perform image processing. (Citing CX-429C at Q. 24.) Staff believes that both the individual effects and the patches are image processors being stored in memory wherein said processors are software modules.

**PUBLIC VERSION**

Staff asserts that when certain effects, such as “Twirl,” are selected, a slider bar is available at the bottom of the image which allows the user to select and control the degree to which the selected effect will be applied. (Citing CX-429C at Q. 16-17.) Staff asserts that these scroll bars are part of, and unique to, each of the individual effects and constitute the claimed parametric controls.

Staff states that Apple has offered three theories under which the Photo Booth software meets the requirement of a central processing unit capable of linking the two or more image processors to form an image processing chain – the Page Two Effects combined with Twirl, the Light Tunnel Effect and the use of Quartz Composer development tool with PhotoBooth.

Staff states that Apple’s first argument is that each “Page” of effects, when the source code simultaneously applies eight different image processing algorithms to generate a 3 x 3 matrix, should be considered an image processor performing eight types of effect simultaneously and then, once an effect is selected, a second processor is used to apply the degree of effect chosen by the user. (Citing CPHB at 103-104.) However, Staff believes that the evidence shows that data representative of a single image is not first processed, for example, in the “Page Two Effects” and thereafter processed in the “Twirl” processor.

{

} Thus, Staff claims that the evidence does not show that the

PUBLIC VERSION

Macs running this process meet the “central processing unit capable of linking the two or more image processors to form an image processing chain” limitation.

Staff says that Apple’s second argument for the satisfaction of this element relates to the “Light Tunnel” effect. Staff asserts that the evidence shows that the Light Tunnel effect is, in essence, an image processing chain formed of two image processors – {

} Staff believes that the evidence accordingly demonstrates that the Light Tunnel effect satisfies the “a central processing unit capable of linking the two or more image processors to form an image processing chain” limitation. Staff states that because Light Tunnel does not require the use of Quartz Composer, the evidence shows that Macs with PhotoBooth meet this limitation.

Staff asserts that Apple’s third argument relies on the Quartz Composer, which is the tool used to create and implement the “Page” effects and individual effects. Staff notes that Quartz Composer allows the user to create software “patches” which perform image processing. (Citing CX-429C at Q. 24.) Staff claims that the evidence shows that the Quartz Composer can be used to link together various PhotoBooth effects to form image processing chains. (Citing CX-429C at Q. 30-35.) Staff says that like Photo Booth, Quartz Composer is executed by the CPU.

Accordingly, the Staff submits that the evidence demonstrates that the Mac computers running Photo Booth with Quartz Composer satisfies the “a central processing unit capable of linking the two or more image processors to form an image processing chain” limitation.

Staff claims that the evidence shows that the Intel CPU of the Mac executes the Photo Booth application, and facilitates the graphical interface that allows the user to modify image

PUBLIC VERSION

processing. (Citing CX-425C at Q. 325.) Accordingly, Staff believes that the evidence shows that the Macs running Photo Booth with or without Quartz Composer meet the final claim limitation of claim 15.

Staff asserts that for the same reasons that the evidence shows that claim 15 of the '911 patent is practiced by the Macs using Photo Booth with or without Quartz Composer, the evidence shows that claim 27 of the '911 patent is practiced by the Macs using Photo Booth with or without Quartz Composer.

In its reply brief, Staff notes that Kodak contends {

} (Citing RIB at 105-106.) Staff argues that because Kodak did not raise this argument in its pre-hearing brief, it should be deemed waived.

**Discussion and Conclusion:** Based on the evidence in the record, I find that Apple has demonstrated that the Mac computers satisfy the technical prong of the domestic industry.

Apple asserts that its Mac computers running Photo Booth software practice claims 15 and 27 of the '911 patent. (CIB at 123.) The Mac computers are the iMac, MacBook, MacBook Pro, and MacBook Air. (CX-429C at Q. 7.) Photo Booth is software that comes pre-installed on all Apple computers that are shipped with the Mac OS X v.10.6 Snow Leopard operating system. (*Id.* at Q. 6-8.) Dr. Delp describes Photo Booth as “a software application that lets a user take digital pictures and perform a variety of digital image processing operations on the pictures.” (CX-425 C at Q. 299.)

