

In the Matter of

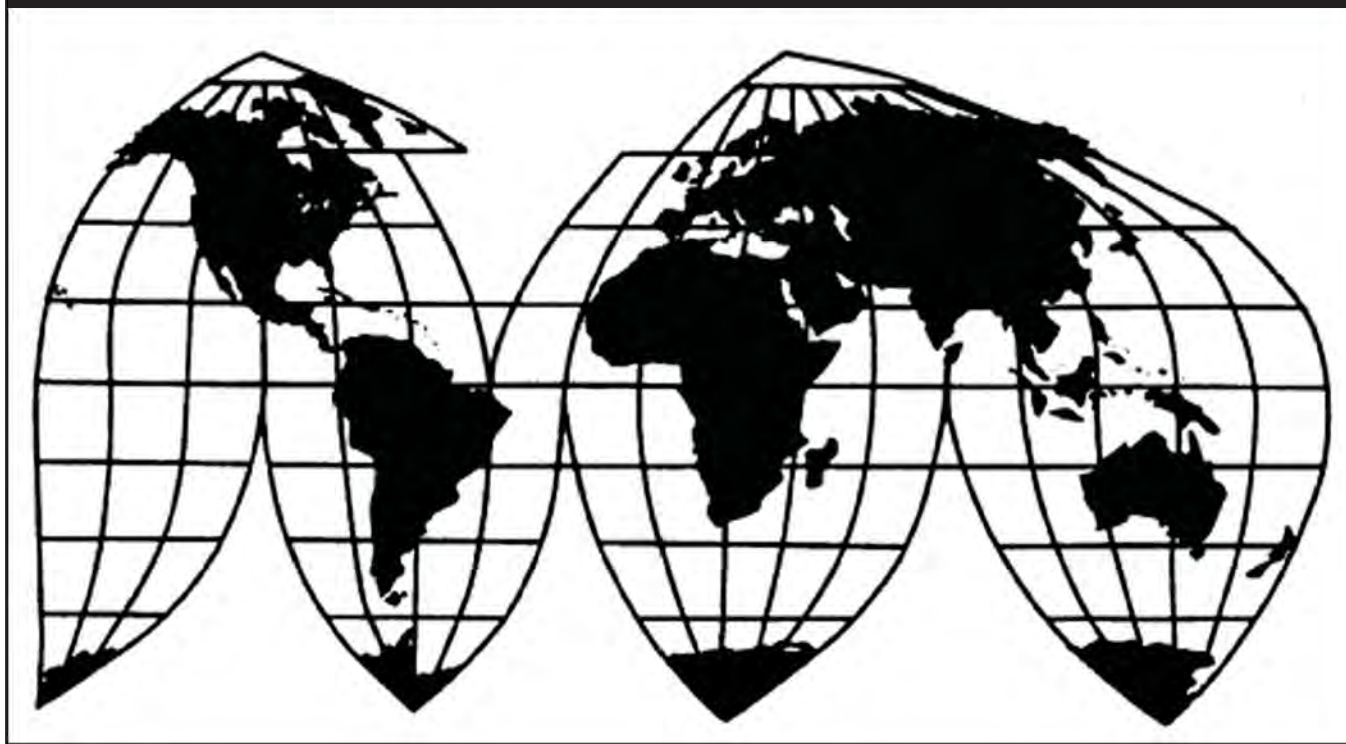
**CERTAIN INTEGRATED CIRCUIT CHIPS
AND PRODUCTS CONTAINING THE SAME**

337-TA-859

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U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

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AND PRODUCTS CONTAINING THE SAME**

337-TA-859



UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of

**CERTAIN INTEGRATED CIRCUIT
CHIPS AND PRODUCTS CONTAINING
THE SAME**

Investigation No. 337-TA-859

**NOTICE OF THE COMMISSION'S DETERMINATION TO AFFIRM IN PART,
REVERSE IN PART AND VACATE IN PART THE FINAL INITIAL
DETERMINATION FINDING NO VIOLATION; TERMINATION OF THE
INVESTIGATION**

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to affirm in part, reverse in part, and vacate in part the final initial determination ("ID") issued by the presiding administrative law judge ("ALJ") on March 21, 2014, finding no violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337. The Commission finds no violation of section 337 and terminates the investigation.

FOR FURTHER INFORMATION CONTACT: Amanda Pitcher Fisherow, Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2737. 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 October 23, 2012, based on a complaint filed by Realtek Semiconductor Corporation ("Realtek") of Hsinchu, Taiwan alleging violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337), as amended, by reason of infringement of certain claims of U.S. Patent Nos. 6,787,928 ("the '928 patent") and 6,963,226 ("the '226 patent"). 77 Fed. Reg. 64826. The notice of investigation named as respondents LSI Corporation of Milpitas, California; and Seagate

Technology of Cupertino, California (collectively "Respondents"). The '226 patent was terminated from the investigation.

On March 21, 2014, the ALJ issued her final ID finding no violation of section 337. The ALJ held that no violation occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain integrated circuit chips and products containing the same that infringe one or more of claims 1-10 of the '928 patent. Although the ALJ found that the asserted claims were infringed, the ALJ held claims 1-10 of the '928 patent invalid and found that no domestic industry exists.

On April 4, 2014, Realtek filed a petition for review, and on April 7, 2014, Respondents filed a contingent petition for review. The parties timely responded to each other's petitions for review.

On May 22, 2014, the Commission determined to review the ID in part. The Commission sought briefing on seventeen questions and on the issues of remedy, public interest and bonding. On June 5, 2014, the parties filed their initial briefs on review and on June 16, 2014, the parties filed their responsive briefs.

Having considered the record and the parties' submissions, the Commission finds that no violation of section 337 has occurred. Specifically, the Commission affirms in part, reverses in part, and vacates in part to find that (1) all of the accused products infringe claims 1-3, and 6-10 of the '928 patent; (2) the FireWire chips also infringe claims 4-5; (3) the MS410B and MS410B2 chips anticipate claims 1-3 and 6-9; (4) the MS410B and MS410B2 chips do not anticipate claim 10; (5) the Ker application does not anticipate claims 1-10; (6) claims 4-5 are obvious in view of the MS410B and MS410B2 chips and the Ker application; and (7) a domestic industry does not exist.

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 Part 210 of the Commission's Rules of Practice and Procedure (19 C.F.R. Part 210).

By order of the Commission.



Lisa R. Barton
Secretary to the Commission

Issued: July 21, 2014

**CERTAIN INTEGRATED CIRCUIT CHIPS AND PRODUCTS 337-TA-859
CONTAINING THE SAME**

CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **COMMISSION NOTICE** has been served upon the following parties as indicated, on **July 21, 2014**



Lisa R. Barton, Secretary
U.S. International Trade Commission
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**UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.**

In the Matter of

**CERTAIN INTEGRATED CIRCUIT
CHIPS AND PRODUCTS CONTAINING
THE SAME**

Inv. No. 337-TA-859

COMMISSION OPINION

I. INTRODUCTION

On March 21, 2014, the presiding administrative law judge (“ALJ”) issued her final initial determination (“ID”) in this investigation, finding no violation of Section 337 with respect to certain integrated circuit chips alleged to infringe claims 1-10 of U.S. Patent No. 6,787,928 (“the ’928 patent”). The Commission determined to review-in-part the final ID on May 22, 2014 and requested briefing on the issues under review.

Having considered the ID, the submissions of the parties, and the relevant portions of the record, the Commission has determined to affirm-in-part, reverse-in-part, and vacate-in part the final ID. Specifically, the Commission (1) affirms the ALJ’s construction of the claim term “spaced apart” with the additional discussion provided herein; (2) modifies the ALJ’s construction of “lower electric-conduction layer”; (3) modifies the ALJ’s construction of the “wherein” clause of claim 10 and determines that Realtek’s “substantial or significant” position was not waived; (4) affirms the ALJ’s literal infringement findings for claims 1-9; (5) supplements the ID’s reasoning supporting infringement of claim 1 by the []; (6)

reverses the ALJ's finding of no infringement of claim 10 by the []; (7) modifies the ALJ's infringement finding of claim 10 for the []; (8) vacates the ALJ's finding of no infringement under the doctrine of equivalents for the []; (9) reverses the ALJ's findings that claims 1-10 are anticipated by the Ker application; (10) affirms the ALJ's findings that claims 1-3 and 6-9 are anticipated by MS410B and MS410B2; (11) reverses the ALJ's finding that claim 10 is anticipated by MS410B and MS410B2; (12) reverses the ALJ's determination that claims 4-5 are not obvious in view of MS410B or MS410B2 in combination with the Ker application/Ker patent; (13) takes no position on whether claims 1-3 and 6-10 are obvious in view of MS410B and MS410B2; (14) takes no position on whether claims 1-10 are obvious in view of the Ker application; (15) affirms the ALJ's findings that the domestic industry ("DI") chips practice claims 1-3 and 6-9, and finds that the technical prong is met; (16) modifies the ALJ's findings for the technical prong for claim 10 to be consistent with the application of the "wherein" clause, and finds that the technical prong is met; and (17) vacates the ALJ's analysis concerning the economic prong, and finds that the economic prong has not been met for reasons other than those supplied by the ALJ. The Commission adopts the ALJ's findings that are consistent with the Commission's opinion as set forth below.

II. BACKGROUND

A. Procedural History

The Commission instituted this investigation on October 23, 2012, based on a complaint filed by Realtek Semiconductor Corporation ("Realtek" or "Complainant"). 77 Fed. Reg. 64826-27 (Oct. 23, 2012). The complaint alleged violations of Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 ("Section 337"), in the sale for importation, importation, or sale after

importation into the United States of certain integrated circuit chips and products containing the same by reason of infringement of certain claims of the '928 patent and U.S. Patent No. 6,963,226 ("the '226 patent"). The Commission's Notice of Investigation named LSI Corporation ("LSI") and Seagate Technology ("Seagate") (collectively "Respondents") as respondents. OUII is not a party in this investigation.

On February 25, 2013, the Commission reviewed and reversed an initial determination granting Realtek's motion to terminate the '226 patent from the investigation.¹ The Commission reversed the ID because Realtek did not include in its motion "a statement that there are no agreements, written or oral, express or implied between the parties concerning the subject matter of the investigation, or if there are any agreements concerning the subject matter of the investigation," as required by the Commission's rules. Realtek renewed its motion for termination of the allegations relating to the '226 patent. The ALJ issued an ID granting the motion and on March 26, 2013, the Commission determined not to review the ID.²

An evidentiary hearing was held January 13 through 16, 2014. On March 21, 2014, the presiding ALJ issued her final ID, finding no violation of Section 337. The final ID included the ALJ's recommended determination on remedy and bonding. On April 4, 2013, Realtek filed a petition for review and on April 7, 2013, Respondents filed a contingent petition for review.

¹ Notice of Commission Determination To Review And Reverse an Initial Determination Granting Realtek Semiconductor Corporation's Motion For Termination of the Allegations Relating To U.S. Patent No. 6,963,226 (Feb. 25, 2013).

² Notice of Commission Determination Not to Review an Initial Determination Granting Realtek Semiconductor Corporation's Renewed Motion for Termination of the Allegations Relating to U.S. Patent No. 6,963,226 (March 26, 2013).

Realtek petitioned for review of the ALJ's conclusion that the "lower electric-conduction layer" was limited to a single planar layer; the construction of "spaced apart;" the ALJ's conclusion that any noise (*e.g.*, electromagnetic signals) reduction would satisfy claim 10; the ALJ's findings of anticipation by MS410B and MS410B2 and the Ker Application/Ker Patent; that the [] meet the "lower electric-conduction layer;" that the [] do not infringe claim 10; that Realtek failed to establish a domestic industry; and that the ALJ erroneously recommended a reporting requirement. Respondents contingently petitioned for review of the ALJ's findings that claims 4-5 are not anticipated by MS410B, or M410B2, in combination with the Ker application/Ker Patent; the ALJ's economic prong domestic industry finding; and the ALJ's findings of infringement. The parties timely replied to each other's petitions for review.

Public interest statements were filed by the parties on April 23, 2014. No additional public interest statements were filed.

On May 22, 2014, the Commission determined to review the ID in part. The Commission sought briefing on seventeen questions and on remedy, public interest, and bonding. On June 5, 2014, the parties filed their initial briefs on review and on June 16, 2014, the parties filed their responsive briefs.

B. Overview of the '928 Patent

The '928 patent issued on September 7, 2004 and is entitled "Integrated Circuit Device Having Pads Structure Formed Thereon and Method for Forming the Same." Ying-Hsi Lin is named as the sole inventor. The Abstract of the '928 patent states:

The invention is to provide a structure of IC pad and its forming method. The structure is arranged in an insulation layer and is comprised of a lower

electric-conduction layer, a compound layer structure and a pad layer. The lower electric-conduction layer is arranged at an appropriate position in the insulation layer and is connected to an electric potential. The compound layer structure is arranged on the insulation layer and is composed of at least one electric-conduction layer and at least one electric-conduction connecting layer, both are inter-overlapped to each other. The pad layer is arranged on the compound layer structure.

JX-1 at Abstract. The patent describes a bond pad of an integrated circuit (“IC”) that has “high frequency and low noise to lower down the equivalent electric capacitance and enhance bonding adherence.” *Id.* at 2:20-24. The patent seeks to achieve this goal by positioning an electric-conduction layer between the substrate and the compound structure connected to the bond pad.

Asserted independent claim 1 recites:

An integrated circuit (IC) device having a pad structure formed thereon, the IC device comprising:

- a) a substrate;
- b) an insulation layer formed on the substrate;
- c) a lower electric-conduction layer formed in the insulation layer;
- d) a compound layer structure formed in the insulation layer;
- e) a first pad layer formed on the insulation layer and coupled to the compound layer structure, wherein the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer; and
- f) a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer.

JX-1 at 5:6-21.

Asserted dependent claims 2-10 recite:

Claim 2: The IC device according to claim 1, wherein the compound layer structure comprises a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer.

Claim 3: The IC device according to claim 2, wherein the first connecting layer comprises a plurality of via plugs.

Claim 4: The IC device according to claim 2, wherein the first electric-conduction layer is shaped like a webbed railing.

Claim 5: The IC device according to claim 2, wherein the area of the first electric-conduction layer is smaller than that of the first pad layer.

Claim 6: The IC device according to claim 1, wherein the first pad layer is shaped like a polygon.

Claim 7: The IC device according to claim 1, further comprising a passivation layer formed on the insulation layer to cover a part of the outer rim of at least one of the first and second pad layers.

Claim 8: The IC device according to claim 1, further comprising at least one second connecting layer for coupling the second pad layer to the lower electric-conduction layer.

Claim 9: The IC device according to claim 8, further comprising at least one second electric-conduction layer coupled between the second pad layer and the lower electric-conduction layer with the second connecting layer.

Claim 10: The IC device according to claim 1, wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer.

JX-1 at 5:22-48.

C. Products At Issue

The accused products at issue include LSI's [] and Seagate products containing the []. ID at 4. The accused LSI []. *Id.* The accused LSI [] and Seagate products are:

[

]
Id. at 4-5.

To show the existence of articles protected by the '928 patent, for purposes of demonstrating the existence of a domestic industry, 19 U.S.C. § 1337(c), Realtek relies upon certain of its [] chips [

]

(collectively, “the DI Chips”). ID at 180-81.

III. LEGAL STANDARDS

A. Claim Construction

“To ascertain the scope and meaning of the asserted claims, we look to the words of the claims themselves, the specification, the prosecution history, and, if necessary, any relevant extrinsic evidence.” *01 Communique Lab., Inc. v. LogMeIn, Inc.*, 687 F.3d 1292 (Fed. Cir. 2012) (quoting *Chicago Bd. Options Exch., Inc. v. Int’l Sec. Exch., LLC*, 677 F.3d 1361, 1366 (Fed. Cir. 2012); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315-17 (Fed. Cir. 2005) (*en banc*). The language used in a claim bears a heavy presumption that it has the ordinary and customary meaning that would be attributed to the words used by persons skilled in the relevant art. *See Phillips*, 415 F.3d at 1312-13. The specification is always highly relevant to the claim construction analysis. *Id.* at 1315 (citations omitted). “Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Id.*

A court must “take care not to import limitations into the claims from the specification.” *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1288 (Fed. Cir. 2009). “When the specification describes a single embodiment to enable the invention, this court will not limit broader claim language to that single application ‘unless the patentee has demonstrated a clear intention to limit the claim scope using ‘words or expressions of manifest exclusion or restriction.’” *Id.* (citations omitted). “By the same token, the claims cannot ‘enlarge what is patented beyond what the inventor has described as the invention.’ Thus, this court may reach a narrower construction, limited to the embodiment(s) disclosed in the specification, when the claims themselves, the specification, or the prosecution history clearly indicate that the invention encompasses no more than that confined structure or method.” *Id.* (citations omitted).

“[T]he distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to apply in practice ... [h]owever, the line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court’s focus remains on understanding how a person of ordinary skill in the art would understand the claim terms.” *Phillips*, 415 F.3d at 1323 (citations omitted). In attempting to discern whether a “patentee is setting out specific examples of the invention . . . or whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive . . . [t]he manner in which the patentee uses a term within the specification and claims usually will make the distinction apparent.” *Id.*

B. Infringement

A determination of patent infringement encompasses a two-step analysis. *Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc.*, 261 F.3d 1329, 1336 (Fed. Cir. 2001) (“*Scimed*”). First, the court determines the scope and meaning of the patent claims asserted, and then the properly construed claims are compared to the allegedly infringing device. *Id.* “Literal infringement of a claim exists when each of the claim limitations reads on, or in other words is found in, the accused device.” *Allen Eng. Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1345 (Fed. Cir. 2002). Under the doctrine of equivalents, “a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is ‘equivalence’ between the elements of the accused product or process and the claimed elements of the patented invention.” *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 21 (1997). Direct infringement includes the making, using, selling, offering for sale and importing

into the United States an infringing product, without authority. 35 U.S.C. § 271(a). To prove direct infringement, the plaintiff must establish by a preponderance of the evidence that one or more claims of the patent read on the accused device either literally or under the doctrine of equivalents. *Scimed*, 261 F.3d at 1336.

C. Validity

1. Anticipation

Pursuant to 35 U.S.C. § 102, a patent claim is anticipated when a single piece of art discloses each and every limitation of the claimed invention. *See Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003); *CR. Bard v. M3 Sys.*, 157 F.3d 1340, 1349 (Fed. Cir. 2000). Because the hallmark of anticipation is prior invention, the prior art reference, in order to anticipate under § 102, must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements “arranged as in the claim.” *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983). Federal Circuit precedent informs that the “arranged as in the claim” requirement applies to all claims and refers to the need for an anticipatory reference to show all of the limitations of the claims arranged or combined in the same way as recited in the claims, not merely in a particular order. *Net MoneyIn, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008).

The disclosure by an invalidating reference need not be express, but may anticipate by inherency where such inherency would be appreciated by one of ordinary skill in the art. *EMI Group North America, Inc. v. Cypress Semiconductor Corp.*, 268 F.3d 1342, 1350 (Fed. Cir. 2001). In order to support a finding of inherency, the prior art must necessarily include the inherent limitation. *Schering*, 339 F.3d at 1377.

Depending on the circumstances, a claimed invention may be anticipated by many types of prior art, including publications, earlier-sold products, and patents. *See* 35 U.S.C. § 102. Anticipation, like all forms of patent invalidity, must be established by clear and convincing evidence. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047 (Fed. Cir. 1995). Whether a patent claim is anticipated is a question of fact. *See Smith Kline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1343 (Fed. Cir. 2005).

2. Obviousness

Under 35 U.S.C. § 103(a), a patent is valid unless “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a). The ultimate question of obviousness is a question of law, but “it is well understood that there are factual issues underlying the ultimate obviousness decision.” *Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d 1476, 1479 (Fed. Cir. 1997).

Once claims have been properly construed, “[t]he second step in an obviousness inquiry is to determine whether the claimed invention would have been obvious as a legal matter, based on underlying factual inquiries including: (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) secondary considerations of non-obviousness.” *Smiths Indus. Med. Sys., Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1354 (Fed. Cir. 1999) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)). The Federal Circuit has historically required that, in order to prove obviousness, the patent challenger must demonstrate, by clear and convincing evidence, that there is a “teaching,

suggestion, or motivation to combine.” The Supreme Court, however, rejected this “rigid approach” in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007):

The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

D. Domestic Industry

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). Under Commission precedent, the domestic industry requirement of Section 337 consists of an “economic prong” and a “technical prong.” *See, e.g., Alloc, Inc. v. ITC*, 342 F.3d 1361, 1375 (Fed. Cir. 2003).

The “economic prong” of the domestic industry requirement is satisfied when it is determined that the economic activities and investments 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 & Components Thereof*, Inv. No. 337-TA-376, USITC Pub. No. 3003, 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.

(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. *Wind Turbines & Components Thereof*, Inv. No. 337-TA-376, Comm'n Op. at 15. With respect to subparagraph (a)(3)(C), the statute requires that the substantial investment in engineering, research and development, or licensing must exploit the asserted IP right. *See infra* note 13 and accompanying text.

To meet the technical prong, the complainant must establish that it practices at least one claim of the asserted patent. *See Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op., 1996 WL 1056095, at *7-8 (Jan. 16, 1996). "The test for satisfying the 'technical prong' of the industry requirement is essentially the same as that for infringement, *i.e.*, a comparison of domestic products to the asserted claims." *Alloc*, 342 F.3d at 1375.

Recently, the Federal Circuit opined on the showing necessary to demonstrate the existence of a domestic industry under section 337(a)(3)(C). *InterDigital Commc'ns, LLC v. ITC*, 707 F.3d 1295 (Fed. Cir. 2013); *Microsoft Corp. v. ITC*, 731 F.3d 1354 (Fed. Cir. 2013). The Commission has since provided its application of those decisions in *Certain Computers & Computer Peripheral Devices, and Components Thereof, and Products Containing Same*

(“*Peripheral Devices*”), Inv. No. 337-TA-841, Comm’n Op. 27-40 (Jan. 9, 2014). In short, the Commission held as follows: A complainant relying upon a domestic industry founded upon section 337(a)(3)(C) must demonstrate the existence of articles that practice the asserted patent. *Id.* at 40; *see also id.* at 32. Then, “the substantial investment, once protected articles have been shown, is in exploitation of the intellectual-property rights, ‘including engineering, research and development, or licensing.’” *Id.* at 40 (quoting 19 U.S.C. § 1337(a)(3)(C)).

IV. CLAIM CONSTRUCTION

A. The ‘928 Patent

1. Construction of the Claim Terms

a) “Spaced Apart” of Asserted Claim 1

The Commission adopts the ALJ’s construction of “spaced apart” found in claim 1 to be its plain and ordinary meaning. *ID* at 17. The ALJ found that this construction is supported by the intrinsic record and that Realtek’s construction “improperly imports limitations from the specification and is unsupported by the intrinsic record.” *Id.*

In addition to the discussion and analysis provided by the ALJ, the Commission finds that additional intrinsic evidence supports the plain and ordinary meaning construction of the term “spaced apart.”

As the ALJ noted, the term “spaced apart” is not in the specification. The specification teaches that the lower electric-conduction layer is formed at an “appropriate position” in the insulation layer, but provides no other explicit guidance as to the meaning of the claim term “spaced apart.”

Realtek's position, before the Commission, is generally based on the premise that one of ordinary skill in the art would know that ICs include alternating metal and insulation layers, and in light of this knowledge, would know that the term would require a metal layer between the compound layer structure and the lower electric-conduction layer. Comp. Pet. at 6-20. Although the generalization that ICs include alternating metal and insulation layers may be true in many circumstances, the record does not reflect that it is true of all ICs. The specification of '928 patent discusses the prior art in the Background of the Invention, including U.S. Patent No. 5,248,903 ("the '903 patent"). JX-1 at 1:56-65. The '903 patent uses the same term, "spaced apart," to claim metal layers in an IC that are physically separated without an intervening metal layer. See RX-4 ('903 patent) at 5:37-40, FIG. 2A; Tr. at 319:16-320:1. Realtek's expert, Dr. Walker, even admitted that the "upper bond pad element" in FIG. 2A of the '903 patent is spaced apart from the "lower bond pad element" even though those layers are separated by only a single insulation layer and do not have an intervening metal layer between them. Tr. at 319:20-23, 318:18-319:1, 319:24-320:3, 320:20-321:3. The Commission finds that this additional intrinsic evidence supports the ALJ's determination. ID at 17-26.

b) "Lower Electric-conduction Layer" of Asserted Claims 1-2, and 8-10

The parties' dispute does not center on the actual construction of the term "lower electric-conduction layer," but rather whether it is limited to a *single* planar layer as the ALJ stated in the ID. ID at 36-37; Comp. Pet. 5-6; Resp. Reply to Pet. at 6-7. The ALJ construed the term "lower electric-conduction layer" to mean a "planar region of conductive material extending between the first pad layer and the substrate, the planar region being lower than the first pad layer and the compound layer structure." ID at 32. In discussing the basis for her construction, the ALJ found

that the claim language supports a finding that the “lower electric-conduction layer” is *a single*, planar layer. *Id.* at 36. Although the ALJ made this finding, it was not part of her claim construction. *Id.* at 32.

Respondents argue that (1) one of ordinary skill in the art would understand that the “lower electric-conduction layer” is a single layer structure; and (2) the claim language precludes the “lower electric-conduction layer” from being comprised of multiple layers. Resp. Rev. Br. at 2-4. Realtek argues that the use of the term “a” or “an” in an open ended claim that uses the transitional phrase “comprising” generally means one or more unless there is clear intent by the patentee to limit the term to a singular. Comp. Pet. at 5. Respondents can point to no evidence of such intent.

While Realtek correctly states this principle of claim construction, the question is not whether the term covers multiple lower electric-conduction layers, but rather whether two layers can comprise a single lower electric conduction layer. We find that there is no disclosure in the specification that requires the lower electric-conduction layer to be comprised of only a single layer. Dr. Gwozdz, Respondents’ expert, testified that the ’928 patent does not disavow a lower electric-conduction layer that is made up of more than a single layer. Comp. Reply Rev. Br. at 3; CX-341 at 24:19-23.

Respondents can only point to the language of claim 1 that recites a separate limitation of a “compound layer structure” formed in the insulation layer to support their position. We are not persuaded by this argument. In claiming the “compound layer structure,” the patentee required that the “compound layer structure” must be comprised of multiple layers, but with respect to the

“lower electric-conduction layer,” the language of the claim does not require multiple layers nor does it limit the term to a single layer.

The Commission adopts the ALJ’s construction, but reverses the ALJ’s finding that the “lower electric-conduction layer” must be comprised of a single planar layer. Because there is nothing in the specification that limits the “lower electric-conduction layer” to a single layer or requires it to be composed of multiple layers, the Commission finds that the “lower electric-conduction layer” can be comprised of either a single planar layer or a multi-layer structure. The ALJ’s findings that are consistent with these determinations are adopted.

c) “Wherein a Noise From the Substrate is Kept Away From the First Pad Layer by the Lower Electric-conduction Layer” of Asserted Claim 10

The ALJ construed the term “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” found in claim 10 to have its plain and ordinary meaning, ID at 38, and found that some amount of noise reduction would meet the claim limitation. *See e.g.*, ID at 40-42, 76, 132. The Commission adopts the plain and ordinary meaning of the limitation but finds that one of ordinary skill in the art would understand the term to require a “significant or substantial” reduction in noise to achieve the goals of the patent. The Commission affirms the ALJ’s finding that the claim limitation is not indefinite. ID at 38-39.

Respondents argue that Realtek waived its position that the “wherein” limitation of claim 10 should be construed to require a “significant or substantial” noise reduction by not raising the issue before the ALJ. *See e.g.*, Resp. Reply to Pet. at 7-9. Respondents contend that Realtek asserted for the first time in its petition for review that claim 10 requires a significant or substantial amount of noise reduction, and did not make this assertion in its pre-hearing or post-

hearing briefs. *Id.* at 8. Respondents explain that Realtek’s new construction is based on testimony from Respondents’ expert witness, Dr. Gwozdz, and the inventor. Respondents assert that this testimony was exchanged five months before pre-hearing briefs were due, and thus Realtek could have offered its new construction in its pre-hearing brief. Resp. Rev. Br. at 9.

Realtek explains that it did not advocate for this construction as a matter of claim construction before the ALJ, but instead presented it repeatedly and consistently when advancing its infringement positions. Comp. Rev. Br. at 14-16. In its pre-hearing brief, Realtek discussed the analysis its expert, Dr. Walker, conducted in determining that the “wherein” limitation was met by the accused products and the DI chips. Specifically, Dr. Walker determined that the shielding provided in the accused products and the DI chips results in significant noise reduction. *See e.g.*, CX-313C at QQ. 260, 215. In concluding its discussion for both the accused products and the DI product in its pre-hearing brief, Realtek repeatedly stated: “In this case, the shielding is improved by [] dB, which is a significant improvement.” Comp. Pre-Hearing Br. at 60, 87-88, 121-122, 146, 171-172.

Realtek points to similar statements in its post-hearing brief. *See e.g.*, Comp. Post-Hearing Br. at 45-46. Realtek explains that Respondents’ expert, Dr. Gwozdz, stated in his witness statement on infringement:

Even if claim 10 only requires that *noise be effectively kept away, or substantially kept away*, Dr. Walker does not show that the alleged lower electric-conduction layer of the [] substantially keeps noise from the substrate away from the bond pad. Contrary to Dr. Walker’s conclusion, the alleged reduction in noise from the substrate in the [

], is negligible.

RX-0285C at Q. 97; *see also* RX-0285C at Q. 135. Based on these statements, Realtek contends that it did not waive its argument that the lower electric-conduction layer keeps a significant amount of noise from the substrate away from the first pad layer. Comp. Rev. Br. at 14-17. Because Realtek reiterated its position consistently throughout its pre-hearing brief and again in its post-hearing briefs, the Commission determines that the argument was not waived and that Respondents were on notice of the application of the construction.

With regard to the merits of Realtek's argument, the specification provides no direct guidance on the amount of noise reduction that the invention provides, but instead the goals of the patent inform one of ordinary skill in the art that the noise reduction must be significant or substantial. In applying the plain and ordinary meaning of this limitation, the ALJ found that some noise reduction would meet this claim term. *See e.g.*, ID at 76, 132. The evidence that Realtek relies on to require a "substantial or significant" amount of noise reduction is testimony from the parties' experts and the inventor that one of ordinary skill in the art would have understood this limitation to require significant or substantial noise reduction. Comp. Rev. Br. at 20. Dr. Walker testified that one of ordinary skill in the art would understand the "wherein" limitation to require significant or substantial amount of noise reduction and Dr. Gwozdz testified that the claim requires that noise be kept away completely. Tr. at 428:1-429:15; CX-313C at Q. 78-80; RX-285C at QQ. 46, 97. In addition, Dr. Lin, the inventor, testified that the lower electric conduction layer in a device embodying the '928 patent provides shielding to reduce "a substantial amount of noise." CX-316C at Q. 41-43.

Claim 10 does not include any language specifying the amount of noise reduction that is required. Likewise, the specification is also silent with regard to the amount of noise reduction.

However, the goal of an IC with high frequency and low noise is emphasized throughout the specification. For example, the specification states: “the emphasis of the invention is to provide a pad structure adapted for an integrated circuit of high frequency and *low* noise” (JX-1 at 2:20-22); “a pad of . . . high frequency and low noise” (JX-1 at 1:9-13); “The low noise and low loss of high frequency signal are always the pursuing goals for communication IC” (JX-1 at 1:41-43); and “so this kind of designing method may be adapted to integrated circuit of high frequency and *fulfill the requirement of high frequency and low noise*” (JX-1 at 4:64-5:4).

The Commission finds that the expert testimony of both parties in combination with the stated goals of the patent leads to the conclusion that the claimed noise reduction as understood by skilled artisans must be “significant or substantial.”

V. INVALIDITY AND OTHER DEFENSES

A. Anticipation

1. MS410B and MS410B2 Chips³

a) Claims 1-3 and 6-9

The ALJ found that MS410B practices each element of claims 1-3 and 6-10 of the '928 patent.⁴ ID at 70-77. The ALJ noted that Respondents' expert, Dr. Gwozdz, provided an analysis of how each limitation of independent claim 1 is met. *Id.* at 70-71. Respondents only challenged whether the limitation “the first pad layer and the compound layer structure are

³ The parties refer to MS410B and MS410B2 collectively as MS410B because they do not differ in any relevant way. *See e.g.*, Comp. Pet. at 22 n. 8. Accordingly, we also refer to MS410B and MS410B2 collectively as MS410B.

⁴ Claim 10 will be addressed separately below.

spaced apart from the lower electric-conduction layer” was found in MS410B based on the construction of the term “spaced apart.” *Id.* at 71; *see also* Comp. Pet. at 32-35. The ALJ relied on the testimony of Dr. Gwozdz to find that this disputed limitation was met. *Id.* at 71-72. Specifically, Dr. Gwozdz testified “that the compound layer structure below the first pad layer is in fact physically separated from the lower electric-conduction layer.” *Id.* The ALJ explained Dr. Gwozdz’s testimony was that “these two structures are on separate layers—M3 and M4—and the figures demonstrate that there are no vias connecting these two structures.” *Id.* at 71-72. Accordingly, the ALJ found that there is clear and convincing evidence that all the claim elements required by claim 1 are present in the MS410B device. *Id.* at 72.

The ALJ also found that all of the limitations of claims 2-3 and 6-9 are found in MS410B. *Id.* at 72-74. Before the ALJ, Realtek argued that claims 2-3 and 6-9 are not anticipated only because claim 1 is not anticipated; Realtek did not dispute that the claim elements required by claims 2-3 and 6-9 are found in MS410B. *Id.* at 72. The ALJ nonetheless analyzed each of these claim elements. *Id.* at 72-74.

The Commission reviewed the ALJ’s finding that claims 1-3 and 6-10 are anticipated by MS410B and asked the parties to brief whether modifying the ALJ’s construction of “lower electric-conduction layer” to include multi-layer structures would have an impact on the ALJ’s invalidity findings. Notice of Review at 2 (Q. 2). The parties agreed that such modification would not change the ALJ’s analysis on invalidity. Comp. Rev. Br. at 24; Resp. Rev. Br. at 5. As noted above, the Commission adopts the ALJ’s construction of “spaced apart.” Accordingly, the Commission affirms the ALJ’s finding that claims 1-3, and 6-9 are anticipated by MS410B.

b) Claim 10

The ALJ found that claim 10 is met by MS410B based on the testimony of Dr. Gwozdz with respect to the disputed “wherein” clause limitation of claim 10. Specifically, the ALJ determined that “the first bond pad in the MS410B (and MS410B2) device is shielded from electromagnetic signals from the substrate by the power or ground lines running below it.” ID at 74 (citing RX-0246C at Q. 93)). As discussed above, the Commission has determined that one of ordinary skill in the art would interpret the plain and ordinary meaning of “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” of claim 10 to require “substantial or significant” noise reduction. The Commission asked the parties to brief what impact a change in the ALJ’s construction would have on the ALJ’s invalidity findings. Notice of Review at 3 (Q. 8). Realtek asserted that Respondents have not met their burden of proving by clear and convincing evidence that the MS410B “substantially or significantly” keeps noise away from the first pad layer. *See* Comp. Rev. Br. at 39.

Respondents argued that if the accused [] infringe claim 10, then claim 10 must be invalid. *Resp. Rev. Br.* at 18, 20-21. Respondents contend that the two devices have substantially the same structure and the only difference is the number of metal layers. *Id.* at 18. In addition to arguing that the structures are the same, and therefore that claim 10 must be invalid, Respondents argue, without citation to evidence, that because the wrap under structure, which routes noise to the first pad, underlies less than 50% of the first pad area, more than 50% of the noise would be kept away and this is a significant amount of noise. In contrast, Dr. Walker testified that the “lower electric-conduction layer” of MS410B would provide some shielding but not much. *Tr.* at 438:6-439:2. Respondents cite to no evidence that MS410B

reduces noise substantially or significantly. Resp. Rev. Br. at 18-21; Resp. Reply Rev. Br. 8-13. Because Respondents have not offered proof that the MS410B chips provide significant and substantial noise reduction, the Commission finds that Respondents have not met their burden that MS410B anticipates claim 10 by clear and convincing evidence.

The parties also dispute whether Realtek waived its validity argument that MS410B routes noise to the first pad layer. Comp. Pet. at 28-32; Resp. Reply to Pet. at 10-11. Realtek did not argue in its pre-hearing brief that noise is routed to the first pad layer and therefore, MS410B does not anticipate claim 10. *See e.g.*, Comp. Pre-hearing Br. at 190-192. Because Realtek did not raise this position in its pre-hearing brief, Respondents argued that the argument was waived. Realtek argues that it developed this argument—that MS410B cannot invalidate the claims because it routes noise to the first pad layer—only after they cross examined Dr. Gwozdz at the hearing. Comp. Pet. at 30.

The Commission finds that Realtek must have developed this theory prior to the hearing because Realtek introduced CDX-0053, which showed a cross-sectional view of MS410B that illustrated that some noise is routed to the first pad layer, during cross-examination of Dr. Gwozdz. Realtek did not disclose this demonstrative exhibit prior to the hearing and did not argue this position in its pre-hearing brief. In order for Realtek to have prepared the exhibit by trial, it is likely that it developed the new theory prior to cross examining Dr. Gwozdz, despite its contention otherwise. Accordingly, the Commission finds that Realtek's argument that MS410B routes noise to the first pad layer is waived.

2. Ker Application/Patent⁵

a) Claims 1-3 and 6-9

The parties' dispute whether the Ker application inherently discloses a second pad layer that is connected to an external power source or potential and connected to the lower electric-conduction layer. In order to support a finding of inherency, the prior art must *necessarily* include the inherent limitation. *Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003).

Claim 1 requires “a second pad layer formed on the insulation layer *and coupled to the lower electric-conduction layer.*” The Commission affirmed the ALJ’s construction of the “second pad layer” as “one or more coplanar surfaces that provide a bonding zone to an external power source or potential.” Therefore, in order for the Ker application to anticipate claim 1 it would have to inherently disclose that one or more coplanar surfaces that provide a bonding zone to an external power source or potential are formed on the insulation layer and coupled to the lower electric-conduction layer.

The ALJ found that the Ker application discloses a first pad layer, but does not disclose a second pad layer. ID at 88. The Ker specification teaches that metal layers 53 and 54 *may* serve as power lines. RX-13 at ¶ 53. The ALJ relied on Dr. Gwozdz’s testimony that a semiconductor device includes multiple bond pads *and* that power lines would be connected to the bond pads to find this limitation is met. ID at 89 (citing RX-246 at Q. 133).

⁵ The parties’ experts agree that the Ker application and the Ker patent have essentially the same specification. *See e.g.*, Comp. Pet. at 36 n. 14. The ALJ noted that the parties refer to the Ker application and the Ker patent interchangeably, but the ALJ only made reference to the Ker application. ID at 87 n. 19. The Commission does the same.

