

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

In the Matter of

CERTAIN FLASH MEMORY
CONTROLLERS, DRIVES, MEMORY
CARDS, AND MEDIA PLAYERS AND
PRODUCTS CONTAINING SAME

Investigation No. 337-TA-619

NOTICE OF COMMISSION FINAL DETERMINATION OF 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 that there has been no violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, in this investigation, and has terminated the investigation.

FOR FURTHER INFORMATION CONTACT: Panyin A. 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 December 12, 2007, based on a complaint filed by SanDisk Corporation of Milpitas, CA. 72 *Fed. Reg.* 70610 (Dec. 12, 2007). 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 flash memory controllers, drives, memory cards, media players and products containing the same by reason of infringement of various claims of United States Patent Nos. 6,426,893; 6,763,424 ("the '424 patent"); 5,719,808; 6,947,332; and 7,137,011 ("the '011 patent"). Three patents and several claims were subsequently terminated from the investigation. Claims 17, 24 and 30 of the '424 patent and claim 8 of the '011 patent remain in the investigation. The complaint named nearly

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fifty respondents. Twenty-one respondents were terminated from the investigation based on settlement agreements, consent orders and withdrawal of allegations from the complaint. Five respondents defaulted. The following respondents remain in the investigation: Imation Corporation of Oakdale, MN; Imation Enterprises Corporation of Oakdale, MN; and Memorex Products, Inc. of Cerritos, CA (collectively, "Imation Respondents"); Phison Electronics Corporation of Hsinchu, Taiwan; Silicon Motion Inc. of Taiwan; Silicon Motion, Inc. of Milpitas, CA; Skymedi Corporation of Hsinchu, Taiwan; Power Quotient International Co., Ltd. of Taipei, Taiwan; Power Quotient International (HK) Co., Ltd. of Hong Kong; Syscom Development Co., Ltd. of the British Virgin Islands; PQI Corporation of Fremont, California; Kingston Technology Corporation of Fountain Valley, CA; Kingston Technology Company, Inc. of Fountain Valley, CA ; MemoSun, Inc. of Fountain Valley, CA; Transcend Information Inc. of Taipei, Taiwan; Transcend Information Inc. of Orange, CA; Transcend Information Maryland, Inc. of Linthicum, MD; Apacer Technology Inc. of Taipei Hsien, Taiwan; Apacer Memory America, Inc. of Milpitas, CA; Dane Memory S.A. of Bagnolet, France; Deantusaiocht Dane-Elec TEO of Spiddal, Galway, Ireland; Dane-Elec Corporation USA of Irvine CA; LG Electronics U.S.A., Inc. of Englewood Cliffs, New Jersey; and LG Electronics, Inc. of Seoul, South Korea.

On April 10, 2009, the ALJ issued his final ID finding no violation of section 337 by Respondents. The ALJ issued a corrected version of his final ID on April 16, 2009. The ID included the ALJ's recommended determination on remedy and bonding. In the subject ID, the ALJ found that the accused products do not infringe asserted claims 17, 24 and 30 of the '424 patent. The ALJ also found that none of the asserted claims of the '424 patent were proven to be invalid as anticipated or obvious in view of the prior art. The ALJ further found the Respondents not liable for contributory or induced infringement of the asserted claims of the '424 patent. Likewise, the ALJ found that SanDisk failed to prove that the Imation Respondents, the only respondents accused of infringing claim 8 of the '011 patent, induced or contributed to infringement of the patent. The ALJ also found that SanDisk's rights in the '011 patent were not exhausted and that claim 8 of the '011 patent satisfies the indefiniteness requirement of 35 U.S.C. § 112, second paragraph. The ALJ, however, concluded that the prior art rendered claim 8 of the '011 patent obvious.

On May 4, 2009, SanDisk and the Commission investigative attorney filed petitions for review of the ID. That same day, Respondents filed a collective contingent petition for review of the ID with respect to the '424 patent. Skymedi Corporation and the Imation Respondents, in addition to joining the collective contingent petition for review, filed individual contingent petitions for review. On May 18, 2009, the parties filed responses to the various petitions and contingent petitions for review.

On August 24, 2009, the Commission determined to review the final ID in part and requested briefing on several issues it determined to review, and on remedy, the public interest and bonding. 74 *Fed. Reg.* 44382 (Aug. 28, 2009). The Commission determined to review the claim construction of claims 17, 24 and 30 of the '424 patent; infringement of the asserted claims

of the '424 patent; validity of the '424 patent; and the ALJ's decision not to consider the Sinclair PCT publication as evidence of prior art to claim 17 of the '424 patent. *Id.*

On September 3, 2009, the parties filed written submissions on the issues on review, remedy, the public interest and bonding. On September 14, 2009, the parties filed response submissions on the issues on review, remedy, the public interest and bonding.

Having examined the record of this investigation, including the ALJ's final ID, the Commission has determined to (1) reverse the ALJ's finding that claim 17 of the '424 patent does not cover single-page updates; (2) reverse the ALJ's finding that the claim term "reading and assembling data from the first and second plurality of pages" as recited in claim 20 of the '424 patent excludes the so-called table method as disclosed in Figure 12; (3) affirm the ALJ's finding that the accused products do not infringe the asserted claims of the '424 patent; and (4) affirm the ALJ's finding that none of the asserted claims of the '424 patent were proven to be invalid as anticipated or obvious in view of the prior art considered by the ALJ. Given the Commission's affirmance of the ALJ's determination that SanDisk failed to establish that the accused controllers infringe claim 17 of the '424 patent, the Commission declines to reach the issue of whether the ALJ should have considered the Sinclair PCT publication as evidence of prior art to claim 17 of the '424 patent.