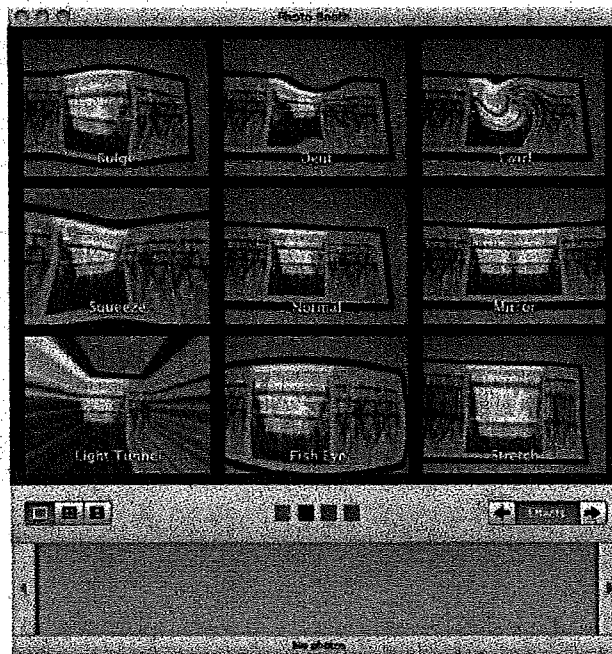
When a user launches Photo Booth, the first screen he sees is a window showing the user as captured by the integrated camera in the Mac. (CX-429C at Q. 9.) The user may click the button called “effects” to see the image as altered by various effects. (*Id.* at Q. 9-10.) The

**PUBLIC VERSION**

effects are performed “live,” in that Photo Booth creates a real-time preview of the user in front of the camera. (*Id.* at Q. 10.) There are multiple pages of effects. Below is a depiction of the “Page 1” effects:



(CDX-2.001.) Below is a depiction of the “Page 2” effects:



PUBLIC VERSION

(CDX-2.002.)

As can be seen from both pages of effects, there are nine different panels, where the center panel is labeled "Normal" and each of the other panels shows the image with a different effect applied. The effects are implemented via image processing algorithms that are contained in the Photo Booth software. (CX-429C at Q. 11.) The Photo Booth application consists of a series of software instructions that are stored in memory on the Mac computers. (*Id.* at Q. 12.)

A user can click on one of the nine boxes to view a larger image of the chosen effect. (CX-429C at Q. 16-17.) For some, but not all, of the effects, a slider bar appears to allow the user to change the magnitude of the effect applied to the image. (*Id.* at Q. 17-19.) For example, of the eight "Page 2" effects, the following effects provide a slider bar that allow the user to vary the magnitude of the effect: bulge, dent, swirl, squeeze, and light tunnel. (*Id.* at Q. 19.) Other effects such as the mirror effect do not provide a slider bar. (*Id.*)

The parties' dispute focuses on the limitation of claim 15 requiring "a central processing unit within the digital image capture device and capable of linking the two or more image processors to form an image processing chain..." I construed "linking...to form an image processing chain" to mean "connecting two or more image processors such that the image processors manipulate digital image data in a stage by stage fashion."

Apple offers two separate arguments for why this limitation is met. First, it argues that the Light Tunnel effect, which is one of the "Page 2" effects, {



**PUBLIC VERSION**

I construed "image processors" to mean "software modules which each apply algorithms on image data to obtain a particular type of image transformation." {

PUBLIC VERSION

.} Kodak has not demonstrated that there must be a transformation performed on every image pixel to qualify as an “image processor.” Kodak cites to no expert testimony or other evidence to contradict the testimony of Dr. Delp and Mr. Goodwin. {

.}

The second argument raised by Apple concerning the “linking...to form an image processing chain” limitation is that this limitation is met through use of the Quartz Composer tool. Quartz Composer is not pre-installed on Mac computers, but it can be installed through the install DVD that comes with every Mac computer. (Tr. at 205:14-206:21.)