We agree with the ALJ's determination that the Ker application must necessarily include a second bond pad, and Realtek does not dispute this fact. *Id.* at 88; Comp. Pet. at 40; RX-246 at Q. 133. However, although Dr. Gwozdz testified that a second bond pad layer is **necessarily** connected to the metal layers, the Ker application only teaches that the metal layers **may** serve as power lines. RX-13 at ¶ 53. The Commission finds that there is not clear and convincing evidence that there is an inherent second bond pad that is coupled to metal layers 53, 54 and that the second bond pad is connected to an external power source. For these reasons, the Commission reverses the ALJ's finding that claims 1-9 are anticipated by the Ker application.

b) Claim 10

The Commission asked the parties to brief what impact a proposed change in the ALJ's construction of the "wherein" clause limitation would have on the ALJ's invalidity findings with respect to claim 10. Respondents provided no response with respect to the Ker application. *See, e.g.,* Resp. Rev. Br. at 18-21. Realtek argues that Respondents have not met their burden of proving by clear and convincing evidence that the Ker application discloses "substantially or significantly" keeping noise away from the first pad layer. Comp. Rev. Br. at 30-31. Although Dr. Gwozdz testified that the power line would provide some noise shielding, the parties have not cited any evidence that establishes that the Ker application provides "significant or substantial" noise reduction. Due to the failure to establish this element by clear and convincing evidence, the Commission finds that claim 1 is not anticipated by the Ker application, and therefore the Commission finds that claim 10 is also not anticipated by the Ker application, in addition to the reasons discussed herein.

B. Obviousness

1. MS410B and MS410B2 Chips and The Ker Application/Patent

The Commission takes no position on whether claims 1-3 and 6-10 are obvious in view of the MS410B chip taken alone or whether claims 1-10 are obvious in view of the Ker application taken alone.

2. MS410B or MS410B2 in Combination with the Ker Application/Ker Patent

The ALJ found that claims 4-5 were not obvious in view of MS410B in combination with the Ker application. ID at 96-97. In determining that MS410B and the Ker application could not be combined, the ALJ found that there is no showing that the problems that the Ker application sought to solve were problems for MS410B. *Id.* at 96.

When combining two references to find obviousness, the test is not whether both references seek to solve the same problem. Instead, the question is whether one of ordinary skill in the art facing the same problems as the inventor would combine MS410B and the Ker application. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419- 20 (2007). “[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Id.* at 420. Further, “[o]ne of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.” *Cross Med. Prods. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1323 (Fed. Cir. 2005).

Respondents provided expert testimony that bond peel off and parasitic capacitance were known problems facing IC designers. RX-246C at Q. 111; *see also* RX-13 at ¶8. The Ker application explains the use of an electric-conduction layer shaped like a webbed railing and that the area of the electric-conduction layer is smaller than the first pad layer.⁶ RX-246C at Q. 111; RX-13 at ¶¶11-13, 48. Dr. Gwozdz testified that one of ordinary skill in the art would combine the references because the Ker application accomplishes the objective of reducing parasitic capacitance by reducing the area of the metal layers under the bond pad. RX-246 at Q. 109-111. Accordingly, the Commission reverses the ALJ’s findings and finds that Respondents have proven by clear and convincing evidence that claims 4 and 5 are obvious in view of the Ker application in combination with MS410B.⁷

VI. INFRINGEMENT OF THE ’928 PATENT

As discussed above, Realtek accuses the [] of infringing claims 1-3 and 6-10 of the ’928 patent. Realtek argues that certain products incorporating the [], specifically the [] product lines (collectively, “Seagate products”) infringe claims 1-3 and 6-10 of the ’928 patent for the same reasons the [] infringe. Realtek also accuses the [] of infringing claims 1-10 of the ’928

⁶ There appears to be no dispute that the Ker application teaches the additional limitations of claims 4 and 5. *See* ID at 96, 86.

⁷ The Commission notes that Realtek did not argue the existence of any secondary considerations of non-obviousness.

patent.

A. Claims 1-9

The ALJ found that the [] and Seagate products infringe claims 1-3 and 6-9, and the [] infringe claims 1-10 of the '928 patent. ID at 110-132. As discussed above, the Commission has modified the ALJ's findings regarding the "lower electric-conduction layer" such that it can be composed of multi-layer planar structures. The Commission affirms the ALJ's literal infringement findings for claims 1-9 and supplements the ALJ's reasoning with an additional basis for finding infringement of claim 1 by the [].

The ALJ found that the [] meets the claimed "lower electric-conduction layer." ID at 108-09. However, Realtek argued that the [

] together act as the "lower electric-conduction layer." *See e.g.*, Comp. Rev. Br. at 42-45. [] that extend under the first pad layer. *See e.g.*, CX-313C at Q.138. [

] *Id.* Respondents do not challenge these facts, and instead challenge only whether the "lower electric-conduction layer" can include multi-layer structures. Resp. Rev. Br. at 5-6. The Commission finds that [] is a "planar region of conductive material extending between the first pad layer and the substrate, the planar region being lower than the first pad layer and the compound layer structure," and therefore, the [] infringe claim 1 for this additional reason.

The ALJ found that the [] do not meet the lower electric-conduction layer under the doctrine of equivalents. ID at 116 n. 25. Because the Commission finds that the

[] literally meet the “lower electric-conduction layer” limitation, the Commission vacates the ALJ’s findings under the doctrine of equivalents.

B. Claim 10

Realtek petitioned for review of the ALJ’s finding that the [] do not infringe claim 10. The ALJ determined that the “lower electric-conduction layer” must be comprised of a single planar layer and that Realtek did not present evidence that the [] alone kept noise from the substrate away from the first pad layer. ID at 131. However, as discussed above, the Commission finds that the “lower electric-conduction layer” can be a multi-layer structure and that the [] meet this claim limitation. Dr. Walker, Realtek’s expert, performed a quantitative analysis of the [] and determined that they keep a “significant” amount of noise from the substrate away from the first pad layer. CX-313C. at Q.164. Respondents did not challenge this evidence. Resp. Rev. Br. at 5-6, 18-21; Resp. Reply Rev. Br. at 3, 8-13. Accordingly, the Commission finds that the [] infringe claim 10.

In addition, although no party challenged the ALJ’s finding that claim 10 was infringed by the [] we note that the ALJ found that only some noise is kept away from the lower electric-conduction layer by the [] ID at 131-132. However, Dr. Walker testified that the [] results in significant noise reduction. CX-313C at Q. 214-15. Accordingly, the Commission affirms the finding of infringement based on this testimony. *See* ID at 131-132.

VII. DOMESTIC INDUSTRY

A. Economic Prong

1. Procedural Background

To demonstrate the existence of a domestic industry, Realtek relied upon its domestic research and development investment pursuant to subparagraph (a)(3)(C) of section 337.⁸ Comp. Post-Hearing Br. 97-129. In particular, Realtek alleged the existence of a domestic industry based on evidence of investments of its U.S. affiliate in [] research and development projects and evidence that certain Realtek chips practice claims 1-3 and 6-10 of the '928 patent. ID at 133. All of these patent claims (along with two others) were also asserted for infringement.

Prior to the hearing in this investigation, the respondents moved for summary determination that the economic prong of the domestic industry requirement is not met. In Order No. 34 (Dec. 6, 2013), the ALJ denied the motion, with a lengthy discussion of the domestic industry requirement. Much of that discussion is repeated in the ID. Among other matters, Order No. 34 requested that the parties develop the record further in the following manner: “Moving forward, a factual record should be developed that addresses the relationship between the patented technology employed in the domestic industry products and the [] circuits developed by the engineers at Realcom, and the extent to which the domestic expenditures can be allocated to the domestic industry products.” Order No. 34 at 20. In addition, and citing the recent Federal Circuit decision in *Microsoft Corp. v. ITC*, 731 F.3d 1354, 1361-62 (Fed. Cir. 2013), Order No. 34 asked the parties “to address whether investments under subsection (C)

⁸ Realtek expressly has abandoned theories of domestic industry based upon subparagraphs (a)(3)(A) and (a)(3)(B). Comp. Rev. Br. 65.

must be directed to exploitation of the '928 patent, or to articles protected by the '928 patent.”

Order No. 34 at 20 n.9.

The facts most pertinent to Commission review are not disputed, and are set forth in the ID. The ID found in relevant part as follows. Realtek’s U.S. research and development operations are conducted through a subsidiary, Real Communications, Inc. (“Realcom”). ID at 135. Realcom’s California facility [

] *Id.* at 138. The pertinent research and development was conducted by [] engineers.

Id.

The ID explained that Realtek identified “[] technologies created by the engineers at Realcom that are included in the DI [*i.e.*, domestic industry] chips.” ID at 139. Each of these [] technologies (or “[] IPs” as Realtek calls them) is an electronic structure. *Id.* The [] IPs are: [

] *Id.*

Realtek estimated that its engineers in the United States spent [] of their time on these [] technologies. ID at 140. These technologies, however, are also used in non-DI products. *Id.* at 140 n.29. Realtek attempted to allocate all of its expenses toward these technologies to the DI Chips. *Id.* at 140. The ALJ found that the development of these technologies had been substantially completed by 2008; since then “Realcom’s efforts concerning the []” technologies “appear to be limited to consulting or fine-tuning activities that are not necessarily related to the DI Chips.” *Id.* Realtek contended that its domestic industry investment from 2011 to 2012 was []. *Id.* at 141.

The dispute before the ALJ was substantially legal, rather than factual. Realtek argued that the “substantial investment” referred to in subparagraph (a)(3)(C) “refers to the articles protected by the patent” and that subparagraph (a)(3)(C) “does not require research and development to relate directly to the bond pad claimed in the ’928 patent.” ID at 148 (quoting Comp. Post-Hearing Br. 99-100). The respondents argued that under subparagraph (a)(3)(C), “unlike (A) and (B), domestic activities must relate directly to the patent in issue.” *Id.* at 161 (citing Resp. Post-Hearing Br. 100-01).

The ID interpreted the Federal Circuit’s decisions in *InterDigital* and *Microsoft* to “require rejection” of the respondents’ position. *Id.* Nonetheless, the ID found that “the more closely related the domestic activities are to the patented technology, the greater may be the weight of the activities in determining whether they constitute a domestic industry.” *Id.* at 162. The ID concluded that Realtek’s U.S.-based research and development investment was not substantial in view of the attenuated connection between that investment and the DI articles, and because most of Realtek’s operations are overseas. ID at 163-73. Thus, the ID found that Realtek failed to meet the economic prong of the domestic industry requirement. *Id.* at 178-79.

Realtek and the Respondents each petitioned for review. Realtek argued that the ID impermissibly discriminates against foreign-headquartered companies. Comp. Pet. 49-56; *see also id.* at 68-70. Realtek, however, generally supported the ID’s methodology, *i.e.*, looking to Realtek’s investment in the domestic industry articles, as opposed to investment in the patents.

Realtek argued that its U.S.-based investment in its domestic industry articles was substantial and that the ID erred in concluding otherwise.⁹ Comp. Pet. 61-70.

The Respondents' petition for review argues that a "complainant seeking to establish a domestic industry under" subparagraph (a)(3)(C) "must prove a substantial domestic investment that is directed not only to articles protected by the patent at issue, but also to 'its' (*i.e.*, the patent's) exploitation." Resp. Pet. 11-12. The Respondents further stated that Realtek's "domestic-industry claim fails because the undisputed evidence demonstrated that none of Realtek's research-and-development activities in the United States were directed to the bond-pad technology claimed by the '928 Patent." *Id.* at 12.

The Commission determined to review the ID. The Commission's notice of review sought further briefing from the parties organized around the analysis adopted by the Commission in its opinions, including *Peripheral Devices*, which was not cited by the parties to the ALJ and was not discussed in the ID:

(13) Discuss whether and how Realtek's research and development investment in the United States is investment in the asserted patent's exploitation pursuant to 19 U.S.C. § 1337(a)(3)(C). *See Certain Computers and Computer Peripheral Devices, and Components Thereof, and Products Containing Same*, Inv. No. 337-TA-841, Comm'n Op. 27 (Jan. 9, 2014) ("The Commission has established that the 'its' in 'substantial investment in its exploitation' of subparagraph

⁹ Realtek also challenges certain discovery that the ALJ denied. Realtek Pet. 70-71. Realtek sought discovery from the Respondents about the scope of *their* domestic industry (specifically respondent LSI's domestic industry in *Certain Audiovisual Components and Products Containing the Same* Inv. No. 337-TA-837). Comp. Pet. 70-71. Realtek has not shown that the facts of that investigation or the licensing-based theory of domestic industry there are pertinent to this investigation. The ALJ acted within her authority to deny the discovery sought under Rule 210.27. *See generally* 19 C.F.R. § 210.27(b) (relevant discovery); *id.* § 210.27(d) (4) (limiting proposed discovery when the "burden or expense . . . outweighs its likely benefit").

(a)(3)(C) refers to ‘the patent, copyright, trademark, mask work, or design.’); *InterDigital Commc’ns, LLC v. ITC*, 707 F.3d 1295, 1297 (Fed. Cir. 2013) (“The parties agree that the word ‘its’ in the last clause of paragraph 337(a)(3) refers to the intellectual property at issue.”).

(14) Discuss whether and how Realtek’s domestic-industry research and development in the United States involves or relates to articles protected by the asserted patent pursuant to 19 U.S.C. § 1337(a)(3)(C). *See Microsoft Corp. v. ITC*, 731 F.3d 1354, 1362 (Fed. Cir. 2013) (explaining that a complainant must “provide evidence that its substantial domestic investment—*e.g.*, in research and development—relates to an actual article that practices the patent”).

Notice of Review at 3-4.¹⁰

2. Analysis

Because the ID misinterpreted the text and legislative history of subparagraph (a)(3)(C), as well as recent Federal Circuit caselaw, we vacate the ID’s analysis of the economic prong of domestic industry. In particular, the ID improperly conflated our cases addressing the articles-related focus of subparagraphs (a)(3)(A) and (B) with the showing required for subparagraph (a)(3)(C), which contains different statutory language. Nonetheless, the Commission reaches the same conclusion as the ID, that Realtek did not meet the economic prong of the domestic industry requirement. Our reasoning follows.

¹⁰ In addition, the notice sought clarification whether Realtek was relying upon subparagraphs (a)(3)(A) or (B). Notice of Review at 4 (Q. 16). As noted earlier, in response to the notice, Realtek abandoned theories of domestic industry based upon those subparagraphs. Comp. Rev. Br. 65.

a) Subparagraph (a)(3)(C) Requires that the Domestic Industry Be “With Respect to the Articles Protected by the Patent”

The Commission’s decisions concerning subparagraph (a)(3)(C) can be broken into two categories: those that regard “engineering, research and development” investment;¹¹ and those that regard “licensing” investment.

Prior to *Peripheral Devices*, our practice was “not to require a complainant to demonstrate for purposes of a licensing-based domestic industry the existence of protected articles practicing the asserted patents.” *Peripheral Devices*, Comm’n Op. 27-28. We recognized that although “there may have been protected articles actually practicing the asserted patents in our past investigations, such a showing was not mandatory.” *Id.* at 28.

The Federal Circuit decisions in *InterDigital* and *Microsoft* changed that analysis.¹² *See Peripheral Devices*, Comm’n Op. at 30-36. We found that *InterDigital* held “that there is an express articles requirement for subparagraph (C), in addition to (A) and (B).” *Peripheral Devices*, Comm’n Op. at 32 (citing *InterDigital*, 707 F.3d at 1299). *Microsoft* made this point expressly. *Microsoft Corp. v. ITC*, 731 F.3d 1354, 1362 (Fed. Cir. 2013) (stating that a complainant must “provide evidence that its substantial domestic investment—*e.g.*, in research and development—relates to an actual article that practices the patent”); *see Peripheral Devices*, Comm’n Op. at 35. Although this articles requirement applies to all investments under

¹¹ In this opinion, we will refer to “engineering, [and] research and development” just as “research and development” for syntactic clarity.

¹² Both cases concern whether section 337 requires the existence of articles practicing the asserted patent, *i.e.*, the technical prong of the domestic industry requirement. *See infra* note 15 and accompanying text.

paragraph (a)(3), *id.* at 32, 35-36, *InterDigital* and *Microsoft* like the present investigation concern research and development investment under subparagraph (a)(3)(C)—*Microsoft* entirely, and *InterDigital* in part.

This articles requirement sometimes requires the Commission to determine what the appropriate domestic industry articles are. In cases including *Certain Video Game Systems and Wireless Controllers and Components Thereof*, Inv. No. 337-TA-770 (“*Video Game Systems*”), Comm’n Op. at 66-70 (July 12, 2013) and *Certain Kinesiotherapy Devices and Components Thereof*, Inv. No. 337-TA-823 (“*Kinesiotherapy Devices*”), Comm’n Op. at 33-35 (July 12, 2013), as well as the cases cited in those opinions, the Commission has looked to the “realities of the marketplace” to decide what “article” is protected by the patent. For example, the Commission has looked at whether the article is an entire device or a component thereof, or a downstream product containing the patented component, depending on the facts presented in an investigation as to what articles are allegedly imported.

b) “Investment in Its Exploitation” Refers to the Asserted Patent’s Exploitation

The Commission has long recognized that the “its” in the phrase “investment in *its* exploitation” in subparagraph (C) refers to the asserted patent or other intellectual-property right being asserted.¹³ That conclusion is supported by the clear text of the statute. Paragraph (a)(3)

¹³ *Certain Computers and Computer Peripheral Devices, and Components Thereof, and Products Containing Same*, Inv. No. 337-TA-841, Comm’n Op. 27 (Jan. 9, 2014); *see also, e.g., Certain Microcomputer Memory Controllers, Components Thereof and Products Containing Same*, Inv. No. 337-TA-331, Order No. 6, 1992 WL 811,299, at *4 (Jan. 8, 1992), *not reviewed*, Notice, 57 *Fed. Reg.* 5710 (Feb. 12, 1992); *Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same*, Inv. No. 337-TA-650, Comm’n Op. at 51-54 (Apr. 14,

discusses a domestic industry “with respect to the articles protected by the patent, copyright, trademark, mask work, or design.” 19 U.S.C. § 1337(a)(3). Thus, the reference to the asserted intellectual property right is singular (*i.e.*, “the patent”), and the reference to the articles protected by that right is plural (*i.e.*, “with respect to *the articles*”). Thus, “*its* exploitation” in subparagraph (a)(3)(C) must refer to the patent and not to the articles.

This conclusion is also strongly supported by the legislative history of the 1988 amendments to section 337 that added subparagraph (C). In particular, an earlier version of what became subparagraph (C) expressly cited the intellectual property right: “substantial investment in exploitation of the intellectual property right, including engineering, research and development, or licensing.” H.R. Rep. No. 100-576 at 634 (Apr. 20, 1988) (Conference Report for H.R. 3, “Omnibus Trade and Competitiveness Act of 1988”).¹⁴ Recent Federal Circuit caselaw does not purport to upset this interpretation of section 337. *InterDigital Commc'ns, LLC v. ITC*, 707 F.3d 1295, 1297 (Fed. Cir. 2013) (“The parties agree that the word ‘its’ in the last clause of paragraph 337(a)(3) refers to the intellectual property at issue.”).¹⁵

2010); *Certain Multimedia Display and Navigation Devices and Systems, Components Thereof, and Products Containing the Same*, Inv. No. 337-TA-694, Comm’n Op. 13 (Aug. 8, 2011).

¹⁴ While a different bill was enacted in 1988, it adopted the legislative history cited in the text, *supra*. Pub. L. 100-418 § 2 (H.R. 4848) (Aug. 23, 1988) (“the legislative history of a . . . provision of the conference report to accompany H.R. 3 of the 100th Congress (H. Rept. 100-576) shall be treated (along with any other legislative history developed by reason of this Act) as being the legislative history of the [corresponding] provision of this Act”).

¹⁵ The Federal Circuit decision in *Microsoft* is consonant with *InterDigital*. *Microsoft* interpreted the language “with respect to the articles protected by the patent,” 19 U.S.C. § 1337(a)(3). *See Microsoft*, 731 F.3d 1361-62. There was “no question about the substantiality of [complainant] Microsoft’s investment in its operating system or about the importance of that operating system

To meet this requirement of “its exploitation,” the Commission requires that the complainant establish a nexus between the asserted patent and the U.S. investment in its exploitation. See *Certain Multimedia Display and Navigation Devices and Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-694, Comm’n Op., at 7-13 (revised public version) (“*Navigation Devices*”) (collecting cases). *Navigation Devices* involved licensing, and accordingly, most of the decisions cited in *Navigation Devices* involved licensing. Neither the instant opinion nor any other Commission opinion post-*Navigation Devices* has changed the analysis concerning an adequate nexus for purposes of licensing.

The Commission itself (as opposed to the Commission’s ALJs) has opined infrequently on research and development investments, as opposed to licensing investments. Nonetheless, to the extent that there was any question, under subparagraph (C), the complainant must establish that there is a nexus between the claimed investment and the asserted patent, regardless of whether the domestic-industry showing is based on licensing, engineering, or research and development.¹⁶

to mobile phones on which it runs.” *Id.* at 1361. In that case, Microsoft “simply failed to identify any phones with the required components performing as required.” *Id.* at 1362. Thus, *Microsoft* deals with whether the “articles protected by the patent” requirement was met, whereas here, the issue is whether the additional requirement of subparagraph (a)(3)(C) was met, *i.e.*, whether the claimed R&D investments exploit the asserted patent.

¹⁶ See *Navigation Devices*, Comm’n Op. at 8-9 nn.4-5 (citing *Certain Plastic Encapsulated Integrated Circuits*, Inv. No. 337-TA-315, USITC Pub. 2574, Final Initial Determination at 87 (unreviewed in relevant part) (Nov. 1992) (“*Encapsulated Circuits*”).

Generally, the nexus between the asserted patent and the claimed investments has not been contested in research and development cases.¹⁷ To the extent that the patented technology arises from endeavors in the United States, such a nexus would ordinarily exist. But engineering and research and development investments—particularly engineering and development investments—need not end there. “Exploitation” is a generally broad term that encompasses activities such as efforts to improve, develop, or otherwise take advantage of the asserted patent.

By way of example, in *Certain Integrated Circuits, Processes for Making Same and Products Containing Same*, Inv. No. 337-TA-450 (“*Integrated Circuits*”), the cognizable investment encompassed “activities and investments which assist customers to design integrated circuits that will be made according to the ’345 patented method.” ID at 156 (May 6, 2002), *not reviewed*, Notice (June 21, 2002); *see id.* at 153-55. Similarly, in *Encapsulated Circuits*, Inv. No. 337-TA-315 (“*Encapsulated Circuits*”), the presiding ALJ emphasized the relationship between the research and development and the asserted patent:

The numerous research and development projects undertaken by TI during this time period in support of its exploitation of the ’027 patent are set forth in CX 424. Many of the projects are directly related to the ’027 patent in that they concerned an aspect of the molding process itself Many other projects are also directly related to the exploitation of the ’027 patent because they concerned an aspect of an integrated circuit which is closely related to the molding process

These research and development projects include projects totaling [redacted] relating to equipment for die mounting and wire bonding. . . .

¹⁷ Cases in which the nexus requirement was challenged include *Certain Hybrid Vehicles*, Inv. No. 337-TA-688, Order No. 5, 2010 WL 1138330 at *8 (Feb. 26, 2010) and *Certain Probe Card Assemblies, Components Thereof, and Certain Tested DRAM and NAND Flash Memory Devices and Products Containing Same*, Inv. No. 337-TA-621, ID at 196 (July 20, 2009), *not reviewed*, Notice (Sept. 14, 2009). In both investigations, the complainant was unable to establish a nexus between the asserted patents and the domestic research and development investments.

The patent does not contain any discussion of the techniques of die mounting and wire bonding. . . . However, both of these operations are an integral part of the manufacturing of a semiconductor, and the location of the die and the delicate nature of the wire bonds are both mentioned in the '027 patent's specification. . . . It is difficult in situations such as that presented in this investigation to draw a bright line dividing those projects which exploit the patent at issue from those which do not. Some relate more directly to the patented process, and others seem somewhat indirectly or remotely related. Since there are many processes which could be used in die mounting or wire bonding from manual to highly automated techniques, evidence of research and development into these areas appears rather indirect to the exploitation of the '027 patent. Accordingly, the ALJ has not given the evidence of this [project] as much weight as that regarding other engineering and research projects which are more directly related to the patented claims in determining whether a domestic industry exists.

Encapsulated Circuits, Final ID at 85-86 (Oct. 15, 1991). Accordingly, the ID gave weight to research and development closely related to the asserted patents, and gave less weight to the expenses not closely related. We adopted this reasoning, *Encapsulated Circuits*, Comm'n Op. at 18 (Feb. 1992), and this precedent continues to guide our analysis of the nexus requirement. Indeed, the ALJ here recognized this principle, noting that "the more closely related the domestic activities are to the patented technology, the greater may be the weight of the activities in determining whether they constitute a domestic industry." ID at 162.

The difficulty arises when the complainant points to investment in an article without offering evidence of a nexus between that investment and the patented technology. Commission decisions recognize that the evidence presented in a particular investigation may readily support the inference that the nexus has been met. For example, this nexus may readily be inferred based on evidence that the claimed investment is in the domestic industry article, which itself is the physical embodiment of the asserted patent. In *Certain Cases for Portable Electronic Devices*, Inv. Nos. 337-TA-867 & -861, the complainant's patent dealt with the overall configuration and

structure of a protective cell phone case. *See* U.S. Patent No. 8,204,561 (issued June 19, 2012). Accordingly, the ALJ properly analyzed investment in the domestic-industry articles, which themselves embodied the patented invention. Order No. 15, 2013 WL 5702593 (Sept. 10, 2013), *not reviewed*, Notice (Nov. 5, 2013). Similarly, in *Certain Foam Footwear*, Inv. No. 337-TA-567, the domestic-industry Crocs sandals were the embodiment of the asserted utility and design patents, and attention there turned to investment in the patented articles. Order No. 34 at 7 (Nov. 7, 2006), *not reviewed*, Notice (Nov. 27, 2006). In these investigations, the evidence was sufficient to support the inference that the research and development efforts in these articles are inextricably linked to the asserted patents themselves.

In response to an articles-based showing by a complainant, the Respondents here have asserted that the nexus requirement mandates a patent-by-patent allocation of investment. *See* ID at 159. The Commission recently rejected a patent-by-patent allocation requirement in the licensing context under subparagraph (C). *Certain Semiconductor Chips and Products Containing Same*, Inv. No. 337-TA-753 (“*Semiconductor Chips*”), Comm’n Op. at 49 (July 31, 2012) (finding that “Rambus was not required to provide a precise allocation of its licensing investments on a patent-by-patent basis in this investigation in order to make a sufficient evidentiary showing,” but holding that firmwide licensing expenditures were insufficient given that Rambus licensed a number of patent portfolios not at issue); *id.* (“We are not seeking exact amounts or quantities of investments.”).

Similarly, no patent-by-patent allocation is required for research and development investment under subparagraph (C). First, requiring such an allocation is an unduly narrow interpretation of “exploitation” and risks freezing cognizable investment at the point at which the

patented technology is reduced to practice.¹⁸ Second, most firms have little reason to keep research and development records on a patent-by-patent basis, as opposed to a project-by-project basis (to the extent that project-by-project records are kept). Further, numerous Commission cases have rejected requiring such allocations. *See, e.g., Certain Electronic Imaging Devices*, Inv. No. 337-TA-850, Final ID, 2013 WL 5956227, at *105 (Sept. 30, 2013), *aff'd*, Comm'n Op. 95 (Apr. 21, 2014); *Certain Silicon Microphone Packages and Products Containing Same*, Inv. No. 337-TA-888, Order No. 47 at 9-13 (May 8, 2014), *not reviewed*, Notice (June 9, 2014); *Certain Unified Communications Systems, Products Used with Such Systems, & Components Thereof*, Inv. No. 337-TA-598, Order No. 9, 2007 WL 3071633 at *4 (Sept. 5, 2007), *not reviewed*, Notice (Oct. 23, 2007); *Encapsulated Circuits*, Inv. No. 337-TA-315, ID at 85-86 (Oct. 15, 1991), *aff'd*, Comm'n Op. 18 (Feb. 1992).

Our decisions cited above recognize that a complainant can establish the existence of a domestic industry by showing evidence of its research and development investment in an article that practices a patent, where such evidence supports the inference that the investment exploits the patented invention. Our caselaw demonstrates that a complainant's evidence of its investment in a protected article that practices the patent ordinarily also can support the inference that the investment was itself an exploitation of the patent.

That said, analogous to the ID's discussion, *see* ID at 172-73, there may be circumstances in which the domestic investment is so unrelated to the asserted patent that no nexus can be

¹⁸ Beyond the plain language of the statute, the legislative history of the 1988 amendments to section 337 evidences Congress's intention that subparagraph (a)(3)(C) not be read so narrowly. *See, e.g.,* H.R. Rep. No. 100-40, at 157-58 (1987); S. Rep. No. 100-71, at 129 (1987).

imputed. Respondents may properly challenge the evidence concerning R&D investments presented by a complainant, as they have here, to show that complainant's evidence is insufficient to support an inference of a nexus between the claimed investments and the asserted patent.

As an example of our practice, in *Microlithographic Machines and Components Thereof*, Inv. No. 337-TA-468 ("*Microlithographic Machines*"), the presiding ALJ found:

Whereas it is true that in *Compression Devices, supra*, the Commission determined that in making the "nexus" analysis, "[t]o include activities which are in the same field of technology but which do not have the requisite nexus to the patent would be contrary to the statute," [respondent] ASML provides no basis whatsoever to show that the R&D projects that [complainant] NCRA allocated to the S204, S205 and S305 [domestic industry articles] have no such nexus to the patents at issue.

Final ID, 2003 WL 1831981, at *203-204, 213 (Jan. 29, 2003), *not reviewed*, Notice (Mar. 17, 2003); *see Certain Dynamic Sequential Gradient Compression Devices and Component Parts Thereof*, Inv. No. 337-TA-335, ID at 63 (May 15, 1992), *not reviewed in relevant part*, Notice (June 15, 1992). In *Microlithographic Machines*, the ALJ evaluated and rejected the arguments offered by respondents that the complainant's showing of the nexus was inadequate.

In the cases cited by complainant, Comp. Rev. Br. at 55-56, respondents did not provide an adequate basis to contest the evidence offered by complainants to support the claim that the R&D investments in the articles protected by the patent were an exploitation of the patented technology. Requiring an extensive inquiry as to the adequacy of the nexus when it is not challenged on the merits by respondents would unduly consume the time and resources of the parties and the Commission given the Commission's experience that in most factual situations a patent is exploited in research and development efforts concerning products that practice the

patent. Accordingly, as discussed above, in many cases the nexus between the asserted patent and the domestic investment can be inferred from the complainant's showing of domestic investment in articles that practice the patent.

c) The Requirement of a Nexus Between the Domestic Investment and the Asserted Patent Was Not Met Here

In the present investigation, Order No. 34 directed that the parties develop the record to explain the “relationship between the patented technology employed in the domestic industry products” and Realtek’s U.S. research and development investments. Order No. 34 at 20. The facts are substantially undisputed.

Complainant Realtek relies upon independent claim 1 and dependent claims 2-3 and 6-10 of the '928 patent to show a domestic industry. As recited earlier, Realtek relied upon [] models of its integrated circuit chips for [] for domestic-industry purposes. ID at 180. Each of these chips practices each of the domestic industry patent claims. *See infra* at §VII.B.

The preamble of claim 1 of the '928 patent recites an “integrated circuit (IC) device having a pad structure formed thereon, the IC device comprising.” No one argued in this proceeding that the preamble is limiting.¹⁹ Accordingly, all of the claim limitations in claim 1 relate to a three level structure of an integrated circuit, comprising a substrate (element (a)), an insulation layer (element (b)), and two pad layers formed on the insulation layer (elements (e)

¹⁹ In addition, we find no reason to view the preamble as limiting. *See, e.g., Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (“[A] preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.”) (quotation omitted).

and (f)). The insulation layer has within it a conduction layer and a compound layer structure (elements (c) and (d), respectively). Dependent claims 2-3, 6-7, and 10 provide added detail as to various of these layers.

None of the claim limitations concern structures related to the bond pad claimed in all of the domestic-industry patent claims.²⁰ By contrast, all of Realtek's U.S. investments concern [] structures in certain [] chips that also utilize the patented bond pad. The Respondents properly observed, and we find, that the evidence of record did not disclose any relationship between the [] projects in the United States and the '928 patent. Nor did complainants provide any demonstration in their briefs before the ALJ and the Commission in support of such a relationship, in response to the Respondents' arguments.

Notably, it is undisputed that there has never been any domestic investment in the patented bond-pad technology of the '928 patent. Similarly, it is undisputed that there has never been any domestic investment into connecting the patented bond pad with other structures. For example, there is no evidence of Realtek's domestic research and development modeling the patented bond pads or similar such efforts. Nor did complainants offer any explanation of how the evidence supported an inference that the investments in some way constituted efforts to improve, develop, or otherwise take advantage of the patented technology. Instead, the [] IPs (or [] technologies) that represent Realtek's U.S. investment happen to be used in the

²⁰ Had the domestic-industry claims here included an additional limitation concerning structures connected to the bond pad, our outcome may have been different. *See, e.g., Encapsulated Circuits*, Inv. No. 337-TA-315, ID at 85-86 & Comm'n Op. at 18. An additional limitation enlarging the scope of the claims to cover something more than merely bond pads could enable us to consider exploitation at least as to that additional limitation.

domestic industry [] chips that are otherwise developed abroad. But the [] technologies appear to be extensively used as well in products that lack the patented bond pad, thus negating a possible inference that the R&D was in exploitation of the patented invention as embodied in the DI chips. *See* Resp. Rev. Br. 31. In fact, Realtek’s U.S. employees generally lacked knowledge about the specific products in which their technologies would be incorporated. *See id.*

At the hearing, Realtek’s expert Dr. Gregory Leonard acknowledged the lack of a connection between the ’928 patent and the domestic investments:

Judge Lord: . . . Your testimony does not include, as I understand it, an allocation as between . . . work that was done on the DI products and work that was done on the ’928 patent. Is that correct?

The Witness: Work on the ’928? Yeah, I don’t think so. I think what I was focused on was the amount of R&D effort that was going into the DI products specifically. I understand [the] DI products all practice the ’928 patent, but I don’t think any of the work that Realcom did related to the—specifically to the ’928 patent, although there’s a connection, as I understand it, between the . . . [] technologies, on the one hand, and the bond pad, on the other hand, because they’re both having to do with speeding up the operation of the chips.

So they do work together, but I believe that for the most part, the Realcom employees [*i.e.*, Realtek’s U.S. employees] were working on just those [] technologies.

Tr. 528-29.

Dr. Chia-Liang (Brian) Lin, Vice President of Realtek’s Research and Design Center and the named inventor of the ’928 patent, testified similarly at his deposition, the pertinent portion of which was admitted into evidence here. The testimony reads as follows: “Q. Did your group in the United States ever work on anything related to the bond pad technology that is actually the subject of this investigation? . . . A. No.” RX-277C.0027. The evidence indicates that there is

no connection between the U.S. R&D investment and the '928 patent here other than the fact some “articles protected by the patent” happen to include the [] technologies. This is consistent with Dr. Lin’s direct witness statement, where he testified that what the bond pads and the [] technologies have in common is a goal of faster communications.²¹ CX-316C QQ 151, 158, 170.

With these facts in hand, there are three questions to be answered for a domestic industry based upon research and development under subparagraph (C). First, is the domestic industry “with respect to the articles protected by the patent,” as required by the prefatory language of section 337(a)(3)?²² Second, has it been shown that there is “investment in [the asserted patent’s] exploitation, including engineering, [or] research and development,” as required by section 337(a)(3)(C)?²³ Third, is that “investment in [the asserted patent’s] exploitation,” “substantial,” as required by section 337(a)(3)(C)? We address these three questions in turn.

²¹ While the goal is common, there was no evidence of any interrelationship between the '928 patent’s bond pads and the [] technologies researched in the United States in achieving that goal. A common goal of otherwise unrelated technologies is insufficient to establish a nexus, absent evidence that establishes that the R&D in some way exploits the patent.

²² If a complainant cannot demonstrate the existence of articles protected by the patent, the complainant must instead show a domestic industry “is in the process of being established.” 19 U.S.C. § 1337(a)(2).

²³ *Navigation Devices* spoke of three nexuses concerning investment for licensing under subparagraph (C): (i) nexus to the asserted patents; (ii) nexus to licensing; and (iii) nexus to the United States. *Navigation Devices*, Comm’n Op. at 8-14. That recitation remains accurate for all subparagraph (C) domestic industries, though in a research and development case, we are concerned with nexus to research and development rather than licensing ((ii), immediately above). In the present investigation, there is no dispute that Realtek’s claimed investment occurred in the United States and is related to research and development. What remains from *Navigation Devices*, then, is the nexus to the asserted patents, as discussed in the text herein.

First: We agree with Realtek that the domestic industry it alleged is “with respect to” articles protected by the patent. 19 U.S.C. § 1337(a)(3). Recognizing the realities of the marketplace,²⁴ the articles in commerce here are chips that include the patented bond pad. Realtek’s research and development in the United States unquestionably relates to the domestic industry articles—certain [] chips. We reject the Respondents’ arguments to the contrary. In particular, the Respondents argue that Realtek’s domestic investment relates not only to the chips put forward as domestic industry articles here, but also to other chips. Resp. Rev. Br. 30-31. That fact does not diminish that Realtek’s investment is also with respect to the domestic-industry articles.

For subparagraphs (a)(3)(A) and (B), we would only examine whether Realtek’s “investment in plant and equipment” or “employment of labor or capital” relates to protected articles. This opinion does not change any analysis to be conducted under subparagraphs (a)(3)(A) or (B). As Realtek has expressly abandoned any arguments pertaining to these subparagraphs, we do not address them. For subparagraph (C), however, as discussed above, a domestic industry “with respect to” articles is necessary, but there is an additional requirement that the investment constitutes an exploitation of the asserted patent.

Our *Navigation Devices* decision preceded the Federal Circuit’s decisions in *InterDigital* and *Microsoft*, as well as our decision in *Peripheral Devices*, interpreting those two decisions concerning “articles.” The effect of those two decisions has been recited in the text of this opinion, *supra*, as well as in *Peripheral Devices* itself.

²⁴ See *Video Game Systems*; Comm’n Op. at 66-70; *Certain Digital Set-Top Boxes and Components Thereof*, Inv. No. 337-TA-712, Order No. 33 at 13-16 (Jan. 11, 2011), *aff’d in part*, Notice, 76 *Fed. Reg.* 45616, 45616 (July 29, 2011); *Kinesiotherapy Devices*, Comm’n Op. at 22-23 (July 12, 2013).

Second: We agree with the Respondents that Realtek's evidence does not establish that its investment in the United States is an exploitation of the '928 patent. In its submissions to the Commission, Realtek does not dispute the facts recited earlier, but argues that its showing was sufficient. *See* Comp. Rev. Br. 52; Comp. Reply Rev. Br. 24. In particular, Realtek argues that "the 'substantial investment' referred to in subsection (C) pertains 'to the articles protected by the patent.'" Comp. Rev. Br. 55 (quoting 19 U.S.C. § 1337(a)(3)(C)). We have rejected Realtek's legal argument as inconsistent with the language of section 337.