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 and 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.42-46 and 210.50).

By order of the Commission.



Marilyn R. Abbott
Secretary to the Commission


Issued: October 23, 2009

**CERTAIN FLASH MEMORY CONTROLLERS, DRIVES,
MEMORY CARDS, AND MEDIA PLAYERS AND PRODUCTS
CONTAINING SAME**

337-TA-619

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **NOTICE OF COMMISSION
FINAL DETERMINATION OF NO VIOLATION OF SECTION 337;
TERMINATION OF INVESTIGATION** has been served by hand upon the
Commission Investigative Attorney, Christopher G. Paulraj, Esq., and the following
parties as indicated, on October 23, 2009.


Marilyn R. Abbott, Secretary *JNO*
U.S. International Trade Commission
500 E Street, SW
Washington, DC 20436

On Behalf of Complainant Sandisk Corporation:

Gregory A. Castanias, Esq.
JONES DAY
51 Louisiana Avenue, NW
Washington, DC 20001-2113

Via Hand Delivery
 Via Overnight Mail
 Via First Class Mail
 Other: _____

**On Behalf of Respondents Phison Electronics
Corporation; Kingston Technology Company,
Incorporated; Kingston Technology Corporation; and,
Memo Sun Incorporated:**

Jeffrey R. Whieldon, Esq.
FISH & RICHARDSON PC
1425 K Street, NW – Suite 1100
Washington, DC 20005

Via Hand Delivery
 Via Overnight Mail
 Via First Class Mail
 Other: _____

On Behalf of Respondents, Skymedi Corporation:

Robert R. McKelvie, Esq.
Covington & Burling Llp
1201 Pennsylvania Avenue, Nw
Washington, Dc 20004-2401

Via Hand Delivery
 Via Overnight Mail
 Via First Class Mail
 Other: _____

**On Behalf Of Respondents Apacer Technology,
Incorporated and Apacer Memory America,
Incorporated:**

Daniel J. Lueders, Esq.
WOODARD, EMHARDT, MORIARTY, MCNETT &
HENRY LLP
111 Monument Circle, Suite 2700
Indianapolis, IN 46204-5137

Via Hand Delivery
 Via Overnight Mail
 Via First Class Mail
 Other: _____

**On Behalf of Respondents LG Electronics, Incorporated
and LG Electronics USA, Incorporated:**

Brian Koo, Esq.
SIDLEY AUSTIN LLP
1501 K Street, NW
Washington, DC 20005

Via Hand Delivery
 Via Overnight Mail
 Via First Class Mail
 Other: _____

**On Behalf of Respondents Dane Elec Corporation USA,
Dane-Memory, S.A., and Deantusaiocht Dane-Elec
TEO:**

Charles C.H. Wu, Esq.
WU & CHEUNG LLP
98 Discovery
Irvine, CA 92618-3105

Via Hand Delivery
 Via Overnight Mail
 Via First Class Mail
 Other: _____

DOCUMENT SEPARATOR

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

In the Matter of

**CERTAIN FLASH MEMORY
CONTROLLERS, DRIVES, MEMORY
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Investigation No. 337-TA-619

COMMISSION OPINION

I. BACKGROUND

A. Procedural History

The Commission instituted this investigation on December 12, 2007, based on a complaint filed by SanDisk Corporation ("SanDisk"). 72 Fed. Reg. 70610 (Dec. 12, 2007). The complaint alleged violations 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 flash memory controllers, drives, memory cards, media players and products containing the same by reason of infringement of certain claims of five United States patents: U.S. Patent No. 6,763,424 ("the '424 patent"), U.S. Patent No. 7,137,011 ("the '011 patent"), U.S. Patent No. 5,719,808 ("the '808 patent"), U.S. Patent No. 6,947,332 ("the '332 patent") and U.S. Patent No. 6,426,893 ("the '893 patent"). SanDisk named forty-seven respondents. *See id.* Subsequently, SanDisk filed motions to terminate the investigation with respect to the '808, '332 and '893 patents. Only the '424 and '011 patents remain in the investigation.

During the course of the investigation, several respondents were terminated based on

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settlement agreements, consent orders, and/or withdrawal of allegations from the complaint. Five respondents defaulted. The following groups of respondents remain in the investigation after the various defaults and terminations:

1. Phison Electronics Corporation of Hsinchu, Taiwan (“Phison”);
2. Silicon Motion Inc. of Taiwan; and Silicon Motion, Inc. of Milpitas, CA (collectively “Silicon”);
3. Skymedi Corporation of Hsinchu, Taiwan (“Skymedi”);
4. Power Quotient International Co., Ltd. of Taipei, Taiwan; Power Quotient International (HK) Co., Ltd. of Hong Kong; Syscom Development Co., Ltd. of the British Virgin Islands; and PQI Corporation of Fremont, California (collectively “PQI”);
5. Kingston Technology Corporation of Fountain Valley, CA; Kingston Technology Company, Inc. of Fountain Valley, CA; and MemoSun, Inc. of Fountain Valley, CA (collectively “Kingston”)
6. Transcend Information Inc. of Taipei, Taiwan; Transcend Information Inc. of Orange, CA; and Transcend Information Maryland, Inc. of Linthicum, MD (collectively “Transcend”);
7. Imation Corporation of Oakdale, MN; Imation Enterprises Corporation of Oakdale, MN; and Memorex Products, Inc. of Cerritos, CA (collectively “Imation”);
8. Apacer Technology Inc. of Taipei Hsien, Taiwan; and Apacer Memory America, Inc. of Milpitas, CA (collectively “Apacer”);
9. Dane Memory S.A. of Bagnolet, France; Deantusaiocht Dane-Elec TEO of Spiddal, Galway, Ireland; and Dane-Elec Corporation USA of Irvine CA (collectively “Dane-Elec”); and
10. LG Electronics U.S.A., Inc. of Englewood Cliffs, New Jersey; and LG Electronics, Inc. of Seoul, South Korea (collectively “LG”).