Quartz Composer allows a user to create custom effects for Photo Booth. (CX-429C at

## PUBLIC VERSION

Q. 20-35.) Included is the ability to combine effects so that one image is processed by multiple effects. (*Id.*) Apple provides the example of creating a custom effect that both changes the color of the image to “Night Vision” and blurs the image. (*Id.*) The Quartz Composer software allows a user to string together hundreds or thousands of different image processors together. (*Id.* at Q. 35.) I find that the use of Quartz Composer with Photo Booth meets the “linking...to form an image processing chain” limitation. (CX-429C at Q. 20-35; CX-425C at Q. 328-329.)

Kodak does not oppose Apple’s assertion that Quartz Composer allows for the linking of image processors to form an image processing chain. Instead, Kodak argues that Apple’s reliance on Quartz Composer is improper. Kodak claims that prior to the hearing, Apple never relied on Quartz Composer. Kodak asserts that Apple provided little to no discovery regarding Quartz Composer.

I find that Apple’s reliance on the Quartz Composer is not improper. Apple clearly relied on Quartz Composer in its pre-hearing brief. (CPHB at 112-115.) Apple timely produced the Quartz Composer User Guide during discovery, and both Dr. Delp and Mr. Goodin listed the Quartz Composer User Guide under the references considered when formulating the opinions found in their expert reports. (*See* CX-430.002; CX-437.001.) Finally, Kodak did not raise any objections at trial when Apple offered into evidence the Quartz Composer User Guide or the witness statement of Mr. Peter Westen, the Apple engineer that explained the relevant details of Quartz Composer. (*See* Tr. at 208:1-15; CX-137; CX-429C.) Based on the foregoing, I find that Apple may rely on the Quartz Composer functionality to demonstrate the technical prong.

Beyond the issues discussed *supra*, Kodak does not dispute that Apple has proven the technical prong. The Mac computers are “digital image capture devices.” (CX-425C at Q. 300.) The Photo Booth effects, and the components used to make up those effects, are image

## PUBLIC VERSION

processors that each perform a particular type of image transformation and are stored in memory. (*Id.* at Q. 301-308; CX-426C at Q. 112-115; CX-429C.) Many of the effects include a sliding scroll bar that allows a user to adjust the magnitude of the effect. (CX-429C at Q. 17.) The scroll bar constitutes a uniquely identified “parametric control” because it is a range type control that affects how an image processor processes image data. (*Id.*; CX-425C at Q. 313-315.) Finally, the Mac computers include the central processing unit that performs the functionality required by claim 15. (CX-425C at Q. 318-325.)

Based on the foregoing, I find that Apple has demonstrated that its Mac computers practice claim 15 of the ‘911 patent. I find that Apple has further demonstrated that its Mac computers practice claim 27 of the ‘911 patent for the same reasons discussed *supra* with respect to claim 15. Thus, Apple has satisfied the technical prong of the domestic industry requirement.

## VII. REMEDY & BONDING

### A. Limited Exclusion Order

**Apple’s Position:** Apple seeks a limited exclusion order barring the importation of all infringing Kodak digital cameras.

In its reply brief, Apple notes that Kodak argues that the exclusion order should include a certification provision requiring Apple to certify to the Commission every three months that it maintains a domestic industry. (Citing RIB at 144-145.) Apple argues that Kodak offers no evidence to support this request. Apple states that if Kodak has reason to believe Apple is no longer maintaining a domestic industry, the proper course of action would be for Kodak to petition for modification or rescission of any exclusion or cease and desist orders under Commission Rule 210.76.

**Kodak’s Position:** Kodak contends that if there is a violation of Section 337, the

## PUBLIC VERSION

Commission should enter a limited exclusion order limited to those products found to infringe a valid and enforceable claim of one of the asserted patent and that were imported by Kodak or on its behalf before the close of the evidentiary record.

Kodak asserts that because Apple no longer accused the {

} any exclusion order should specifically exempt those products.