Realtek argues, to the same effect, that research and development of features incorporated into articles that also practice the '928 patent should constitute an "exploitation" of the '928 patent. Comp. Rev. Br. 52-55. As a matter of statutory construction, an investment in the article is not automatically an investment in the asserted patent. Were it so, it would impermissibly read out of subparagraph (a)(3)(C) the "its."

Realtek cites past initial determinations with language that could be read to support its argument. *See* Comp. Rev. Br. 55-56. But in none of the cited cases did the Respondents sufficiently challenge the evidence to point out the disconnect between the investment in the asserted patent and the investment in other aspects of the protected article. We view such cases as standing for no more than the proposition that we have already identified: that evidence of investment in the patented article may be such as to support an inference that the investment also exploits the patent. To the extent language in any other Commission decision has suggested the contrary, the Commission's reasoning and support set forth herein governs.

As discussed earlier, in showing the nexus between the protected articles and the '928 patent, a qualitative discussion of the relationship between the patented bond pad and the

domestic investment can suffice; we are not seeking precise numerical allocation. However, in response to the Respondents' persuasive demonstration that Realtek's domestic investment is unrelated to the '928 patent, Realtek offered little in return to shoulder its burden to establish the nexus requirement. Realtek argues, for example, that when the "[] IPs are implemented into the DI Products, they work with the '928 patented technology to create a faster and more reliable [] chip." Comp. Rev. Br. 57; *see* CX-314C at QQ. 83, 91, 123 (Leonard Witness Statement); CX-315C at QQ. 24-27 (Leon Lin Witness Statement); CX-316C at QQ. 136-170 (Brian Lin Witness Statement). That is like saying that an automobile with an improved engine (developed in the United States) and patented tires (developed overseas) results in a "faster" car. But there has to be an explanation why engine-related investment should be credited to the patent for the tires. Here, there is no evidence of any research and development in the United States integrating the '928 patent technology into Realtek products. Similarly, there is no evidence of Realtek engineers in the United States possessing, modeling, or otherwise taking advantage of the '928 patented technology as part of their research and development endeavor. Rather, all or substantially all of the effort to connect the '928 bond pad to the U.S.-researched structures occurred overseas. ID at 139; CX-314C at Q. 53; CX-316C at Q. 140. What we are left with is that one goal of the '928 patent is faster communication,²⁵ and that Realtek's U.S. research is directed to achievement of the same goal in other unrelated manners. Accordingly, we find that Realtek did not demonstrate an investment in the United States of the '928 patent's exploitation.

²⁵ The '928 patent also teaches other goals of the invention. *See, e.g.*, '928 patent col. 2 lines 17-20 ("[W]e know that the prior arts . . . are unable to propose an effective solution that aims for the high frequency, low noise and bonding adherence.").

Third: Had a nexus between the domestic industry articles and the '928 patent been shown, we next would have had to consider whether Realtek's domestic investment is "substantial" as required by section 337(a)(3)(C). Because we have found that there is no nexus, we need not reach whether Realtek's domestic investment would have been substantial. Accordingly, we also do not decide whether, as Realtek contends, certain passages of the ID impermissibly make it more difficult for Realtek, as a foreign firm, to obtain relief at the Commission. As discussed earlier, we have vacated the ID's analysis of the economic prong. Whether the complainant is foreign or domestic does not affect the availability of relief at the Commission provided that sufficient qualifying domestic industry investments are made and the other statutory requirements are established.²⁶

For the foregoing reasons, we find that Realtek did not meet the economic prong of the domestic industry requirement in this investigation.

B. Technical Prong

The ALJ found that the DI chips practice claims 1-3 and 6-10 but that no domestic industry exists because the DI practice invalid claims. ID at 185-86. With respect to claim 1-3 and 6-9, the parties agree that modification of the construction of the "lower electric-conduction layer" will not have any impact on the ALJ's technical prong findings as to these claims. *See*

²⁶ To the extent that the ID interpreted the legislative history of the 1988 amendments to section 337 to expand relief at the Commission only as to universities and small businesses, ID at 135, 164, the ID overstates the effect of the legislative history. Such entities are certainly among the class of patent holders that may have benefitted from expansion of domestic industry in the 1988 amendments, but the plain language of the statute is not so limiting.

e.g., Comp. Rev. Br. at 49-50; Resp. Rev. Br. at 6. The Commission affirms the ALJ's findings that the DI chips practice claims 1-3 and 6-9, but finds that the technical prong is met.²⁷

In light of the Commission's modification of the ALJ's interpretation of the wherein clause of claim 10, the Commission modifies the ALJ's findings that the DI chips practice claim 10. Dr. Walker testified that the lower electric-conduction layer reduces noise by [] and that is a significant improvement in noise reduction. *See e.g.*, CX-313C, QQ. 259-260. Respondents have not challenged this testimony. Accordingly, the Commission finds that the lower electric-conduction layer of the DI chips results in a significant reduction in noise and thereby, practice claim 10 and satisfy the technical prong requirement.

VIII. CONCLUSION

For the forgoing reasons, the Commission finds that no violation of section 337 has occurred.

By order of the Commission.



Lisa R. Barton
Secretary to the Commission

Issued: August 22, 2014

²⁷ The Commission notes that the correct finding when the DI products practice only invalid claims is that there is no violation of section 337, not that there is no domestic industry. *See e.g.*, *Certain Audiovisual Components and Products Containing the Same*, Inv. 337-TA-837, Comm'n Op. at 33 (March 10, 2014).

**CERTAIN INTEGRATED CIRCUIT CHIPS AND PRODUCTS 337-TA-859
CONTAINING THE SAME**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **COMMISSION OPINION** has been served upon the following parties as indicated, on **8/22/2014**.



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

On Behalf of Complainant Realtek Semiconductor Corporation:

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of

**CERTAIN INTEGRATED CIRCUIT
CHIPS AND PRODUCTS CONTAINING
THE SAME**

Investigation No. 337-TA-859

**NOTICE OF THE COMMISSION'S DETERMINATION TO REVIEW IN PART THE
FINAL INITIAL DETERMINATION; REQUEST FOR SUBMISSIONS**

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to review in part the final initial determination ("ID") issued by the presiding administrative law judge ("ALJ") on March 21, 2014, finding no violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in this investigation.

FOR FURTHER INFORMATION CONTACT: Amanda Pitcher Fisherow, Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2737. 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 October 23, 2012, based on a complaint filed by Realtek Semiconductor Corporation ("Realtek") of Hsinchu, Taiwan alleging violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337), as amended, by reason of infringement of certain claims of U.S. Patent Nos. 6,787,928 ("the '928 patent") and 6,963,226 ("the '226 patent"). 77 *Fed. Reg.* 64826. The notice of investigation named as respondents LSI Corporation of Milpitas, California; and Seagate Technology of Cupertino, California (collectively "Respondents"). The '226 patent was terminated from the investigation.

On March 21, 2014, the ALJ issued the subject final ID finding no violation of section 337. The ALJ held that no violation occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain integrated circuit chips and products containing the same that infringe one or more of claims 1-10 of the '928 patent. Although the ALJ found that the asserted claims were infringed, the ALJ held claims 1-10 of the '928 patent invalid and found that no domestic industry exists.

The final ID also included the ALJ's recommended determination on remedy. The ALJ recommended that if the Commission finds a violation, that the Commission issue a limited exclusion order that includes a six month waiting period to permit only Respondent Seagate to replace the accused chips with non-infringing chips. *Id.* The ALJ further recommended that Realtek be required to submit quarterly reports certifying that it continues to maintain a domestic industry with respect to the domestic industry products and to specify the nature of the activities that constitute the domestic industry. The ALJ also recommend that the Commission not issue cease and desist orders. Further, the ALJ recommended that the Commission set a zero bond.

On April 4, 2014, Realtek filed a petition for review and on April 7, 2014 Respondents filed a contingent petition for review. The parties timely responded to each other's petitions for review. The Commission has determined to review the ID with the exception of the following: (1) construction of the term "second pad layer," (2) findings on jurisdiction, and (3) level of one of ordinary skill in the art.

The parties are requested to brief their positions on the issues under review with reference to the applicable law and the evidentiary record. In connection with its review, the Commission is particularly interested in responses to the following questions:

- (1) Does the evidence of record show that a person of ordinary skill in the art would understand the "lower electric-conduction layer" to be composed of a single layer or that it could be composed of one or more layers? Does the evidence of record (*e.g.*, intrinsic evidence, expert testimony, etc.) preclude the "lower electric-conduction layer" from being composed of more than one planar layer? Please also cite and/or discuss any relevant case law.
- (2) If the "lower electric-conduction layer" may be composed of more than a single planar layer, what impact would that have, if any, on the ALJ's invalidity findings?
- (3) If the "lower electric-conduction layer" may be composed of more than a single planar layer, do the accused products infringe the asserted claims?
- (4) If the "lower electric-conduction layer" may be composed of more than a single planar layer, what impact would that have, if any, on the ALJ's domestic industry findings?
- (5) Discuss whether Realtek waived its argument that the term "wherein a noise from the substrate is kept away from the first pad layer by the lower

electric-conduction layer” should be construed to require a significant or substantial reduction of noise.

(6) In light of the specification’s stated goals, what would a person of ordinary skill in the art understand as the amount of reduction in noise required by the wherein clause of claim 10? *See e.g.*, ’928 patent at 1:7-14, 2:20-26, 29-34. Please provide citations to the evidentiary record and discuss relevant case law pertaining to this issue.

(7) Is the limitation “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” of claim 10 indefinite? Would one of ordinary skill in the art understand the scope of the limitation, and if so what is that scope? Please cite to record evidence.

(8) If the “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” limitation requires significant or substantial reduction of noise, is claim 10 invalid?

(9) If the “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” limitation of claim 10 requires a significant or substantial reduction of noise, do the accused products infringe claim 10?

(10) If the “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” limitation of claim 10 requires significant or substantial reduction of noise, do the domestic industry products practice claim 10?

(11) Discuss whether or not the evidence of record shows the metal layers 53 and 54 of the Ker application are “necessarily” coupled to a “second pad layer” that provides a bonding zone to an external power source or potential. Please cite record evidence to support your position.

(12) Discuss whether there is clear and convincing evidence that the metal layer 53 of the Ker application is not coupled to the bond pad.

(13) Discuss whether and how Realtek’s research and development investment in the United States is investment in the asserted patent’s exploitation pursuant to 19 U.S.C. § 1337(a)(3)(C). *See Certain Computers and Computer Peripheral Devices, and Components Thereof, and Products Containing Same*, Inv. No. 337-TA-841, Comm’n Op. 27 (Jan. 9, 2014) (“The Commission has established that the ‘its’ in ‘substantial investment in its exploitation’ of subparagraph (a)(3)(C) refers to ‘the patent, copyright, trademark, mask work, or design.’”); *InterDigital Commc’ns, LLC v. ITC*, 707 F.3d 1295, 1297 (Fed. Cir. 2013) (“The parties agree that the word ‘its’ in the last clause of paragraph 337(a)(3) refers to the intellectual property at issue.”).

(14) Discuss whether and how Realtek's domestic-industry research and development in the United States involves or relates to articles protected by the asserted patent pursuant to 19 U.S.C. § 1337(a)(3)(C). See *Microsoft Corp. v. ITC*, 731 F.3d 1354, 1362 (Fed. Cir. 2013) (explaining that a complainant must "provide evidence that its substantial domestic investment—*e.g.*, in research and development—relates to an actual article that practices the patent").

(15) If Realtek has demonstrated investment in the United States in exploitation of the asserted patent pursuant to 19 U.S.C. § 1337(a)(3)(C), identify each investment specifically and explain why the investments, as a whole, are substantial.

(16) Discuss whether Realtek presented and preserved theories of domestic industry based upon 19 U.S.C. § 1337(a)(3)(A) or (a)(3)(B), and if so, whether Realtek demonstrated the existence of a domestic industry on those bases.

(17) Please comment on whether a six month delay in enforcing a limited exclusion order against Seagate is or is not appropriate.

In connection with the final disposition of this investigation, the Commission may (1) issue an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) issue one or more cease and desist orders that could result in the respondent(s) being required to cease and desist from engaging in unfair acts in the importation and sale of such articles. Accordingly, the Commission is interested in receiving written submissions that address the form of remedy, if any, that should be ordered. When the Commission contemplates some form of remedy, it must consider the effects of that remedy upon the public interest. The factors the Commission will consider include the effect that an exclusion order and/or cease and desist orders would have on (1) the public health and welfare, (2) competitive conditions in the U.S. economy, (3) U.S. production of articles that are like or directly competitive with those that are subject to investigation, and (4) U.S. consumers. The Commission is therefore interested in receiving written submissions that address the aforementioned public interest factors in the context of this investigation.

If a party seeks exclusion of an article from entry into the United States for purposes other than entry for consumption, the party should so indicate and provide information establishing that activities involving other types of entry either are adversely affecting it or likely to do so. For background, see *Certain Devices for Connecting Computers via Telephone Lines*, Inv. No. 337-TA-360, USITC Pub. No. 2843 (December 1994) (Commission Opinion).

If the Commission orders some form of remedy, the U.S. Trade Representative, as delegated by the President, has 60 days to approve or disapprove the Commission's action. See Presidential Memorandum of July 21, 2005, 70 *Fed. Reg.* 43251 (July 26, 2005). During this period, the subject articles would be entitled to enter the United States under bond, in an amount determined by the Commission and prescribed by the Secretary of the Treasury. The

Commission is therefore interested in receiving submissions concerning the amount of the bond that should be imposed if a remedy is ordered.

WRITTEN SUBMISSIONS: The parties to the investigation are requested to file written submissions on the issues identified in this notice. Parties to the investigation, interested government agencies, and any other interested persons are encouraged to file written submissions on the issues of remedy, the public interest, and bonding, as well as respond to the questions posed herein relating to remedy and the public interest. Such submissions should address the recommended determination by the ALJ on remedy and bonding. Complainant is also requested to submit proposed remedial orders for the Commission's consideration.

Complainant is also requested to state the date that the '928 patent expires and the HTSUS numbers under which the accused products are imported. The written submissions and proposed remedial orders must be filed no later than close of business on Thursday, June 5, 2014. Reply submissions must be filed no later than the close of business on Monday, June 16, 2014. No further submissions on these issues will be permitted unless otherwise ordered by the Commission. The page limit for the parties' initial submissions on the questions posed by the Commission is 75 pages. The parties reply submissions, if any, are limited to 35 pages.

Persons filing written submissions must file the original document electronically on or before the deadlines stated above and submit 8 true paper copies to the Office of the Secretary by noon the next day pursuant to section 210.4(f) of the Commission's Rules of Practice and Procedure (19 C.F.R. 210.4(f)). Submissions should refer to the investigation number ("Inv. No. 337-TA-859") in a prominent place on the cover page and/or the first page. (*See Handbook for Electronic Filing Procedures, http://www.usitc.gov/secretary/fed_reg_notices/rules/handbook_on_electronic_filing.pdf*). Persons with questions regarding filing should contact the Secretary (202-205-2000).

Any person desiring to submit a document to the Commission in confidence must request confidential treatment. All such requests should be directed to the Secretary to the Commission and must include a full statement of the reasons why the Commission should grant such treatment. *See* 19 C.F.R. § 201.6. Documents for which confidential treatment by the Commission is properly sought will be treated accordingly. A redacted non-confidential version of the document must also be filed simultaneously with the any confidential filing. All non-confidential written submissions will be available for public inspection at the Office of the Secretary and on EDIS.

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 Part 210 of the Commission's Rules of Practice and Procedure (19 C.F.R. Part 210).

By order of the Commission.

A handwritten signature in black ink, appearing to read 'Lisa R. Barton', written in a cursive style.

Lisa R. Barton
Secretary to the Commission

Issued: May 22, 2014

**CERTAIN INTEGRATED CIRCUIT CHIPS AND PRODUCTS 337-TA-859
CONTAINING THE SAME**

CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **COMMISSION NOTICE** has been served upon the following parties as indicated, on **May 22, 2014**



Lisa R. Barton, Secretary
U.S. International Trade Commission
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 Other: _____

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of

**CERTAIN INTEGRATED CIRCUIT
CHIPS AND PRODUCTS CONTAINING
THE SAME**

Inv. No. 337-TA-859

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

Administrative Law Judge Dee Lord

(March 21, 2014)

Appearances:

For Complainant Realtek Semiconductor Corporation:

Steven S. Baik, Esq. of Reed Smith LLP, Palo Alto, California

Gerard M. Donovan, Esq. of Reed Smith LLP, Washington, DC

Mark W. Wasserman, Esq. of Reed Smith LLP, Falls Church, Virginia

John W. McCauley, IV, Esq.; Christine Morgan, Esq. of Reed Smith LLP, San Francisco, California

For Respondents LSI Corporation and Seagate Technology:

Bruce S. Sostek, Esq.; Jane Politz Brandt, Esq.; Max Ciccarelli, Esq.; Herbert J. Hammond, Esq.; Richard L. Wynne, Jr., Esq.; Timothy E. Hudson, Esq.; Vishal Patel, Esq.; Michael E. Schonberg, Esq.; Michael Heinlen, Esq. of Thompson & Knight LLP, Dallas, Texas

David F. Nickel, Esq. of Foster, Murphy, Altman & Nickel, Washington, DC

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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 Integrated Circuit Chips and Products Containing the Same, Investigation No. 337-TA-859.

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 sale for importation, the importation into the United States, and sale after importation into the United States of certain integrated chips and products containing same, in connection with U.S. Patent No. 6,787,928. Furthermore, the Administrative Law Judge hereby determines that a domestic industry in the United States does not exist that practices U.S. Patent No. 6,787,928.

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The following abbreviations may be used in this Initial Determination:

CPX	Complainant's physical exhibit
CDX	Complainant's demonstrative exhibit
CX	Complainant's exhibit
CIB	Complainant's initial post-hearing brief
CRB	Complainant's reply post-hearing brief
RPX	Respondents' physical exhibit
RDX	Respondents' demonstrative exhibit
RX	Respondents' exhibit
RIB	Respondents' initial post-hearing brief
RRB	Respondents' reply post-hearing brief
JCCC	Joint Claim Construction Chart
JSCI	Joint Stipulation of Contested Issues
JX	Joint Exhibit
Tr. at	Transcript
CPHB	Complainant's pre-hearing brief
RPHB	Respondents' pre-hearing brief

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I. BACKGROUND

A. Procedural History

On October 18, 2012, 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 integrated circuit chips and products containing the same that infringe one or more of claims 1-22 of [U.S. Patent No. 6,787,928] and claims 1-22 of [U.S. Patent No. 6,963,226]; 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 October 23, 2012. See 77 Fed. Reg. 64826-27 (2012); 19 C.F.R. § 210.10(b).

The complainant is Realtek Semiconductor Corporation (“Realtek” or “Complainant”), 2 Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan. The respondents are LSI Corporation, 1621 Barber Lane, Milpitas, CA 95305 and Seagate Technology, 10200 S. DeAnza Boulevard, Cupertino, CA 95014. The Commission Investigative Staff of the Office of Unfair Import Investigations (“Staff”) is not a party in this Investigation.

On January 30, 2013, Order No. 12 issued, granting Complainant’s motion to terminate all asserted claims of the ‘226 patent from the Investigation.

On March 1, 2013, Order No. 15 issued and compelled Complainant to provide certain discovery regarding the research and development of the asserted domestic industry products, regardless of where it occurred.

On May 9, 2013, Order No. 19 issued, granting Respondents’ motion to strike

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Complainant's untimely supplemental interrogatory response, barring Complainant from asserting that conception and reduction to practice of the asserted claims occurred any earlier than February 26, 2003, the date that was provided in its February 19, 2013 contention interrogatory response.

On July 17, 2013, Order No. 22 issued, denying Respondents' motion for summary determination that Complainant lacked a domestic industry related to the '928 patent.

On July 17, 2013, Order No. 23 issued, striking certain opinions of Complainant's expert, Dr. Leonard, that discussed a comparison of domestic and overall spending on research and development related to the asserted domestic industry products.

On September 26, 2013, Order No. 26 issued, extending the target date for the investigation to June 4, 2014.

On October 30, 2013, Order No. 30 issued and granted a motion for reconsideration of Order No. 22.

On November 12, 2013, Order No. 31 issued, extending the target date for the Investigation to July 17, 2014.

On December 6, 2013, Order No. 34 issued and affirmed the denial, from Order No. 22, of Respondents' motion for summary determination on domestic industry, and rescinded the portions of Order No. 23 striking Dr. Leonard's opinions.

On January 17, 2014, Order No. 37 issued and denied the parties' joint motion to terminate claims 11-22 of the '928 patent from the investigation, noting that any arguments regarding these claims likely were waived because they were not raised in pre-hearing briefs.

On March 18, 2014, Order No. 40 issued, extending the target date for this Investigation

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to July 21, 2014.

An evidentiary hearing in this investigation was held on January 13 through 16, 2014.

B. The Private Parties

1. Realtek Semiconductor Corporation

Realtek is a corporation organized and existing under the laws of Taiwan, having its principal place of business at No. 2 Innovation Road II, Hsinchu Science Park, Hsinchu, 300, Taiwan. (Complaint at ¶ 9.) Realtek has a United States subsidiary, Real Communications, Inc., located in San Jose, California. (Complaint at ¶¶ 10, 88.)

2. LSI Corporation

LSI is a corporation organized and existing under the laws of the state of Delaware with its principal place of business in Milpitas, California. (Complaint at ¶ 14; LSI Resp. to Complaint at ¶ 14.)

3. Seagate Technology

Seagate is a corporation organized and existing under the laws of Ireland with its principal place of business in Cupertino, California. (Complaint at ¶ 15; Seagate Resp. to Complaint at ¶ 15.)

C. Overview Of The Patent At Issue

1. Ownership

The '928 patent is assigned to Realtek. (JX-0004C at 4.)

2. Overview of the '928 Patent

U.S. Patent No. 6,787,928 (“the ‘928 patent”) is entitled “Integrated Circuit Device Having Pads Structure Formed Thereon and Method for Forming the Same.” (JX-0001.) It lists

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Ying-Hsi Lin as the inventor. (*Id.*) It was filed on April 30, 2003 and issued on September 7, 2004 and claims a foreign application priority date of February 26, 2003. (*Id.*) The Abstract of the '928 patent states:

The invention is to provide a structure of IC pad and its forming method. The structure is arranged in an insulation layer and is comprised of a lower electric-conduction layer, a compound layer structure and a pad layer. The lower electric-conduction layer is arranged at an appropriate position in the insulation layer and is connected to an electric potential. The compound layer structure is arranged on the insulation layer and is composed of at least one electric-conduction layer and at least one electric-conduction connecting layer, both are inter-overlapped to each other. The pad layer is arranged on the compound layer structure.

(JX-0001 at Abstract.)

D. Products At Issue

Complainant accuses LSI's { } chips and Seagate products containing LSI's { } chips of infringement. (*See* CIB at 9-11.) Specifically, Complainant accuses { },

and the following LSI { } Chips and Seagate products:

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(*Id.*)

II. JURISDICTION

A. Subject Matter Jurisdiction

Complainant's Position: Complainant argues that the Commission has subject matter jurisdiction over this Investigation. Complainant says that its complaint is based upon Respondents' unlawful and unauthorized importation and/or sale for importation into the United States, and/or sale within the United States after importation, of the Accused Products. Complainant says it has standing because it has established ownership of the '928 patent. Complainant says that jurisdiction is assumed under section 337. (CIB at 12 (citing *Amgen, Inc. v. Int'l Trade Comm'n*, 902 F.2d 1532, 1536 (Fed. Cir. 1990)).)

Respondents' Position: Respondents say that section 337 empowers the Commission to hear and decide actions alleging a violation of section 337. (RIB at 9 (citing *Certain Steel Rod Treating Apparatus and Components Thereof*, Inv. No. 337-TA-97, Comm'n Mem. Op., 215 U.S.P.Q. 229, 231 (1981)).)

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Analysis and Conclusions: The complaint alleges that Respondents have violated subsection 337(a)(1)(B) by the importation and sale of products that infringe the '928 patent. With the exception of a single product, I find in Section II.C, *infra*, that Respondents import into the United States, sell for importation, or sell within the United States after importation, products that Complainant has accused of infringement in this Investigation. 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. Int'l Trade Comm'n*, 902 F.2d at 1536.

B. Personal Jurisdiction

Complainant's Position: Complainant says that Respondents have responded to the Complaint in this Investigation, appeared through counsel, participated in discovery, and participated in the hearing of this matter and argues that Respondents' participation in this Investigation establishes jurisdiction.

Respondents' Position: Respondents say that they have answered the Complaint and participated in the Investigation.

Analysis and Conclusions: Respondents each responded to the complaint and Notice of Investigation, participated in the Investigation, made an appearance at the hearing, and submitted joint post-hearing briefs. Thus, I find that Respondents 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

Complainant's Position: Complainant argues that the Commission has in rem jurisdiction over the Accused Products that Respondents have imported, sold for importation, or

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sold after importation in the United States. (CIB at 12 (citing 19 U.S.C. § 1337(a)(1)(B)(i)).)

Complainant avers that Respondents have stipulated that they import the accused products. (See CIB at 1, 130-131.)

Respondents' Position: Respondents say that Complainant states in its Post-Trial Brief that it is accusing { } of infringing claims 1–10 of the '928 Patent. (RRB at 48 (citing CIB at 11).) Respondents aver that Complainant has not presented evidence that the { } were imported into the United States; rather, although LSI stipulated that certain { } were imported, it did not stipulate that the { } were imported. Respondents argue that Complainant has failed to meet its threshold burden to show importation into the United States under 19 U.S.C. § 1337 of { }.

Analysis and Conclusions: On July 10, 2013, Respondents filed stipulations regarding importation. LSI's stipulation provides, in pertinent part, that "LSI has imported, sold for importation, and/or sold after importation into the United States" products that contain the:

{

•
}

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(LSI Stipulation Regarding Importation at 1 (July 10, 2013).) The stipulation continues that “[w]ithin the meaning of 19 U.S.C. § 1337(a)(1)(B), products containing the {
} have been imported into the United States, sold for importation, and/or sold within the United States after importation by or on behalf of Respondent LSI.” (*Id.*) The Stipulation adds that “Realtek has therefore met the importation requirements of 19 U.S.C. § 1337(a)(1)(B) for the purposes of this investigation as to Respondent LSI for products containing the {

} (*Id.* at 2.)

Similarly, Seagate’s stipulation provides, in pertinent part, that “Seagate has imported, sold for importation, and or sold after importation into the United States the following downstream product lines that incorporate {

{

•

}

(Seagate Stipulation Regarding Importation at 1 (July 10, 2013).) The Stipulation continues that “Seagate has imported, sold for importation, and/or sold after importation into the United States the following downstream product lines that incorporate {

{

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}

(*Id.*) The stipulation continues that “[w]ithin the meaning of 19 U.S.C. § 1337(a)(1)(B), the above named products containing the { } have been imported into the United States, sold for importation, and/or sold within the United States after importation by or on behalf of Respondent Seagate.” (*Id.*) The stipulation adds that “Realtek has therefore met the importation requirements of 19 U.S.C. § 1337(a)(1)(B) for the purposes of this investigation as to Respondent Seagate for products containing { } (*Id.* at 2.) Both stipulations note that upon execution of the stipulations, Complainant will withdraw its motion for summary determination on importation (Motion Docket No. 859-033). (*Id.* at 2; LSI Stipulation Regarding Importation at 2 (July 10, 2013).)

These stipulations cover all accused products except for LSI’s { } Complainant cites no evidence in their briefs other than the stipulations. Further, the withdrawn motion for summary determination on importation does not address { } (See Statement of Material Facts in Support of Motion Docket No. 859-033 at ¶¶ 2, 10, 12.) Based upon the foregoing, the Commission has *in rem* jurisdiction over the accused products with the exception of LSI’s { } See *Sealed Air Corp. v. United States Int’l Trade Comm’n*, 645 F.2d 976, 985 (C.C.P.A. 1981). Because Complainant has failed to establish importation, sale for importation, or sale after importation of LSI’s {

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,) there is no in rem jurisdiction over these products.¹

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 977. “[T]he 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) (alterations in original). “[O]nly those [claim] terms need be construed that are in controversy, and only to the extent necessary to resolve the 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.

¹ Although there is no in rem jurisdiction over these products because there is no evidence of importation, infringement of these products is addressed below for completeness.

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“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. “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.* “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. For example, “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.” *Phillips*, 415 F.3d at 1316. The specification also “may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor.” *Id.* In such cases, “the inventor has dictated the correct claim scope, and the inventor’s intention, as expressed in the specification, is regarded as dispositive.” *Id.*

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

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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. “[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).

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 occurred.” *Warner-Lambert Co. v. Teva Pharm. USA, Inc.*, 418 F.3d 1326, 1341 n.15 (Fed. Cir. 2005).

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B. The '928 Patent

1. Person of Ordinary Skill in the Art

Complainant's Position: Complainant argues that a person of ordinary skill in the art of the '928 patent would have a bachelor of science degree in electrical engineering or equivalent and at least five years of experience in the integrated circuit industry or its equivalent. (CIB at 9 (citing CX-0313C at Qs. 87-88).) Complainant contends that Respondents generally agree with Complainant's proposed level of skill. However, Complainant argues that Respondents' additional requirement that one of ordinary skill in the art of the '928 patent also possess experience in process engineering is improper because the claims of the '928 patent are not directed to process development.

Respondents' Position: Respondents argue that a person of ordinary skill in the art of the '928 patent would have a bachelor of science degree in electrical engineering or equivalent, such as degrees in material engineering or physics, and five years of industry experience with process engineering development for integrated circuits, including at least two years in the art of multilevel interconnect. (RIB at 10 (citing RX-0246C at Q. 48).) Respondents contend that a person of ordinary skill may possess equivalent experience, such as government or laboratory experience. (*Id.* (citing RX-0246C at Q. 48).)

Analysis and Conclusion: A person of ordinary skill in the art of the '928 patent would have a bachelor of science degree in electrical engineering or equivalent, such as degrees in material engineering or physics, and five years of industry experience with processing engineering development for integrated circuits, including at least two years in the art of multilevel interconnect.

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The '928 patent is directed to an integrated circuit pad structure *and* the method of forming said structure. (JX-0001 at 3:30-34.) The '928 patent states the “lower electric-conduction layer 300 formed at an appropriate position in the insulation layer 500 is coupled with plural electric-conduction layers 202 and plural electric-conduction connecting layers 201.” (*Id.* at 3:39-43.) Further, the '928 patent elaborates that in one embodiment, “each of the electric-conduction layer is interlaced-connected to the corresponding electric-conduction connecting layers . . . such that a signal connection may be provided to a bond-pad electric-connection layer.” (*Id.* at 4:39-44.) Claim 1 recites, *inter alia*, “a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer.” (*Id.* at 5:20-21.) Likewise, claims 19-22 are directed to a method of fabricating an IC device. (*Id.* at 6:27-59.) One of ordinary skill in the art of the '928 patent would have to be familiar with process development in integrated circuits, including multilevel interconnects, to understand how to form the various connected electric-conduction layers and insulation layers recited in the patent. Dr. Gwozdz’s testimony confirms this. (RX-0246C at Q. 48.) Other than conclusory testimony from its expert to the contrary, Complainant cites no support for its argument that requiring experience in process development is “improper.” (CIB at 9 n.1.) Complainant only states that such a requirement is improper because no claims are directed to process development. Even though the claims are not specifically directed to process development, one of ordinary skill in the art would need to have experience with process development to understand the structures (and methods of forming those structures) recited in the '928 patent.

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2. “spaced apart”

Claim term	Complainant’s Proposal	Respondents’ Proposal
“spaced apart”	“physically separated to provide electromagnetic isolation”	Plain and ordinary meaning

Complainant’s Position: Complainant argues that “spaced apart” should be construed to mean “physically separated to provide electromagnetic isolation.” (CIB at 14.) Complainant states that the disclosed objectives of the ‘928 patent are to (1) effectively reduce capacitance and; (2) shield the pad layer from noise by forming the lower electric-conduction layer at an “appropriate position.” (*Id.* at 14-15 (citing JX-0001 at 2:20-26, 2:30-38, 4:36-40).) Complainant states that its proposed construction of “spaced apart” encompasses these identified objectives and is therefore correct. (*Id.* at 14-15.)

Complainant argues that giving this claim term its plain and ordinary meaning would render it meaningless. (*Id.* at 16-17.) Complainant explains that one of ordinary skill in the art would understand that the term “lower” already requires that the lower electric-conduction layer be physically separated from the compound layer structure because metal layers in integrated circuits must necessarily be physically separated. (*Id.* at 16-17.) Complainant argues that “spaced apart” must mean something more than “physically separated” or else it would simply repeat the requirement implied by the term “lower.” (*Id.* at 17.)

Complainant further argues that within the context of the specification, one of ordinary skill in the art would have understood “spaced apart” to require more than minimal physical separation. (*Id.* at 18-19 (citing CX-0043C at 48:6-20, 49:7-50:6).) In other words, Complainant argues that one of ordinary skill in the art would understand that the term “spaced apart” requires

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the lower electric-conduction layer cannot be the metal layer closest to the compound layer structure. (*Id.*)

Respondents' Position: Respondents argue that the term “spaced apart” does not need to be construed and should be given its plain and ordinary meaning. (RIB at 13.) Respondents argue that the term “spaced apart” is not a term of art in the semiconductor industry and is readily understood even by lay persons as meaning “physical separation.” (*Id.* at 13, 14.) Respondents argue that the term does not appear in the specification and therefore the patentee did not act as his own lexicographer. (*Id.* at 18.) Respondents argue that the cited prior art does provide guidance as to the meaning of the term. (*Id.* at 14-15.) Respondents state that the ‘903 patent, cited as prior art in the ‘928 patent, uses the term “spaced apart” simply to indicate physical separation. (*Id.* at 15 (citing RX-0004 at 5:37-40; Tr. at 319:16-320:18).)

Respondents also argue that giving the term “spaced apart” its plain and ordinary meaning will not render the term superfluous as Complainant contends. (*Id.* at 18.) Respondents explain that metal layers can be in direct physical contact in integrated circuits and that the term “lower” in “lower electric-conduction layer” does not already imply physical separation. (*Id.* at 19 (citing Tr. at 307:13-17, 308:3-9, 322:19-323:17, 424:6-427:4).)

Respondents also argue that Complainant’s proposal to require an intervening metal layer between the compound layer structure and lower electric-conduction layer is erroneous. (*Id.* at 20-21.) Respondents explain that claims 8 and 9, which depend from claim 1, contemplate an embodiment of the invention in which there is no intervening metal layer between the compound layer structure and lower electric-conduction layer. (*Id.* (citing JX-0001 at 5:43-45).) Therefore,

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Respondents reason that “spaced apart” in claim 1 cannot be construed to exclude this embodiment.

Respondents also argue that the term “spaced apart” does not require electromagnetic isolation. (*Id.* at 22-23.) Respondents state that claim 19, which was not asserted in this Investigation, requires the compound layer structure to be “spaced apart from and not connected to” the lower electric-conduction layer, whereas claim 1 only requires the compound layer structure to be “spaced apart” from the lower electric-conduction layer. Respondents argue that if the term “spaced part” already required electromagnetic isolation, the phrase “and not connected to” in claim 19 would be redundant and superfluous because electromagnetic isolation is impossible if the two elements are connected. (*Id.* at 24.)

Analysis and Conclusions: The term “spaced apart” will be given its plain and ordinary meaning. The meaning of the term “spaced apart” as understood by one of ordinary skill in the art is readily apparent from the plain language of the claim as requiring nothing more than physical separation. This meaning is supported by the other intrinsic evidence of record. Complainant’s proposed construction improperly imports limitations from the specification and is unsupported by the intrinsic record.

Claim terms are given their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312-13 (citing *Innova*, 381 F.3d at 1116). “In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges and claim construction in such cases involves little more than the application of widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314 (citing *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed.

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Cir. 2001)). The term “spaced apart” is not a technical term and there is no evidence on the record that it is afforded a particular meaning in the art of semiconductors or integrated circuits.² Its meaning is commonly understood by both persons of ordinary skill and lay persons as “physically separated” and the term does not need to be construed.

The intrinsic evidence supports this understanding. The Federal Circuit has made clear that “the claims themselves provide substantial guidance as to the meaning of particular claim terms.” *Phillips*, 415 F.3d at 1314. The doctrine of claim differentiation holds that “the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Phillips*, 415 F.3d at 1315 (citing *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004)). Claim 10 depends from claim 1 and recites “[t]he IC device according to claim 1, wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer.” (JX-0001 at 5:46-48.) Thus, claim 10 adds one limitation – the lower electric-conduction layer keeps noise from the substrate away from the first pad layer – to the device of claim 1. Under the doctrine of claim differentiation, because claim 10 adds the limitation that the lower electric-conduction layer keeps noise from the substrate away from the first pad layer, it is presumed that this limitation is not present in independent claim 1. Thus, there is a presumption that “spaced apart” does not include a limitation requiring electromagnetic isolation.

² Complainant has not provided any evidence that there is a special art-accepted meaning of the term “spaced apart.” Complainant only provides conclusory expert testimony on how the term would be understood in the context of the objectives identified in the ‘928 patent. (*See, e.g.*, CX-0313C at Qs. 113-114; Tr. at 274:17-23.) In fact, the testimony of Complainant’s expert indicates that there is no special art-accepted meaning of the term. (Tr. at 413:6-414:16 (testifying that “spaced apart” is used differently in the prior art ‘903 patent than it is in the ‘928 patent).) Further, Respondents’ expert also testified that “spaced apart” is not a term of art. (RX-0285C at Q. 58.)

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Complainant fails to rebut this presumption or adequately demonstrate why the plain language of the claim should be limited to its proposed construction.³ The specification may limit the plain language of the claims where (1) the patentee acts as his own lexicographer, or (2) there is intent by the patentee to disclaim or disavow the scope of the claim. *Aventis Pharms. Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013); *see also Phillips*, 415 F.3d at 1316. Neither of those exceptions applies here. There is no dispute that the patentee has not acted as his own lexicographer and given a special meaning to the term “spaced apart.” Indeed, the term “spaced apart” does not even appear in the specification of the ‘928 patent. (*See* JX-0001.)

Further, Complainant has not adequately demonstrated intent by the patentee to limit the scope of the claim term in the specification. Complainant identifies three arguments for limiting the scope of the claim term. First, Complainant argues “spaced apart” should be limited only to embodiments of the invention that achieve the objectives identified in the specification. Second, Complainant argues one of ordinary skill in the art would understand “spaced apart” to mean more than minimal separation in the context of the ‘928 patent. Third, Complainant argues that Respondents’ proposed construction renders the term “spaced apart” redundant. None of Complainant’s arguments are persuasive.

a. Objectives of the Invention

Complainant’s argument that “spaced apart” should be construed to encompass only

³ Complainant actually argues in its brief that “spaced apart” requires the “lower electric-conduction layer cannot be the metal layer closest to the first pad layer and the compound layer structure.” (CIB at 18-19.) Complainant and its expert go to great lengths to avoid stating this requirement as an additional limitation, but for all practical purposes, Complainant’s proposed construction includes this additional limitation in their proposed construction. (*See id.*; Tr. 276:21-279:3.) For the same reasons discussed below there is no support for this additional limitation.