The ALJ held a *Markman* hearing from May 6-7, 2008, and issued an order construing the terms of the asserted claims of the patents-in-issue on July 15, 2008. *See* Order No. 33. The ALJ further stated that all briefing in this investigation is governed by the claim construction order and “[a]ll other claim terms shall be deemed as undisputed and shall be interpreted by the undersigned in accordance with ‘their ordinary meaning as viewed by one of ordinary skill in the art.’” *Id.* at 9. The ALJ incorporated Order No. 33 into his final ID. ID at 8.

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On April 10, 2009, the ALJ issued his final ID in this investigation, finding no violation of section 337 by Respondents with respect to any of the asserted claims.¹ Specifically, the ALJ found that the accused products do not infringe the asserted claims of the '424 patent. The ALJ also found that none of the references properly before him anticipated the asserted claims or rendered the asserted claims of the '424 patent obvious. The ALJ further found the Respondents not liable for contributory or induced infringement of the asserted claims of the '424 patent. Likewise, the ALJ found that SanDisk failed to prove that Imation, the sole respondent accused of infringing the '011 patent, induced or contributed to infringement of the patent. The ALJ also found that SanDisk's rights in the '011 patent were not exhausted and that claim 8 of the '011 patent satisfied the indefiniteness requirement of 35 U.S.C. § 112, second paragraph. The ALJ further found claim 8 of the '011 patent invalid for obviousness. The ALJ concluded that an industry exists within the United States with respect to SanDisk's products that practice the '424 and '011 patents, as required by 19 U.S.C. § 1337(a)(2) and (3).

The ID includes the ALJ's recommended determination ("RD") on remedy and bonding. The ALJ recommended that in the event the Commission finds a violation of section 337, the Commission should issue a limited exclusion order to exclude the accused products of all the named respondents as well as a cease and desist order directed towards respondents, [] because they maintain significant inventories of accused products in the United States. The ALJ recommended that the Commission set a bond of [] based on a reasonable royalty rate, during the period of

¹ The ALJ issued a corrected version of the ID on April 16, 2009.

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Presidential review.

On May 4, 2009, SanDisk filed a petition requesting review of the ID's finding that the accused products do not infringe the asserted patents. SanDisk also sought review of the ID's finding that the prior art invalidates the asserted claim of the '011 patent. That same day, the Commission investigative attorney ("IA") filed a petition seeking review of the ID's finding that the accused products do not infringe claim 17 of the '424 patent. The IA further asked the Commission to review the ALJ's decision not to consider U.S. Patent No: 6,725,321 ("the '321 patent") to Alan Welsh Sinclair *et al.* and its corresponding Patent Cooperation Treaty ("PCT") publication, WO 00/49488 ("the Sinclair PCT publication") as prior art references to claim 17 of the '424 patent. Also on May 4, 2009, Respondents filed various contingent petitions for review of the ID's findings should the Commission decide to review the subject ID. The contingent petitions sought review of the ID's findings regarding validity of the asserted claims, waiver of non-infringement contentions and patent exhaustion.

On August 24, 2009, the Commission determined to review the final ID in part and requested briefing on several issues it determined to review, and on remedy, the public interest and bonding. 74 *Fed. Reg.* 44382 (Aug. 28, 2009). The Commission determined to review the claim construction of claims 17, 24 and 30 of the '424 patent; infringement of the asserted claims of the '424 patent; validity of the '424 patent; and the ALJ's decision not to consider the Sinclair PCT publication as evidence of prior art to claim 17 of the '424 patent. *Id.* The Commission determined not to review the remaining issues decided in the ID. In its notice of review, the Commission asked the parties the following:

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1. Address whether the accused products would infringe claim 17 of the '424 patent if construction of the claim term "updating pages of original data within any of the metablock component blocks less than all the pages within the block" is construed to cover single-page updates. Please cite record evidence and/or relevant legal precedent to support your position.
2. Address whether the claim term "reading and assembling data from the first and second plurality of pages" as recited in claim 20 of the '424 patent should be construed to cover the so-called "table method," and whether the accused products would infringe claims 24 and 30 of the '424 patent as a result. *See* '424 patent (JX-2) at column 10, lines 44-59; FIG. 12. Please cite record evidence and relevant legal authority to support your position.
3. Address why the Sinclair PCT publication was not listed on any notice of prior art as required by Ground Rule No. 5, and having violated the ground rule, why none of the parties availed itself of its remedy to submit a timely written motion showing good cause why the reference was not listed. *See* Order No. 2 at 9-10.
4. Address under what circumstances, if any, the Commission should consider a reference that was not submitted in accordance with an ALJ's ground rule.
5. Address the similarities and differences, if any, between U.S. Patent No. 6,725,321 to Alan Welsh Sinclair *et al.* (RX-628) and its corresponding Patent Cooperation Treaty publication, WO 00/49488 ("the Sinclair PCT publication") (RX-1038 – rejected by ALJ) and whether the Sinclair PCT publication invalidates claim 17 of the '424 patent. Please cite record evidence and any relevant legal authority to support your position.

On September 3, 2009, the parties filed written submissions on the issues under review, remedy, the public interest and bonding. On September 14, 2009, the parties filed response submissions on the same issues.