Kodak states that because Apple did not accuse any of {

} of infringing the '911 patent, no LEO directed at the '911 patent should include those products. Kodak claims that to address the differences between various Kodak cameras (only some of which were accused of infringement), any exclusion order should provide a certification requirement under which Kodak would be able to certify products that it could import notwithstanding a limited exclusion order.

Kodak argues that in light of the frequent changes in Apple's product line (including its iPhone products), Apple should be required to certify to the Commission every three months that it maintains a domestic industry in each of the '911 and '964 patents. Kodak claims that the Commission has required such a certification process when the existence of a domestic industry is dependent upon the continued viability of the asserted domestic industry products. Finally, Kodak asserts that replacement parts and future products should be exempt from any exclusion order to lessen the potential harm to third parties.

**Staff's Position:** Staff is of the view that the appropriate remedy will include a limited exclusion order directed at infringing digital cameras.

**Discussion and Conclusion:** I have found that, in this case, there is no violation of Section 337 related to either the '964 patent or the '911 patent.

Should the Commission find a violation of Section 337, however, I recommend that the

## PUBLIC VERSION

Commission issue a limited exclusion order that applies to Kodak, as well as all of its affiliated companies, parents, subsidiaries, or other related business entities, or its successors or assigns, and covers the digital imaging devices and related software found to infringe the asserted patents.

I decline to limit the recommended exclusion order by product names. Commission precedent has held that it is not appropriate to include specific product names in an exclusion order, as the exclusion order should extend to Kodak's products that are within the scope of the investigation and that are found to infringe the applicable patents. *See Certain Integrated Repeaters, Switches, Transceivers & Products Containing Same*, Inv. No. 337-TA-435, Commission Opinion at 22-23, USITC Pub. 3547 (Oct. 2002); *Certain Hardware Logic Emulation Systems & Components Thereof*, Inv. No. 337-TA-383, Commission Opinion, 1998 WL 307240 (Mar. 1998) (“[T]he Commission’s long-standing practice is to direct its remedial orders to all products covered by the patent claims as to which a violation has been found, rather than limiting its orders to only those specific models selected for the infringement analysis.”)

In light of the fact that there are Kodak camera products that are not accused of infringement, I recommend that any exclusion order include a certification provision to allow Kodak to certify products that it may import notwithstanding a limited exclusion order. Neither Apple nor Staff oppose this request. The Commission has explained that “[c]ertification provisions are generally included in exclusion orders where Customs is unable to easily determine by inspection whether an imported product violates a particular exclusion order.” *Certain Semiconductor Chips With Minimized Chip Package Size & Products Containing Same*, Inv. No. 337-TA-605, Commission Opinion (July 29, 2009) (including a certification provision in an exclusion order because of the difficulty of determining whether imported products contain

PUBLIC VERSION

the infringing chipsets); see also *Certain Ground Fault Circuit Interrupters & Products Containing Same*, Inv. No. 337-TA-615, Commission Opinion (Mar. 26, 2009) (noting that a certification provision “gives U.S. Customs & Border Protection the authority to accept a certification from the parties that goods being imported are not covered by the exclusion order.”)

Kodak also seeks a requirement that Apple certify every three months that a domestic industry still exists. Apple opposes such a request. Kodak bases its request on the assertion that Apple changes its product line frequently. Kodak states “Apple relies entirely on a limited number of its current products that have a limited sales life to establish any domestic industry, and thus, any change in those products could affect whether Apple maintains a domestic industry.” (RIB at 145.) Kodak offers no evidence to support its position, relying solely on attorney argument. “Attorneys’ argument is no substitute for evidence.” *Johnston*, 885 F.2d at 1581. Without any evidence of the limited sales life of Apple’s domestic industry products, I decline to recommend this certification provision sought by Kodak.

Finally, Kodak asserts that replacement parts and future products should be exempt from any exclusion order to lessen the potential harm to third parties. Kodak provides no explanation regarding this request, and I decline to recommend this provision absent a sufficient justification by Kodak for the need for such a provision.

**B. Cease & Desist Order**

**Apple’s Position:** Apple contends that a cease and desist order is appropriate because Kodak maintains a commercially significant inventory of the accused products in the United States.