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embodiments of the invention that achieve the objectives identified in the specification is factually and legally flawed. Complainant argues that the specification identifies separating noise from the substrate and reducing capacitance as objectives of the '928 patent. (CIB at 14 (citing JX-0001 at 2:20-26, 2:30-38).) Complainant continues that the '928 patent discloses that the lower electric-conduction layer should be formed at an "appropriate position" in the insulation layer so as to provide electromagnetic isolation and reduce capacitance. (*Id.* (citing JX-0001 at 4:36-40; CX-0313C at Q. 113).) Complainant thus concludes that the specification discloses the lower electric-conduction layer must be physically separated to keep noise from the substrate away from the first pad layer and compound layer structure (in order to fulfill the objective of providing electromagnetic isolation) and may not be the metal layer closest to the first pad layer and compound layer structure (fulfilling the objective of reducing capacitance).

Complainant's argument finds no support in the intrinsic evidence.⁴ The specification does not disclose that the lower electric-conduction layer must be physically separated from the first pad layer and compound layer structure by a sufficient distance to fulfill the two identified objectives of the '928 patent. The only discussion in the specification that even tangentially relates to spacing is the disclosure that, in preferred embodiments, the lower electric-conduction layer is formed at an "appropriate position." (JX-0001 at 4:36-40.) However, the specification does not discuss what constitutes an "appropriate position." (*See* JX-0001.) Contrary to Complainant's conclusory and unsupported arguments, there is no indication, much less clear intent in the specification, that the lower electric-conduction layer must be formed at an

⁴ Complainant's expert Dr. Walker testifies that "spaced apart" should be construed to include providing electromagnetic isolation because the '928 patent discloses the first pad layer is electromagnetically shielded from noise coming from the substrate. (CX-0313C at Q. 113.) Such general and conclusory extrinsic evidence is not enough to controvert the plain language of the claim and the other intrinsic evidence of record.

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“appropriate position” as a means of providing electromagnetic isolation or reducing capacitance.

Complainant’s argument also fails because it relies on the false assumption that the patent claims must be limited to embodiments that achieve the objectives. Complainant argues that the term “spaced apart,” rather than being given its plain and ordinary meaning, should be further limited to embodiments that achieve the objectives of providing electromagnetic isolation and reducing capacitance identified in the specification. The task of the court, however, “is not to limit claim language to exclude particular devices because they do not serve a perceived ‘purpose’ of the invention.” *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1370 (Fed. Cir. 2003). The court’s function “is to interpret claims according to their plain language unless the patentee has chosen to be his own lexicographer in the specification or has clearly disclaimed coverage during prosecution.” *Id.* As the Federal Circuit reasoned in *E-Pass*, “an invention may possess a number of advantages or purposes, and there is no requirement that every claim directed to that invention be limited to encompass all of them.” *Id.*; *see also Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1345 (Fed. Cir. 2008); *Kim v. ConAgra Foods, Inc.*, 465 F.3d 1312, 1319 (Fed. Cir. 2006).⁵

The Federal Circuit’s analysis in *Kim* is particularly instructive. In *Kim*, the patent was directed to a substitute for potassium bromate, a slow acting oxidant, in the breadmaking process. At issue was the construction of the term “potassium bromate replacer.” Relying on portions of the specification and prosecution history that indicated an objective of the patent was

⁵Although the Federal Circuit acknowledged that “[w]here claim language is ambiguous, the purpose of the invention . . . may . . . sometimes be useful in resolving the ambiguity,” there is no ambiguity in what “spaced apart” means. *E-Pass*, 343 F.3d at 1370 n.4.

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to produce a slow acting oxidant for use in the breadmaking process, the dissent urged that “slow acting oxidant” should be part of the construction of “potassium bromate replacer.” The majority disagreed, stating that the fact that the patent disclosed the advantages of a slow acting oxidant, as opposed to a regular oxidant, did not mean that all claims were directed to a slow acting oxidant. *Kim*, 465 F.3d at 1319. Moreover, the majority applied the claim differentiation doctrine, noting the fact that a dependent claim specifically included a limitation directed to a slow acting oxidant created a presumption that the independent claim did not include that limitation. *Id.*

As explained above, the meaning of “spaced apart” in the ‘928 patent is readily apparent from the plain language of the claim. (*See supra* Section III.B.2.) The patentee has not acted as his own lexicographer and there is no clear disclaimer or disavowal of scope in the specification. Further, the doctrine of claim differentiation creates a presumption that “providing electromagnetic isolation” is *not* a limitation in claim 1. Under these circumstances, it is not proper to import limitations into the term “spaced apart” based purely on the objectives identified in the specification. Indeed, the fact that the specification discloses objectives of the invention does not mean that every claim must be limited only to embodiments that achieve those objectives. *See Kim*, 465 F.3d at 1319.

Complainant cites *Retractable Techs., Inc. v. Becton, Dickinson and Co.*⁶ to support its argument. (CIB at 14 (citing *Retractable* for the proposition that “claims should be construed in order to capture the scope of the actual invention.”)) Complainant’s reliance on this case is

⁶ 653 F.3d 1296 (Fed. Cir. 2011).

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misplaced. In *Retractable*, the court limited the scope of the claim term “body” to mean a one-piece structure because 1) the specification expressly recited the “invention” had a body constructed of a one-piece structure, 2) the specification expressly distinguished the invention from prior art comprised of multiple structures, and 3) all disclosed embodiments expressly had a one-piece body. 653 F.3d at 1305. In other words, the intrinsic evidence clearly evinced intent by the patentee to limit the term “body” to a one-piece structure. Complainant has failed to demonstrate the same in the case at hand.

b. More than Minimal Separation

Complainant’s argument that one of ordinary skill in the art would understand “spaced apart” to mean more than minimal separation in the context of the ‘928 patent also is flawed. Complainant argues that “spaced apart” requires more than minimal spacing to achieve the objectives of the ‘928 patent. Complainant points to the deposition testimony of Mr. Lakshmanan, LSI’s corporate witness, and Complainant’s expert Dr. Walker, as evidence that one of ordinary skill in the art would have understood “spaced apart” to require that the lower electric-conduction layer not be the layer closest to the first pad layer and the compound layer structure. (CIB at 18-19 (citing CX-0043C at 48:6-20, 49:7-50:6; CX-0313C at Q. 114; Tr. at 283:17-21).) Complainant also points to the trial testimony of Respondents’ expert Dr. Gwozdz, as evidence that increasing the space between the lower electric-conduction layer and the first pad layer and compound layer structure would reduce capacitance.⁷

⁷ Complainant introduced a previously undisclosed demonstrative exhibit, CDX-0053C, at trial during the cross-examination of Dr. Gwozdz. Respondents objected to the admission of the demonstrative exhibits, but did not object to the cross-examination based on the demonstrative. (See Tr. at 638:20-640:20, 671:20-672:3, 718:11-719:23.) At trial, I warned the parties that CDX-0053C would be included in the record, but would not be used as evidence and should not be cited by the parties in their post-hearing briefs as evidence. (Tr. at 860:16-23.)

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“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*, 192 F.3d at 977. As discussed above, Complainant’s argument that “spaced apart” should be construed as limited to the objectives identified in the ‘928 patent has already been rejected. (*See supra* Section III.B.2.a.) The meaning of “spaced apart” is readily apparent from the plain language of the claim and nothing in the specification suggests spacing between the lower electric-conduction layer and the first pad layer and compound layer structure is used to achieve the objectives of providing electromagnetic isolation or reducing capacitance. (*See supra* Section III.B.2.a.) Complainant points only to extrinsic evidence to support its argument that “spaced apart” requires more than minimal spacing. Assuming *arguendo* that the testimonies of Mr. Lakshmanan, Dr. Walker, and Dr. Gwozdz are relevant to whether one of ordinary skill in the art would have understood “spaced apart” to require more than minimal spacing, this extrinsic evidence is clearly at odds with the meaning of “spaced apart” apparent from the plain language of the claim and the intrinsic evidence. For this reason, Complainant’s proposed construction based on this extrinsic evidence is rejected.

c. Superfluous Construction

Complainant’s argument that giving “spaced apart” its plain and ordinary meaning will render the term superfluous is also without merit. Complainant argues that one of ordinary skill in the art would understand the term “lower” in “lower electric-conduction layer” to require the

Accordingly, I have considered the testimony of Dr. Gwozdz concerning the demonstratives as evidence, but the demonstratives themselves are not evidence and have no persuasive value.

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lower electric-conduction layer to be physically separated from the first pad layer and compound layer structure. (CIB at 16-17 (citing CX-0341 at 178:13-179:9; Tr. 277:13-18, 281:1-10).)

Complainant argues that because “lower” already implies “physically separated,” “spaced apart” must mean something more than “physically separated” or else it is superfluous. Complainant’s argument is not persuasive.

The alleged conflict between the terms “lower” and “spaced apart” is entirely of Complainant’s creation. Complainant introduces extrinsic evidence to import limitations into the claim term “lower.” Complainant introduces extrinsic evidence in the form of expert testimony to argue “lower” means “lower and physically separated” rather than its plain and ordinary meaning. (*Id.* at 16-17 (citing CX-0341 at 178:13-179:9.) Nothing in the plain language of the claim or the specification indicates the patentee intended to further limit the meaning of the term “lower” to “lower and physically separated.” Only after arguing that the term “lower” should be given a meaning different from its plain and ordinary meaning, does Complainant argue that “spaced apart” must also be given a meaning different from its plain and ordinary meaning to avoid rendering the term “spaced apart” superfluous as a result of Complainant’s construction for “lower.”

Complainant’s circular argument is in direct conflict with the Federal Circuit’s “heavy presumption that claim terms carry their full ordinary and customary meaning.” *Epistar Corp. v. Int’l Trade Comm’n*, 566 F.3d 1321, 1334 (Fed. Cir. 2009); *see also Elbex Video, Ltd. v. Sensormatic Elecs. Corp.*, 508 F.3d 1366, 1371 (Fed. Cir. 2007); *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). Complainant’s concerns about finding a claim construction that gives meaning to all the terms is easily addressed by applying this “heavy

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presumption” and giving both “spaced apart” and “lower” their plain and ordinary meanings. *See Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (applying the plain and ordinary meaning of the term “about” to avoid rendering other terms of the claim superfluous). The plain language of the claim indicates to one of ordinary skill in the art that the lower electric-conduction layer is both lower and physically separated from the first pad layer and compound layer structure through the use of both the terms “lower” and “spaced apart.”

Based upon the plain language of the claims and the lack of evidence of intent to limit the meaning of “spaced apart” in the specification, Complainant’s limiting construction will be rejected and the term “spaced apart” will be given its plain and ordinary meaning, which merely requires physical separation.

3. “second pad layer”

Claim term	Complainant’s Proposal	Respondents’ Proposal
“second pad layer”	“one or more conductive layers that provide a bonding zone to an external power source or potential”	“second surface for providing an electrical connection between the integrated circuit and the external circuit”

Complainant’s Position: Complainant argues that “second pad layer” should be construed to mean “one or more conductive layers that provide a bonding zone to an external power source or potential.” (CIB at 26.) Complainant points to the fact that the specification provides that “[t]he noise transferred from the substrate 400 will be kept away by the lower electric-conduction layer 300 which may be connected to a power source or voltage signal by the second pad layer 700.” (*Id.* (quoting JX-0001 at 3:52-55).) Complainant continues that FIG. 5 of the ‘928 patent depicts two second pad layers. (CRB at 11.) Complainant avers that the expert testimony of Dr. Walker supports its construction. (CIB at 26 (citing CX-0313C at Qs.

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106-107).) Complainant adds that because the article “a” means one or more in open-ended claims containing the transitional phrase “comprising,” and because “second pad layer” is modified by the article “a,” “second pad layer” must be construed to include one or more bond pads. (*Id.* at 25 (citing *Baldwin Graphic Sys., Inc. v. Sibert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008).))

Respondents’ Position: Respondents argue that the term “second pad layer” should be construed to mean “second surface for providing an electrical connection between the integrated circuit and the external circuit.” (RIB at 27.) Respondents say that the plain language of the claim indicates that the “second pad layer” is a single structure rather than a structure encompassing multiple layers. (*Id.* at 27-28.) Respondents continue that the specification allows—but does not require—the second pad layer to be connected to an external power source or potential. (*Id.* at 29-30 (citing JX-0001 at 3:35-55).) Respondents further point to the prosecution history, noting that the limitation “connected to an electric potential” was specifically removed from the claims during the course of prosecution in an attempt to broaden the scope of the claim. (*Id.* at 30 (citing JX-0026C at 4).)

Respondents also argue that Complainant misapplies the rule in *Baldwin Graphics* that “a” means one or more in open ended claims. (*Id.* at 28.) Respondents argue that the issue is not whether claim 1 covers a device with more than one “second pad layer” but whether “second pad layer” may be comprised of more than one bond pad. (*Id.*) According to Respondents, “a second pad layer” indicates that while claim 1 covers a device with more than one “second pad layer,” each “second pad layer” must nevertheless be comprised of only one bond pad.

Analysis and Conclusions: The term “second pad layer” means “one or more coplanar

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surfaces that provide a bonding zone to an external power source or potential.” The parties essentially dispute two main issues: (1) whether the term encompasses a single pad or multiple pads, and (2) whether such pads must be connected to an external power source or potential. The intrinsic record reflects that (1) the “second pad layer” encompasses multiple pads, and (2) that such pads may be connected to an external power source or potential.

a. Single Pad or Multiple Pads

The claim recites, in pertinent part, “a second pad layer formed on the insulation layer.” (JX-0001 at 5:20.) While the article “a” indicates the claims can cover embodiments with more than one “second pad layer,” it has no bearing on whether each “second pad layer” is comprised of one or more bond pads. Thus, the language of the claim is not definitive.

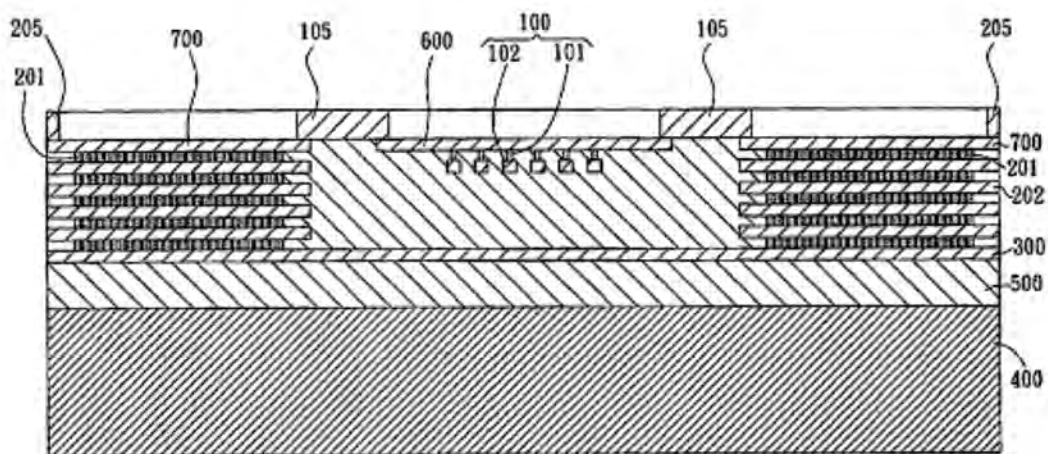


FIG. 5

Turning to the specification, it is clear that a “layer” can be comprised of one or more elements. FIG. 5 depicts a cross-section of the claimed integrated circuit pad structure. (JX-0001 at Fig. 5; 3:16-18.) The specification refers to each horizontal plane of the structure as a “layer” regardless of how many elements are present in that horizontal plane. (*Id.* at 3:35-62.)

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For example, element “600” is referred to as the “first pad layer” although only one such element is depicted. (*Id.* at 3:38.) The specification, however, also depicts two elements “201” and refers to them jointly as an “electric-conduction connecting layer.” (*Id.* at 3:42-43.) Likewise, both elements labeled “700” are referred to jointly as a “second pad layer.” (*Id.* at 3:45.) Thus, the specification makes clear that a “layer” is not intended to refer to a single pad, but the horizontal plane containing the specified pad or pads. Therefore, there is nothing in the specification that supports limiting the “second pad layer” to one (and only one) “second pad” element. Rather, the specification contemplates a second pad layer that is made up of multiple pads.

Respondents argue that Complainant’s proposed construction is improper because it covers a multi-layer structure. (RIB at 27.) Respondents’ concerns are well taken and the adopted construction changes Complainant’s proposed construction from “one or more conductive layers” to “one or more coplanar surface” to make clear that the “second pad layer” is comprised of multiple pads lying in the same horizontal plane rather than multiple vertically stacked pads.

b. Connected to External Power Source or Potential

At the outset, the adopted construction does not *require* that the second pad layer be connected to an external power source or potential, rather, the second pad layer merely provides a bonding zone for an external power source or potential. Again, the claims themselves are not instructive, but the specification indicates that the “second pad layer” provides a bonding zone to an external power source or potential. The specification only discloses one way in which the lower electric-conduction layer is connected to an electric potential—the lower electric-

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conduction layer “may be connected to a power source or voltage signal by the second pad layer.” (JX-0001 at 3:53-55.) The specification also provides that “the pad layer may be connected to a potential of cleaner power source or electric potential.” (JX-0001 at 4:45-46.) The specification does not describe any structure connected to a power source or potential, other than the “second pad layer,” to provide an electric potential to the lower electric-conduction layer.

Respondents argue that because the specification teaches that the lower electric-conduction layer “may”—rather than must—“be connected to a power source or voltage signal by the second pad layer” it is improper to import this limitation into the claims. (RIB at 29.) The adopted construction does not require the second pad layer or the lower electric-conduction layer actually be connected to an external power source or potential. However, the specification is quite clear that if the lower electric-conduction layer is connected to an external power source or potential, it is through the second pad layer. Thus, one of ordinary skill in the art would have understood “second pad layer” to provide a bonding zone to an external power source or potential.

Based upon the foregoing, the term “second pad layer” will be construed to mean “one or more coplanar surfaces that provide a bonding zone to an external power source or potential.”

4. “lower electric-conduction layer”

Claim term	Complainant’s Proposal	Respondents’ Proposal
“lower electric-conduction layer”	“one or more conductive layers substantially intersecting the footprint of the first pad layer (extending between the first pad layer and the substrate)”	“planar region of conductive material proximate to the substrate having dimensions corresponding to the pad layer”

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Complainant's Position: Complainant argues that “lower electric-conduction layer” should be construed to mean “one or more conductive layers substantially intersecting the footprint of the first pad layer (extending between the first pad layer and the substrate).” Complainant argues that Figure 5 of the ‘928 patent is an exemplary embodiment depicting a lower electric-conduction layer which extends between the first pad layer and the substrate. (CIB at 27 (citing JX-0001 at Fig. 5 and 3:35-50).) Complainant also argues that Figure 5 shows the lower electric-conduction layer substantially intersecting the footprint of the first pad layer. (*Id.*) Complainant argues that Respondents’ proposed construction erroneously includes the term “proximate” because the lower electric-conduction layer does not have to be the metal layer closest to the substrate. (*Id.* at 27.) Complainant also argues that Respondents’ proposed construction erroneously requires the lower electric-conduction layer to have dimensions corresponding to the pad layer because it would exclude the preferred embodiment in which the lower electric-conduction layer has dimensions greater than the pad layer. (*Id.* at 28 (citing JX-0001 at Fig. 5).) Complainant finally argues that the term “planar” in Respondents’ proposed construction is superfluous because metal layers in integrated circuits are “most commonly horizontal layers.” (*Id.*)

Respondents' Position: Respondents argue that “lower electric-conduction layer” should be construed to mean “planar region of conductive material proximate to the substrate having dimensions corresponding to the pad layer.” Respondents argue the term “proximate” is necessary to indicate that the lower electric-conduction layer is the electric-conduction layer closest to the substrate. (RIB at 34-35 (citing JX-0001 at Fig. 5).) Respondents argue that Complainant’s proposed construction would read the word “lower” out of the claim because it

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does not require that the lower electric-conduction layer be lower than other electric-conduction layers. (*Id.* at 35.) Respondents argue that the lower electric-conduction layer must also have dimensions corresponding to the pad layer because one of ordinary skill in the art would understand that if the lower electric-conduction layer had dimensions smaller than the pad layer, it would not be able to perform its undisputed function of shielding the pad layer from noise from the substrate.⁸ (*Id.* at 32-33.) Respondents contend that Complainant’s proposed construction of “substantially intersecting” is ambiguous and would render the claim invalid. (*Id.* at 33.) Respondents argue that the term “planar” is not superfluous because metal layers in integrated circuits are not always horizontal layers. (RRB at 9.) Moreover, Respondents argue that Complainant’s proposed construction is erroneous because it encompasses a multi-layer structure rather than a single planar horizontal layer. (RIB at 34.)

Analysis and Conclusions: The term “lower electric-conduction layer” will be construed to mean “planar region of conductive material extending between the first pad layer and the substrate, the planar region being lower than the first pad layer and the compound layer structure.” The parties’ dispute centers around three issues: (1) the location of the lower electric-conduction in relation to the substrate; (2) the dimensions of the lower electric-conduction layer in relation to the pad layer; and (3) whether the term “planar” is superfluous.

a. Location in Relation to the Substrate

Complainant argues that Respondents’ proposed construction including “proximate to the substrate” erroneously requires the “lower electric-conduction layer” to be the metal layer closest

⁸ Respondents contend that “dimensions corresponding to the pad layer” allows the lower electric-conduction layer to have dimensions equal to or larger than, but not smaller than the dimensions of the pad layer. (RIB at 32 n.15.)

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to the substrate. (CIB at 27-28.) Respondents argue that their expert has testified that being “proximate to the substrate” does not require the “lower electric-conduction layer” to be the metal layer closest to the substrate. (RRB at 8-9.) Rather, they argue, “proximate to the substrate” means the “lower electric-conduction layer must be the lowest electric-conduction layer that meets all of the other requirements of claim 1.” (*Id.* at 9.) Respondents also counter that, without such a limitation, the term “lower” would be read out of the claim. (RIB at 35.)

Respondents’ construction—“proximate to the substrate”—essentially requires that the “lower electric-conduction layer” be the lowest layer that qualifies as an “electric-conduction layer,” and thereby the “lowest electric-conduction layer.” To be noted, the claim does not require the “lowest electric-conduction layer,” and construing “lower” to mean “lowest” goes against the plain import of the language of the claim. As a result, the adopted construction replaces “proximate to the substrate” in favor of “lower than the first pad layer and the compound layer structure” to clarify that the “lower electric-conduction layer” is not the lowest possible metal layer, but an electric-conduction layer lower than the other electric-conduction layers identified in the claim.

Claim 1 discloses a “lower electric-conduction layer formed in the insulation layer.” (JX-0001 at 5:10-11.) Although no other “electric-conduction” layers are explicitly identified in claim 1,⁹ the specification makes clear that the first pad layer that appears in claim 1 is an “electric-conduction layer.” (*Id.* at FIG. 6 (“Forming a bond-pad *electric-conduction layer* on the compound layer structure.”) (emphasis added).) Further, the specification explains that the

⁹ Notably, claim 2 explicitly provides that the compound layer structure comprises a first electric-conduction layer and a first connecting layer, confirming this understanding. (See JX-0001 at 5:22-25.)

compound layer structure is also comprised of an electric-conduction layer. (*Id.* at 3:56-60.) Thus, in the context of the other features of claim 1, it is clear that the term “lower” in “lower electric-conduction layer” specifies the position of the “lower electric-conduction layer” relative to the other electric-conduction layers in claim 1 – namely, the first pad layer and the compound layer structure.

Other portions of the specification also support this construction. Figure 5 of the ‘928 patent depicts an electric-conduction layer (102), plural electric-conduction layers (202), and a “lower electric-conduction layer” (300). (JX-0001 at FIG. 5.) The “lower electric-conduction layer” is below the other electric-conduction layers in this embodiment. (*Id.*)

b. Dimensions in Relation to the Pad Layer

The claims themselves provide little insight into the dimensions of the “lower electric-conduction layer.” I next look to the specification for guidance.

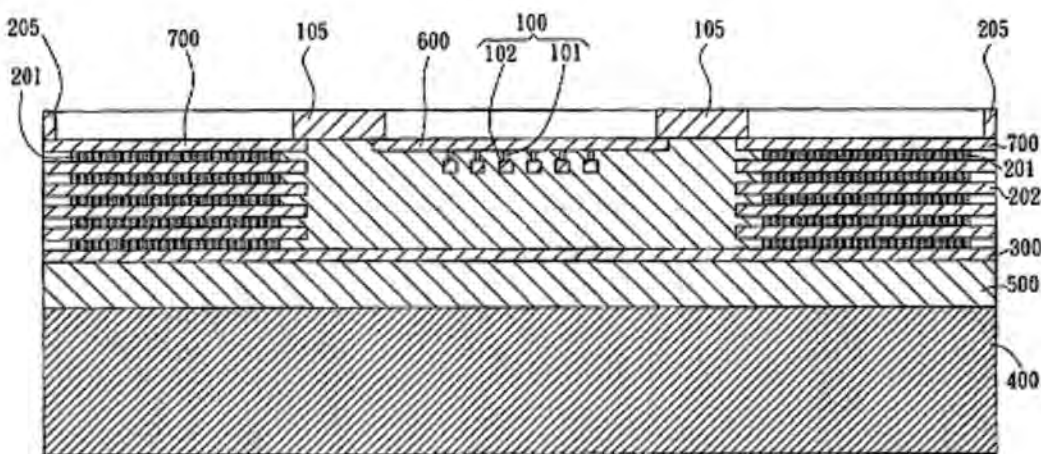


FIG. 5

The specification shows the “lower electric-conduction layer” 300 extending between the first pad layer 600 and the substrate 400. Nothing in the specification supports placing further

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limitations on the dimensions of the lower electric-conduction layer.

Complainant argues that one of ordinary skill in the art would have further understood a “lower electric-conduction layer” to substantially intersect the footprint of the first pad layer.¹⁰ Similarly, Respondents argue that one of ordinary skill in the art would have further understood a “lower electric-conduction layer” to have dimensions corresponding to the first pad layer. Both arguments are based on the erroneous assumption that “lower electric-conduction layer” must be interpreted in accordance with the goal of shielding noise identified in the specification. *See E-Pass Techs.*, 343 F.3d at 1370; *Howmedica Osteonics*, 540 F.3d at 1345; *Kim*, 465 F.3d at 1319. As explained above, there is no requirement that every claim must be directed only to devices that serve a purpose of the invention. (*See supra* Section III.B.2.a.) The plain language of the claim and the specification do not show the patentee acted as his own lexicographer or that the patentee intended to limit the dimensions of the “lower electric-conduction layer” as proposed by either party.

Further, in this case, the doctrine of claim differentiation actually creates a presumption that such limitations are not present in claim 1. (*See supra* Section III.B.2.) Claim 10, which depends from claim 1, explicitly adds the limitation that the “lower electric-conduction layer” keeps noise from the substrate away from the first pad layer. (JX-0001 at 5:46-48.) Thus, there is a presumption that the “lower electric-conduction layer” in claim 1 is not required to keep

¹⁰ Complainant’s proposed construction must also be rejected because the phrase “substantially intersecting the footprint of the first pad layer” is insolubly ambiguous and would render the claim invalid. A claim is insolubly ambiguous if it fails to provide sufficient clarity about the bounds of the claim to one skilled in the art. *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1373 (Fed. Cir. 2011). In this case, there is no guidance in the specification or the prosecution history as to what would constitute “substantially intersecting.” Complainant has not even introduced *extrinsic* evidence of what would constitute “substantially intersecting.” Further, the record includes evidence that one of ordinary skill in the art would not understand with sufficient clarity what constituted “substantially intersecting.” (RX-0285C at Q. 55.)

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noise from the substrate away from the first pad layer. *See Phillips*, 415 F.3d at 1315 (citing *Liebel-Flarsheim*, 358 F.3d at 910). Although the “lower electric-conduction layer” may need to have dimensions as proposed by the parties to meet claim 10’s limitation of keeping a significant or substantial amount of noise away from the first pad layer, such limitations are not a part of claim 1.

c. Planar

The plain language of the claims supports a construction of “lower electric-conduction layer” as a single, planar layer. Claim 1 discloses a “lower electric-conduction *layer*” rather than “lower electric-conduction *layers*.” (JX-0001 at 5:11-12.) The use of the singular suggests a single, planar layer. Further, claims 1 and 2 explicitly refer to a multi-layer structure using different terminology. Claims 1 and 2 refer to a multi-layer structure comprised of a “first electric-conduction layer” and a “first connecting layer” as a “compound layer structure.” (JX-0001 at 5:22-25.) Had the patentee intended the term “layer” to encompass a multi-layer structure, the term “compound” would be redundant.

Complainant argues that layers in integrated circuits are “most commonly horizontal layers” so the term “planar” is superfluous. (CIB at 28.) Complainant also takes the inconsistent position that “planar” is inappropriate because “lower electric-conduction layer” can be comprised of multiple layers. (*Id.*) Complainant cites no authority or evidence to support these arguments. The term “planar” is not superfluous because, as Complainant admits, layers in integrated circuits as “most commonly”—but not always—horizontal layers. Moreover, as explained above, the plain language of the claims supports a construction of “lower electric-conduction layer” as a single, planar layer.

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Based upon the foregoing, the term “lower electric-conduction layer” will be construed to mean “planar region of conductive material extending between the first pad layer and the substrate, the planar region being lower than the first pad layer and compound layer structure.”

5. “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer”

Claim term	Complainant’s Proposal	Respondents’ Proposal
“wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer”	“the first pad layer is shielded from electromagnetic signals from the substrate by the lower electric-conduction layer being coupled to an external power source or potential ”	indefinite

Complainant’s Position: Complainant concedes that the limitation “being coupled to an external power source or potential” should not be a part of the construction. (CIB at 23.)

Complainant argues that the remainder of its construction is supported by the specification. (*Id.*)

Complainant also argues that this limitation requires that the integrated circuit device of claim 10 “not includ[e] other structures in the integrated circuit that would direct noise around the lower electric-conduction layer and directly to the bond pad.” (*Id.* at 24.) Complainant counters

Respondents’ argument that the term is indefinite under *IPXL Holdings, Inc. v. Amazon.com, Inc.*¹¹ by arguing that the term does not recite a method step, but rather a functional capability of the claimed apparatus. (*Id.*)

Respondents’ Position: Respondents argue that the term is indefinite under *IPXL Holdings* because it recites both a structure—lower electric-conduction layer—and a method performed by that structure—keeping noise from the substrate away from the first pad layer.

¹¹ 430 F.3d 1377 (Fed. Cir. 2005.)

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(RIB at 36.) Respondents also argue that if the claim is definite, it does not need to be construed as it is easily understood by one of ordinary skill in the art. Respondents also argue that dropping the limitation “being coupled to an external power source or potential” from the term significantly changes the scope of claim 10. Respondents point out that Complainant contends its new construction now further limits claim 10 “such that other structures do not route the noise around the lower electric-conduction layer and directly to the first pad layer.” (RRB at 7.) Respondents argue that such a change in scope post-hearing is extremely prejudicial. (*Id.*)

Analysis and Conclusions: The term “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” does not need a special construction and will be given its plain and ordinary meaning. The parties dispute whether the term is indefinite and if not, whether the term needs to be construed. The record supports a finding that the term is definite, but does not need to be construed as Complainant’s proposed construction seeks to impose improper limitations not supported by the specification.

a. Definiteness

Respondents argue that the term “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” is indefinite under *IPXL Holdings* because it recites both a structure and a method to be performed by the structure. Respondents argue that the term claims both a “lower electric-conduction layer” and the use of the “lower electric-conduction layer” to keep noise from the substrate away from the first pad layer.

“[A]pparatus claims are not necessarily indefinite for using functional language.”

Microprocessor Enhancement Corp. v. Texas Instruments, Inc., 520 F.3d 1367, 1375 (Fed. Cir. 2008) (citing *Halliburton Energy Servs. v. M-I LLC*, 514 F.3d 1244, 1255 (Fed. Cir. 2008)).

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Rather, the claim is indefinite if the use of functional language in an apparatus claim makes it unclear as to when the claim would be infringed. *Id.* at 1374 (“The conclusion of *IPXL Holdings* was based on the lack of clarity as to when the mixed subject matter claim would be infringed.”).

The claim at issue in *IPXL Holdings* recited

The system of claim 2, [including an input means] wherein the predicted transaction information comprises both a transaction type and transaction parameters associated with that transaction type, and *the user uses the input means* to either change the predicted transaction information or accept the displayed transaction type and transaction parameters.

430 F.3d at 1384 (alteration in original). Thus, it recited both a system that allows a user to change the predicted transaction information and a method step of using the system to change the predicted transaction information. The Federal Circuit concluded the claim was indefinite because it was unclear whether the claim was infringed when one creates the system or when one actually uses the system in the recited manner. *Id.* at 1384.

There is no such lack of clarity in the claim term at issue. The term “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” only recites a functional capability of the lower electric-conduction layer. Unlike in *IPXL Holdings*, there is no actual recitation of a method step. Further, it is clear that claim 10 is directed to an integrated circuit device according to claim 1 which has the capability of using the lower electric-conduction layer to keep noise from the substrate away from the pad layer. It is likewise clear that claim 10 is infringed when one creates an integrated circuit device according to claim 1 which has the capability of using the lower electric-conduction layer to keep noise from the substrate away from the pad layer. Therefore, the term is not indefinite under *IPXL Holdings*.

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b. Plain and Ordinary Meaning

The meaning of “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” as understood by one of ordinary skill in the art is apparent from the plain language of the claim—the lower electric-conduction layer performs the function of keeping noise from the substrate away from the first pad layer. (JX-0001 at 5:47-49.) The specification similarly provides “[t]he noise transferred from the substrate will be kept away by the lower electric-conduction layer.” (JX-0001 at 3:52-53.) Complainant’s proposed construction includes additional limitations not supported by the specification.

Complainant argues that the term should be construed as “the first pad layer is shielded from electromagnetic signals from the substrate by the lower electric-conduction layer.” (CIB at 23-24.) Complainant further argues that this new proposed construction excludes any structure “in the integrated circuit that would direct noise around the lower electric-conduction layer and directly to the bond pad.” (*Id.* (citing Tr. at 438:6-439:6).) As an initial matter, Complainant asserts in its Post-Hearing Trial Brief, for the first time, that its proposed construction would preclude any structure in the integrated circuit of claim 10 that would direct noise around the lower electric-conduction layer and directly to the bond pad. Presenting new claim constructions and arguments for the first time *after the hearing* is extremely prejudicial and Complainant’s arguments are rejected as waived. *See* Ground Rule 8.2 (“Any contentions not set forth in detail [in the pre-trial brief] 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.”).

Assuming *arguendo* that Complainant’s argument was not waived, its construction finds

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no basis in the intrinsic evidence, and the expert testimony of Dr. Walker is not sufficient to controvert the plain language of the claims. Complainant argues the specification supports its proposed construction that includes terms such as “shielded” and “electromagnetic signals,” which are not in the specification. In fact, the specification’s disclosure nearly parrots the language of the claim. (*Compare* JX-0001 at 3:52-53 (“[t]he noise transferred from the substrate will be kept away by the lower electric-conduction layer”) *with* JX-0001 at 5:47-49 (“wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer”).) Nothing in the specification supports rewriting the claims as Complainant proposes. The intrinsic evidence does not support construing claim 10 to explicitly exclude structures that would direct noise around the lower electric-conduction layer to the bond pad. Indeed, the specification does not even discuss such other structures, much less express an intent to exclude them from certain embodiments of the invention. *See Omega Eng’g, Inc. v. Raytech Corp.*, 334 F.3d 1314, 1322-23 (Fed. Cir. 2003).

Complainant presents extrinsic evidence in the form of Dr. Walker’s testimony that the presence of such structures would cause the lower electric-conduction layer to keep some, but not all, of the noise from the substrate away from the first pad layer. (Tr. at 438:6-439:6.) Complainant’s argument is rejected for two reasons. First, Dr. Walker’s testimony does not support Complainant’s argument because it indicates that even if the structures at issue are present, the lower electric-conduction layer can still perform the stated function of keeping noise from the substrate away from the pad layer. (Tr. at 438:24-439:2 (“Q. Would the lower electric-conduction layer provide shielding at that point? A. It would provide some shielding but not

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much.”).) Second, extrinsic evidence of this kind is not sufficient to controvert the meaning of the term mandated by the plain language of the claim.

Based upon the foregoing, the term “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” will be given its plain and ordinary meaning.

6. Other Claim Terms

Although Complainant addressed constructions for a number of additional claim terms from the asserted claims of the ‘928 patent in its briefs, none of those terms need to be addressed because they have no impact on the questions of infringement, invalidity, and domestic industry – technical prong. Rather, as explained in Sections IV-V, *infra*, the only claim terms relevant to an infringement, invalidity, or domestic industry analyses are “spaced apart,” “second pad layer,” “lower electric-conduction layer,” and “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer.” Only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Vanderlande Indus. Nederland BV v. Int’l Trade Comm’n.*, 366 F.3d 1311, 1323 (Fed. Cir. 2004); *Vivid Techs.*, 200 F.3d at 803.

IV. INVALIDITY AND OTHER DEFENSES

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 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

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convincing evidence” *SRAM Corp. v. AD-II Eng’g, Inc.*, 465 F.3d 1351, 1357 (Fed. Cir. 2006). The clear and convincing standard was recently reaffirmed by the Supreme Court. *Microsoft Corp. v. i4i Ltd. P’ship*, 131 S.Ct. 2238 (2011) (upholding the Federal Circuit’s interpretation of 35 U.S.C. § 282).

The clear and convincing evidence standard placed on the party asserting an 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 that 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 claim is invalid as anticipated if:

- “the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant” (35 U.S.C. § 102(a) (2008));¹²
- “the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States” (35 U.S.C. § 102(b) (2008));
- “the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent” (35 U.S.C. § 102(e) (2008)); or
- “before such person’s invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it.” (35 U.S.C. § 102(g) (2008)).

¹² As explained in the revision notes and legislative reports in 35 U.S.C.A. § 100, the language of 35 U.S.C. § 102 that was effective prior to the America Invents Act, controls in this Investigation.

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“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).

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.*, 528 F.3d at 1379. 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.”

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

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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); *Velandar v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003) (explaining that a

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requirement for a finding of obviousness is that “all the elements of an invention are found in a combination of prior art references”).

B. Anticipation

1. MS-410B and MS-410B2

Respondents’ Position: Respondents say that LSI’s predecessor, Lucent Technologies, developed, manufactured, and sold ICs in the United States at least as early as 2001 that are indistinguishable from the structures accused of infringement. (RIB at 58 (citing RX-0248C at Qs. 18–64; RX-0247C at Qs. 34–37, 49–51, 90–92, 131–138; RX-0249C at Qs. 38–102; RX-0042C; RX0043C; RX-0044C).) Respondents explain that these include read-channel chips with the marketing name MS410 that were designed by Lucent for Quantum Corporation, a hard-drive manufacturer. (*Id.* (citing RX-0248C at Qs. 18–64; RX-0247C at Qs. 34–37, 49–51, 90–92, 131–138; RX-0249C at Qs. 38–102; RX-0042C; RX0043C; RX-0044C).) Respondents argue that: (1) because these chips were known or used in the United States before the February 26, 2003 priority date of the ’928 patent, they are prior art to the ’928 patent under 35 U.S.C. § 102(a), (2) because they were invented and sold or in public use in the United States more than one year before the priority date of the ’928 patent, they are prior art under 35 U.S.C. § 102(b), and (3) because they were made in the United States before the invention claimed by the ’928 patent by another inventor, Lucent, who did not abandon, suppress, or conceal them, they are prior art under 35 U.S.C. § 102(g). Respondents aver that the MS410B and B2 were not considered during prosecution of the ’928 patent.