For the reasons discussed below, the Commission affirms the ID's determination of no violation of section 337. Specifically, we affirm the ID's finding that Complainant has failed to prove that Respondents indirectly infringe asserted claims 17, 24 and 30 of the '424 patent. In

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other words, Complainant's proffered evidence falls short of establishing that Respondents either contribute to, or induce infringement of, the asserted claims of the '424 patent. The Commission affirms the ID's construction of the claim term "updating pages of original data within any of the metablock component blocks less than all the pages within the block" in claim 17 of the '424 patent to mean "updating fewer than all the pages of a block within the metablock," but reverses the ID's application of the claim construction to exclude single-page updates. The Commission also finds that the "reading and assembling" claim term recited in independent claim 20, from which asserted claims 24 and 30 depend, is not limited to the so-called reverse-read method, but rather construes the term to cover the so-called table method as described in Figure 12 of the '424 patent. Finally, because the Commission finds no section 337 violation due to Complainant's failure to prove that Respondents indirectly infringe the asserted claims of the '424 patent, the Commission does not decide the issue of whether the ALJ should have considered the Sinclair PCT publication as evidence of prior art to claim 17 of the '424 patent.

B. Patents and Technology at Issue

This investigation pertains to flash memory controllers, drives, memory cards, and media players and products containing same. Flash memory signifies a non-volatile memory system, for example, a USB flash drive. The term "non-volatile" refers to the fact that flash memory retains the information stored on it, even in the absence of electrical power, making flash memory useful as a portable storage device. In contrast, most personal computers utilize a memory drive (Random Access Memory or RAM) that loses the information stored on it in the absence of electrical power.

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The '424 patent, entitled "Partial Block Data Programming and Reading Operations in a Non-Volatile Memory," issued on July 13, 2004, to Kevin M. Conley. SanDisk owns the '424 patent and has asserted independent claim 17 as well as dependent claims 24 and 30, depending from independent claim 20, in this investigation. The asserted claims cover two categories of inventions. Claim 17 discloses an allegedly novel technique for updating data stored in the component blocks of a metablock, while claims 24 and 30 disclose an allegedly novel method for performing partial block updates to data stored in a non-volatile memory system.

The '011 patent, entitled "Removable Mother/Daughter Peripheral Card," issued on November 14, 2006, to Eliyahou Harari, Daniel C. Guterman and Robert F. Wallace. SanDisk owns the patent and has asserted only independent claim 8 in this investigation. Claim 8 discloses an allegedly novel non-volatile memory card that incorporates a flash memory array in an enclosure and that is removably attached to a host system. The memory card is allegedly designed to provide "security with portability." Unlike prior art systems, SanDisk asserts that the memory card recited in claim 8 stores both a decryption algorithm and encrypted user data in the flash memory array so that they can be read out for use together.

C. Products at Issue

The accused products fall into two general categories: (1) Flash memory controllers, and (2) products or systems containing Flash memory controllers, generally referred to as Flash memory systems. Specifically, SanDisk asserted the '424 patent against particular controllers manufactured by certain respondents, as well as against Flash memory systems imported and sold

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by certain respondents that incorporate the accused controllers.² With respect to the '011 patent, SanDisk accused various products manufactured by Imation of infringement.³

II. STANDARD OF REVIEW

Under the Administrative Procedure Act, upon review of the initial determination of the ALJ, “the agency has all of the powers which it would have in making the initial decision except as it may limit the issues on notice or by rule.” 5 U.S.C. § 557(b) (*quoted in Certain Acid-Washed Garments and Accessories*, Inv. No. 337-TA-324 (U.S.I.T.C. Aug. 6, 1992)); 19 C.F.R. § 210.45(c). In other words, once the Commission decides to review the decision of the ALJ, the Commission may conduct a review of the findings of fact and conclusions of law presented by the record under a *de novo* standard.

III. CLAIM CONSTRUCTION

A. Legal Standard

Claim construction “begin[s] with and remain[s] centered on the language of the claims themselves.” *Storage Tech. Corp. V. Cisco Sys., Inc.*, 329 F.3d 823, 830 (Fed. Cir. 2003). That is, the words of the claims “define the scope of the patented invention.” *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). Claims should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art, viewing the claim

² For a detailed list of accused controllers, representative controllers and system products, see ID at pages 19-21.

³ For a detailed list of Imation products accused of infringing claim 8 of the '011 patent, see the ID at page 20.

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terms in the context of the entire patent. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (*en banc*). In construing claims, a court looks first to the intrinsic evidence, which consists of the language of the claims, the patent's specification, and the prosecution history, as such evidence "is the most significant source of the legally operative meaning of disputed claim language." *Vitronics*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). The claims themselves, however, "provide substantial guidance as to the meaning of particular claim terms." *Phillips*, 415 F.3d 1303, 1314 (Fed. Cir. 2005). In addition, it is essential to consider a claim as a whole when construing each term, because the context in which a term is used in a claim "can be highly instructive." *Id.*

When the meaning of a claim term remains uncertain, the specification is usually the first and best place to look, aside from the claim itself, in order to find that meaning. *Phillips*, 415 F.3d at 1315. The specification of a patent "acts as a dictionary" both "when it expressly defines terms used in the claims" and "when it defines terms by implication." *Vitronics*, 90 F.3d at 1582; *Phillips*, 415 F.3d at 1323. "The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Phillips*, 415 F.3d at 1316. However, a court may not read particular examples or embodiments discussed in the specification into the claims as limitations. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995).