Apple relies on Kodak’s response to Apple’s Interrogatory Nos. 18 and 19 to support the assertion that Kodak maintains a commercially significant inventory of the accused products in

PUBLIC VERSION

the United States. (Citing JX-97C.) Apple claims that Kodak does not contest the accuracy of the data provided in the interrogatory responses.

In its reply brief, Apple states that Kodak argues that its sworn interrogatory responses setting forth its commercially significant inventory were not part of the evidentiary record. Apple notes that it moved for summary determination regarding this issue, and Kodak did not contest the accuracy or admission of the data in the interrogatory responses. Apple argues that it may rely on the parties' submissions in the context of summary determination when those submissions address material facts without substantial controversy. (Citing 19 CFR § 210.18(e).)

Apple asserts that even if Kodak's inventory amounts are not considered established, the facts still show that Kodak maintains a commercially significant domestic inventory. Apple states that in Kodak's interrogatory responses found at JX-9 and JX-10, Kodak admitted that {

} Apple claims that the evidence establishes that the accused products are extensively available for sale throughout the U.S., either through Kodak's website store or through retailers such as Amazon.com, Best Buy, Staples, Wal-Mart, Sears, Kmart, and others. (Citing CX-277; CX-278; JX-19 at 25:11-26:8; 36:3-10; 36:13-37:12; 38:9-39:25.) Apple asserts that while the average Kodak product life span is eight to 12 months, typically products will sit on retailer's shelves for much longer than that and Kodak will work with the retailers to sell the products sitting in inventory. (Citing JX-19 at 44:21-45:17.) {

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## PUBLIC VERSION

**Kodak's Position:** Kodak contends that if a violation of Section 337 is found, no cease and desist order should issue.

Kodak asserts that Apple failed to meet its burden to show that Kodak maintains a commercially significant inventory of infringing products. Kodak claims that Apple did not seek to admit exhibit JX-97C, the only evidence of inventory identified by Apple in its pre-hearing brief.

Kodak states that any evaluation of the inventory of allegedly infringing products should not include any of the { } which Apple dropped from this Investigation. Likewise, Kodak asserts that should a cease and desist order be recommended with respect to the '911 patent, it should not apply to the { } none of which are accused of infringing that patent. Kodak argues that any cease and desist order should not prevent Kodak from providing technical service, spare parts and other support to its U.S. customers for the accused cameras.

**Staff's Position:** Staff contends that if a violation of Section 337 is found, the Commission should enter a cease and desist order.

Staff states that Kodak did not oppose Apple's motion for summary determination of Kodak's commercially significant inventories. Staff believes the evidence shows that Kodak maintains commercially significant inventories of the accused products in the United States.

In its reply brief, Staff notes that Kodak did not contest the accuracy of its interrogatory response concerning inventory levels when the issue was raised in the context of summary determination. Staff argues that Kodak cannot now deny the accuracy of the information in the interrogatory responses when it did not contest such information during summary determination briefing.

PUBLIC VERSION

{

} Staff states that the evidence also shows that Kodak imports large quantities of accused products with a high total value. (Citing JX-9 at 5-6.) Staff believes that this evidence demonstrates that Kodak possesses a “commercially significant” inventory.

**Discussion and Conclusion:** I reiterate that I have found no violation of Section 337 in this investigation related to either the ‘964 patent or the ‘911 patent.

Should the Commission find a violation of Section 337, however, I do not recommend the issuance of a cease and desist order.

Section 337 provides that in addition to, or in lieu of, the issuance of an exclusion order, the Commission may issue a cease and desist order as a remedy for violation of section 337. *See* 19 U.S.C. § 1337(f)(1). The Commission generally issues a cease and desist order directed to a domestic respondent when there is a “commercially significant” amount of infringing, imported product in the United States that could be sold so as to undercut the remedy provided by an exclusion order. *See Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, USITC Pub. 2391, Comm’n Op. on Remedy, the Public Interest and Bonding at 37-42 (June 1991); *Certain Condensers, Parts Thereof and Products Containing Same, Including Air Conditioners for Automobiles*, Inv. No. 337-TA-334, Comm’n Op. at 26-28 (Aug. 27, 1997). The complainant bears the burden of proving that a respondent has a commercially significant inventory in the United States. *Certain Integrated Repeaters, Switches, Transceivers & Products Containing Same*, Inv. No. 337-TA-435, Comm’n Op., 2002 WL 31359028 (Aug. 16, 2002).