Respondents disagree with Complainant’s argument that there is no evidence that the MS410B and B2 chips were sold. Respondents say that there is a large amount of evidence that

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these chips were sold, including: (1) RX-0042C, RX-0043C, and RX-0044C (spreadsheets containing sales data) (Citing RX-0249C at Qs. 5, 13-17, 39-41, 44, 54-62, 71, 73-80, 91, 93-102.); (2) RX-0040C (MS410B Scarlet Read Channel Device product specification from 2000 indicating that it was for Quantum only); (3) testimony from Martin Heimann (RX-0248C at Qs. 5, 24-25, 53-54, 56-59); and (4) testimony from Roland Krebs (RX-0247C at Qs. 44, 132-33, 135). Respondents conclude that they have conclusively established by clear-and-convincing evidence that the MS410B and MS410B2 devices were sold in 2001 and 2002, at least one year before the February 26, 2003 priority date of the '928 patent.

Respondents contend that Complainant's arguments based on the absence of the "M" prefix in the RX-0041C spreadsheet are not persuasive. Respondents say that Mr. Subits explained that the "M" simply indicates that the sales were "pre-production," meaning smaller quantities of finished products that were sold before full-scale production began. (RRB at 13 (citing RX-0249C at Qs. 50-52).) Respondents continue that devices later sold without the letter "M" were exactly the same devices that were sold during pre-production and the dies were also the same. Respondents aver that there is no testimony that an "M" attached to the device code indicates any change to the die. Rather, Respondents say that Martin Heimann testified that any change in the metal layers would have resulted in a change in the die code. (*Id.* (citing Tr. at 580:12-581:15).)

Respondents argue that the testimony of Roland Krebs and Martin Heimann is credible. Respondents say that Mr. Krebs and Mr. Heimann testified about their roles as engineers who designed products, not salesmen who sold them. Respondents continue that they both testified that they knew the products were being sold based on their personal involvement as engineers.

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(*Id.* at 13-14 (citing RX-0248C at Qs. 24-25; RX-0247C at Qs. 44, 135).) Respondents add that Mr. Heimann personally interacted with representatives from Quantum concerning these products, (*Id.* (citing RX-0248C at Qs. 56-59),) and Mr. Krebs confirmed his recollection through conversations with other LSI employees and through LSI's sales spreadsheets. (*Id.* at 14 (citing RX-0247C at Q. 44).)

Respondents assert that Mr. Krebs' deposition testimony does not conflict with his witness statement. Respondents aver that Mr. Krebs testified on both occasions that he knows the MS410B chip was sold to Quantum based on his personal work on the chip and his discussions with colleagues. (*Id.* (citing CX-0339C at 82:17-83:4; RX-0247C at Qs. 132-133).) Respondents continue that Complainant's attack on Mr. Heimann's testimony is based on testimony that was withdrawn by agreement of counsel for Respondents and is not part of the record. (*Id.* (citing Tr. at 595:25-599:13).) Respondents note that although certain testimony on cross-examination was struck, his entire witness statement remains in evidence, and his witness statement provides that "Scarlet" products were sold to Quantum in 2001 and 2002. (*Id.* (citing Tr. at 599:3-13; RX-0248C at Qs. 56-59).) Respondents explain that while Mr. Heimann testified that he knew that "Scarlet" products were sold to Quantum and Maxtor, the sales spreadsheets presented by Mr. Subits confirm that MS410B and MS410B2 products were sold to Quantum and Maxtor. (*Id.* at 14-15 (citing RX-0249C at Qs. 54-62, 73-80, 93-102).)

Respondents argue that the MS410B and MS410B2 devices disclose the first element of claim 1, a "substrate." Respondents say that the black region in the GDSII image of the

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MS410B chip¹³ reproduced as Figure 28 (included below) in their brief depicts the substrate. (RIB at 63 (citing RX-0246C at Qs. 69, 112–113; RDX-0003C at 1-2; RDX-0004C at 1-2; RDX-0005C at 1-2; RDX-0006C at 1-2).) Respondents aver that Dr. Walker’s testimony does not dispute that the MS410B and B2 chips disclose an IC device with a substrate.

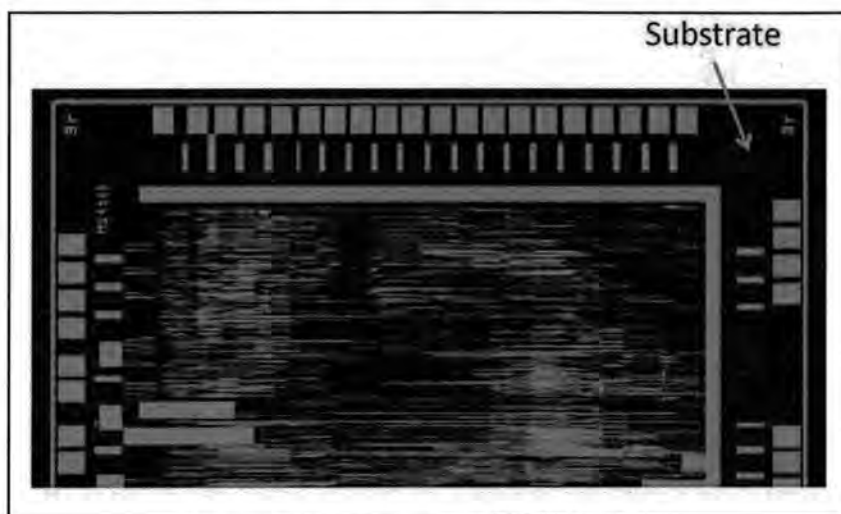


Figure 28: M5 of the MS410B Chip

Respondents argue that the MS410B and B2 chips also disclose the second element of claim 1 of the '928 Patent, an insulation layer formed on the substrate. (*Id.* at 64 (citing RX-0246C Qs. 70, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).)

Respondents say that dielectric insulating material fills the spaces between the structures and the metal levels of the chips. Respondents aver that Dr. Walker’s testimony does not dispute that the MS410B and B2 chips disclose an IC device with an insulation layer formed on the substrate.

Respondents contend that the MS410B and B2 chips also disclose the third element of claim 1 of the '928 Patent, “a lower electric-conduction layer formed in the insulation layer.”

¹³ Respondents say that the structures in the MS410B2 chip do not vary in any relevant way from the structures in the MS410B chip and, as a result, the MS410B2 chip discloses the patent claims for the same reasons as the MS410B chip. (RIB at 63 n.32 (citing RX-0246C at Qs. 113–14).)

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Respondents say that a series of parallel power and ground lines run along the edges of the MS410B and B2 chips providing power and ground to the active circuitry. (*Id.* (citing RX-0246C at Qs. 71, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).) Respondents explain that these lines are located at metal level 3 (M3), and, taken together, have dimensions corresponding to the pad layers, which appear above them in metal level 5 (M5). (*Id.* (citing RX-0246C at Qs. 71, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).) Respondents explain that Figure 29a of their brief (reproduced below), is a GDSII image combining views of M3 and M5.

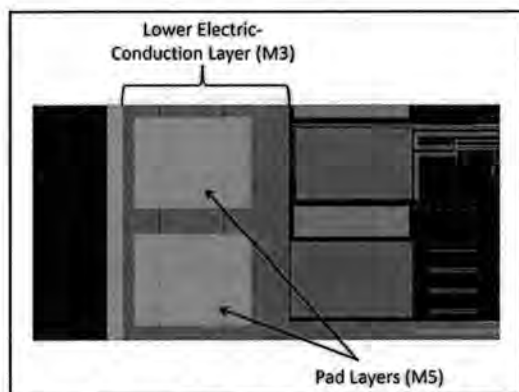


Figure 29a: M3 and 5 of the MS410B Chip

Respondents aver that Dr. Walker’s testimony does not dispute that the MS410B and B2 chips disclose structures that are, in every relevant respect, similar to the accused lower electric-conduction lines in the { } chips. Respondents say that Dr. Walker acknowledges that the collection of power and ground lines at M3 in the MS410B and B2 chips is a “potential lower electric-conduction layer.” (*Id.* at 65 (citing CX-0338C at Q. 99).)

Respondents say that the MS410B and B2 chips disclose the fourth element of claim 1 of the '928 patent, a “compound layer structure formed in the insulation layer.” Respondents say

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that the MS410B and B2 chips include conductive metal layers at M4 that are connected by vias to the pad layers at M5. Respondents continue that figure 30 in their brief (reproduced below) is a cross-section of an MS410B chip that shows an array of vias connecting metal layers 4 and 5. Respondents assert that the compound layer structure is the structure formed by the combined M4 metal layer and vias. (*Id.* at 66 (citing RX-0246C at Qs. 74, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).) Respondents aver that Dr. Walker does not dispute that the MS410B and B2 chips disclose an IC device with a compound layer structure formed in the insulation layer.

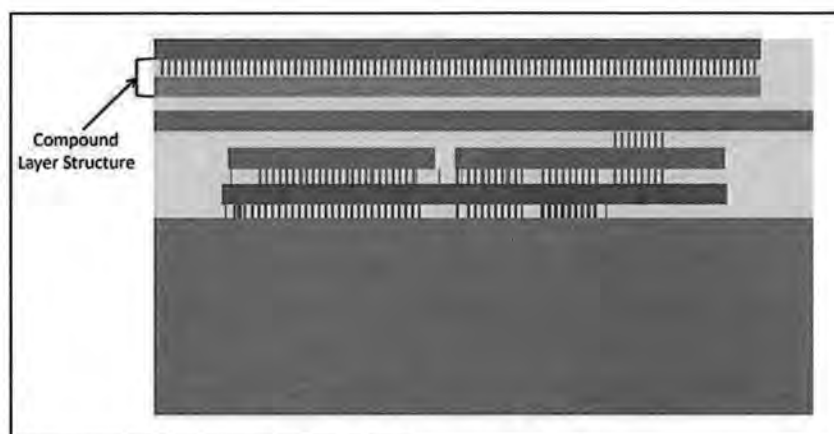


Figure 30: MS410B Chip

Respondents argue that the MS410B and B2 chips disclose the fifth element of claim 1, “a first pad layer formed on the insulation layer and coupled to the compound layer structure, wherein the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer.” Respondents say that the compound layer structures are connected to pad layers. (*Id.* at 66-67 (citing RX-0246C at Qs. 75, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).) Respondents explain that figures 31a and b of their brief (reproduced below) show two pad layers on an MS410B chip. Respondents continue that the

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pad layer at the top of the GDSII image in Figure 31a is a “first pad layer.” Respondents assert that the cross-section view in Figure 31b illustrates the relationship between this first pad layer and the structures beneath it.

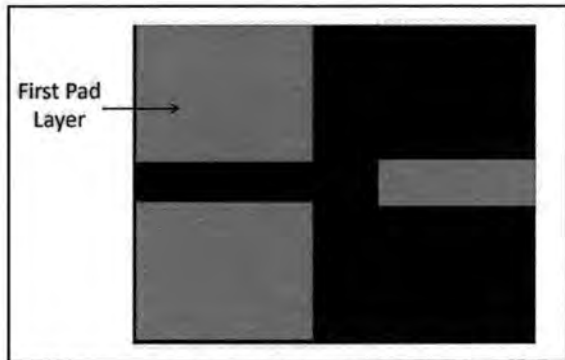


Figure 31a: M5 of the MS410B Chip

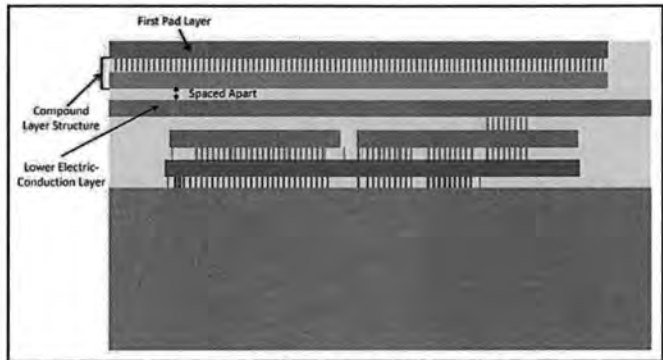


Figure 31b: MS410B Chip

Respondents say that figure 31c of their brief (reproduced below), is another GDSII image that includes the same first pad layer superimposed over the vias and underlying metal layer at M4. Respondents explain that the red pad layer appears orange in this image because the underlying brown metal layer is also shown, and the vias appear as yellow squares arrayed across the pad layer.

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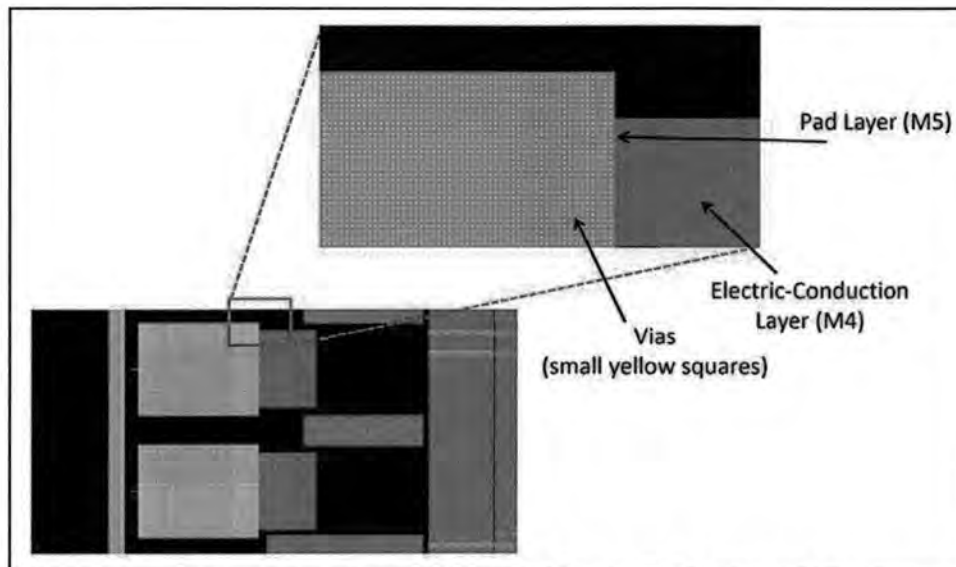


Figure 31c: M4, Via Level 4, and M5 of the MS410B Chip

Respondents aver that Dr. Walker does not dispute that the MS410B and B2 chips disclose an IC device with a first pad layer formed on the insulation layer and coupled to the compound layer structure. Respondents continue that there is no dispute that the power and ground lines running below the first pad layer at M3 are separated from the compound layer structure by a dielectric insulation layer. (*Id.* at 68 (citing RX-0246C at Q. 75).) Respondents contend, as a result, that these layers are spaced apart from each other. (*Id.* (citing RX-0246C at Qs. 75, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).)

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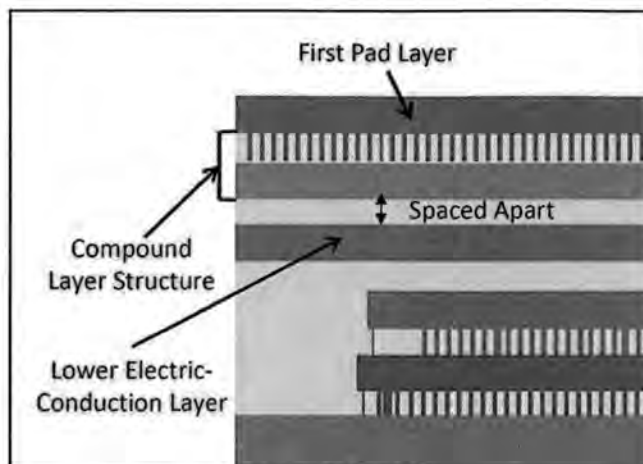


Figure 32: MS410B Chip

Respondents disagree with Complainant’s argument that these layers are not spaced apart. Respondents argue that Complainant’s construction improperly adds limitations to the claim that appear nowhere in the patent or in the prosecution history. Respondents say that the claim does not require electromagnetic isolation and it certainly does not require an intervening metal layer.

Respondents argue that the MS410B and B2 chips disclose the sixth element of claim 1, “a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer.” Respondents say that a series of pad layers rings the circumference of the MS410B and B2 chips and, like the first pad layer discussed above, some are connected to the underlying lower electric-conduction layer at M3. Respondents explain that the cross-section view depicted in figure 33 of their brief (reproduced below) illustrates an example of a pad layer on an MS410B chip that is coupled to the lower electric-conduction layer. Respondents say that a via array connects the lower electric-conduction layer at M3 to the conductive metal layer at M4, and then to the pad layer by another array of vias. (*Id.* at 69 (citing RX-0246C at Q. 81).)

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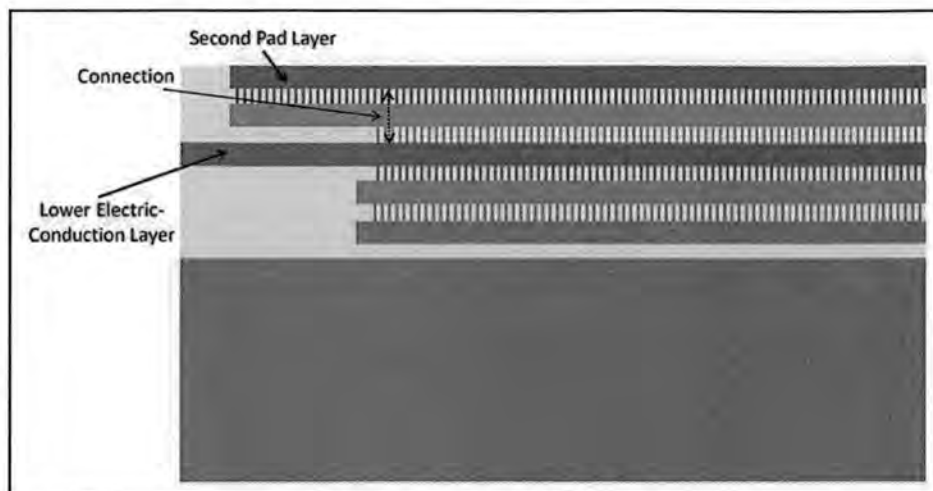


Figure 33: MS410B Chip

Respondents aver that Dr. Walker does not dispute that the MS410B and B2 chips disclose pad layers coupled to power and ground lines at M3.

Respondents argue that the MS410B and B2 chips anticipate claim 2 of the '928 patent, which requires that the compound layer structure must include a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer. Respondents say that the conductive metal layer at M4 in the MS410B and B2 chips is the claimed first electric-conduction layer, and the vias are the claimed first connecting layer that couples the first electric-conduction to the first pad layer. (*Id.* at 71 (citing RX-0246C at Qs. 82–83, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).) Respondents aver that Dr. Walker does not dispute that the MS410B and B2 chips disclose an IC device with a compound layer structure that includes a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer.

Respondents contend that the MS410B and B2 chips anticipate claim 3 of the '928 patent, which requires that the first connecting layer comprise a plurality of via plugs. Respondents say that the MS410B and B2 chips include a first connecting layer with a plurality

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of via plugs. (*Id.* (citing RX-0246C at Qs. 84–85, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).) Respondents aver that Dr. Walker does not dispute that this limitation is disclosed.

Respondents assert that the MS410B and B2 chips also anticipate claim 6 of the '928 patent, which requires the first pad layer to be shaped like a polygon. Respondents say that the pad layers in the MS410B and B2 chips, including the first pad layer, are square, and therefore polygons. (*Id.* at 72 (citing RX-0246C at Qs. 86–87, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).) Respondents aver that Dr. Walker does not dispute that this limitation is disclosed.

Respondents argue that the MS410B and B2 chips anticipate claim 7 of the '928 patent, which requires a passivation layer formed on the insulation layer to cover a part of the outer rim of at least one of the first and second pad layers. Respondents say that figure 36 of their brief (reproduced below) shows that these chips include a passivation layer formed over a pad layer, which covers part of the outer rim of the pad layer. (*Id.* at 73 (citing RX-0246C at Qs. 88–89, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).)

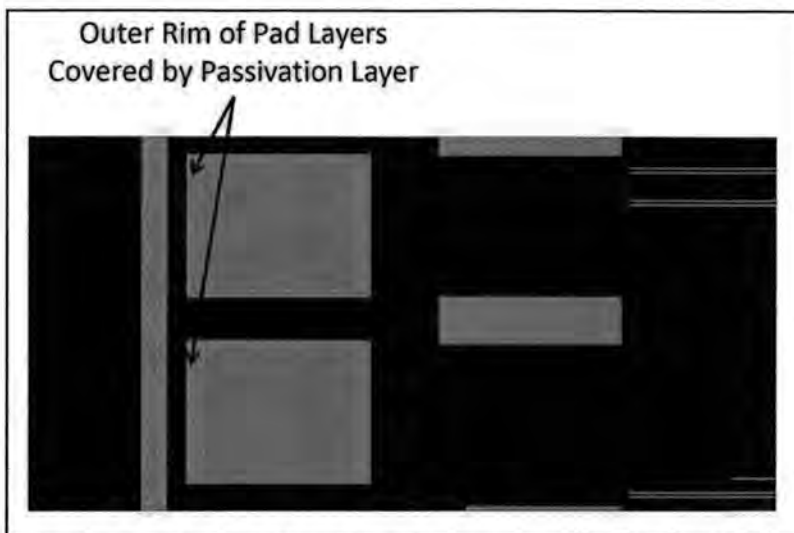


Figure 36: M5 and Passivation Layer of the MS410B Chip

Respondents explain that the purple areas in the image represent openings in a passivation layer at the top of the chip. Respondents contend that because the openings above the pad layers are smaller than the pad layers, the passivation layer covers part of the outer rims of the pad layers, as required by the patent. Respondents say that Dr. Walker does not dispute this limitation is met.

Respondents argue that the MS410B and B2 chips anticipate claims 8 and 9, which require at least one second connecting layer for coupling the second pad layer to the lower electric-conduction layer and at least one second electric-conduction layer coupled between the second pad layer and the lower electric-conduction layer with the second connecting layer, respectively. Respondents say that the second bond pad of the MS410B and B2 chips is constructed like the first bond pad, explaining that it is made up of two metal structures—the second pad layer at M5 and a conductive metal layer at M4—coupled together by vias. (*Id.* at 73-74 (citing RX-0246C Qs. 90–91, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).) Respondents argue that the conductive metal layer at M4 is a second electric-

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conduction layer, and is connected by vias to the second pad layer at M5. Respondents continue that M4 is similarly coupled to the lower electric-conduction layer at M3 by vias, as shown in figure 37 of their brief (reproduced below). (*Id.* (citing RX-0246C Qs. 90–91, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).)

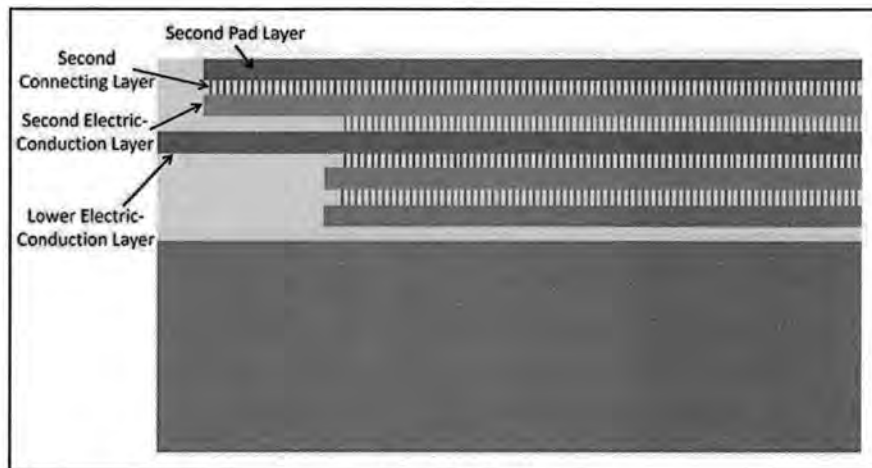


Figure 37: MS410B Chip

Respondents say that Dr. Walker does not dispute that the MS410B and B2 chips disclose a second connecting layer, a second pad layer, and a second electric-conduction layer.

Respondents argue that the MS410B and B2 chips also anticipate claim 10, which requires that a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer. Respondents say that based on Complainant’s infringement contentions and claim constructions, the first pad layer at M5 of the chips is shielded from electromagnetic signals from the substrate by the power and ground lines running below it at M3. (*Id.* at 75 (citing RX-0246C at Qs. 92–93, 112–113; RDX-0003C; RDX-0004C; RDX-0005C; RDX-0006C).)

Respondents disagree with Dr. Walker’s argument that “for the lower electric-conduction layer to provide shielding it must not only substantially intersect the footprint of the first pad

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layer, but it must also be coupled to a stable voltage source, such as a ground or power source.” (*Id.* (citing CX-0338C at Q. 100).) Respondents contend that Dr. Walker’s opinion is based on the incorrect notion that the power and ground lines are not coupled to a stable voltage source. Respondents note that Dr. Walker agrees elsewhere in his witness statement that the lines at M3 are power and ground lines. (*Id.* (citing CX-0338C at Q. 99).)

Respondents assert that Complainant raised a new validity argument for claim 10 of the ‘928 patent at the hearing. Respondents say that Complainant used a demonstrative exhibit, CDX-0053C, during cross-examination, that was created by Realtek’s counsel but was not produced or disclosed to Respondents before the hearing. Respondents continue that Complainant was instructed not to cite the exhibit in post-hearing briefs. (RRB at 17 (citing Tr. at 855:21-856:1, 860:16-23).) Respondents aver that Complainant cites CDX-0053C seven times in its post-hearing brief and embeds figures from this exhibit in the body of its brief.

Respondents argue that Complainant ambushed Dr. Gwozdz with this exhibit. Respondents explain that Complainant used the exhibit to question Dr. Gwozdz about structures below the lower electric-conduction layer in the MS410B chips, suggesting that Claim 10 was not satisfied because noise would be routed around the lower electric-conduction layer. Respondents contend that this is the first time Complainant disclosed this theory (it was not disclosed in expert reports, depositions, witness statements, or the pre-hearing brief), and is therefore waived. (*Id.* at 17-18 (citing Ground Rules 8.2, 11.1).)

Respondents note that while Complainant says that structures below the lower electric-conduction layer are relevant for validity, it has maintained that such structures are irrelevant for purposes of infringement. Respondents explain that Dr. Walker’s witness statement includes

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figures that purportedly show the structure of the accused { } (*id.* at 18 (citing CX-0313C at Qs. 56-66)), and testimony that the power and ground lines on metal layers 4 and 5 in those figures are the claimed lower electric-conduction layers. (*Id.* (citing CX-0313C at Q. 138).) Respondents note, however, that Dr. Walker confirmed that metal layers 1, 2, and 3 exist in the { } but were not relevant to the determination of infringement. (*Id.* (citing CX-0313C at Q. 131).) Respondents say that Dr. Walker admitted at the hearing that the {

} (*Id.* (citing Tr. at 438:11-439:14).) Respondents say that Complainant's argument would require that the same structure accused of infringing claim 10 not be covered by claim 10 of the '928 patent for purposes of validity.

Respondents contend that the cross-section used in CDX-0053C is misleading. Respondents explain that if the cross-section is taken along another line, it would show a portion of the chip where the noise from the substrate is not routed to the bond pad. Respondents continue that Dr. Walker explained that, under Realtek's analysis, claim 10 does not require all noise to be kept away from the bond pads, rather, claim 10 only requires some noise to be kept away from the bond pad. (*Id.* at 20 (citing Tr. at 430:21-431:12).) Respondents say that Dr. Walker acknowledged that the '928 patent does not set a threshold amount of noise that must be kept away to meet the limitation of claim 10. (*Id.* (citing Tr. at 429:16-20).)

Respondents note that Dr. Gwozdz's cross-examination testimony explained that only some of the noise would be routed around the lower electric-conduction layer. (*Id.* at 21 (citing Tr. at 694:4-22).) Respondents reason that because only some of the noise would be routed away, the remainder would hit the lower electric-conduction layer. Respondents additionally

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note that Dr. Gwozdz's testimony was limited to a single line in the accused lower electric-conduction layer, whereas Complainant has identified three separate lines as comprising the lower electric-conduction layer. (*Id.* at 22 (citing CX-0338C at Q. 99).)

Complainant's Position: Complainant argues that the MS410B and MS410B2 are not prior art because Respondents have failed to demonstrate by clear and convincing evidence that either the MS410B or MS410B2 was subject to a commercial sale or in public use more than one year before the filing date of the '928 patent. Complainant explains that there is no clear evidence or credible testimony that the MS410B and MS410B2 were sold and the spreadsheets in evidence fail to show that the dies about which Mr. Roland Krebs testified were ever sold.

Complainant says that the witnesses identified on the notice of prior art, Mr. Roland Krebs and Mr. Martin Heimann, are engineers who testified that they were not personally involved in the sale of the MS410B or MS410B2 devices. (CIB at 68 (citing CX-0339C at 82:23-83:4; CX-0340C at 103:3-5).) Complainant says that Mr. Krebs's and Mr. Heimann's testimony based on what they "know" related to their work as engineers (not in sales) is speculative and does not rise to the level of clear and convincing evidence.

Complainant argues that inconsistent testimony from Mr. Heimann and Mr. Krebs raises questions regarding their credibility. (*Id.* at 68-69 (citing Tr. at 582:3-12 (Mr. Krebs's "reluctantly" admitting that there was "B1" version of the MS410 chip); CX-0339C at 82:23-83:4 (testimony by Mr. Heimann that he had no direct knowledge of sales); RX-0247C at Qs. 132-33 (testimony by Mr. Heimann that the MS410B was sold to Quantum in 2001)).) Complainant says that Mr. Heimann testified that his knowledge was based on review of documents subsequent to his deposition and submission of his witness statement that are not in

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evidence. (*Id.* at 69 (citing Tr. at 578:17-579:1).) Complainant notes that Mr. Heimann's testimony that he had personal knowledge that the MS410B chips were sold was stricken. (*Id.* (citing Tr. at 598:23-599:13).) Complainant says that Mr. Krebs testified that his knowledge was based on his review of communications that are not in evidence. (*Id.* (citing CX-0339C at 82:17-83:4).) Complainant contends that if these documents actually demonstrated sales of the MS410B chip, Respondents would have produced them.

Complainant contends that the MS410B and MS410B2 devices may have been designed but never sold or publicly used. Complainant says that Mr. Krebs admitted that even after manufacture, additional testing and checks are performed on dies. (*Id.* at 70 (citing RX-0247C at Q. 94).) Complainant continues that Mr. Heimann admitted that even after masks are created, chips can still fail validation testing and the design may be modified before chips are sold or put into public use. (*Id.* (citing Tr. at 588:7-589:10).) Complainant concludes that the mere fact that Lucent had design files for the MS410B and MS410B2 devices, ordered masks, and manufactured the MS410B chip, does not mean that the MS410B was sold or put into public use.

Complainant argues that Respondents fail to provide any documentary evidence that would corroborate that the designs for the MS410B and MS410B2 devices were ever completed. Complainant says that the only technical document in evidence is a draft product specification. (*Id.* at 71 (citing RX-0040C; Tr. at 590:1-4).) Complainant says that Mr. Heimann admitted that RX-0040C does not show that a product was sold and he was not aware of any technical document relating to the MS410B other than the draft product specification. (*Id.* (citing Tr. at 592:2-22).)

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Complainant continues that the sales spreadsheets did not contain the MS410B or MS410B2 dies that were analyzed. Complainant says that the information contained in a spreadsheet associating part numbers with design die codes cannot be reconciled with the sales spreadsheets. (*Id.* at 71-72 (citing RX-0041C through RX-0044C).) Complainant says that the sale spreadsheets include device codes that start with a leading “M-,” while the part number association spreadsheet omits the leading “M-.” (*Id.* at 72 (citing RX-0041C; RX-0043C).) Complainant continues that “[a]lthough the omission of the ‘M-’ in the device code name may seem trivial, it is telling that Respondents are unable to provide any documentary evidence that shows that the MS410B die is implemented in a device that was sold with the correct device code.” (*Id.* at 72.) Complainant avers that “when considered in the context of Respondents’ internal coding system, the technical and sales spreadsheets should match up exactly.” (*Id.*) Complainant says that Mr. Subits testified that the “M-” represents pre-production devices. (*Id.* at 72-73 (citing RX-0249C at Q. 50).) Complainant continues that no document or witness identifies what die is used in the pre-production versions of the “Scarlet” chips. (*Id.* at 73 (citing RX-0249C at Qs. 50-54).) Complainant avers that Respondents’ witnesses fail to explain this deficiency, and broadly refer to both dies and final devices as the “MS410B.” Respondents note that RX-0041C demonstrates that a device code that includes the string “MS410B” could include the MS410B1 die, not the MS410B die and it would take a detailed analysis of the design documents to determine what changes were made between the two dies. (*Id.* (citing Tr. at 584:9-23).)

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Complainant argues that the MS410B chips¹⁴ fail to anticipate claim 1 of the '928 patent because the structure that Complainants identify as the lower electric-conduction layer is not “spaced apart” from the first pad layer and the compound layer structure “as properly construed.” (*Id.* at 77.) Complainant says that in the context of integrated circuit design, the term “spaced apart” requires more than physical separation. Complainant argues that Dr. Gwozdz’ s opinion that the MS410B meets the “spaced apart” limitation is based on legal error and is irrelevant to the two step anticipation analysis set forth by the Federal Circuit because he based his opinion on an application of the claims with reference to the accused devices. (*Id.* at 78 (citing RX-0246C at Q. 75; *SRI Int’l v. Matsushita Elec. Corp. Of Am.*, 775 F.2d 1107, 1118 (Fed. Cir. 1985)).)

Complainant argues that the evidence shows that the structures Dr. Gwozdz identifies as making up the lower electric-conduction layer are separated by only the minimum possible geometry permitted by that technology. (*Id.* at 79 (citing CX-0338C at Q. 90; RX-0246C at Q. 75; RX-0247C at Qs. 56-57).) Complainant says that the experts agree that requiring “spaced apart” to require spacing by more than the minimal possible physical separation would further the objectives of the '928 patent. (*Id.* at 79-80 (citing Tr. at 638:8-640:10; CX-0338C at Q. 86; CDX-0028C at 3).) Complainant continues that Dr. Walker testified that having an integrated circuit that has a lower electric-conduction layer on the metal layer immediately below the compound layer structure does not reduce the equivalent electric capacitance of the bond pad. (*Id.* at 80 (citing CX-0338C at Q. 86).)

Complainant argues that because claims 2, 3, and 6-10 depend from claim 1, clear and convincing evidence does not exist that the MS410B anticipates the dependent claims.

¹⁴ Complainant refers to the MS410B and MS410B2 collectively as MS410B. (CIB at 76-77, n.92.)

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Complainant argues that the MS410B does not anticipate claim 10 for an additional reason. Complainant says that Dr. Gwozdz testified that to provide effective shielding, a shield must be between the noise and the signal being protected. (*Id.* at 81 (citing Tr. at 635:16-20).) Complainant says that Dr. Gwozdz testified that electrically, the first pad layer is between the substrate and what Respondents have identified as the lower electric-conduction layer. (*Id.* at 82 citing Tr. at 691:8-13; CDX-0053C at 3.) Complainant continues that Dr. Gwozdz testified that in the MS410B, the noise from the substrate would be routed to the first pad layer. (*Id.* (citing Tr. at 691:13-692:3).) Complainants contend that Dr. Gwozdz was unable to disagree with the fact that under any construction, the MS410B cannot keep noise from the substrate away from the first pad layer as a result of the lower electric-conduction layer, because a lower metal layer between the alleged lower electric-conduction layer substantially intersects the lower electric-conduction layer. (*Id.* at 83 (citing Tr. at 691:4-13, 696:9-697:21).)

Complainant argues that Respondents misrepresent Dr. Gwozdz's testimony. Complainant says that Dr. Gwozdz did not testify that the power and ground lines in MS410B taken together have dimensions corresponding to the pad layer. Rather, according to Complainant, Dr. Gwozdz testified that the power or ground lines in the MS410B did not have dimensions corresponding to the pad layer and would not anticipate under Respondents' proposed construction. (CRB at 23 (citing RX-0246C at Q. 108).) Complainant continues that Dr. Gwozdz's trial testimony contradicted this point. (*Id.* (citing Tr. at 681:10-16).)

Conclusions and Analysis: The MS410B and MS410B2 devices are prior art to the '928 patent because there is clear and convincing evidence that these chips were sold more than a year before the priority date for the '928 patent. Under 35 U.S.C. § 102(b), a claim is anticipated if

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“the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.” Respondents have introduced credible testimony, corroborated by documentary evidence, that the MS410B and MS410B2 devices were sold prior to February 26, 2002 (one year before the asserted priority date for the ‘928 patent). As discussed below, the MS410B and MS410B2 devices practice each and every limitation of claims 1-3 and 6-10.

Two employees of Lucent¹⁵ provided testimony regarding the MS410B and MS410B2 devices. Mr. Krebs was an employee of Lucent at the time the MS410B and MS410B2 devices were designed and sold by Lucent. (RX-0247C at Q. 3.) He testified that he recalled that at least the MS410B was sold to Quantum in 2001. (RX-0247C at Q. 132.) He explained that he worked on the product personally, spoke to colleagues who were involved in the product and confirmed his recollection and understands “that certain sales records and shipping reports have been prepared that also identify these sales.” (RX-0247C at Q. 135.)

Mr. Krebs’ testimony is corroborated by the testimony of Mr. Heimann. Mr. Heimann was another employee of Lucent at the time the MS410B and MS410B2 devices were designed and sold by Lucent. (RX-0247C at Q. 3.) Mr. Krebs reported to Mr. Heimann starting in 2001. (RX-0247C at Q. 16.) Mr. Heimann testified that Lucent had a family of products that were referred to as “Scarlet,” and these products included the MS410B and MS410B2 devices. (RX-0248C at Qs. 18-20, 25.) Mr. Heimann also testified that “Scarlet” products were sold to Quantum in 2001 and 2002, explaining that he saw emails about the products, had conversations with Quantum employees about the products, saw Quantum documentation concerning the

¹⁵ Lucent is a predecessor company to respondent LSI.

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products, and attended meetings with Quantum employees in which they discussed the “Scarlet” products that had been manufactured and sold to Quantum by Lucent as well as to some Quantum subcontractors in Asia. (RX-0248C at Qs. 56-59.) Mr. Heimann testified that he did not recall what specific “Scarlet” products were sold, but that could be ascertained from the company’s records. (RX-0248C at Q. 60.)