Differences between claims may be helpful in understanding the meaning of claim terms. *Phillips*, 415 F.3d at 1314. A claim construction that gives meaning to all the terms of a claim is preferred over one that does not do so. *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364,

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1372 (Fed. Cir. 2005). In addition, the presence of a specific limitation in a dependent claim raises a presumption that the limitation is not present in the independent claim. *Phillips*, 415 F.3d at 1315. This presumption of claim differentiation is especially strong when the only difference between the independent and dependent claim is the limitation in dispute. *SunRace Roots Enter. Co., v. SRAMCorp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003).

“[I]n context, the plural can describe a universe ranging from one to some higher number, rather than requiring more than one item.” *Versa Corp. v. Ag-Bag Int’l Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004) (stating that “the use of ‘channels’ in the plural does not imply that multiple channels are required by the claim.”); *Dayco Prods. v. Total Containment, Inc.*, 258 F.3d 1317, 1328 (Fed. Cir. 2001) (noting that “[i]n the phrase ‘projections with recesses therebetween,’ the use of ‘recesses’ can be understood to mean a single recess where there are only two projections and more than one recess where there are three or more projections” and that “in the present context, if the patentees had wanted to require an insert means with more than one recess, it would have been natural to limit the claimed invention to an insert means with a ‘plurality of recesses.’”)

B. Claim Construction of the '424 Patent

The Commission determined to review the claim construction of claims 17, 24 and 30 of the '424 patent. Specifically, the Commission determined to review whether the claim term “updating pages of original data within any of the metablock component blocks less than all the pages within the block” recited in claim 17 should be construed to cover single-page updates. The Commission also decided to review whether the claim term “reading and assembling data from

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the first and second plurality of pages” as recited in claim 20 of the ’424 patent should be construed to cover the so-called table method as described in Figure 12 of the ’424 patent.

1. Construction of the claim term “updating pages of original data within any of the metablock component blocks less than all the pages within the block” recited in asserted claim 17

Claim 17 of the ’424 patent with emphasis on the claim term at issue is set forth below:

17. A method of operating a non-volatile memory system having an array of memory storage elements organized into at least two sub-arrays, wherein the individual sub-arrays are divided into a plurality of non-overlapping blocks of storage elements wherein a block contains the smallest group of memory storage elements that are erasable together, and the individual blocks are divided into a plurality of pages of storage elements wherein a page is the smallest group of memory storage elements that are programmable together, comprising:

linking at least one block from individual ones of said at least two sub-arrays to form a metablock wherein its component blocks are erased together as a unit, and

updating pages of original data within any of the metablock component blocks less than all the pages within the block by programming replacement data into pages within another at least one block in only a designated one of the sub-arrays regardless of which sub-array the data being updated is stored.

The ALJ adopted the claim construction agreed to by the parties, including the IA, and construed the claim term “updating pages of original data within any of the metablock component blocks less than all the pages within the block” to mean “updating fewer than all the pages of a block within the metablock” in his *Markman* Order. Order No. 33 at 57. We find that the ALJ improperly applied his *Markman* claim construction to exclude single-page updates, and thus, despite affirming the ALJ’s claim construction, we reverse his application of the construction to exclude single page updates.

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Although claim construction issues normally present some uncertainty, the parties in this investigation agreed to a construction of the claim term during the *Markman* hearing, and the ALJ adopted that construction. The parties agreed to construe the claim term “updating pages of original data within any of the metablock component blocks less than all the pages within the block” to mean “updating fewer than all the pages of a block within the metablock.” This claim construction on its face includes single-page updates because updating a single-page necessarily updates “fewer than all the pages.” *See* Rhyne, Tr. 409:2-4 (noting that “one page is fewer than all the pages”). Nothing from case law or the patent disclosure dictates deviating from this understanding.

Federal Circuit precedent makes clear that “in context, the plural can describe a universe ranging from one to some higher number, rather than requiring more than one item.” *Versa*, 392 F.3d at 1330.⁴ Consequently, the use of the word “pages” does not necessarily compel construing

⁴ Respondents cite *Electro Scientific Indus., Inc. v. Dynamic Details, Inc.*, 307 F.3d 1343, 1349-50 (Fed. Cir. 2002), and *Superior Fireplace Co. v. Majestic Products Co.*, 92 F.Supp.2d 1001, 1010 (Cal. 2002), for the proposition that the general rule in claim construction is that the plural form requires more than one. In our view, Respondents mis-describe the courts’ holdings. In *Electro Scientific*, the Federal Circuit explained its rationale behind construing the claim term “circuit boards” to require multiple circuit boards as follows:

To determine the meaning of “circuit boards,” this court begins with the claim language. The preamble defines “circuit boards” as “at least first and second substantially identical boards” References throughout the rest of the claim to “circuit boards” rely upon and derive antecedent basis from this preamble language. Therefore, this preamble definition limits the term “circuit boards” throughout the claim.

Id. at 1348. In other words, the context of the claim, reciting “*at least first and second substantially identical boards*”(emphasis added) dictated that the claimed “circuit boards”

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the claim term to exclude single-page updates. The context in which the word “pages” is employed should dictate its scope. The ALJ acknowledged Federal Circuit law but concluded that the context of claim 17 did not warrant construing “pages” to encompass single-page updates. ID at 46. The ALJ reasoned that “[t]he plain meaning of the term ‘pages’ clearly indicates more than one page” and found “no indication within the specification that the patentees intended the word ‘pages’ to indicate anything other than the plain and ordinary meaning of the term ‘pages.’” *Id.* The ALJ noted that “[w]hile there may be a reference in the ‘Summary of the invention’ that the metablock is ‘particularly useful when the memory system frequently updates single pages from a metablock,’ the claim specifically refers to pages” and that “the example in the preferred embodiment refers to multiple pages.” *Id.*

We find that the ALJ impermissibly allowed an embodiment disclosed in the specification to limit the claim term. *See Markman*, 52 F.3d at 979. While the ’424 patent includes an embodiment that recites multiple-page updates, the ’424 patent’s disclosure specifically states that “this technique is particularly useful when the memory system frequently updates *single* pages from a metablock.” ’424 patent, col. 3, ll. 19-26 (emphasis added). In other words, the patent contemplates single-page updates. Moreover, claim 17 as a whole compels the understanding that

included at least two boards. Thus, the Federal Circuit construed the claim term to require multiple circuit boards.