Apple relies on a Kodak interrogatory response found in exhibit JX-97C to establish that

## PUBLIC VERSION

Kodak maintains a commercial significant inventory of accused products in the U.S. JX-97C was not admitted during the hearing, and cannot be relied upon as evidence.

Apple also argues that I have already established facts regarding Kodak's domestic inventory in Order No. 21. In Order No. 21, I addressed Apple's motion seeking summary determination that Kodak's domestic inventory of digital cameras is commercially significant. I denied Apple's motion because I found that the Commission Rules require the determination of this remedy-specific issue to be made via a recommended determination, and not an initial determination. (Order No. 21 at 5-6.)

Order No. 21 includes the following statement: "[b]ecause the parties do not dispute the accuracy of the information found in Kodak's response to Interrogatory No. 58, I accept the facts found in Kodak's response to Interrogatory No. 58 as true." Apple argues that pursuant to Commission Rule 210.18(e), the facts found in Kodak's response to Interrogatory No. 58 may be relied upon to prove a commercially significant inventory.

It is unnecessary to determine whether or not Commission Rule 210.18(e) applies, as JX-9C was admitted into evidence and contains, *inter alia*, Kodak's response to Interrogatory No. 58. (JX-9C.) Kodak has not raised any challenges to the accuracy the information found in JX-9C. Kodak's response to Interrogatory No. 58 consists of a chart listing the "Total Quantity Imported" and the "Total Value of Imports" for each accused camera. It does not provide any information regarding the domestic inventory actually held by Kodak, and does not demonstrate that Kodak maintains a commercially significant U.S. inventory. Otherwise, the fact that Kodak did not oppose Apple's reliance on Kodak's interrogatory responses in the summary determination motion does not mean that Apple may now rely on facts that are not in evidence.

The other evidence cited by Apple and Staff does not prove that Kodak maintains a

**PUBLIC VERSION**

commercially significant U.S. inventory. {

} CX-277 and CX-278 appear to be printouts

from Kodak's online store that show that the cameras may be purchased directly from Kodak.

These exhibits do nothing to demonstrate the level of Kodak's domestic inventory.

Finally, Apple and Staff rely on the deposition testimony of Philip Scott, a Kodak employee. (JX-19C.) {

}

These facts do not prove that Kodak maintains a commercially significant domestic inventory of the accused products. {

.} Without more, I cannot recommend the

issuance of a cease and desist order should the Commission find a violation of Section 337.

## PUBLIC VERSION

### C. Bonding

**Apple's Position:** Apple contends that because Kodak did not submit any evidence of pricing differentials or of a reasonable royalty rate, a 100 percent bond is appropriate.

**Kodak's Position:** Kodak contends that the Commission should enter no bond if it finds a violation of Section 337.

Kodak argues that Apple bears the burden of establishing the amount of a bond. Kodak asserts that Apple offered no evidence at the hearing regarding price comparisons or reasonable royalty. Kodak claims that because Apple made no effort to show a need for a bond to protect it from injury, no bond can or should be required.

**Staff's Position:** Staff contends that the Commission should enter no bond if it finds a violation of Section 337.

Staff notes that Apple bears the burden to demonstrate the proper bond amount. Staff asserts that Apple offered no evidence at the hearing regarding price differentials or a reasonable royalty. Staff argues that Apple has not justified the imposition of a bond.

**Discussion and Conclusion:** I reiterate that I have found no violation of Section 337 in this investigation related to either the '964 patent or the '911 patent.

Should the Commission find a violation of Section 337, however, I recommend no bond.

The administrative law judge and the Commission must determine the amount of bond to be required of a respondent, pursuant to section 337(j)(3), during the 60-day Presidential review period following the issuance of permanent relief, in the event that the Commission determines to order a remedy. The purpose of the bond is to protect the complainant from any injury.