As required by *Finnigan Corp. v. Int’l Trade Comm’n*, Lucent records confirm the sales that Mr. Krebs and Mr. Heimann recalled. 180 F.3d 1354, 1366-68 (Fed. Cir. 1999). This corroboration addresses any concerns that may arise based on LSI’s interest in the outcome of this Investigation. *See Finnigan Corp.*, 180 F.3d at 1366-68. RX-0042C, RX-0043C, and RX-0044C are spreadsheets reflecting sales of various chips that include the name “MS410B.” (RX-0042C; RX-0043C; RX-0044C.) Mr. Philip Subits is a financial analyst for revenue accounting at LSI, and has been employed by LSI or its predecessors (including Lucent) since 1981. (RX-0249C at Qs. 2-5.) Mr. Subits explained how LSI tracks sales and revenue, including testimony regarding the databases used by LSI for this tracking. (RX-0249C at Qs. 13-32.)

Mr. Subits testified that he generated sales reports from 2001 and early 2002, explaining that column “L” and “M” of the sales reports identify the sales order number and invoice date, column “A” identifies the fiscal year of the transaction, “B” identifies the type of transaction, “C” provides the customer name, “D” provides the customer category, “E” identifies the sales order type, “F” is the invoice quantity, “G” is the line extended price, “H” is the line extended cost, “I” is the device code, and “J” provides shipping information. (RX-0249C at Qs. 38-43; RX-0043C.) Mr. Subits also testified that a second report was generated from a different system and that report confirmed the data included in RX-0043C. (RX-0249C at Qs. 63-80; RX-

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0044C.) Mr. Subits provided a similar confirmation regarding a third report, RX-0042C. (RX-0249C at Qs. 81-102.)

RX-0042C, RX-0043C, and RX-0044C refer to products by device code rather than by die used to manufacture the product. Respondents produced an additional record that correlates the device codes to the dies used to manufacture the chips. Mr. Krebs testified that RX-0041C is a report generated from information in LSI's databases that identifies the final part numbers associated with the design die codes for the MS410B series of chips, explaining that the second column of the report identifies the final device codes showing the package type. (RX-0247C at Qs. 97-99, 101-102.) Mr. Krebs explained that several device codes are associated with a single design die code because the device codes provide different package types for the chips, but the underlying die is the same. (RX-0247C at Q. 100.) Mr. Heimann similarly testified that if a specific "Scarlet" product were contained in two or more different packages, the die would have been the same and would have used the same GDSII and xy mask data. (RX-0248C at Qs. 74-75.)

The first row of RX-0043C identifies the "domestic" sale of 120 units with a device code of "M-MS410B-65T10-DB" in fiscal year 2001 to Quantum. (RX-0043C at 1-2.) Mr. Subits explained that Fiscal Year 2001 corresponded to October 2000 to September 2001. (RX-0249C at Q. 95.) The thirty-first row of RX-0044C identifies the "United States" sale of 2,520 "M-MS410B2-85T10-DB" chips on August 3, 2001. Row four of RX-0041C correlates the device code "MS410B-65T10-DB" to die "MS410B." (RX-0041C at 1.) Row twenty-six of RX-0041C correlates the device code "MS410B2-85T10-DB" to die "MS410B2." (RX-0041C at 1.)

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Respondents argue that these are not valid correlations because the RX-0043C and RX-0044C device codes include a leading “M-,” while the correlation spreadsheet omits the leading “M-.” This argument is unpersuasive. Mr. Subits explained that the “M-” prefix for a chip indicates that it was a pre-production device, which would be sales of chips in smaller quantities before full-scale production of those chips began. Mr. Subits continued to explain that “M” prefixed chips were not test chips; rather, the report identifies an invoice for those chips, which means they were fully functional parts for which LSI recognized revenue. (RX-0249C at Qs. 50-52.) Mr. Subits’s testimony regarding the “M-” and the commercial nature of this sale is credible and un rebutted. Thus it is clear that chips using the MS410B and MS410B2 dies were sold commercially within the United States no later than September 2001.

Complainant’s attempts to challenge the credibility of Mr. Krebs and Mr. Heimann are ineffective. Complainant argues that Mr. Krebs and Mr. Heimann are only engineers and were not personally involved in sales, therefore their testimony cannot “rise to the level of clear and convincing evidence.” (CIB at 68.) Mr. Krebs and Mr. Heimann testified about what they knew as engineers, explaining how they would know that certain sales had occurred. (RX-0247C at Q. 135; RX-0248C at Qs. 56-59.) Further, their testimony was corroborated by sales records. As a result, there is no reason to doubt the accuracy of their testimony.

Complainant also argues that “inconsistent” and “reluctant” testimony was provided by Mr. Heimann and Mr. Krebs, which “creates serious questions” regarding their credibility. (CIB at 68.) These arguments are meritless. There was nothing “reluctant” about Mr. Heimann’s testimony on cross-examination, rather there was merely back and forth discussion between Mr. Heimann and the cross-examining attorney. (*See* Tr. at 582:3-12.) The fact that Mr. Heimann’s

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testimony regarding previously unproduced documents (emails that were not produced based on an agreement between the parties) was stricken does not impact his credibility. (*See* Tr. at 597:23-599:13.) It merely was a result of documents not having been produced, not Mr. Heinmann's credibility. Similarly, Mr. Krebs' deposition testimony that he had no "direct" knowledge of sales is entirely consistent with his direct testimony, which explained that he was aware of sales because of his activities and communications as an engineer—he was not directly involved in sales. (CX-0339C at 81:11-83:4; RX-0247C at Q. 135.)

Based upon all of the foregoing, I find that there is clear and convincing evidence that chips manufactured using the MS410B and MS410B2 dies were sold before February 26, 2002 (one year prior to the priority date asserted for the '928 patent), and are prior art to the '928 patent.

I also find that the prior art MS410B and MS410B2 devices practice each element of claims 1-3 and 6-10 of the '928 patent. Claim 1 discloses:

An integrated circuit (IC) device having a pad structure formed thereon, the IC device comprising:

- a) a substrate;
- b) an insulation layer formed on the substrate;
- c) a lower electric-conduction layer formed in the insulation layer;
- d) a compound layer structure formed in the insulation layer;
- e) a first pad layer formed on the insulation layer and coupled to the compound layer structure, wherein the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer; and
- f) a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer.

(JX-0001 at 5:6-21.) Respondents' expert Dr. Gwozdz provided a thorough analysis of each claim element of claim 1, citing graphical representations of relevant portions of the dies for the

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MS410B and MS410B2 devices based on the GDS2 data reflected in RPX-0001C¹⁶ for those chips. (RX-0246C at Qs. 47, 63-67, 69-71, 74-75, 81; RPX-0001C.) He identified the substrate (RX-0246C at Q. 69 (citing RDX-0003C at 2-3)), the insulation layer formed on the substrate (RX-0246C at Q. 70 (citing RDX-0003C at 2; RX-0058C at 28; RX-0059C at 26; RX-0060C at 27)), the lower electric-conduction layer formed in the insulation layer (M3)¹⁷ (this extends between the first pad layer and the substrate and is below the first pad layer and the compound layer structure) (RX-0246C at Q. 71 (citing RDX-0003C at 3)), a compound layer structure formed in the insulation layer (RX-0246C at Q. 74 (citing RDX-0003C at 4-5 (showing metal layers M4 and M5 connected by vias))), a first pad layer (M5) formed on the insulation layer and coupled by vias to the compound layer structure (M4) (RX-0246C at Q. 75 (citing RDX-0003C at 5-6)), and a second pad layer (M5) formed on the insulation layer and coupled by vias to M4 and to the lower electric-conduction layer (M3) (RX-0246C at Q. 81 (citing RDX-0003C at 6-7)). Complainant disputes the presence of a single limitation that requires that “the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer.” (CIB at 77.) For the reasons explained below, I find that this limitation is practiced in the MS410B and MS410B2 devices.

Complainant’s argument turns on its interpretation of the claim term “spaced apart” to require more than the minimal possible physical separation. For the reasons explained in Section III.B.2, *supra*, the term “spaced apart” requires only physical separation. Dr. Gwozdz testified, citing supporting documentation generated from GDSII files, that the compound layer structure

¹⁶ Complainant has agreed that the MS410B and MS410B2 devices are functionally identical for relevant purposes of this Investigation. (CIB at 76 n.92.)

¹⁷ As explained in Section III.B.4.b, *supra*, there is no requirement regarding the size of the lower electric-conduction layer relative to the pad layer.

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below the first pad layer is in fact physically separated from the lower electric-conduction layer. (RX-0246C at Q. 75 (citing RDX-0003C at 5-6).) He explains that these two structures are on separate layers—M3 and M4—and the figures demonstrate that there are no vias connecting these two structures. (*Id.*) As a result, Respondents have provided clear and convincing evidence that the claim elements required by claim 1 are present in the MS410B and MS410B2 devices.

All limitations of claim 2 also can be found in the MS410B and MS410B2 devices. Although Complainant argues generally that claims 2-3 and 6-10 are not anticipated because claim 1 is not anticipated, Complainant does not dispute that the claim elements required by claims 2-3 and 6-9 are present in the MS410B and MS410B2 devices. (CIB at 81.) Claim 2 requires:

The IC device according to claim 1, wherein the compound layer structure comprises a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer.

(JX-0001 at 5:22-25.) Dr. Gwozdz credibly testified, citing supporting documentation, that the compound layer structure includes a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer. (RX-0246C at Q. 83 (citing RDX-0003C at 7-8)). As a result, Respondents have provided clear and convincing evidence that the claim elements required by claim 2 are present in the MS410B and MS410B2 devices. All limitations of claim 3 can also be found in the MS410B and MS410B2 devices. Claim 3 requires:

The IC device according to claim 2, wherein the first connecting layer comprises a plurality of via plugs.

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(JX-0001 at 5:26-27.) Dr. Gwozdz credibly testified, citing supporting documentation, that the MS410B (and MS410B2) included a first connecting layer having a plurality of via plugs. (RX-0246C at Q. 85 (Citing RDX-0003C at 9).) As a result, Respondents have provided clear and convincing evidence that the claim elements required by claim 3 are present in the MS410B and MS410B2 devices.

All limitations of claim 6 can also be found in the MS410B and MS410B2 devices.

Claim 6 requires:

The IC device according to claim 1, wherein the first pad layer is shaped like a polygon.

(JX-0001 at 5:33-34.) Dr. Gwozdz credibly testified, citing supporting documentation, that bond pads used in the MS410B (and MS410B2) were square, which is a polygon. (RX-0246C at Q. 87 (Citing RDX-0003C at 13).) As a result, Respondents have provided clear and convincing evidence that the claim elements required by claim 6 are present in the MS410B and MS410B2 devices.

All limitations of claim 7 can also be found in the MS410B and MS410B2 devices.

Claim 7 requires:

The IC device according to claim 1, further comprising a passivation layer formed on the insulation layer to cover a part of the outer rim of at least one of the first and second pad layers.

(JX-0001 at 5:35-38.) Dr. Gwozdz credibly testified, citing supporting documentation, the MS410B (and MS410B2) included a passivation layer formed over the bond pad to cover part of the outer rim of the pad. (RX-0246C at Q. 89 (Citing RDX-0003C at 13-14).) As a result, Respondents have provided clear and convincing evidence that the claim elements required by claim 7 are present in the MS410B and MS410B2 devices.

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All limitations of claims 8 and 9 can also be found in the MS410B and MS410B2 devices. Claim 8 requires:

The IC device according to claim 1, further comprising at least one second connecting layer for coupling the second pad layer to the lower electric-conduction layer.

(JX-0001 at 5:39-41.) Claim 9 further requires:

The IC device according to claim 8, further comprising at least one second electric-conduction layer coupled between the second pad layer and the lower electric-conduction layer with the second connecting layer.

(JX-0001 at 5:42-45.) Dr. Gwozdz credibly testified, citing supporting documentation, that the second bond pad of the MS410B (and MS410B2) is constructed similarly to the first bond pad, in that it is made up of two metal structures coupled together by vias. (RX-0246C at Q. 89 (citing RDX-0003C at 14-16).) As a result, Respondents have provided clear and convincing evidence that the claim elements required by claims 8 and 9 are present in the MS410B and MS410B2 devices.

The only dependent claim for which Complainant raises a separate argument is claim 10. For the reasons explained below, however, all limitations of claims 10 can also be found in the MS410B and MS410B2 devices. Claim 10 requires:

The IC device according to claim 1, wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer.

(JX-0001 at 5:46-48.) Dr. Gwozdz credibly testified that the first bond pad in the MS410B (and MS410B2) device is shielded from electromagnetic signals from the substrate by the power or ground lines running below it. (RX-0246C at Q. 93.)

Complainant argues that because there are metal layers below the alleged lower electric-conduction layer that are connected to the first bond pad, noise from the substrate would be

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directed to the first bond pad, and the lower electric-conduction layer would not keep noise away from the first bond pad. Complainant's arguments fail for several reasons. First, Complainant cites to exhibit CDX-0053C at 3 in support of its argument. Complainant failed to produce this exhibit in a timely manner pursuant to the procedural schedule, disclosing it for the first time at trial. (Tr. at 718:14-23, 855:6-856:1) I found that Respondents were prejudiced as a result of this untimely disclosure. (Tr. at 855:21-856:1.) I also instructed the Complainant that this exhibit was not to be "used as evidence" and "should not be cited by either of the parties in their post-hearing briefs, other than as explanation" (Tr. at 860:16-23.) To the extent that Complainant is now trying to rely upon CDX-0053C.3 as substantive evidence, this is in direct violation of these instructions.

Second, this argument was not raised in Complainant's pre-trial brief. Complainant argued only that Dr. Gwozdz did not provide a quantitative analysis to determine how much noise was kept away from the first bond pad. (CPHB at 190-191.) Complainant did not disclose the argument it now asserts. (*See id.*) Ground Rule 8.2 provides that "[a]ny contentions not set forth in detail [in the pre-trial brief] 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." Because Complainant failed to raise this argument in its pre-trial brief, and failed to identify any reason it was not aware and could not be aware of this argument at the time it filed the brief, Complainant waived this argument.

Third, the substance of the argument is not persuasive. As an initial matter, Complainant's position appears to directly conflict with the arguments made on infringement.

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Dr. Walker confirmed that these lower metal layers (below the lower electric-conduction layer) also exist in the { } accused of infringement, but asserts that they are irrelevant to the question of infringement. (CX-0313C at Q. 131.) If these layers are irrelevant for the question of infringement, they also are irrelevant for invalidity.

Further, the lower electric-conduction layer in the MS410B and MS410B2 devices will “shield noise” as required by claim 10 even if there are lower metal layers present in the chips. The inconsistency between Complainant’s infringement and invalidity positions notwithstanding, it is clear that the lower electric-conduction layer would provide some shielding. Rather, Dr. Gwozdz explained during cross-examination that because the bottom metal layer in the MS410B (and MS410B2) device “doesn’t cover the entire region,” it would not shield “all” of the noise emitting from the substrate and some noise would still reach the lower electric-conduction layer. (Tr. at 694:4-22.) Because some of the noise would still hit the lower electric-conduction layer, it is clear that the lower electric-conduction layer would prevent at least some noise from reaching the first pad layer. Complainant’s expert, Dr. Walker, admitted that the ‘928 patent does not set a threshold for the amount of noise reduction and opined that all that claim 10 requires is “significant” or “measureable” noise reduction. (Tr. at 429:5-21.) Dr. Walker also admitted that even where there were additional metal layers between the lower electric-conduction layer and the substrate, the lower electric-conduction layer “would provide some shielding but not much.” (Tr. at 438:6-439:2.) As a result, and based upon all of the foregoing, Complainant’s argument fails to rebut the clear and convincing evidence that demonstrates claim 10 is practiced by the MS410B and MS410B2 devices.

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Complainant argues generally that because Dr. Gwozdz referenced the infringement positions of Complainant in forming his invalidity opinion, his invalidity opinion is “irrelevant” to the two step anticipation analysis set forth by the Federal Circuit. This argument is baseless. Although *SRI Int’l* cautioned against using the accused device to construe the claim language and criticized the defendant’s counsel in that case for arguing that the claims are construed “to cover” or “not to cover” the accused device, no such exercise is being conducted here. 775 F.2d at 1118. Rather, Dr. Gwozdz is following the fundamental maxim of patent law that provides “that which infringes, if later, would anticipate, if earlier.” *Peters v. Active Mfg. Co.*, 129 U.S. 530, 537 (1889).¹⁸ The fact that Dr. Gwozdz considered Complainant’s infringement arguments does not render his invalidity positions “irrelevant.” Based upon all of the foregoing, I find that Respondents have presented clear and convincing evidence that claims 1-3 and 6-10 are invalid as anticipated by the MS410B and MS410B2 devices.

2. Ker Application/Patent

Respondents’ Position: Respondents argue that U.S. Patent Pub. No. 2001/0010407 (the “Ker Application”) anticipates claims 1-10 of the ’928 patent. Respondents say that the Ker Application was filed on March 27, 2001 and published on August 2, 2001. (RIB at 76 (citing RX-0013).) Respondents say that the Ker Application is prior art to the ’928 patent under 35 U.S.C. § 102(a) and (b). Respondents aver that the examiner did not consider the Ker Application during prosecution of the ’928 patent.

¹⁸ To prevent any confusion, I note that this Initial Determination applies the clear and convincing evidence standard for invalidity.

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Respondents argue that the Ker application discloses an integrated circuit with a substrate. (*Id.* at 77 (citing RX-0246C at Qs. 124-25; RDX-0007 at 1-2; RX-0013 at 1 (Abstract), Fig. 23 Element 30).) Respondents argue that the Ker Application also discloses the second element of claim 1. Respondents say that the Ker Application discloses an IC device with an insulation layer formed on the substrate. (*Id.* at 78 (citing RX-0246C at Q. 126; RDX-0007 at 2-3; RX-0013 at 1 (Abstract) (“The stacked metal layer is made from a plurality of metal layers and a plurality of dielectric layers, and the metal layers and the dielectric layers are stacked alternately”), Fig. 23, Element 60).)

Respondents argue that the Ker Application discloses the third element of claim 1. Respondents say that the Ker Application discloses a lower electric-conduction layer formed in the insulation layer. (*Id.* at 78-79 (citing RX-0246C at Q. 127; RDX-0007 at 3-4; RX-0013 at ¶ 53).) Respondents continue that metal layer 53 in Figure 23 substantially intersects the footprint of the pad layer (labeled 56 in the figure) and its dimensions correspond to the pad layer. (*Id.* at 79 (citing RX-0013 at Fig. 23).)

Respondents argue that the Ker Application discloses the fourth element of claim 1. Respondents say that the Ker Application discloses a compound layer structure in which the “bonding pad includes a stacked metal layer and a metal layer, [and] in which the metal layer is on the stacked metal layer [and e]ach of the metal layers stacked in the stacked metal layer is coupled with an adjacent metal layer by a via plug.” (*Id.* at (citing RX-0013 at ¶ 10, Fig. 23; RX-0246C at Q. 128; RDX-0007 at 4–6).)

Respondents contend that the Ker Application also discloses the fifth element of claim 1. Respondents explain that the Ker Application discloses a compound layer structure and a first

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pad layer formed on the insulation layer. (*Id.* at 80 (citing RX-0013 at ¶ 53 (“[a] bonding pad includes the metal layers 55 and 56 and is covered by the passivation layer 80”); RX-0246C at Q. 129; RDX-0007 at 6–7).) Respondents continue that Figure 23 of the Ker Application shows that the first pad layer (element 56) and the compound layer structure (elements 55 and 75) are spaced apart from the lower electric-conduction layer (element 53). Respondents contend that the structure labeled number 54 in Figure 23 is an intervening metal layer between the lower electric-conduction layer and the first pad layer and compound layer structure, as would be required under Realtek’s construction of “spaced apart.” Respondents note that the Ker Application expressly states that the “metal layers are isolated by the dielectric layers.” (*Id.* at 81 (citing RX-00013 at ¶ 10).)

Respondents disagree with Dr. Walker’s opinion that the lower electric-conduction layer in the Ker Application is not spaced apart from the first pad layer and compound layer structure because they are coupled together. (*Id.* at 81 (citing CX-0338C at Qs. 111–13).) Respondents argue that the structures are not shown to be coupled in the figure, and nothing else in the Ker Application indicates that they are. Respondents continue that it is possible to find connections between each layer of a chip, but this does not mean all of the millions of devices on the chip are coupled to each other and the chip would be useless if they were. Respondents add that even if the structures were coupled, they would still be “spaced apart” from each other under the plain and ordinary meaning of “spaced apart.” According to Respondents, “spaced apart” cannot mean “not connected” because claim 19 of the ’928 patent provides that the compound layer structure is “spaced apart from and not connected” to the lower electric-conduction layer. (*Id.* at 82 (citing

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JX-0001 at 6:38). Respondents conclude that the patent distinguishes “spaced apart” from “not connected,” and “spaced apart” cannot mean “not connected.”

Respondents assert that Complainant’s argument that all of the layers in the Ker Application are interconnected is based on the false assumption that the Ker Application uses “layer” to refer to individual structures or lines within an IC. Respondents say that Dr. Gwozdz explained that the Ker Application uses “layers” to refer to the metal layers across the chip, and not to individual structures within those metal layers. (RRB at 24 (citing RX-0246C at Q. 130).) Respondents continue that although the Ker Application states that the “metal layers 51, 52 are coupled by a via plug 71”, there are five individual structures on metal layer 51 in figure 23 and only two of them are coupled to the structure on metal layer 52. (*Id.* (citing RX-0013 at ¶ 53).) Respondents add that coupling every metal layer would render the chip inoperable because the transistor circuits would be shorted. (*Id.* (citing RX-0246C at Q. 130).)

Respondents say that the Ker Application explains that metal layers 52, 53, and 54 serve as signal and power lines. (*Id.* (citing RX-0013 at ¶ 53).) Respondents continue that Dr. Walker admitted that signal lines are not coupled to power lines because it would cause the IC to short. (*Id.* (citing Tr. at 431:13-21).) Respondents add that the Ker Application explains that “[e]ach pair of the metal layers 51, 52, 53, 54, 55 and 56 is isolated by the dielectric layer 60.” (*Id.* at 24-25 (citing RX-0013 at ¶ 53).) Respondents argue that if all structures were coupled, no isolation would be needed.

Respondents disagree with Complainant’s argument that the Ker Application does not disclose a second pad layer. Respondents say that Dr. Gwozdz testified that the Ker Application discloses various bond-pad structures that can be used on an IC and that a semiconductor device

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necessarily has multiple bond pads, including multiple pads coupled to power and signal lines. (*Id.* at 25 (citing RX-0246C at Q. 133).) Respondents continue that it is undisputed that an IC must be connected through a bond pad to an external power source. (*Id.* (citing Tutorial Transcript at 19:25-20:7).) Respondents argue that power line 53 in Figure 23 of the Ker Application and Patent is necessarily connected to a different bond pad than the pad shown in Figure 23.

Respondents say that Complainant is mistaken in arguing that Figure 12 and Figure 23 in the Ker Application cannot be combined because they have different numbers of metal layers. Respondents say that the Ker Application does not disclose that there is any significance to the number of layers. Respondents continue that Dr. Gwozdz testified that a person of ordinary skill in the art would understand that the invention could be used for ICs having different numbers of metal layers, as opposed to rigidly applying only the illustrations. (*Id.* (citing RX-0246 at Q. 133; Tr. at 658:6-9, 706:6-709:1).) Respondents note that the claims in Ker refer only to an “uppermost metal layer” and “a plurality of metal layers and a plurality of dielectric layers.” (*Id.* (citing RX-0013 at ¶ 61).) Respondents argue that Complainant’s attempt to limit the disclosure of the Ker Application to the specific layouts shown in the figures should be rejected.

Respondents say that while Complainant purportedly dropped the limitation requiring connection to an external power source from its claim construction to avoid a finding of non-infringement, it is relying on the same limitation to avoid a finding of invalidity. Respondents argue that Complainant’s argument is also incorrect because the Ker Application discloses that the metal layer 53 in the embodiment of Figure 23 serves as a power line. (*Id.* at 26 (citing RX-0013 at ¶ 53).) Respondents continue that it is undisputed that there is no power or ground inside

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a chip internally and it needs to be provided from the outside world. (*Id.* (citing Tutorial Tr. at 20:5-6).)

Respondents argue that the Ker application discloses the sixth element of claim 1. According to Respondents, the Ker Application discloses several bond-pad structures and indicates that any of them may be used to achieve the objectives of the invention. (RIB at 82 (citing RX-0246C at Q. 133; RDX-0007 at 7–8).) Respondents say that Figure 23 of the Ker Application discloses a first pad layer formed in the insulation layer and figure 12 discloses a second pad layer formed in the insulation layer, wherein the second pad layer is coupled to a series of metal layers that lie beneath it. Respondents explain that the second pad layer (1150) is coupled to metal layer 1140 by vias 1144; metal layer 1140 is connected to metal layer 1130 by vias 1134; and metal layer 1130 is connected to metal layer 1120 by vias 1124. Finally, according to Respondents, metal layer 1120 is conductive metal layer. (*Id.* at 83 (citing RX-0013 at ¶ 46).)

Respondents disagree with Dr. Walker’s opinion that the pad layer in the Ker Application is not the claimed second pad layer because the embodiment of the invention pictured in Figure 23 of the Ker Application has more metal layers than the embodiment depicted in Figure 12. (*Id.* at 83 (citing CX-0338C at Qs. 116–17).) Respondents say that the notion that an IC device might have only a single bond pad is unreasonable. Respondents continue that the Ker Application discloses an IC with at least two bond pads—after describing “a [first] low-capacitance bonding pad for a semiconductor device,” the specification states that “the invention provides another low-capacitance bonding pad for a semiconductor devices.” (*Id.* at 83-84 (citing RX-0013 at ¶¶ 10, 12).) Respondents argue that it would be clear to a person of ordinary

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skill in the art that modifications and variations can be made to the structures without departing from the scope or spirit of the invention. (*Id.* at 83 (citing RX-246C at Q. 133).) Respondents contend that such a disclosure would be inherent.

Respondents argue that the Ker Application anticipates claim 2. Respondents say that the compound layer structure of the Ker Application includes a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer. (*Id.* at 84 (citing RX-0246C at Qs. 134–35; RDX-0007 at 8–9; RX-0013C at Fig. 23, Elements 55, 75).)

Respondents assert that the Ker Application anticipates claim 3. Respondents say that Figure 23 of the Ker Application discloses a first connecting layer (75) that includes at least three vias that connect the first pad layer (56) to the first electric-conduction layer (55). (*Id.* at 85 (citing RX-0246C at Qs. 136–37; RDX-0007 at 9–10).)

Respondents contend that the Ker Application anticipates claim 4. (*Id.* at 86 (citing RX-0246C at Qs. 138–39; RDX-0007 at 11–12).) According to Respondents, the Ker Application states that “the metal layer includes several metal bars in one layer and crosses to each other in different layer in different bar direction so as to form a geometric structure, such as a net structure or any other overlapping structure.” (*Id.* (citing RX-0013 at ¶ 11).) Respondents aver that the Ker Application also provides various other possible structural configurations that disclose a webbed railing. (*Id.* (citing RX-0013 at Figs. 2, 17-22).)

Respondents also assert that the Ker Application anticipates claim 5. Respondents say that the Ker Application discloses that “the metal layers stacked in the stacked metal layer are formed with small area and each area of the metal layer in the stacked metal layer is smaller than

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the uppermost metal layer.” (*Id.* at 86-87 (citing RX-0013 at ¶ 12 (emphasis added by respondents); RX-0246C at Q. 140; RDX-0007 at 12–13).)

Respondents contend that the Ker Application anticipates claim 6. According to Respondents, the pad layer disclosed by Figure 2 of the Ker Application is a square. (*Id.* at 87 (citing RX-0246C at Qs. 141–42; RDX-0007 at 13–14).)

Respondents argue that the Ker Application anticipates claim 7. Respondents say that the Ker Application discloses a passivation layer formed over the bond pad to cover part of the outer rim of the pad, teaching that “[a] bonding pad includes the metal layers 55 and 56 and is covered by the passivation layer 80.” (*Id.* (citing RX-0246C at Qs. 143–44; RDX-0007 at 14–16; RX-0013 at ¶ 53, Fig. 23 Element 75).)

Respondents contend that the Ker Application anticipates claims 8 and 9. Respondents say that Figure 12 of the Ker Application discloses: (a) a second connecting layer (element 1144) for coupling a second pad layer (element 1150) to the lower electric-conduction layer; and (b) a second electric-conduction layer (element 1140) coupled between the second pad layer and the lower electric-conduction layer with the second connecting layer. (*Id.* at 88-89 (citing RX-0246C at Qs. 145–46; RDX-0007 at 16–18; RX-0013 at Fig. 12).)

Respondents assert that the Ker Application anticipates claim 10. Respondents say that metal layer 53 shown in Figure 23 of the Ker Application is a lower electric-conduction layer below a first pad layer. Respondents continue that the Ker Application specifically states that metal layer 53 is a planar layer that can be used as a power line. (*Id.* at 89-90 (citing RX-0013 at ¶ 53).) Respondents conclude that if claim 10 is not invalid as indefinite, then it anticipated by the Ker Application based on Realtek’s contention that combined power and ground lines can

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shield noise from the substrate and applying Realtek's claim construction for this limitation. (*Id.* at 90 (citing RX-0246C at Qs. 147–48; RDX-0007 at 18–19).)

Respondents say that U.S. Patent No. 6,448,641 (the “Ker Patent”) issued on September 10, 2002. (*Id.* at 91 (citing RX-0014).) Respondents explain that the Ker Application is a divisional of the application that led to the Ker Patent, which was filed on June 9, 1999. Respondents aver that the Ker Patent and the Ker Application have essentially the same specification. (*Id.* (citing RX-0246C at Qs. 169–70).) Respondents argue that because it was filed on June 9, 1999, and issued on September 10, 2002, the Ker Patent is prior art under 35 U.S.C. §§ 102(a) and (e). Respondents aver that the examiner did not consider the Ker Patent during prosecution of the '928 Patent. Respondents argue that for the same reasons discussed with respect to the Ker Application, the Ker Patent discloses every element of claims 1–10 of the '928 Patent and anticipates those claims. (*Id.* (citing RX-0246C at Qs. 170–74; RDX-0008).)

Complainant's Position: Complainant argues that the Ker Application and Ker Patent do not disclose the claim 1 limitation requiring that the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer. Complainant says that the Ker Application and Patent teach that all metal layers are coupled together. (CIB at 84 (citing RX-0013 at ¶ 10 (“Each of the metal layers stacked in the stacked metal layer is coupled with an adjacent metal layer by a via plug.”))). Complainant disagrees with Respondents' reliance on Figure 23 to argue that not all metal layers are connected together. Complainant says that paragraph 53 of the Ker Application explains that while the via plugs are not shown in Figure 23, the structure on metal layer 53 is coupled through the structure on metal layer 54 to the structure

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on metal layer 55. (*Id.* at 85 (citing RX-0013 at ¶ 53).) Complainant concludes that because these layers are coupled together, they are not spaced apart. (*Id.* (citing CX-0338C at Q. 112).)

Complainant additionally argues that the Ker Application and Patent do not disclose “a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer.” Complainant says that Respondents have relied on figure 23’s disclosure for the first pad layer and figure 12’s disclosure for the second pad layer. (*Id.* at 86 (citing RX-0246C at Q. 133).) Complainant contends that Figure 12 and 23 depict alternative embodiments that would be impossible to combine because one uses a five metal process and the other uses a six metal process. (*Id.* (citing CX-0338C at Q. 116).)

Complainant contends that because claims 2-10 depend from claim 1, they also are not anticipated by the Ker Application and Patent.

Complainant argues that the Ker Application and Patent do not anticipate claim 10 for additional reasons. First, Complainant says that Dr. Gwozdz’s testimony is unclear regarding the claim construction applied. (*Id.* at 87 (citing RX-0246C at Q. 148).) Second, Complainant says that the lower electric-conduction layer must be coupled to a power source or potential to provide shielding, which the Ker application does not disclose. (*Id.* at 88 (citing CX-0338C at Q. 118).) Complainant explains that this is consistent with Respondents’ explanation of shielding at the tutorial. (*Id.* (citing Tr. at 62:2-8).) Respondents say that Dr. Gwozdz testified that if a lower metal layer is electrically connected to the first pad layer, then a noise from the substrate will get routed all the way up to the first pad layer. (*Id.* (citing Tr. at 691:13-692:3).) Respondents say that the second layer 53 of the Ker Application and Patent would not keep noise away from the first pad layer because it is coupled to the first pad layer. (*Id.* (citing RX-0013 at ¶¶ 10, 53).)

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Conclusions and Analysis: The Ker Application/Patent¹⁹ anticipates claims 1-10 because it discloses each and every limitation of those claims. The Ker application was filed on March 27, 2001 and published on August 2, 2001. As a result, it is prior art under section 102(a) and 102(b).

Turning to the disclosure of the Ker Application itself, there appear to be only two disputes between the parties regarding whether the Ker Application discloses each of the limitations of claim 1. (CIB at 87.) First, the parties disagree regarding whether or not the Ker Application discloses a lower electric-conduction layer that is spaced apart from the first pad layer and the compound layer structure. Second, the parties disagree regarding whether or not the Ker Application discloses a second pad layer. Respondents have relied upon the disclosure of Figure 12 for the “second pad layer” and Figure 23 for the first pad layer and associated structure. Respondents essentially have argued that a second pad layer is inherently present in the semiconductor device depicted in figure 23. Because a second pad layer that provides power is necessarily present for the IC to function, I find that claim 1 is anticipated by the Ker Application.

Turning to the language of claim 1, Figure 23 of the Ker Application discloses a substrate (Elements 30 and 34), an insulation layer formed on the substrate (Element 60), a lower electric-conduction layer formed in the insulation layer (Element 53), a compound layer structure formed in the insulation layer (Elements 55 and 75), a first pad layer formed in the insulation layer and coupled to the compound layer structure (Element 56). (RX-0013 at Figure 23.) Figure 12 of

¹⁹ Although the parties refer to the Ker Application and Patent interchangeably, references in the ID will be made to the Ker Application (RX-0013).

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the Ker Application discloses a substrate (Elements 200, 202, and 204), an insulation layer formed on the substrate (Elements 252, 242, 232, 222, and 212), a lower electric-conduction layer formed in the insulation layer (Element 1120), a compound layer structure formed in the insulation layer (Elements 1144 and 1140), and a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer (Element 1150). (RX-0013 at Figure 12.) Thus, the only questions that remain are whether the lower electric-conduction layers (Element 53 in Figure 23 and Element 1120 in Figure 12) are “spaced apart” from the compound layer structure and the first pad layer, and whether a second pad layer is “inherently” disclosed in Figure 23.

I find that Element 53 in Figure 23 and Element 1120 in Figure 12 are spaced apart from the compound layer structure and pad layer. As discussed in Section III.B.2, *supra*, “spaced apart” only requires physical separation. Figure 23 makes clear that the Element 53 is physically separated from Elements 55, 75, and 56. (RX-0013 at Figure 23.) Figure 12 makes clear that Element 1120 is physically separated from Elements 1140, 1144, and 1150. (RX-0013 at Figure 12.)²⁰

Although Figure 23 does not explicitly depict a second pad layer, a second pad layer is necessarily present. The Federal circuit has explained that 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.*, 339 F.3d at 1377. The Ker Application discloses that Element 53 is connected to “power.” (See RX-0013 at ¶ 53

²⁰ Because electromagnetic isolation is not required, the question of whether or not Elements 55, 75, and 56 are connected by vias is irrelevant for claim 1. However, as explained regarding claim 10 below, the lower electric-conduction layer (Element 53) would not be connected to all of the other metal layers because doing so would, by Complainant’s expert’s admission, very likely cause a short. (Tr. at 431:13-431:21.)

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(disclosing that “metal layers 53 and 54 are designed to be planar layers and used to serve as, for example, power lines.”).) Dr. Gwozdz testified that a semiconductor device “necessarily has multiple bond pads,” and “power lines” would be connected to bond pads. (RX-0246 at Q. 133.) It does not appear to be disputed that an IC necessarily would have a bond pad for supplying power. As a result, the fact that Figure 23 discloses power lines necessarily means that there will be a second bond pad to provide power for the power lines. As a result, I find that a second bond pad is inherently present in Figure 23. Figure 12 of the Ker Application depicts a bond pad connected to a power line. (RX-0013 at Fig. 12, ¶ 10.) Because each and every limitation of claim 1 is explicitly or inherently present in Figure 23 of the Ker Application, I find that the Ker Application anticipates claim 1.

All limitations of claim 2 also are taught in the Ker Application. Although Complainant argues generally that claims 2-10 are not anticipated because claim 1 is not anticipated, Complainant does not dispute that the claim elements required by claims 2-9 are present in the Ker Application. (CIB at 81.) Figure 23 discloses a first electric-conduction layer (element 55) and a first connecting layer (element 75) that connects the first electric-conduction layer to the first pad layer (element 56). As a result, Respondents have provided clear and convincing evidence that the claim elements required by claim 2 are taught by the Ker application.

All limitations of claim 3 also are taught by the Ker Application. Paragraph 53 of the Ker Application explains that element 75 of Figure 23 is a “via plug.” (RX-0013 at ¶ 53.) As a result, Respondents have provided clear and convincing evidence that the claim elements required by claim 3 are taught by the Ker application.

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All limitations of claim 4 are taught by the Ker Application. Paragraph 13 of the Ker Application explains that “[t]he metal layers in the stacked metal layer can include various geometry structures.” (RX-0013 at ¶ 13.) Figure 2 is an illustration of the stacked metal layers (e.g., Element 55 of figure 23) in a webbed pattern below the bonding pad. (RX-0013 at ¶ 33, Fig. 2.) As a result, there is clear and convincing evidence that the claim elements required by claim 4 are present in the Ker application.

All limitations of claim 5 are taught by the Ker Application. Paragraph 12 of the Ker Application explains that the stacked metal layers (the layers depicted in Figure 2) are “formed with small area and each area of the metal layer in the stacked metal layer is smaller than the uppermost metal layer [the bond pad].” (RX-0013 at ¶ 12.) As a result, there is clear and convincing evidence that the claim elements required by claim 5 are present in the Ker Application.

All limitations of claim 6 are taught by the Ker Application. Figure 2 depicts the bond pad (250) as a square, which is a polygon. (RX-0013 at Fig. 2, ¶ 34.) As a result, Respondents have provided clear and convincing evidence that the claim elements required by claim 6 are taught by the Ker Application.

All limitations of claim 7 also are disclosed in the Ker Application. Figure 23 depicts Element 80 as overlapping the bond pad, Element 56. (RX-0013 at Fig. 23.) Paragraph 53 explains that Element 80 is a passivation layer. (RX-0013 at ¶ 53.) As a result, there is clear and convincing evidence that the claim elements required by claim 7 are taught by the Ker Application.

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All limitations of claims 8 and 9 are disclosed in the Ker Application. Claims 8 and 9 add additional limitations related to the second pad layer. As discussed above regarding claim 1, the existence of a second pad layer is necessary, and therefore inherent, in the disclosure of Figure 23. Claim 8 requires that the second pad layer be coupled by a connecting layer to the lower electric-conduction layer. Because the second pad layer necessarily would need to be connected to the lower electric-conduction layer in order to provide power to the lower electric-conduction layer, this limitation also is inherently disclosed.