In *Superior Fireplace*, the claim at issue specifically recited “. . . a housing having a top wall, bottom wall, side walls and a rear wall. . . .” (Emphasis added). The claim also recited “a firebox within the housing comprising the top wall, rear walls and side walls” (Emphasis added). The court stated that the claim term “rear walls” required at least two walls because of the context in which the claim term was used. That is, the patentee used the singular (a rear wall) when he intended the singular, and used the plural (rear walls) when he intended the plural.

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“pages” as used in that context should encompass single pages. For example, in its preamble, claim 17 states that “the individual sub-arrays are divided into *a plurality of non-overlapping blocks of storage elements*” and that “the individual blocks are divided into *a plurality of pages of storage elements*” (emphasis added). That is, when the patentee wanted to limit the scope of the invention to “plurals,” he used the qualifier “plurality of.” As the Federal Circuit has noted, such use of the qualifier “plurality of” indicates that when the qualifier is not used, the claim term should not be limited to the plural. *Dayco Prods. v. Total Containment, Inc.*, 258 F.3d 1317, 1328 (Fed. Cir. 2001) (stating that “indeed, in the present context, if the patentee had wanted to require an insert means with more than one recess, it would have been natural to limit the claimed invention to an insert means with a ‘plurality of recesses.’”).

In sum, the claim language as a whole, the specification, and Federal Circuit precedent compel construing the claim term “updating pages of original data within any of the metablock component blocks less than all the pages within the block” to mean “updating fewer than all the pages of a block within the metablock” and specifically including single-page updates. Accordingly, although we affirm the ALJ’s claim construction, we reverse his application of the claim construction to exclude single-page updates.

2. Construction of claim term “reading and assembling” recited in independent claim 20 from which asserted claims 24 and 30 depend

Claims 24 and 30 depend from independent claim 20, which was not asserted in the investigation. The disputed claim term the Commission determined to review, however, resides within claim 20. Thus, claim 20 of the ’424 patent with emphasis on the claim term at issue is set forth below:

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20. In a re-programmable non-volatile memory system having a plurality of blocks of memory storage elements that are erasable together as a unit, the plurality of blocks individually being divided into a plurality of a given number of pages of memory storage elements that are programmable together, a method of operating the memory system, comprising:

programming individual ones of a first plurality of said given number of pages in each of at least a first block with original data and a logical page address associated with the original data,

thereafter programming individual ones of a second plurality of a total number of pages less than said given number in a second block with updated data and a logical page address associated with the updated data, wherein the logical page addresses associated with the updated data programmed into the second plurality of pages are the same as those associated with the original data programmed into the first plurality of pages, and

thereafter **reading and assembling** data from the first and second plurality of pages including, for pages having the same logical addresses, selecting the updated data from the pages most recently programmed and omitting use of the original data from the pages earlier programmed.

We find that the ALJ's claim construction improperly limits the scope of the claim term "reading and assembling" to one embodiment (reverse-read method) disclosed in the '424 patent while ignoring a second embodiment (table method) disclosed in the patent. Accordingly, we reverse the ALJ's claim construction and find that the claim term "reading and assembling" encompasses both the reverse-read and table methods.

Even though reliance may be placed on the written specification to provide guidance as to the meaning of claim terms when construing patent claims, a court may not read particular examples or embodiments discussed in the specification into the claims as limitations. *Markman*, 52 F.3d 967, 979 (Fed. Cir. 1995). The '424 patent describes two distinct embodiments, a reverse-read method and a table method. *See* '424 patent, col. 9, l. 54 - col. 10, l. 43; col. 10, ll.

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44-59. As SanDisk notes, the reverse-read method “enables a controller to distinguish new data (stored in an update block) from old data (stored in an original block) by reading the pages of memory in the two blocks in the reverse of the order in which they were programmed.” SanDisk Petition for Review at 47 (citing ’424 patent, col. 9, l. 54 - col. 10, l. 43). The patent also describes a second embodiment, the table method, which “can be used . . . when the reverse page reading technique is not used.” ’424 patent, col. 10, ll. 54-55. SanDisk explains that under this method “the controller maintains a table that maps the correspondence between a given logical address and the physical address in the memory where the associated data is stored” and “when the host provides the controller with a particular logical address . . . the controller checks the table so (sic) see whether that logical address is associated with an update block, or only an original block.” SanDisk Petition for Review at 48. If an updated block exists “then the controller will select the updated page and omit the original page.” *Id.* In other words, under this technique, the controller does not read logical page address information from both the first and second plurality of pages.⁵

The claim term at issue specifically recites, “thereafter reading and assembling *data* from the first and second plurality of pages including, for pages having the same logical addresses, selecting the updated data from the pages most recently programmed and omitting use of the

⁵ We note that while the controller does not read logical page address information from both the first and second plurality of pages, the table is “constructed by reading the overhead data from each of the pages in blocks to which data of a common LBN [logical block number] has been written.” ’424 Patent, col. 10, ll. 51-53. The ALJ construed the claim term “logical page address” as requiring “a logical block number and a logical page offset.” *See* Order No. 33 at 63-64.