19 CFR §§ 210.42(a)(1)(ii), 210.50(a)(3). The complainant has the burden of supporting any bond amount it proposes. *Certain Rubber Antidegradants, Components Thereof, and Products*

PUBLIC VERSION

*Containing Same*, Inv. No. 337-TA-533, Comm'n Op., 2006 ITC LEXIS 591 (Jul. 21, 2006).

When reliable price information is available, the Commission has often set the bond by eliminating the differential between the domestic product and the imported, infringing product. See *Certain Microsphere Adhesives, Processes for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. at 24 (1995). In other cases, the Commission has turned to alternative approaches, especially when the level of a reasonable royalty rate could be ascertained. See, e.g., *Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm'n Op. at 41 (1995).

The Commission has set a bond of 100% when the evidence supported a finding that it would be difficult or impossible to calculate a bond based on price differentials. *Certain Variable Speed Wind Turbines and Components Thereof*, Inv. No. 337-TA-376, Comm'n Op., 1996 WL 1056209 (Sept. 23, 1996) (finding that a bond of 100% was appropriate "because of the difficulty in quantifying the cost advantages of respondents' imported Enercon E-40 wind turbines and because of price fluctuations due to exchange rates and market conditions."); *Certain Systems For Detecting and Removing Viruses or Worms, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-510, Comm'n Op., 2007 WL 4473083 (Aug. 2007) (imposing a bond of 100% based on a finding that the parties had numerous models and products lines, and that a price comparison would be difficult because respondent's products were a combination of hardware and software while the complainant's products were software only); *Certain Flash Memory Circuits and Products Containing Same*, Inv. No. 337-TA-382, USITC Pub. No. 3046, Comm'n Op. at 26-27 (July 1997) (a 100% bond imposed when price comparison was not practical because the parties sold products at different levels of commerce,

PUBLIC VERSION

and the proposed royalty rate appeared to be *de minimis* and without adequate support in the record).

In *Certain Rubber Antidegradants*, the Commission did not require a bond. The presiding administrative law judge had set no bond, finding, “no evidence in the record to support any bond to offset any competitive advantage resulting from the unfair acts of [respondents] from their importations.” *Certain Rubber Antidegradants*, 2006 ITC LEXIS 591, at \*59.

The respondent argued that the lack of pricing information was due to the complainant’s failure to adduce such evidence during the hearing and complainant should not be able to benefit from that failure. (*Id.* at 60.) In response, the complainant argued that it had no burden of proof with respect to bonding, and that the existence of a violation is sufficient to support a 100% bond. (*Id.*) In deciding the issue, the Commission stated:

We find the ALJ’s recommendation appropriate in the circumstances here and have determined not to require that a bond be posted for temporary importation. In our view, the complainant has the burden of supporting any proposition it advances, including the amount of the bond. [The complainant] did not meet that burden.

(*Id.*)

Apple has offered no evidence of price differentials or a reasonable royalty. Instead, Apple seeks the imposition of a 100% bond because “Kodak did not submit any evidence of pricing differentials or of a reasonable royalty rate[.]” (CIB at 150.) Apple does not assert that it requested such information from Kodak during discovery, and that Kodak refused to produce the information. I find that Apple’s failure to either offer any evidence regarding bonding or explain why it would be difficult or impossible to calculate a bond means that Apple has failed to meet its burden to justify the imposition of any bond. Thus, I recommend no bond if the Commission

## PUBLIC VERSION

finds a violation of Section 337.

### VIII. MATTERS NOT DISCUSSED

This Initial Determination's failure to discuss any matter raised by the parties, or any portion of the record, does not indicate that it has not been considered. Rather, any such matter(s) or portion(s) of the record has/have been determined to be irrelevant, immaterial or meritless. Arguments made on brief which were otherwise unsupported by record evidence or legal precedent have been accorded no weight.