Claim 9 requires that there be at least one second electric-conduction layer between the second pad layer and the lower electric-conduction layer. The first and second pad layers are necessarily on the same level of the chips. Because there is an intervening metal layer depicted in Figure 23 between the first pad layer and the lower electric-conduction layer (Elements 54), there would necessarily be intervening electric-conduction layers between a second pad (at the same level as the first pad) and the lower electric-conduction layer. As a result, there is clear and convincing evidence that the claim elements required by claim 8 and 9 are inherently disclosed in the Ker Application.

The limitations of claim 10 also are taught in the Ker Application. As noted above regarding claim 1, Element 53 of Figure 23 of the Ker Application can be used as a “power line.” Dr. Gwozdz testified that this power line would provide noise shielding for the bond pad. (RX-0246C at Q. 147.)

Complainant’s argument that Element 53 would not provide shielding to the bond pad because it is connected to the bond pad is not persuasive. Paragraph 53 of the Ker Application does not actually state that Element 53 is connected to the bond pad. Rather, Paragraph 53

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discloses that “[t]he metal layers 55, 56 are coupled by a via plug 75 and the metal layers 51, 52 are coupled by a via plug 71. The metal layers 52, 53 and 54 serving as signal lines and power lines are also coupled by via plugs (not shown), and the metal layers 54 and 55 are similar.” (RX-0013 at ¶ 53.) Thus, there is no explicit disclosure that Element 53 is connected to the bond pad. Although Complainant reads this passage to mean that all of the metal layers, 52, 53, 54, and 55 are connected to one another, Complainant’s expert admitted that signal lines would not be connected to power lines, because it would “very likely” cause a short. (Tr. at 431:13-431:21.) As noted above, the Ker Application indicates that metal layers 52, 53, and 54 are signal and powerlines. Thus, Complainant’s reading of this passage in the Ker Application is unreasonable. As a result, Complainant’s arguments are not persuasive.

Based upon all of the foregoing, I find that there is clear and convincing evidence that each and every limitation of claims 1-10 is explicitly or inherently disclosed in the Ker Application.

C. Obviousness

1. MS410B and MS410B2

Respondents’ Position: Respondents argue that if any element of claims 1–3 or 6–10 of the ’928 Patent is not disclosed by the MS410B and MS410B2 devices, the claims would have been obvious. (RIB at 76 (citing RX-0246C at Q. 108).) Respondents say that it would have been obvious to one of ordinary skill in the art to use a wider structure, including a structure having dimensions corresponding to the pad layer, for the ground or power distribution lines (the “lower electric-conduction layer”), especially if the goal were to provide an effective shield

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against noise from the substrate travelling up through the chip. (*Id.* (citing RX-0246C at Q. 108).)

Complainant's Position: Complainant argues that Respondents do not provide substantive arguments but simply argue in the alternative that if the claims are not found to be anticipated, they are obvious. Complainant says that the MS410B and MS410B2 devices fail to render obvious the claims of the '928 patent for two reasons. First, Complainant says that one of ordinary skill in the art could not have used a structure having dimensions corresponding to the pad layer for the ground or power distribution lines. (CIB at 92 (citing CX-0338C at Q. 101; CX-0226C at 147).) Second, even if such a structure could be used, Complainant says that the MS410B and MS410B2 devices would fail to satisfy the "spaced apart" limitation. (*Id.* at 93 (citing CX-0246C at Q. 108).)

Conclusions and Analysis: As explained in Section IV.B.1, *supra*, each and every limitation of claims 1-3 and 6-10 are found in the MS410B and MS410B2 devices. As a result, if not anticipated, claims 1-3 and 6-10 would be obvious over the MS410B and MS410B2 devices.

2. The Ker Application/Patent

Respondents' Position: Respondents argue that if any elements of the asserted claims are not found to be disclosed by the Ker Application, those elements would have been obvious. (RIB at 90 (citing RX-0246C at Qs. 156–57).) Respondents also contend that if any elements of the asserted claims are not disclosed by the Ker Patent, those elements would have been obvious. (*Id.* at 91 (citing RX-0246C at Q. 174).)

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Conclusions and Analysis: As explained in Section IV.B.2, *supra*, each and every limitation of claims 1-10 are found in the Ker Application. As a result, if not anticipated, claims 1-10 would be obvious over the Ker Application.

3. MS410B chip or the MS410B2 chip in combination with the Ker Application/Ker Patent

Respondents' Position: Respondents argue that the MS410B and MS410B2 devices in combination with the Ker Application/Ker Patent render claims 4 and 5 obvious. (CIB at 93 (citing RX-0246C at Qs. 109-111).) Respondents say that although the MS410B and MS410B2 devices do not disclose a first electric-conduction layer that is shaped like a webbed railing or that is smaller in area than the first pad layer, the Ker Application and Ker Patent do and provide detailed explanations as to the benefits of using such structures in bond-pad applications. (*Id.* at 92 (citing RX-0246C at Q. 110; RDX-0003C at 9–12; RDX-0004C at 10–12; RDX-0005C at 9–12; RDX-0006C at 8–13).)

Respondents contend that a person of ordinary skill in the art would have been motivated to provide bond pads on the MS410B and MS410B2 devices with a first electric-conduction layer shaped like a webbed railing and smaller than the first pad layer, based on the teachings of the Ker Application and Ker Patent. (*Id.* (citing RX-0246C at Q. 111).) Respondents explain that reducing the capacitance of bond pads in semiconductor devices had been a concern for IC designers since well before 2002 and was one of the concerns specifically addressed by the Ker Application and the Ker Patent, which were directed to low-capacitance bonding pads for semiconductor devices and which described a bond pad that reduced parasitic capacitance. (*Id.* (citing RX-0246C at Q. 111; RX-0013; RX-0014 at ¶ 9).)

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Respondents say that the Ker patent and application identified various surface configurations that could be used to reduce the area, such as a net structure or a honeycomb-type mesh (*Id.* (citing RX-0013 at ¶¶ 11–12, 48),) which provided an obvious solution for the known problem addressed by claims 4 and 5 of the '928 Patent. Respondents say that the Ker Application and Ker Patent explain that a problem with bond-pad structures is the “peel-off effect,” which can occur while forming the bonding wire such that the bonding reliability is decreased. (*Id.* at 93 (citing RX-0246C at Q. 111; RX-0013 ¶ 6).) Respondents continue that the Ker Application and Ker Patent teach that the peel-off effect can be avoided by its bond-pad structures, which “include the stacked metal layers which are buried deeply in the dielectric layer.” (*Id.* (citing RX-0013 at ¶ 14).) Respondents add that the Ker Application and the Ker Patent include at least seven varieties of webbed railings to achieve the objectives of reduced capacitance and improved bond-pad adherence. (*Id.* (citing RX-0013 at Figs. 2, 17, 18, 19, 20, 21, 22).)

Respondents say that Dr. Gwozdz explained in detail why a person of ordinary skill in the art would have been motivated to combine the Ker Application and Patent with the MS410B and MS410B2 devices. (*Id.* (citing RX-0246C at Qs. 109-111).)

Complainant’s position: Complainant argues that the Ker Application and Patent fail to teach the “spaced apart” requirement. (CIB at 93 (citing CX-0338C at Q. 103).) Complainants conclude, as a result, that the Ker Application and Patent fails to cure the deficiencies of the MS410B and MS410B2 devices, and their combination cannot render obvious claims 4 and 5. (*Id.* at 93 (citing CX-0338C at Q. 103).) Respondents argue that Dr. Gwozdz fails to articulate a plausible reason why one of ordinary skill in the art would have combined the teachings of the

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Ker Application and Patent with the MS410B and MS410B2 devices. (*Id.* at 93-94 (citing CX-0338C at Q. 103).)

Conclusions and Analysis: I find that there is not clear and convincing evidence that claims 4 and 5 are obvious over the combination of the MS410B and MS410B2 devices with the Ker Application. In Section IV.B.2, *supra*, I find that the Ker Application discloses each and every limitation of claims 4 and 5. As a result, the only question that must be answered is whether it would be obvious to one of ordinary skill in the art to combine the teachings of the Ker Application and Patent related to claims 4 and 5 with the MS410B and MS410B2 devices. For the reasons explained below, I find that there is not clear and convincing evidence that a person of ordinary skill in the art would have made this combination.

The Federal Circuit has explained that “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*, 491 F.3d at 1360. Here, Respondents argue that parasitic capacitance and bond pad peel off are well known problems that have been a concern for IC designers since “well before 2002.” Respondents say that because the Ker Application and Patent explicitly address these problems, one of ordinary skill in the art would have combined the teachings of the Ker Application and Patent with the MS410B and MS410B2 devices. Although Respondents aver that bond pad peel off and parasitic capacitance were well known problems, there is no showing that parasitic capacitance or bond pad peel off were problems for the specific MS410B and MS410B2 devices at issue. Rather, Respondents are silent on the issue. Because there is no showing that these two “problems” needed to be solved

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in the MS410B and MS410B2 devices, I find that Respondents have failed to provide clear and convincing evidence that one of ordinary skill in the art would apply the solution provided in the Ker Application and Patent to the MS410B and MS410B2 devices.

As a result, claims 4 and 5 are not obvious over the combination of the MS410B and MS410B2 devices with the Ker Application and Patent.²¹

D. Indefiniteness of Claim 10

Conclusions and Analysis: Respondents' arguments under 35 USC § 112 are addressed in Section III.B.5.a, *supra*. For the reasons explained in Section III.B.5.a, *supra*, claim 10 is not invalid as indefinite.

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 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. DirectTV 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).

²¹ To be noted, as explained in Section IV.B.2, *supra*, these claims are anticipated by the Ker Application.

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Contributory infringement requires the patentee to prove that: (1) there is an act of direct infringement in violation of section 337; (2) the accused device has no substantial non-infringing uses; (3) the component is a material part of the invention; and (4) the accused infringer imported, sold for importation, or sold after importation within the United States, the accused components that contributed to another's direct infringement. *Certain Electronic Devices With Image Processing Systems, Components Thereof, and Associated Software*, Inv. No. 337-TA-724; Comm'n Op. (Dec. 21, 2011) at n.9 (citing *Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1353 (Fed. Cir. 2010)). In addition to the foregoing factors, the Federal Circuit has explained that the patentee must also demonstrate that the alleged infringer "knew that the combination for which its components were especially made was both patented and infringing." *Golden Blount, Inc. v. Robert H. Peterson Co.*, 365 F.3d 1054, 1061 (Fed. Cir. 2004) (quoting *Preemption Devices, Inc. v. Minn. Mining & Mfg., Co.*, 803 F.2d 1170, 1174 (Fed. Cir. 1986)).

B. The '928 Patent

Complainant accuses the {

} of infringing claims 1-3 and 6-10 of the '928 patent.

Complainant argues that certain products incorporating the { } specifically the { } (collectively, "Seagate Products") infringe claims 1-3 and 6-10 of the '928 patent for the same reasons the { } infringe. (CIB at 51 (citing CX-0313C at Qs. 172-173).) Complainant also accuses the

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{

} of infringing claims 1-10 of the '928 patent.

Respondents state Complainant's infringement contentions were not fully disclosed in Complainant's interrogatory responses. Respondents argue that this Investigation should be limited to only the infringement contentions disclosed in Complainant's interrogatory responses—that the { } infringe claim 1 of the patent. Nevertheless, Respondents admit that all the relevant structures of all { } are identical for the purposes of infringement analysis. (RIB at 39 n.19.)

As an initial matter, Respondents' contention that this Investigation should be limited to only the infringement contentions identified in Complainant's interrogatory responses has already been denied twice during this Investigation. Respondents' request to limit the Investigation in this manner was addressed in Motion Docket No. 859-032, and denied by Order Number 32. Respondents' renewed request in the form of a motion *in limine* and high priority objection was addressed and denied during the Pre-Hearing Conference for the same reasons explained in Order Number 32. (Tr. at 130:4-18.) Moreover, Respondents admit that all the relevant structures of all { } are identical for the purposes of infringement analysis and do not articulate any prejudice that would result from denying their request to limit this Investigation. (RIB at 39 n.19.) Respondents also admit that the relevant structures of all { } are similar to the { } for the purposes of infringement analysis. (*Id.* at

²² Although Complainant asserts the { } infringe the '928 patent, it has not submitted evidence to establish that these chips were imported into the United States nor have Respondents stipulated that these chips were imported into the United States. Thus, the Commission does not have jurisdiction over the { }. (See *supra* Section II.C.) However, to the extent the Commission disagrees with this finding, I find that the { } infringe claims 1-10 of the '928 patent as explained below.

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49.) Respondents' request to limit this Investigation to the infringement of claim 1 of the '928 patent by the { } is therefore denied.

For the reasons set forth herein, I find that (1) the { } and Seagate Products literally infringe claims 1-3 and 6-9, and (2) { } literally infringe claims 1-10 of '928 patent.

1. Claim 1

Asserted claim 1 claims:

An integrated circuit (IC) device having a pad structure formed thereon, the IC device comprising:

- a) a substrate;
- b) an insulation layer formed on the substrate;
- c) a lower electric-conduction layer formed in the insulation layer;
- d) a compound layer structure formed in the insulation layer;
- e) a first pad layer formed on the insulation layer and coupled to the compound layer structure, wherein the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer; and
- f) a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer.

(JX-0001 at 5:6-21.)

Complainant's Position: Complainant asserts that the { } and Seagate Products infringe claims 1-3 and 6-10 of the '928 patent. Complainant also asserts that the { } infringe claims 1-10 of the '928 patent. Complainant asserts that the relevant structures in all of the { } are identical for the purposes of analyzing infringement.

(CIB at 30 (citing CX-0336 at 211:23-212:19; CX-0313C at Q. 168.))

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Complainant argues that the { } include an integrated circuit device having a pad structure formed thereon, a substrate, and an insulation layer formed on the substrate. (*Id.* at 32 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23-212:19; JX-0030C at 2-6; JX-0031C at 2-6; JX-0032C at 2-6; CX-0313C at Qs. 133-137, 168; CPX-0002C; CX-0225C; CX-0336 at 216:5-13; JX-0033C at 2-5; CX-0313C at Qs. 184-188).) Complainant alleges that Respondents do not dispute that the { } meet these limitations of claim 1. (*Id.*)

Complainant argues that the { } include a lower electric-conduction layer formed in the insulation layer. (*Id.* at 32 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23-212:19; JX-00030C at 7-8; JX-0031C at 7-8; JX-0032C at 7-8; CX-0313C at Q. 138; CPX-0002C; CX-0225C; CX-0336 at 216:5-13; JX-0033C at 7-9; CX-0313C at Q. 189).) Complainant argues that { } in the { } substantially intersect the footprint of the first pad layer and are formed in the insulation layer and are therefore the lower electric-conduction layer. (*Id.* at 33.) Complainant argues that even under Respondents' proposed construction of "lower electric-conduction layer," the { } meet this limitation. (*Id.* (citing CX-0313C at Q.149).)

Complainant argues that the { } are proximate to the substrate either literally or under the doctrine of equivalents. (*Id.* at 33-34 (citing CX-0341 at 134:12-136:24; CX-0313C at Q.152).) Complainant further argues that { } have dimensions corresponding to the first pad layer. (*Id.* (citing CX-0313C at Q. 153; Tr. at 681:8-16).)

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Complainant argues that to the extent the { } do not literally have dimensions corresponding to the first pad layer, the limitation is still met under the doctrine of equivalents because { } “serve the same function of providing shielding, in the same way of being placed between the substrate and spaced apart from the first pad layer and compound layer structure, and provide the same result, the reduction of electromagnetic interference by noise from the substrate.” (*Id.* at 35 (citing CX-0313C at Q. 153).)

Complainant also states that Respondents’ attempts to limit the construction of “lower electric-conduction layer” to cover only the { } is improper. However, Complainant argues that even if such a construction is adopted, the { } would meet the limitation under the doctrine of equivalents. (*Id.* (citing CX-0313C at Qs. 156, 204).)

Complainant argues that the { } include a compound layer structure formed in the insulation layer and a first pad layer formed on the insulation layer and coupled to the compound layer structure. (*Id.* at 37 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23-212:19, 216:5-13; JX-0030C at 9-10; JX-0031C at 9-10; JX-0032C at 9-10; CX-0313C at Qs. 132, 139, 140; CPX-0002C; CX-0225C; JX-0033C at 9-10).) Complainant alleges that Respondents do not dispute that the { } meet these limitations of claim 1. (*Id.*)

Complainant argues that the first pad layer and compound layer structure are spaced apart from the lower electric-conduction layer in the { } (*Id.* at 38 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-

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0100; CX-0137; CX-0336 at 211:23 – 212:19, 216:5-13; JX-0030C at 13-17; JX-0031C at 13-17; JX-0032C at 13-17; CX-0313C at Qs. 141, 192; CPX-0002C; CX-0225C; JX-0033C at 13-17.) Complainant states that the { } which it alleges to be the lower electric-conduction layers, are separated from the compound layer structure at the { } by insulating dielectric layers between { } (*Id.* (citing CX-0313C at Q. 141).) Thus, Complainant argues that the lower electric-conduction layer is not only physically separated, but “sufficiently separated to provide electromagnetic isolation, or shielding from noise from the substrate.” (*Id.* (citing CX-0313C at Q. 141).) Complainant further argues that one of ordinary skill in the art would have understood that the claim does not require 100 percent noise isolation. (*Id.* at 39 (citing CX-0313C at Qs. 78-79; CX-0341 at 167:17-25).)

Complainant argues that the { } include a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer. (*Id.* at 40 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23 – 212:19, 216:5-13; JX-0030C at 18-28; JX-0031C at 18-28; JX-0032C at 18-29; CX-0313C at Qs. 142, 193; CPX-0002C; CX-0225C; JX-0033C at 18-30).) Complainant argues that {

} which they allege to be the lower electric-conduction layers. (*Id.* (citing CX-0313C at Q. 142).) Complainant argues that the ‘928 patent does not require the second pad layer to be only one layer. (*Id.* (citing CX-0313C at Q. 142).) Complainant further argues that even if the second pad layer is limited to one bond pad, the { } meet this limitation under the

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doctrine of equivalents because there is an insubstantial difference between using two pads versus one pad. (*Id.* at 41 (citing CX-0313C at Q. 156).)

Respondents' Position: Respondents argue that the { } do not have a lower electric-conduction layer connected to a second pad layer as required by claim 1 of the patent. First, Respondents argue that { } separately or collectively, cannot be the lower electric-conduction layer because they are not shields. (RIB at 40 (citing CX-0313C at Qs. 75-77; JX-0001 at 3:52-53).) Respondents argue that { } layers are connected to multiple devices in the substrate and therefore cause additional noise to the bond pad rather than shielding it from noise. (*Id.* at 40-41 (citing RX-0285C at Q. 85; RDX-0013C at 2-3; Tr. at 262:19-23).) Second, Respondents argue that under their proposed constructions, the { } cannot be the lower electric-conduction layer because it is not proximate to the substrate or lower than the { } (*Id.* at 41 (citing RX-0285C at Q. 85).) Third, Respondents argue that { } cannot be combined to form the lower electric-conduction layer. Respondents state that the ground lines and power lines perform different functions and do not ever connect, so they cannot collectively be considered a lower electric-conduction layer. (*Id.* (citing RX-0285C at Q. 85).) Fourth, Respondents argue that the { } do not have a second pad layer . . . coupled to the lower electric-conduction layer" as required by claim 1 because { } (*Id.* (citing RX-0285C at Qs. 85, 142).)

Respondents state that {

} because, if they were, the chips would short circuit. (*Id.* at 42 (citing RX-

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0285C at Q. 85).) Thus, Respondents argue that the { } do not have a second pad layer coupled to the combined set of ground and power lines.

Respondents argue that Dr. Walker’s infringement opinion is undermined by his testimony concerning the validity of the ‘928 patent over the prior-art Chittipeddi Patent. (*Id.*) Respondents argue that Dr. Walker found the metal layers underneath the lower electric-conduction layer in the Chittipeddi Patent relevant to his invalidity analysis, but ignored the metal layers underneath the lower electric-conduction layer in the { } for the purposes of his infringement analysis, even though they both connect the lower electric-conduction layer to the substrate. (*Id.* at 43 (citing CX-0338C at Q. 125; CX-0313C at Q. 131; Tr. at 260:16-25, 262:19-23; RX-0285C at Q. 87; RDX-0020C.2-9).) Respondents argue that this inconsistency in Dr. Walker’s analysis renders his testimony on infringement unreliable. (*Id.*)

Respondents also state that there is no infringement under the doctrine of equivalents. Respondents argue that Dr. Walker’s testimony concerning the doctrine of equivalents lacks any particularized explanation and is “[g]eneralized testimony as to the overall similarity between the claims and the accused infringer’s product” which is not sufficient to show infringement under the doctrine of equivalents. (*Id.* at 44 (quoting *Tex. Instruments, Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1567 (Fed. Cir. 1997)).) Further, Respondents contend that {

} do not perform the same function, in a similar way, to achieve a similar result as the lower electric-conduction layer in the ‘928 patent. Respondents reiterate that the { } are connected to devices in the substrate and increase noise, rather than shield noise. (*Id.* at 45 (citing RX-0285C at Q. 85; CX-0313C at Qs. 138, 142, 143, 153; Tr. at 262:19-23).)

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Respondents argue that the { } do not include structures that are “spaced apart” as that term is construed by Complainant. Respondents state that Complainant’s proposed construction, when read literally, requires the first pad layer and compound layer structure to be physically separated to provide electromagnetic isolation from the lower electric-conduction layer. Respondents argue there is no evidence that the first pad layer and compound layer structure are electromagnetically isolated from the lower electric-conduction layer in { }

Respondents also argue that even if Complainant’s proposed construction requires the first pad layer and compound layer structure to be electromagnetically isolated from the substrate, { } do not meet that limitation. Respondents argue that Dr. Walker’s QuickCap simulation and analysis of the results shows that there is significant capacitance between the first pad layer and compound layer structure and the substrate and therefore they are not completely electromagnetically isolated from one another. (*Id.* at 47 (citing RX-0285C at Q. 86; CX-0313C at Q. 164).) Respondents also argue that { } actually provide the opposite effect of shielding because {

} making the substrate electromagnetically closer to the first pad layer and compound layer structure. (*Id.* (citing RX-0285C at Q. 87; Tr. at 262:19-23).)

Respondents assert the Seagate Products do not infringe the asserted claims of the ‘928 patent for the same reasons the { } do not infringe.

Respondents assert the { } are similar to the { } in all relevant respects and do not infringe the asserted claims of the ‘928 patent for the same reasons the { } do not infringe. Respondents assert that the { } do not include a lower

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electric-conduction layer. Respondents argue the five ground lines and three power lines that allegedly comprise the lower electric-conduction layer do not shield the bond pad from noise because they are connected to devices on the substrate and actually create additional noise. (*Id.* at 49 (citing CX-0313C at Q. 189; RX-0285C at Q. 125; RDX-0014C at 2).) Respondents also argue that the ground and power lines serve different purposes and are not connected and thus cannot be collectively considered a lower electric-conduction layer. (*Id.* at 50 (citing RX-0285C at Q. 125).) Respondents also argue that the { } Chips do not include a single bond pad that connects to both the ground and power lines and therefore does not include a second pad layer coupled to the lower electric-conduction layer as required by claim 1. (*Id.* (citing CX-0313C at Q. 193; RX-0285C at Q. 125; RDX-0014C).)

Respondents assert that the { } Chips do not infringe under the doctrine of equivalents for the same reasons the { } Chips do not. Respondents argue that Dr. Walker's testimony is generalized and unreliable. (*Id.* at 51 (citing CX-0313C at Qs. 200-204).) Respondents also argue that the ground and power lines in the { } Chips do not perform substantially the same function, in substantially the same way, to achieve substantially the same result as the lower electric-conduction layer of the '928 patent, because the { } Chips' ground and power lines create additional noise rather than shielding the pad layer from noise. (*Id.* (citing RX-0285C at Qs. 88, 125).)

Respondents also argue that the { } Chips do not include structures that are "spaced apart" as that term is construed by Complainant because the neither the lower electric-conduction layer nor the substrate are electromagnetically isolated from the first pad layer and

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compound layer structure, as required by Complainant’s proposed construction of the term “spaced apart.” (*Id.* at 52 (citing RX-0285C at Q. 126).)

Analysis and Conclusion: The parties do not dispute that the { } Seagate Products, and { } contain all elements of claim 1 except for elements c), e), and f). Thus, the question of infringement turns on (1) whether the accused products include a lower electric-conduction layer, (2) whether the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer in the accused products, and (3) whether the second pad layer is coupled to the lower electric-conduction layer in the accused products. Based on the claim constructions adopted above in Sections III.B.2-5 *supra*, I find that the { } Seagate Products, and { } meet each and every limitation of independent claim 1.

a) “a lower electric-conduction layer formed in the insulation layer”

Complainant has demonstrated by a preponderance of the evidence that the accused products include a “lower electric-conduction layer formed in the insulation layer.” (JX-1 at 5:11-12.) As explained in Section III.B.4, *supra*, “lower electric-conduction layer” is construed as “planar region of conductive material extending between the first pad layer and the substrate, the planar region being lower than the first pad layer and the compound layer structure.” A top-down view of the relevant portion of the { } shows that { } is comprised of { } and extends underneath the first pad layer. (JX-0030C at 8 (“Taken together, the parallel lines that comprise the lower electric-conduction layer form a planar region

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of conductive material”); JX-0031C at 8; JX-0032C at 8; *see also* CX-0313C at Q. 138.)²³

A cross-section of the same portion of the { } shows that the { } and the substrate and is formed in the insulation layer. (JX-0030C at 7; JX-0031C at 7; JX-0032C at 7; *see also* CX-0313C at Q. 138.) The { } is lower than the first pad layer { } and the compound layer structure { } (JX-0030C at 11; JX-0031C at 11; JX-0032C at 11; *see also* CX-0313C at Q. 139.) Further, { } are neither planar regions nor do they extend between the first pad layer and the substrate. (JX-0030C at 7; JX-0031C at 7; JX-0032C at 7; *see also* CX-0313C at Q. 138.) Thus, { } is the planar region of conductive material extending between the first pad layer and the substrate, and is ***lower than the first pad layer and the compound layer structure***. Therefore, the { } include “a lower electric-conduction layer formed in the insulation layer” as recited in claim 1.

Likewise, the { } also contain a { } that is comprised of { } and extends underneath the first pad layer. (JX-0033C at 8-9; *see also* CX-0313C at Q. 189.)²⁴ The { } and the substrate. (JX-0033C at 7; *see also* CX-0313C at Q. 189.) The { } is lower than the first pad layer { } and the compound layer structure { } (JX-0033C at 11; *see also* CX-0313C at Q. 190.) Further, { } are neither planar regions nor do they extend between the first pad layer and the substrate. (JX-0033C at 9; *see also* CX-0313C at Q. 189.) The { } is the planar region of conductive

²³ The parties agree that the relevant structures of the { } chips are identical for the purposes of infringement analysis. (RIB at 39, n.19; CX-0313C at Q. 168; CX-0336 at 211:23; 212:19.)

²⁴ The parties also agree that the relevant structures of the { } chips are identical for the purposes of infringement analysis. (RIB at 49; CX-0336 at 216:5-13.)

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material extending between the first pad layer and the substrate, and is *lower than the first pad layer and the compound layer structure* and therefore, the { } also include “a lower electric-conduction layer formed in the insulation layer” as recited in claim 1.

Respondents’ arguments that the { } cannot be the lower electric-conduction layer are unpersuasive. First, Respondents argue that { } cannot be the lower electric-conduction layer because they do not act as shields. Respondents state that the lower electric-conduction layer must shield the first pad layer from noise from the substrate. (*Id.* at 40 (citing CX-0313C at Qs. 75-77; JX-0001 at 3:52-53).) Respondents argue, however, that because { } are connected to multiple devices in the substrate, they contribute additional noise to the first pad layer rather than shielding it from noise. (*Id.* at 40-41 (citing RX-0285C at Qs. 85, 125; Tr. at 262:19-23).)

Respondents’ argument is again based on the erroneous assumption that “lower electric-conduction layer” must be interpreted in accordance with the goal of shielding noise identified in the specification. *See E-Pass Techs.*, 343 F.3d at 1370; *Howmedica Osteonics*, 540 F.3d at 1345; *Kim*, 465 F.3d at 1319. This issue has already been addressed at length above. (*See supra* Section III.B.2.a.) Claim 1 does not require that the “lower electric-conduction layer” shield the first pad layer from noise. (*See id.*)

Second, Respondents argue that { } cannot be the lower electric-conduction layer because the { } which serve different functions. (RIB at 41 (citing RX-0285C at Q. 85).) Respondents argue that { }

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.} (*Id.* (citing RX-285C at Q. 85).)

Respondents conclude that because { } they cannot be collectively considered the lower electric-conduction layer. (*Id.* (citing RX-285C at Q. 85).)

Respondents' argument finds no basis in law or fact. The record is clear that { }, collectively, form a planar region of conductive material extending between the first pad layer and the substrate closest to the substrate. (JX-0030C at 7-8; JX-0031C at 7-8; JX-0032C at 7-8; JX-0033C at 7-9.) Under the adopted claim construction, there is no requirement that the "lower electric-conduction layer" be comprised of { } Notably, Respondents did not argue for a construction including such a limitation. Indeed, there is absolutely nothing in the specification of the '928 patent that would have supported such a limitation. Dr. Gwozdz's conclusory testimony that "a person of ordinary skill in the art would not consider these separate sets of lines to make up a lower electric-conduction layer" is unsupported by any corroborating evidence or explanation and improperly seeks to limit the scope of the term "lower electric-conduction layer" as part of the infringement analysis. (CX-0285C at Q. 85.)

Third, Respondents argue that Dr. Walker's infringement analysis is unreliable because he ignores { } in his infringement analysis while including similar metal layers below the lower electric-conduction layer disclosed in prior art in his invalidity analysis. Respondent points out that Dr. Walker found the prior art Chittipeddi Patent did not anticipate because the lower electric-conduction layer was coupled to the substrate, bringing the noise from the substrate closer to the first pad layer. (RIB at 42-43 (citing CX-338C at Q. 125).)

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Respondent states that Dr. Walker ignores the fact that the lower electric-conduction layer in the { } are also coupled to the substrate by layers { } in his infringement analysis. (*Id.* at 43 (citing CX313C at Q. 131; Tr. at 260:16-25).)

Again, Respondents argument is based on the erroneous assumption that claim 1 requires the lower electric-conduction layer to act as a shield. As explained above, it does not. (*See supra* Section III.B.2.a.) Because the requirement that the lower electric-conduction layer act as a shield is not a limitation of claim 1, Dr. Walker’s testimony—as well as Dr. Gwozdz’ rebuttal testimony—as to whether { } shields the first pad layer from noise from the substrate or brings noise from the substrate closer to the first pad layer is irrelevant for both the infringement and invalidity analysis of claim 1.

Based on the foregoing, the { } include “a lower electric-conduction layer formed in the insulation layer” as recited in claim 1.

b) “the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer”

Complainant has demonstrated by a preponderance of the evidence that “the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer” in the accused products. (JX-0001 at 5:16-19.) As explained in Section III.B.2 *supra*, “spaced apart” is given its plain and ordinary meaning. A cross-section of the relevant portion of the { } shows that there is physical separation between the first pad layer { } and compound layer structure { } and the lower electric-conduction layer { } (JX-0030C at 13; JX-0031C at 13; JX-0032C at 13.) Thus, the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer in the { } Likewise, a cross-section of the relevant portion of the { } shows that there is

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physical separation between the first pad layer { } and compound layer structure { } and the lower electric-conduction layer { } (JX-0033C at 13.)

Dr. Walker also testified that under the plain and ordinary meaning of “spaced apart” the “spaced apart element is met by the bond pad structure of the { } (CX-0313C at Q. 154.) He testified that the { } similarly meet the “spaced apart” limitation under the plain and ordinary meaning of the term. (See CX-0313C at Q. 202.) Although Dr. Gwozdz’s rebuttal testimony opines that the { } do not meet the “spaced apart” limitation under Complainant’s rejected proposed construction requiring the additional limitation of electromagnetic isolation, he does not opine on whether the { } meet the “spaced apart” limitation under the plain and ordinary meaning of the term. Respondents’ non-infringement arguments with respect to this limitation are similarly directed only to Complainant’s proposed construction of “spaced apart.” Respondents do not appear to dispute that the { } meet this limitation under the plain and ordinary meaning of “spaced apart.”

Thus, “the first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer” in the { }

c) “a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer”

Complainant has demonstrated by a preponderance of the evidence that the accused products include “a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer.” (JX-0001 at 5:20-21.) As explained Section III.B.3, *supra*, “second pad layer” is construed as “one or more coplanar surfaces that provide a bonding zone to an external power source or potential.” Under the adopted construction, the second pad layer can be comprised of one or more bond pads, but is not comprised of multiple layers. (See *supra* Section

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III.B.3.a.) Bond pads { } are both on the { } and are therefore coplanar surfaces in the { } (JX-0030C at 19, 28; JX-0031C at 19, 28; JX-0032C at 19, 28.) Further, Dr. Walker has testified that the { } is capable of being connected to a { } and that { } is capable of being connected to a { } (CX-0313C at Q. 150.) Respondents appear to agree with this testimony. (See RIB at 42 (“Dr. Walker asserts that separate, independent structures can be combined to make up . . . the second pad layer—{ } Thus, { } comprise the second pad layer.

Further, the record shows that both { } are coupled to the lower electric-conduction layer { } by the { } (JX-0030C at 19-28; JX-0031C at 19-28; JX-0032C at 19-28.) Dr. Walker also opined that “the { } is coupled down through its own compound layer structure at { } and all the way down to { } of the { } Similarly, the same images show the { } is coupled down to { } of the { } (CX-0313C at Q. 142; CDX-0009C at 26-31.) He further explains that {

{ } (CX-0313C at Q. 143; CDX-0009C at 8.)

Similarly, the record shows that { } in the { } are both on the { } and are therefore coplanar. (JX-0033C at 18.) Dr. Walker also testified that the { } are capable of being connected to { } (See CX-0313C at Q. 194.) The record shows that both the { } pads are coupled to

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the lower electric-conduction layer {

} (JX-0033C at 18-30.) Dr. Walker also testified that

the { } are shown coupled down in the back all the way down
to the { } For each pad, the {

}

(CX-0313C at Q. 193; CDX-0010C at 6-7, 16-18.) Respondents also do not appear to dispute
the fact that the {

} (See RIB at 50.) Thus, the record shows that the {

} include a second pad layer formed on the insulation layer and coupled to the
lower electric-conduction layer.

Respondents do not dispute that {

} are each coupled to a portion of the {

} Rather, Respondents argue that multiple bond pads cannot be combined to comprise the
second pad layer, or alternatively, that { } cannot be combined to
comprise the lower electric-conduction layer. (RIB at 41, 50; RX-0285C at Qs. 85, 125.) These
arguments have already been addressed in claim construction and are not persuasive. Even
assuming *arguendo* that the second pad layer is limited to one bond pad, the plain language of
the claim requires the second pad layer to be coupled to the lower electric-conduction layer—not
the *entirety* of the lower electric-conduction layer. There is no dispute that each of the

{ } are coupled to at least a portion of the

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lower electric-conduction layer. Therefore, even if the second pad layer were only a single bond pad, the { } would still meet this limitation.

Based on the foregoing, I find that the { } meet each and every limitation of claim 1. Therefore, the { } the Seagate Products, which incorporate the { } literally infringe claim 1 of the '928 patent.²⁵

2. Claim 2

Asserted claim 2 teaches:

The IC device according to claim 1, wherein the compound layer structure comprises a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer.

(JX-0001 at 5:22-25.)

Complainant's Position: Complainant argues that in the { } the compound layer structure comprises a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer as recited in dependent claim 2. (Complainant's Br. at 47 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 215:20 – 216:13; JX-0030C at 29-30; JX-0031C at 29-30; JX-0032C at 30-31; CX-0313C at Qs. 157, 205; CPX-0002C; CX-0225C; JX-0033C at 31-32).)

Respondents' Position: Respondents assert that the { } do not infringe dependent claim 2 of the '928 patent for the same reasons they do not infringe independent claim 1. (RIB at 47, 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d

²⁵ Because the accused products literally infringe claim 1, there is no need to perform an infringement analysis under the doctrine of equivalents. As a result, Complainant's doctrine of equivalence arguments are moot.

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974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it cannot infringe claims that depend on that independent claim.”)). Respondents assert the Seagate Products do not infringe the asserted claims of the ‘928 patent for the same reasons the { } do not infringe.

Analysis and Conclusion: Asserted claim 2 depends from claim 1 and includes the additional limitation that “the compound layer structure comprises a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer.” A cross-section of the relevant portion of the { } shows that the compound layer structure is comprised of a first electric-conduction layer { } and a first connecting layer { } which couples the first electric-conduction layer { } to the first pad layer { } (JX-0030C at 30; JX-0031C at 30; JX-0032C at 30.) Dr. Walker similarly testified that “the compound layer structure is composed of a metal electric-conduction layer at the {

{ } is connected to the first pad layer by a first connecting layer.” (CX-0313C at Q. 157.) Likewise, the compound layer structure in the { } is also comprised of a first electric-conduction layer { } and a first connecting layer { } which couples the first electric-conduction layer { } to the first pad layer { } (JX-0033C at 31-32.) Dr. Walker also testifies that such structures are present in the { } (CX-0313C at Q. 205.) Respondents do not seem to dispute that the additional limitation of dependent claim 2 is met by the accused products. Rather, Respondents argue only that the accused products do not infringe claim 2 for the same reasons they do not infringe claim 1. (RIB at 47, 52; RX-0285C at Qs. 91, 127.)

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Having found that the accused products infringe claim 1 and meet the additional limitation of dependent claim 2, I find that the { } the Seagate Products, which incorporate the { } and the { } infringe claim 2 of the '928 patent.

3. Claim 3

Asserted claim 3 teaches:

The IC device according to claim 2, wherein the first connecting layer comprises a plurality of via plugs.

(JX-0001 at 5:26-27.)

Complainant's Position: Complainant argues that in the { } the first connecting layer comprises a plurality of via plugs as recited in dependent claim 3. (CIB at 48 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23 – 212:19, 216:5-13; JX-0030C at 31-32; JX-0031C at 31-32; JX-0032C at 31-32; CX-0313C at Q. 158, 206; CPX-0002C; CX-0225C; JX-0033C at 33-34).)

Respondents' Position: Respondents assert that the { } do not infringe dependent claim 3 of the '928 patent for the same reasons they do not infringe independent claim 1. (RIB at 47, 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d 974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it cannot infringe claims that depend on that independent claim.”)).) Respondents assert the Seagate Products do not infringe the asserted claims of the '928 patent for the same reasons the { } do not infringe.