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original data from the pages earlier programmed” (emphasis added). The plain meaning of the claim indicates that “reading and assembling” pertains primarily to data, not to logical page addresses, and the specification provides two techniques that may be used to “read and assemble” the data. Nothing in the claim language or specification indicates or even suggests that “reading and assembling” should be limited to the reverse-read method, and Respondents do not point to any disclosure in the intrinsic evidence as supporting such a proposition. They merely rely on their proposed findings of fact, rebutted by SanDisk, for support. *See* Respondents Reply to Petitions for Review at 27 (citing RFF 4230-4233); *but see* CRRFF 4230A-E.

The doctrine of claim differentiation lends further support. Claim 22, which depends from claim 20, specifically recites “reading the first and second plurality of pages in an order that is reverse to an order in which they were programmed.” That is, dependent claim 22 is drawn to the reverse-read method. As the Federal Circuit has explained, the presence of a specific limitation in a dependent claim raises a presumption that the limitation is not present in the independent claim. *Phillips*, 415 F.3d at 1315. We therefore find that the ALJ should not have limited the scope of claim 20 to the reverse-read method.

Finally, we find unpersuasive Respondents’ contention that SanDisk did not raise the argument that the ALJ’s claim construction fails to cover the table method until its petition for review. *See* Respondents’ Submission in Response to the Commission’s Notice of Review at 23. In discussing SanDisk’s arguments, the ALJ stated that “SanDisk also counters Phison’s attempt to limit claim 24 to a system that reads the logical page addresses stored in the superseded pages of an original block as an attempt to improperly limit the scope of the claim to a ‘reverse read.’”

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ID at 78. The ALJ noted that “SanDisk argues that claims 20, 24 and 30 are not limited to the “reverse read” technique, based on the doctrine of claim differentiation.” *Id.* In other words, the ALJ clearly considered this argument prior to issuing his ID. Because the ALJ’s claim construction impermissibly excludes the table method as described in Figure 12 of the ’424 patent from the scope of the claim, we reverse the ALJ’s claim construction.

IV. INFRINGEMENT ANALYSIS

A. Legal Standard

1. Direct Infringement

After construing the claims of the patent, a factual determination must be made as to whether the properly construed claims read on the accused devices. *Markman*, 52 F.3d at 976. Direct infringement of a method claim requires a party to perform each and every step of a claimed method. *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 773 (Fed. Cir. 1993). In a section 337 investigation, the complainant bears the burden of proving infringement of the asserted patent claims by a “preponderance of the evidence.” *Enercon GmbH v. Int’l Trade Comm’n*, 151 F.3d 1376 (Fed. Cir. 1998).

2. Indirect Infringement

Accused infringers may be liable for indirect infringement if they induce or contribute to infringement. “Indirect infringement, whether inducement to infringe or contributory infringement, can only arise in the presence of direct infringement.” *Dynacore Holdings Corp. v. U.S. Philips Corp.*, 363 F.3d 1263, 1272 (Fed. Cir. 2004).

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Section 271(b) of the Patent Act states that “[w]hoever actively induces infringement of a patent shall be liable as an infringer,” and the Federal Circuit has explained that

[t]o establish liability under section 271(b), a patent holder must prove that once the defendants knew of the patent, they “actively and knowingly aid [ed] and abett[ed] another’s direct infringement.” However, “knowledge of the acts alleged to constitute infringement” is not enough. The “mere knowledge of possible infringement by others does not amount to inducement; specific intent and action to induce infringement must be proven.”

DSU Med. Corp. v. JMS Co., 471 F.3d 1293, 1305 (Fed. Cir. 2006) (*en banc*) (citations omitted).

Under 35 U.S.C. § 271(c), a seller of a component of an infringing product can be held liable for contributory infringement if: (1) there has been an act of direct infringement by a third party; (2) the accused contributory infringer knows that the combination for which its component was made was both patented and infringing; and (3) there are no substantial non-infringing uses for the component part, *i.e.*, the component is not a “staple article” of commerce. *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1312 (Fed. Cir. 2005); *Certain Flash Memory Circuits and Products Containing Same*, Inv. No. 337-TA-382, Commission Opinion at 9-10 (July 1997).

B. Infringement Analysis of Asserted Independent Claim 17

After construing the claim term “updating pages of original data within any of the metablock component blocks less than all the pages within the block” to mean “updating fewer than all the pages of a block within the metablock,” the ALJ found that the accused Phison controllers did not infringe claim 17 exclusively because [

] ID at 47 (stating that “[t]here is no

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disagreement among the parties that if the claim is interpreted in this manner [

] that Phison's controllers do not infringe." As we discussed *supra* at III.B.1., the ALJ erred in his application of his construction of the claim term. The plain meaning of the claim term, in conjunction with the specification and case law, establishes that the claim covers single-page updates.

We find that the accused Phison controllers can be used to infringe method claim 17.⁶

Experts for both SanDisk and Respondents testified that [

] Subramanian, Tr. 1208:18–1209:5 [

] Rhyne, Tr. 416:2–417:2 [

]

SanDisk, however, does not argue that the accused Phison controllers directly infringe claim 17. Complainant SanDisk Corporation's Written Submission On The Issues Under Review at 6. Instead, SanDisk accuses Phison of indirectly infringing claim 17 because, allegedly, "Phison intends for its products to be used in a manner that includes single-page updates" and that "there is no substantial non-infringing use for those parts." *Id.* We disagree with SanDisk and affirm the ALJ's determination that SanDisk failed to prove by a preponderance of the evidence

⁶ Because we affirm the ALJ's finding of non-infringement on other grounds, we terminate the investigation without considering Respondents' [] (*see, e.g.,* Respondents Reply to SanDisk and Staff's Petition for Review at 14). *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (acknowledging that "[t]he Commission . . . is at perfect liberty to reach a "no violation" determination on a single dispositive issue.").