### IX. CONCLUSIONS OF LAW

1. The Commission has subject matter jurisdiction, *in rem* jurisdiction, and *in personam* jurisdiction.
2. There has been an importation into the United States, sale for importation, or sale within the United States after importation of the accused digital imaging devices and related software, which are the subject of the alleged unfair trade allegations.
3. An industry does not exist in the United States that exploits U.S. Pat. No. 6,031,964, as required by 19 U.S.C. § 1337(a)(2).
4. Claims 1, 3, 5, 7, and 8 of U.S. Pat. No. 6,031,964 are not invalid.
5. The accused Kodak products do not infringe claims 1, 3, 5, 7, and 8 of U.S. Pat. No. 6,031,964.
6. Kodak is not a co-owner of U.S. Pat. No. 6,031,964.
7. There is no violation of 19 U.S.C. § 1337(a)(1) with respect to U.S. Pat. No. 6,031,964.
8. An industry exists in the United States that exploits U.S. Pat. No. RE38,911, as required by 19 U.S.C. § 1337(a)(2).



**PUBLIC VERSION**

9. Claims 15, 27, 30, and 38 of U.S. Pat. No. RE38,911 are invalid pursuant to 35 U.S.C. § 102.

10. The accused Kodak products do not infringe claims 15, 27, 30, and 38 of U.S. Pat. No. RE38,911.

11. Kodak is not a co-owner of U.S. Pat. No. RE38,911.

12. There is no violation of 19 U.S.C. § 1337(a)(1) with respect to U.S. Pat. No. RE38,911.

**XI. ORDER**

Based on the foregoing, and the record as a whole, it is my Final Initial Determination that there is no violation of 19 U.S.C. § 1337(a)(1) in the importation into the United States, sale for importation, and the sale within the United States after importation of certain digital imaging devices and related software.

I hereby **CERTIFY** to the Commission my Final Initial and Recommended Determinations together with the record consisting of the exhibits admitted into evidence. The pleadings of the parties filed with the Secretary, and the transcript of the pre-hearing conference and the hearing, as well as other exhibits, are not certified, since they are already in the Commission's possession in accordance with Commission rules.

It is further **ORDERED** that:

In accordance with Commission Rule 210.39, all material heretofore marked *in camera* because of business, financial and marketing data found by the administrative law judge to be cognizable as confidential business information under Commission Rule 201.6(a), is to be given

**PUBLIC VERSION**

*in camera* treatment continuing after the date this investigation is terminated.

The initial determination portion of the Final Initial and Recommended Determination, issued pursuant to Commission Rule 210.42(a)(1)(i), shall become the determination of the Commission sixty (60) days after the service thereof, unless the Commission, within that period, shall have ordered its review of certain issues therein, or by order, has changed the effective date of the initial determination portion. If the Commission determines that there is a violation of 19 U.S.C. § 1337(a)(1), the recommended determination portion, issued pursuant to Commission Rule 210.42(a)(1)(ii), will be considered by the Commission in reaching a determination on remedy and bonding pursuant to Commission Rule 210.50(a).

Within ten days of the date of this document, each party shall submit to the Office of the Administrative Law Judge a statement as to whether or not it seeks to have any portion of this document deleted from the public version. The parties' submissions must be made by hard copy by the aforementioned date and must include a copy of this document with red brackets indicating any portion asserted to contain confidential business information to be deleted from the public version. The parties' submission concerning the public version of this document need not be filed with the Commission Secretary.

**SO ORDERED.**

Issued: May 14 2011

DATE


  
\_\_\_\_\_  
Robert K. Rogers, Jr.  
Administrative Law Judge

**CERTAIN DIGITAL IMAGING DEVICES AND RELATED SOFTWARE**

**337-TA-717**

**CERTIFICATE OF SERVICE**

I, James R. Holbein, hereby certify that the attached **ORDER** has been served by hand upon the Commission Investigative Attorney, Aarti J. Shah, Esq., and the following parties as indicated, on July 12, 2011.

  
James R. Holbein, Secretary  
U.S. International Trade Commission  
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**CERTAIN DIGITAL IMAGING  
DEVICES AND RELATED SOFTWARE**

**Inv. No. 337-TA-717**

**PUBLIC CERTIFICATE OF SERVICE PAGE 2**

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