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that the accused Phison controllers either contribute to or induce infringement of claim 17 of the '424 patent.

SanDisk asserted in its petition for review that upon finding that the accused products did not directly infringe the '424 patent, the ALJ “dismissed summarily the allegations of indirect infringement” and by so doing committed “fundamental errors of law and fact with respect to both contributory infringement and inducement to infringe.” SanDisk Petition for Review at 56, 63. We find SanDisk’s assertion unpersuasive. Rather, even after concluding that the accused products did not directly infringe, the ALJ considered the other factors necessary to prove indirect infringement and found that SanDisk had failed to present enough evidence to sustain its allegations. *See* ID at 90-95.

With respect to contributory infringement, the record evidence supports the ALJ’s finding that the accused Phison controllers do not contribute to infringement of the '424 patent. In particular, the undisputed evidence of record shows that the ALJ did not err in finding that the accused products have substantial non-infringing uses. ID at 94. Indeed, experts for both SanDisk and Respondents acknowledged the existence of substantial non-infringing uses. Subramanian, Tr. 1206: 18-1207:6 (testifying that “there are some usages of flash systems where we don’t rewrite to them, for example, for handing out books on flash. . . . And it turns out that’s getting more common because there are many examples today of flash being used as a distribution-only medium.”); Rhyne, Tr. 427:14-22 (stating that the only non-infringing use of the accused products “would be if you used them as essentially a memory that once you had stored

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data in it, you never did an update”).⁷ We find no error in the ALJ’s conclusion that the record evidence established the presence of substantial non-infringing uses, and hence we affirm his determination that SanDisk failed to establish, by a preponderance of the evidence, contributory infringement.

Concerning inducement to infringe, the ALJ correctly found that “SanDisk failed to establish that Respondents knowingly induced infringement or possessed specific intent to encourage another’s infringement, and thus the evidence falls short of the necessary intent required for induced infringement.” ID at 92-93. “Inducement requires evidence of culpable conduct, directed to encouraging another’s infringement, not merely that the inducer had knowledge of the direct infringer’s activities.” *DSU*, 471 F.3d at 1306. We find that the ALJ correctly found SanDisk’s circumstantial evidence of inducement insufficient. ID at 92-93. The circumstantial evidence presented by SanDisk was the fact that Respondents [

] *Id.* The Federal

Circuit found such evidence to be insufficient in *Kyocera Wireless Corp. v. International Trade Commission*, 545 F.3d 1340,1353 (Fed. Cir. Oct. 14, 2008). There, the Federal Circuit stated that

the ITC’s conclusion that “Qualcomm [the accused infringer] intends to induce infringement because it provides its customers with the system determination code” evinces, at most, a finding that Qualcomm generally intended to cause acts that produced infringement. Thus, the current record falls short of the necessary

⁷ Dr. Rhyne’s testimony specifically concerns asserted claims 24 and 30 of the ’424 patent. The testimony, however, is also relevant to asserted claim 17 of the ’424 patent.

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intent showing for inducement – that Qualcomm possessed a specific intent to cause infringement of Broadcom’s patent.

545 F.3d at 1354. We note that the evidence SanDisk relies on in this investigation is no more probative of inducement than the evidence that was found insufficient in *Kyocera*. As in *Kyocera*, SanDisk failed to show that Respondents possessed a specific intent to cause infringement of the ’424 patent. Accordingly, we affirm the ALJ’s determination that SanDisk failed to prove indirect infringement.

C. Infringement Analysis of Asserted Dependent Claims 24 and 30

As discussed above, we have construed the claim term “reading and assembling” to include the so-called “table method.” However, we affirm the ALJ’s construction and application of the other terms in the claim. *See generally* Order No. 33 at 61-65. Consequently, the only accused product that would be implicated by our decision to modify the ALJ’s construction of “reading and assembling” to cover the table method is [] because the ALJ’s construction of the claim term provided the only basis for his finding of no direct infringement with respect to that controller. *See* ID at 49-50, 56-57, 69-73, 80. *See also* Complainant SanDisk Corporation’s Written Submission On The Issues Under Review at 9-10. Specifically, the ALJ found that [

] ID at 80. We note that the ALJ properly found that the other accused controllers did not infringe due in part to his construction of other terms in the asserted claims and his finding that the other accused products did not practice those other claim terms. *See* ID at 57-60, 67-73, 80-85.

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Although we construe the claim term “reading and assembling” to encompass the table method, SanDisk must still prove that [] infringes the claim term when construed to cover the table method.⁸ SanDisk has failed to do so. SanDisk argues that “under the table method, the controller does not read logical page address information from the pages at all. Rather, it relies on the logical page address information in the table during the reading and assembling step.” SanDisk’s Petition for Review at 48 (emphasis omitted). Nothing in the record evidence, however, [

] Indeed

SanDisk’s own theory of infringement [

] involves [

] SanDisk’s Initial Post-Hearing Brief

at 88. SanDisk argues that [

] (CFF

32.14)” and that [

] (CFF 32.15).” *Id.*; *see also*,

Respondents’ Submission In Response To The Commission’s Notice Of Review. That is,

SanDisk’s theory of infringement requires [

] which SanDisk has admitted does not occur under the table method. Thus, SanDisk has failed to prove that the [] practices the claim.

⁸ The ALJ did not consider whether the accused products practiced the table method because of his finding that the table method was outside the scope of the claim term.