Analysis and Conclusion: Asserted claim 3 depends from claim 2 which in turn depends from claim 1 and includes the additional limitation that “the first connecting layer comprises a plurality of via plugs.” A cross-section of the relevant portion of the { }

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shows that the first connecting layer { } is comprised of via plugs. (JX-0030C at 31-32; JX-0031C at 31-32; JX-0032C at 31-32.) Dr. Walker also testified that the first “connecting layer is formed of a plurality of vias.” (CX-0313C at Q. 158.) The first connecting layer of the { } also is similarly comprised of a plurality of via plugs. (JX-0033C at 33-34; CX-0313C at Q. 206.) Respondents also do not seem to dispute that the accused products meet the additional limitation of dependent claim 3 and argue only that the accused products do not infringe claim 3 for the same reasons they do not infringe claim 1. (RIB at 47, 52; RX-0285C at Qs. 92, 128.)

Having found that the accused products infringe claims 1 and 2 and meet the additional limitation of dependent claim 3, I find that the { } the Seagate Products, which incorporate the { } and the { } infringe claim 3 of the ‘928 patent.

4. Claim 4

Asserted claim 4 teaches:

The IC device according to claim 2, wherein the first electric-conduction layer is shaped like a webbed railing.

(JX-0001 at 5:28-29.)

Complainant’s Position: Complainant argues that in the { } the first electric-conduction layer is shaped like a webbed railing as recited in dependent claim 4. (CIB at 50-51 (citing CPX-0002C; CX-0225C; CX-0336 at 216:5-13; JX-0033C at 35-36; CX-0337C at 8; CX-0086C at 1, 3; CX-0313C at Q. 207).)

Respondents’ Position: Respondents assert that the { } do not infringe dependent claim 4 of the ‘928 patent for the same reasons they do not infringe independent claim 1. (RIB at 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d 974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it cannot infringe

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claims that depend on that independent claim.”)). Respondents assert the Seagate Products do not infringe the asserted claims of the ‘928 patent for the same reasons the { } do not infringe.

Analysis and Conclusion: Asserted claim 4 depends from claim 2 which in turn depends from claim 1 and includes the additional limitation that “the first pad layer is shaped like a polygon.” A top-down view of the relevant portion of the { } shows that the first electric-conduction layer { } has the shape of a webbed railing. (JX-0033C at 35.) Dr. Walker also testified that the { } underneath bond pad { } “is shaped in a { } which is the same as the webbed railing pattern depicted in Fig. 4 of the ‘928 patent.” (CX-0313C at Q. 207.) Respondents also do not seem to dispute that the accused products meet the additional limitation of dependent claim 4 and argue only that the accused products do not infringe claim 4 for the same reasons they do not infringe claim 1. (RIB at 47, 52; RX-0285C at Q. 129.)

Having found that the accused products infringe claims 1 and 2 and meet the additional limitation of dependent claim 4, I find that the { } infringe claim 4 of the ‘928 patent.

5. Claim 5

Asserted claim 5 teaches:

The IC device according to claim 2, wherein the area of the first electric-conduction layer is smaller than that of the first pad layer.

(JX-0001 at 5:30-32.)

Complainant’s Position: Complainant argues that in the { } the first electric-conduction layer is smaller than that of the first pad layer as recited in dependent claim

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5. (CIB at 51 (citing CPX-0002C; CX-0225C; CX-0336 at 216:5-13; JX-0033C at 39; CX-0337C at 8; CX-0086C at 1, 3; CX-0313C at Q. 208).)

Respondents' Position: Respondents assert that the { } do not infringe dependent claim 5 of the '928 patent for the same reasons they do not infringe independent claim 1. (RIB at 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d 974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it cannot infringe claims that depend on that independent claim.”)).) Respondents assert the Seagate Products do not infringe the asserted claims of the '928 patent for the same reasons the { } do not infringe.

Analysis and Conclusion: Asserted claim 5 depends from claim 2 which in turn depends from claim 1 and includes the additional limitation that “the area of the first electric-conduction layer is smaller than that of the first pad layer.” Although the first electric-conduction layer { } and the first pad layer { } have the same dimensions, Dr. Walker testified that the first electric-conduction layer { } is shaped as a webbed railing and has holes. (CX-0313C at Q. 208.) As a result of the holes, the area of the first electric-conduction layer { } is smaller than the first pad layer { } (*Id.*) Respondents again do not seem to dispute that the accused products meet the additional limitation of dependent claim 5 and argue only that the accused products do not infringe claim 5 for the same reasons they do not infringe claim 1. (RIB at 47, 52; RX-0285C at Q. 130.)

Having found that the accused products infringe claims 1 and 2 and meet the additional limitation of dependent claim 5, I find that the { } infringe claim 4 of the '928 patent.

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6. Claim 6

Asserted claim 6 teaches:

The IC device according to claim 1, wherein the first pad layer is shaped like a polygon.

(JX-0001 at 5:33-34.)

Complainant's Position: Complainant argues that in the { } and {

} the first pad layer is shaped like a polygon as recited in dependent claim 6.

(Complainant's Br. at 48 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23 – 212:19, 216:5-13; JX-0030C at 33; JX-0031C at 33; JX-0032C at 33; CX-0313C at Q. 210; CPX-0002C; CX-0225C; JX-0033C at 40).)

Respondents' Position: Respondents assert that the { } do not infringe dependent claim 6 of the '928 patent for the same reasons they do not infringe independent claim 1. (RIB at 47, 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d 974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it cannot infringe claims that depend on that independent claim.”)).) Respondents assert the Seagate Products do not infringe the asserted claims of the '928 patent for the same reasons the { } do not infringe.

Analysis and Conclusion: Asserted claim 6 depends from claim 1 and includes the additional limitation that “the first pad layer is shaped like a polygon.” A top-down view of the relevant portion of the { } shows that the first pad layer { } has the shape of an octagon. (JX-0030C at 33; JX-0031C at 33; JX-0032C at 33.) Dr. Walker also testified that the first pad layer has the shape of an octagon, which is a polygon. (CX-0313C at Q. 159.) The first pad layer of the { } similarly has the shape of an octagon. (JX-0033C at 40; CX-

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0313C at Q. 210.) Respondents also do not seem to dispute that the accused products meet the additional limitation of dependent claim 6 and argue only that the accused products do not infringe claim 6 for the same reasons they do not infringe claim 1. (RIB at 47, 52; RX-0285C at Qs. 93, 131.)

Having found that the accused products infringe claim 1 and meet the additional limitation of dependent claim 6, I find that the { } the Seagate Products, which incorporate the { } and the { } infringe claim 6 of the '928 patent.

7. Claim 7

Asserted claim 7 teaches:

The IC device according to claim 1, further comprising a passivation layer formed on the insulation layer to cover a part of the outer rim of at least one of the first and second pad layers.

(JX-0001 at 5:35-38.)

Complainant's Position: Complainant argues that the { } include a passivation layer formed on the insulation layer to cover a part of the outer rim of at least one of the first and second pad layers as recited in dependent claim 7. (CIB at 49 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23 – 212:19, 216:5-13; JX-0030C at 34; JX-0031C at 34; JX-0032C at 34; CX-0313C at Q. 160, 211; CPX-0002C; CX-0225C; JX-0033C at 41).)

Respondents' Position: Respondents assert that the { } do not infringe dependent claim 7 of the '928 patent for the same reasons they do not infringe independent claim 1. (RIB at 47, 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d 974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it

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cannot infringe claims that depend on that independent claim.”)).) Respondents assert the Seagate Products do not infringe the asserted claims of the ‘928 patent for the same reasons the { } do not infringe.

Analysis and Conclusion: Asserted claim 7 depends from claim 1 and includes the additional limitation of “a passivation layer formed on the insulation layer to cover a part of the outer rim of at least one of the first and second pad layers.” Dr. Walker testified that in the { } a passivation layer is formed on the insulation layer and that the passivation layer covers a part of the outer rim of the bond pad { }. (CX-0313C at Q. 160.) He further testified that a passivation layer also covers a part of the outer rim of the bond pad { } (*Id.*) He similarly testified that a passivation layer covers part of the outer rim of {

} (CX-0313C at Q. 211.) Respondents also do not seem to dispute that the accused products meet the additional limitation of dependent claim 7 and argue only that the accused products do not infringe claim 7 for the same reasons they do not infringe claim 1. (RIB at 47, 52; RX-0285C at Qs. 94, 132.)

Having found that the accused products infringe claim 1 and meet the additional limitation of dependent claim 7, I find that the { } the Seagate Products, which incorporate the { } and the { } infringe claim 7 of the ‘928 patent.

8. Claim 8

Asserted claim 8 teaches:

The IC device according to claim 1, further comprising at least one second connecting layer for coupling the second pad layer to the lower electric-conduction layer.

(JX-0001 at 5:39-41.)

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Complainant’s Position: Complainant argues that the { } include at least one second connection layer for coupling the second pad layer to the lower electric-conduction layer as recited in dependent claim 8. (CIB at 49 (citing CPX-1C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23 – 212:19, 216:5-13; JX-0030C at 35-38; JX-0031C at 35-38; JX-0032C at 35-38; JX-0036C at 36-39; CX-0313C at Qs. 159, 161; CPX-0002C; CX-0225C; JX-0033C at 42-46).)

Respondents’ Position: Respondents assert that the { } do not infringe dependent claim 8 of the ‘928 patent for the same reasons they do not infringe independent claim 1. (RIB at 47, 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d 974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it cannot infringe claims that depend on that independent claim.”)).) Respondents assert the Seagate Products do not infringe the asserted claims of the ‘928 patent for the same reasons the { } do not infringe.

Analysis and Conclusion: Asserted claim 8 depends from claim 1 and includes the additional limitation of “at least one second connecting layer for coupling the second pad layer to the lower electric-conduction layer.” A cross-section of the relevant portion of the { } shows that { } bond pad is connected to the lower electric-conduction layer { } through connecting layers { } and electric-conduction layers { } (JX-0030C at 35; JX-0031C at 35; JX-0032C at 35.) Dr. Walker also testified that at least { } is a second connecting layer that couples the { } bond pads to the lower electric-conduction layer (CX-0313C at Q. 161.) The FireWire Chips similarly include at least second connecting layer { } which couples the { } bond pads to

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the lower electric-conduction layer { }, (JX-0033C at 42-46; CX-0313C at Q. 212.)

Respondents also do not seem to dispute that the accused products meet the additional limitation of dependent claim 8 and argue only that the accused products do not infringe claim 8 for the same reasons they do not infringe claim 1. (RIB at 47, 52; RX-0285C at Qs. 95, 133.)

Having found that the accused products infringe claim 1 and meet the additional limitation of dependent claim 8, I find that the { } the Seagate Products, which incorporate the { } and the { } infringe claim 8 of the '928 patent.

9. Claim 9

Asserted claim 9 teaches:

The IC device according to claim 8, further comprising at least one second electric-conduction layer coupled between the second pad layer and the lower electric-conduction layer with the second connecting layer.

(JX-0001 at 5:39-41.)

Complainant's Position: Complainant argues that the { } include at least one second electric-conduction layer coupled between the second pad layer and the lower electric-conduction layer with the second connecting layer as recited in dependent claim 9. (CIB at 50 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0336 at 211:23 – 212:19, 216:5-13; JX-0030C at 39-42; JX-0031C at 39-42; JX-0032C at 39-42; JX-0036C at 40-43; CX-0313C at Qs. 162, 213; CPX-0002C; CX-0225C; JX-0033C at 47-51).)

Respondents' Position: Respondents assert that the { } do not infringe dependent claim 9 of the '928 patent for the same reasons they do not infringe independent claim 1. (RIB at 47, 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d

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974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it cannot infringe claims that depend on that independent claim.”).) Respondents assert the Seagate Products do not infringe the asserted claims of the ‘928 patent for the same reasons the { } do not infringe.

Analysis and Conclusion: Asserted claim 9 depends from claim 8 which in turn depends from claim 1 and includes the additional limitation of “at least one second electric-conduction layer coupled between the second pad layer and the lower electric-conduction layer with the second connecting layer.” A cross-section of the relevant portion of the { } shows that the { } bond pad is connected to the lower electric-conduction layer { } through connecting layers { }, VIA4 and electric-conduction layers { } (JX-0030C at 39; JX-0031C at 39; JX-0032C at 39.) Dr. Walker also testified that at least { } is a second electric-conduction layer coupled between the { } and { } bond pads and the lower electric-conduction layer { } with the second connecting layer { } (CX-0313C at Q. 162.) The { } similarly include at least second electric-conduction layer { } coupled between { } bond pads and the lower electric-conduction layer { } with second connecting layer { } (JX-0033C at 47-51; CX-0313C at Q. 213.) Respondents also do not seem to dispute that the accused products meet the additional limitation of dependent claim 9 and argue only that the accused products do not infringe claim 9 for the same reasons they do not infringe claim 1. (RIB. at 47, 52; RX-0285C at Qs. 96, 134.)

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Having found that the accused products infringe claim 1 and claim 8 and meet the additional limitation of dependent claim 9, I find that the { } the Seagate Products, which incorporate the { } and the { } infringe claim 9 of the '928 patent.

10. Claim 10

Asserted claim 10 teaches:

The IC device according to claim 1, wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer.

(JX-0001 at 5:46-48.)

Complainant's Position: Complainant argues that in the { } a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer as recited in dependent claim 10. (CIB at 41 (citing CPX-0001C; CPX-0003C; CPX-0005C; CPX-0006C; CPX-0004C; CX-0226C; CX-0100; CX-0137; CX-0336 at 211:23-212:19, 216:5-13; JX-0030C at 43; JX-0031C at 43; JX-0036C at 44; CX-0313C at Qs. 163-164, 214-215; CPX-0002C; CX-0225C; JX-0033C at 52).) Complainant argues that the { } in the { } absorb the noise from the substrate and divert it away from the first pad layer. (*Id.* at 42 (citing CX-0313C at Qs. 163-164; Tr. at 62:2-8).) Complainant further argues that this requirement of keeping noise away in claim 10 limits the structure of the integrated circuit device to exclude other structures that route noise around the lower electric-conduction layer to the first pad layer. (*Id.* at 43.) Complainant alleges that { } with the lower electric-conduction layers improve shielding by 75% compared to { } without the lower electric-conduction layers. (*Id.* at 44 (citing CX-0313C at Q. 164; CDX-0022 at 1; JX-0030C; JX-0031C; JX-0032C).)

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Respondents' Position: Respondents assert that the { } do not infringe dependent claim 10 of the '928 patent for the same reasons they do not infringe independent claim 1. (RIB at 47, 52 (citing *Streamfeeder, LLC v. Sure-Feed Sys., Inc.*, 175 F.3d 974, 984 (Fed. Cir. 1999) (“[I]f an accused infringer does not infringe an independent claim, it cannot infringe claims that depend on that independent claim.”)).) Respondents assert that the { } also do not infringe dependent claim 10 for another reason. Respondents argue that if Complainant’s proposed construction of “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer” is adopted, claim 10 requires the lower electric-conduction layer to be coupled to an external power source or potential. (*Id.* at 48, 52-53.) Respondents argue that if Complainant’s proposed construction is adopted, there is no evidence in the record that shows the { } are coupled to an external source or potential at the time the chips are imported into the United States. (*Id.* (citing *Suprema, Inc. v. Int’l Trade Comm’n*, 742 F.3d 1350, 2013 WL 6510929, at *11 (Fed. Cir. 2013)).) Respondents also argue that if Complainant’s proposed construction is rejected, there is no proof on the record that the { } infringe under a literal reading of the claim. (*Id.* at 48 n.22.)

Analysis and Conclusion: Claim 10 depends from independent claim 1. Having found that the accused products infringe claim 1, they also infringe claim 10 if they meet the additional limitation that a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer.²⁶ I find that Complainant has failed to meet its burden of proving that

²⁶ Respondents appear to take the position that claim 10 requires the lower electric-conduction layer to keep *all* noise from the substrate away from the first pad layer. (RX-0285C at Q. 97.) However, the plain language of the claim does not support such a restrictive requirement. Claim 10 requires “*a* noise” to be kept away. Based on well-

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a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer in the { } by a preponderance of the evidence. However, I find that Complainant has met its burden of proving this limitation is met in the { } As a result, I find that the { } infringe claim 10, but that the { } and Seagate Products do not.

As discussed above, the { } in the { } is the lower electric-conduction layer. (*See supra* Section V.B.1.a.) Complainant has failed to offer any proof that the { } in the { } keeps noise from the substrate away from the { } Dr. Walker testified that in the { } the { } that allegedly make up the lower electric-conduction layer absorb noise emanating from the substrate and divert it away from the first pad layer { } and towards the { } bond pads. (CX-0313C at Q. 163.) Dr. Walker further testified that he performed an analysis of the { } with and without the { } to determine whether the { } kept noise from the substrate away from the first pad layer. (*Id.* at Q. 164.) Dr. Walker further testified that, in this analysis, the C_S/C_T ratios he calculated were proportional to the noise reaching the { } pad—i.e. a lower C_S/C_T ratio indicates better shielding and less noise reaching the { } pad. (*Id.*) He then testified that he calculated a C_S/C_T ratio of 8% in the { } as designed and a C_S/C_T ratio of 14% in the { } with the { } layers removed. (*Id.*) Based on this, he concluded that the { } layers kept 5 dB of noise from the substrate away from the { } pad. (*Id.*)

established Federal Circuit precedent that “a” almost always means “one or more,” claim 10 only requires that *some* but not all noise to be kept away. *See Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008).

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Although Complainant argues that the { } individually or collectively, can be the lower electric-conduction layer, Complainant has only produced evidence that the { } combined keep noise from the substrate away from the { } pad. Complainant has failed to produce any evidence that the { } by itself keeps noise from the substrate away from the { } pad. Because Complainant has failed to present any such evidence, it has not met its burden of proving the { } infringe claim 10. Therefore, I find that the { } and the Seagate Products, which incorporate the { } do not infringe claim 10 of the '928 patent.

Turning to the { } Dr. Walker testified that the { } is a “lower electric-conduction layer that absorbs noise emanating from the substrate underneath the first pad layer, { } and shunts it away to ground.” (CX-0313C at Q. 214.) Further, Dr. Walker testified that he performed an analysis of the { } with and without { } layer to determine whether the { } kept noise from the substrate away from the first pad layer. (*Id.* at Q. 215.) As discussed above, Dr. Walker testified that a lower C_S/C_T ratio indicated better shielding. (*Id.*) He then testified that he calculated a C_S/C_T ratio of 3% in the { } as designed and a C_S/C_T ratio of 9% in the { } with the { } removed. (*Id.*) Based on this, he concluded that the { } kept 10 dB of noise from the substrate away from the { } pad. (*Id.*)

Respondents argue that Dr. Walker’s analysis concerning the capacitance ratios is flawed.²⁷ Dr. Gwozdz testified that Dr. Walker’s model failed to take metal layers { }

²⁷ Respondents also argue that if Complainant’s proposed construction of the term “wherein a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer”—which requires the lower electric-conduction layer to be coupled to an external source or potential—is adopted, Complainant’s claim must fail because it did not offer any proof that the accused products were connected to an external source or potential at the time of importation. (RIB at 48 (citing *Suprema*, 2013 WL 6510929, at *11 (“We . . . interpret the phrase ‘articles

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into account and that such metal layers would affect the level of noise reaching the pad layer. (CX-0285C at Q. 99.) Dr. Gwozdz also testified that Dr. Walker failed to take into account various external factors such as capacitance, inductance, and resistance that could potentially affect the noise analysis. (*Id.*) Finally, Dr. Gwozdz testified that removing the { } would cause a variety of factors in the chip to change which could potentially affect the noise analysis and that Dr. Walker appears to not have taken these factors into consideration. (*Id.*) Although these are valid criticisms, Dr. Walker clearly testified that his analysis measures the noise kept away by the lower electric-conduction layer by removing the { } with all other factors remaining unchanged. (CX-0313C at Q. 215.) This shows that the { } keeps at least *some* noise away from the first pad layer { } in the { }

More importantly, Dr. Gwozdz failed to perform his own analysis—taking into consideration the factors which he claims Dr. Walker erroneously ignored—to show that the { } *does not* keep noise away from the first pad layer { }. Although Dr. Gwozdz testifies that Dr. Walker’s model is incomplete because these factors are unaccounted for, he fails to rebut Dr. Walker’s testimony with his own evidence that the { } in fact does not keep noise away from the pad layer { }. In fact, Dr. Gwozdz seems to agree with Dr. Walker that at least *some*, albeit minimal, noise is indeed kept away from the first pad layer { } by the { } (RX-0285C at Q. 135 (“In my opinion, the minimal reduction [in noise] shown by Dr. Walker’s analysis is not sufficient. . . .”)).) Based on the foregoing, I find that Complainant has demonstrated by a preponderance of the evidence that the { } infringe claim 10.

that—infringe’ to reference the status of articles at the time of importation. Thus, infringement, direct or indirect, must be based on the articles as imported to satisfy the requirements of section 337.”)).) Because Complainant’s construction of the term at issue was rejected, the question of whether the accused products are connected to an external source or potential at the time of importation need not be reached.

VI. DOMESTIC INDUSTRY

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 section that follows discusses the economic prong in detail, concluding that Realtek does not satisfy the statutory requirement. Next, the technical prong is discussed. The conclusion is that the technical prong is not satisfied because claims 1-3 and 6-10 of the ‘928 patent are invalid.

A. Economic Prong

1. Overview

The Federal Circuit and the Commission instruct that the context of a complainant’s activities determines whether a complainant has a domestic industry. Each case is different. The flexible analysis takes into account many factors, including the nature of the business conducted by the complainant, the amount of the complainant’s investment in the U.S., comparison of the complainant’s domestic and foreign investment, whether significant value is added to the complainant’s business by activities conducted in the U.S., whether the complainant is organized in the U.S. or abroad and to what extent and for what purposes it maintains a presence here, and the relationship of the complainant’s domestic activities to the patent in issue. The nature of the claimed domestic industry – whether based upon expenditures for plant, personnel, research and

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development, licensing, etc. – may change the legal analysis and the evidence required. No factor helpful to the determination whether a domestic industry actually exists should be omitted from consideration.

In the absence of a definition of domestic industry in the statute, the legislative history of 19 U.S.C. §1337(a)(3)(C) assumes particular importance. *See Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm’n Op. at 27 (May 16, 2008) (noting the need to determine whether a complainant’s “efforts fall within the ambit prescribed in the legislative history”). When it added subsection (C), which dispensed with a domestic manufacturing requirement, Congress intended to “enable universities and small businesses who do not have the capital to actually make the good in the United States to still have access to the ITC forum for the protection of their rights.” *InterDigital Communications v. Int’l Trade Comm’n*, 707 F.3d 1295, 1301 (Fed. Cir. 2013) (citing legislative history).

The legislative history also shows that, by adding subsection (C), Congress did not intend to allow patent holders to use the ITC to exclude either foreign or American competition from obtaining access to the U.S. market. *Id.* Subsection (C) was intended “to strengthen the effectiveness of section 337 in addressing the growing problems being faced by U.S. companies from the importation of articles which infringe” *Id.* at 1302 (citing and quoting H.R. Rep. No. 100-40, Pt. 1, at 155 (1987); S. Rep. No. 100-71, at 128 (1987)). The House and Senate reports “emphasized that the committees did not ‘want to see this language used as a loophole to the industry requirement. . . .’” *Id.* at 1303. Accordingly, Congress retained the domestic industry requirement in subsection (C) to prevent “foreign owners of U.S. patents [from]

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bring[ing] exclusion actions before the Commission even though they had no substantial U.S. connections.” *Id.* at 1301.

Complainant in this case is an established participant in the vast international semiconductor industry, not a domestic university or a small business. *See Certain Multimedia Display and Navigation Devices and Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-694, Comm’n Op., 2011 WL 3813121 at *11 (July 22, 2011).

(“Initially, we note that this is not an instance in which the complainant is an individual, a university, or other entity with limited resources.”) Realtek is organized as a foreign corporation { } It maintains a very modest presence in the U.S. at a California facility with { } employees, { } This facility operates under the name Real Communications, Inc. (“Realcom”) as a subsidiary of Realtek. On the basis of this one facility and the work performed by { } Realtek claims protection under section 337(a)(3)(C) for its intellectual property, arguing that its U.S. subsidiary constitutes a “substantial investment” in the exploitation of articles protected by the ‘928 patent through research and development.

As discussed herein, only a portion of Realcom’s research efforts pertains to products protected by the patent in issue, and the estimated amount of that work { } is based on the testimony of one individual. Even that limited research activity, amounting to the equivalent of { } is not exclusive to the semiconductor chips incorporating the ‘928 patent (the “DI Chips”). The R&D also appears to relate, to some unknown extent, to other products not protected by the patent.

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Careful review of the facts established in the record, the pertinent legal authority, and the parties' arguments, leads to the conclusion that Realtek's efforts do not constitute a domestic industry related to the '928 patent. In the analysis below, the pertinent facts are discussed, followed by review of the case law and application of the law to the facts found.

2. Procedural and Factual Background

On June 26, 2013, Respondents LSI Corporation and Seagate Technology ("Respondents") filed a motion (Motion Docket No. 859-030) for summary determination that Complainant Realtek Semiconductor Corporation ("Realtek") lacks a domestic industry relating to the '928 patent. On July 11, 2013, Realtek filed an opposition to the motion. On July 17, 2013, Order No. 22 issued denying the motion for summary determination. On October 22, 2013, Respondents filed a motion for leave to file a motion for reconsideration of Order No. 22 out of time, and a motion for reconsideration of Order No. 22. (Motion Docket No. 859-040.) As noted in Order No. 30, and for the reasons explained during a telephone conference on October 30, 2013, Respondents' motions for leave and reconsideration were granted.

Following briefing, Order No. 34 was issued on December 6, 2013. The Investigation order affirmed the previous denial of summary judgment on the domestic industry issue, because the factual record was not sufficiently developed to permit a summary determination. Order No. 34 included an analysis of the domestic industry issue in the context of this case. The Order noted that the decision ultimately would be based on the economic reality concerning the existence of a domestic industry, with consideration of all the pertinent facts and circumstances and the overall context in which Realtek's domestic subsidiary, Realcom, functions. Order No. 34 listed several non-exclusive factors that would be relevant in determining the existence of a

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domestic industry: the value added to the domestic industry products by domestic activities; the relationship of domestic to foreign activity; the nature of the business enterprise; the importance of the domestic activities to the company and the domestic industry products; and the relationship of the domestic industry activity to the practice of the patent.

Order No. 34 noted a dearth of evidence to support the assertion by Realtek that its subsidiary constituted a domestic industry, and significant evidence to the contrary. The Order noted that there was no allocation made as between domestic expenditures on { } that were related to the DI Chips (the { } and other Realtek products. (Order No. 34 at 19.)²⁸ The parties were urged to develop the factual record to address the relationship between the patented technology employed in the domestic industry products, as well as other Realtek products, and the technologies developed by Realcom.

Pertinent facts established in the record include the following:

“Founded in 1987, Realtek is a fabless designer of integrated circuits (“chips”) that are applied in network cards, switches, gateways, routers, computers, mobile phones, digital cameras, and televisions.” (CX-0314C at Q. 34.) “Headquartered in Hsinchu Science Park, Realtek designs and supplies three categories of integrated circuit product: communication network products, which include wireless local area network chips, Ethernet controllers, and gateway controllers; computer peripheral products, which include PC audio compression/decompression modules and card reader solutions; and multimedia products, which

²⁸ Realtek admitted in its Opposition to the motion for summary determination that, “some of these technologies may be used in other products as well[.]” (Order No. 34 at 19.) As indicated in the analysis that follows, my finding of no domestic industry is not based on the lack of proof regarding allocation between domestic expenditures on the { } and other Realtek products. Even assuming that all the work done in California to develop the { } is allocable to the DI Chips, there is no domestic industry.

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include digital video playing chips and network media chips.” (CX-0314C at Q. 34.) Realtek has multiple facilities in mainland China and Japan. “In East Asia, Realtek conducts research and development activities as well as all manufacturing-related activities for its products.” (RX-0286C at Q. 58.) It employs { } and had revenue in 2012 of { } (*Id.* at Q. 59.)

Realtek’s communications network products include Ethernet controller chips, Ethernet switches, broadband controller chips, and Wi-Fi chips. (RX-0271C at 27:6; 28:18.) The domestic industry products that are alleged to practice the ‘928 patent are semiconductor chips that provide Wi-Fi functionality compatible with the IEEE 802.11n standard.” (RX-0243C at 8-10; RX-0269C; CX-0316C at Qs. 20-22.) Sales of Wi-Fi products account for about { } of Realtek’s total revenues. (RX-0271C at 32:16-21.)

The vast majority of Realtek’s sales of Wi-Fi products, including the DI Chips, are made outside the United States, principally “to distributors headquartered in Taiwan for delivery within Asia.” (Complainant’s Opp. to Respondents’ Mot. for Summary Determination that Complainant Lacks Domestic Industry, Ex. 16 at ¶ 5 (“Response to Statement of Material Facts”) (Motion Docket No. 859-030).) Overall, { } of sales of Realtek communications network products occur in Taiwan; about { } of the remaining sales are exports to customers in Asia. (*Id.* at ¶ 6)

Since 2002, Realtek has maintained a presence in the United States through its wholly-owned U.S. subsidiary, Realcom, which occupies an { } facility located in San Jose, California. (CX-0314C at Qs. 35-36.) Realcom employs approximately { } people and has a total annual budget of about { } (RX-0286C at Qs. 60, 155-157; RX-0262C; RX-

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0268C; RX-0196C; RX-0197C.) Realcom’s main business is to conduct product research and development for Realtek. (CX-0314C at Q. 35.) {

} Realcom does not engage in any work directly on the bond-pad technology claimed by the ’928 Patent. (Response to Statement of Material Facts at ¶ 16; RX-0271C at 112:13-18; RX-0276C at 291:3-25; RX-0277C at 141:3-7; Tr. at 528:23-25 (“I don’t think any of the work that Realcom did related to the – specifically to the ‘928 Patent”).)

Realtek asserts, however, that its IP group at Realcom does conduct research and development on the DI Chips that incorporate the ’928 patented technology. (CX-0314C at Q. 53; RX-0286C at Q. 53.) Realtek identifies { } created by the engineers at Realcom that are included in the DI Chips: {

} Realtek asserts that it conducted research and development on the DI Chips by developing and improving these { } (CX-0316C at Q. 53.) “For each of the { } technologies, Realcom created the architecture and preliminary circuit design, then transferred the designs to Realtek in Taiwan, where engineers continued to implement the circuits in the domestic industry 802.11n chip products.” (*Id.*)

The work of the Realcom engineers was not limited to research on these { } however. To determine the amount of its domestic industry expenditures, Realtek identified the portion of Realcom’s work that could be attributed to the { } used in the DI Chips, as opposed to other work. (CX-0315C at Q. 29 (“How much time has your team spent over the past

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two years on the IPs that have been incorporated into the Wi-Fi chips?").) Realtek's witnesses estimated that the team of analog engineers at Realcom spent {

} (*Id.*; see also CX-0314C at Q. 53.)²⁹

Design development work on the { } IPs was completed by 2008. (CX-0314C at Qs. 55-75; RX-0286C at Qs. 85, 147). Since 2008, Realcom has "provided consultation to Realtek when Realtek had issues and questions regarding the implementation of the { } technologies in chips, including the domestic industry 802.11n chips." (CX-0314C at Q. 53.) In recent years, Realcom's efforts concerning the { } IPs appear to be limited to consulting or fine-tuning activities that are not necessarily related to the DI Chips. (RX-0286C at Qs. 68, 93, 95, 147; CX-0316C at Qs. 135, 138-40; CX-0277C at 108:5-24.) Realtek's expert testified that, "[w]hile some of these technologies may be used in other products as well, their implementation in a given product requires work specific to that product." (CX-0314C at Q. 53.) Realtek maintains that the entire amount of Realcom's work on the { } IPs should count toward its domestic industry expenditures.

Using the { } allocation figure, Realtek's economic expert, Dr. Gregory Leonard, testified that Realtek's entire "United States investment in research and development relating to the { } technologies incorporated into the 802.11n domestic industry products over the 2011 to

{

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2012 period was { } (CX-0314C at Q. 94.)³⁰ During the same period, Realtek’s total, global expenses on research and development for the 802.11n chips were { } (*Id.*) These calculations excluded facilities and equipment expenses. (CX-0314C at Qs. 98-99.)

Dr. Leonard determined the amount of Realtek’s U.S. investment in the DI Chips by relying on the evidence { } manager of the Realcom General IP group, who “analyzed company records and determined that his team spent { } of their combined time during the 2011 to 2012 period on the { } technologies.” (CX-0314C at Q. 6.) By applying { } “determination” to Realtek’s documented investment in Realcom, Dr. Leonard calculated that Realtek’s investment in employment was { } (*Id.*) “Realtek’s United States investment in plant, property, and equipment to support research and development for the DI Chips was { } (CX-0314C at Qs. 112-13.) Dr. Leonard allocated a total of { } to general and administrative expenses to support research and development on the DI Chips during 2011 to 2012. (CX-0314C at Qs. 115, 120-21.)

Dr. Leonard reported that the cost of developing the { } “is not fully reflective of the value of the { } to Realtek’s domestic industry products,” because the competitiveness and commercial viability of the DI Chips “depends on those { } (*Id.* at Q. 123.)

{ } is the key fact witness for Realtek concerning its domestic expenditures on DI Chips. { } has been employed by Realcom since 2002, when he joined the firm as “Senior

³⁰ “The Commission practice is usually to assess the facts relating to the economic prong at the time that the complaint was filed.” *See Certain Crawler Cranes and Components Thereof*, Inv. No. 337-TA-887, Order No. 17 (Feb. 12, 2014), 2014 WL 644479 at *5 n.1 (citing *Certain Coaxial Cable Connectors and Components Thereof and Prods. Containing Same*, Inv. No. 337-TA-650, 2011 WL 746395; at *46 n.17 (April 14, 2010)).

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Manager.” (CX-0315C at Q. 2.) Since 2007, he has served as vice president of the “Broadband Communications Group.” His job is to “oversee a team of analog engineers performing research and development for Realtek.” (*Id.*) As he describes it, his team “consists of highly specialized analog engineers, we provide research and development for Realtek products that require analog engineering solutions. We deliver architecture and preliminary design intellectual property to Realtek that Realtek uses to develop its products. We are also involved in providing guidance and assistance to the Realtek engineers when our IP is implemented into a Realtek product.”

(*Id.*) He identified the other analog engineers at Realcom: {

}

{

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}
{ } initially identified { } that were developed by the Realcom group and “incorporated into” “certain Wi-Fi chips.” (*Id.* at Q. 26.) Based on his review { } estimated “the percentage of the team’s effort [that] was spent on those { } (*Id.*) { } testified that, while preparing for his deposition, he identified { } that were incorporated into the Wi-Fi chips.” (*Id.* at 4-5.) Using the { } and his own recollection “over the past two years,” { } estimated that his team “has spent { } of its time on these { } (*Id.* at Q. 29).)

{

} The amount of time and effort expended on the DI Chips thus depends entirely on { } estimate. { } testified, “I do an estimate on how much of a percentage of the team’s effort has been spent on those { } (RX-0277C at 27:16-22.)

3. Legal Background – Statute and Legislative History

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

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337(a)(3) have taken place or are taking place. *Certain Variable Speed Wind Turbines and Components Thereof*, Inv. No. 337-TA-376, Comm'n Op. 1996 WL 1056330, at *13 (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.

(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, 2000 WL 779850, at *2 (May 4, 2000) (unreviewed) (citing *Variable Speed Wind Turbines*). The Federal Circuit has acknowledged this fact by emphasizing the availability of subsection (C) where (A) and (B) may not be available. (*See infra* note 36.)

Sections 337(a)(3)(A) and (B) both use the term “significant” to describe the amount that must be invested in (A) plant and equipment or (B) labor or capital to constitute a domestic industry. 19 U.S.C. § 1337(a)(3)(A)-(B). Subsection (a)(3)(C) of section 337 uses the term “substantial” to describe the amount that must be invested in patent “exploitation, including engineering, research and development, or licensing.” 19 U.S.C. § 1337(a)(3)(C). The case law

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uses the terms “significant” and “substantial” interchangeably. *See Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm’n Op., 2011 WL 1303160, at *15-17 (Feb. 17, 2011) (Commission applying the contextual analysis of “significant” activities to the finding of “substantial” activities under subsection (C)). In *Printing and Imaging*, the Commission indicated that the same contextual analysis was applicable under either the “significant” or “substantial” standard. 2011 WL 1303160, at *17. Specifically, the Commission stated that although *Stringed Musical Instruments* was “decided under subsection (C) of the statute, it illustrates the generally applicable principle that whether an investment is ‘substantial’ or ‘significant’ is context dependent.” *Printing and Imaging*, 2011 WL 1303160, at *17.³¹

The Commission has recognized that “the magnitude of the investment cannot be assessed without consideration of the nature and importance of the complainant’s activities to the patented products in the context of the marketplace or industry in question.” *Certain Kinesiotherapy Devices and Components Thereof*, Inv. No. 337-TA-823, Comm’n. Op. at 31 (July 12, 2013) (citing *Printing and Imaging*, 2011 WL 1303160, at *17). There is, however, no threshold test for what is considered “significant” within the meaning of the statute. *Id.* at 33 (citing *Certain Male Prophylactic Devices*, Inv. No. 337-TA-546, Comm’n. Op. at 39 (Aug. 1, 2007)). The term “significant” is not defined and “[t]he determination [of whether activities are

³¹ Complainants hint at a different standard for determining the existence of a domestic industry under subsection (C), stating that research and development need only be “sufficiently focused and concentrated” to satisfy the statute. (*See* CIB at 97, 108 (a low cost investment in research and development could result in “an invaluable contribution.”)) Use of the term “investment” in subsection (C), however, conflicts with any suggestion that the dollar amount of a complainant’s investment is unimportant.

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significant] is made by an examination of the facts in each investigation, the article of commerce, and the realities of the marketplace.” *Id.* (internal quotations omitted).

The facts of two recent Commission decisions demonstrate the flexible, case specific methodology used for addressing the economic prong of domestic industry. In *Kinesiotherapy*, the Commission reversed the ALJ’s finding that a domestic industry did not exist. *Id.* at 36. In so doing, the Commission rejected a purely quantitative analysis, finding that the contribution of the domestic components from a qualitative standpoint was significant. *Id.* The Commission noted that domestically sourced components were crucial to the functionality of the domestic industry product, and the product itself was the company’s flagship product. Further, the company operated in a developing “niche” market. *Id.* The Commission acknowledged that “the reality of today’s marketplace is that many products are assembled overseas.” Ultimately, the Commission found that domestically produced components included in the domestic industry product were directly related to the asserted patent and were critical to the product, and the domestic activities were significant in the context of a small, start-up company developing a new market in the U.S. *Id.*

In contrast, in *Printing and Imaging*, the Commission reversed the ALJ’s finding that a domestic industry existed. In reaching this decision, the Commission noted that “complainant submitted no evidence to show how its activities were important to the articles protected by the asserted patents in the context of the company’s operations, the marketplace, or the industry in question, or whether the complainant’s undertakings had a direct bearing on the practice of the patent.” 2011 WL 1303160, at *17. The Commission added that the complainant also failed to “demonstrate whether and to what extent its domestic activities added value to the imported

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products.” *Id.* The Commission stated that the complainant had not shown the nature and relative importance of its activities to the articles protected by the patent, or provided evidence that a comparison of its domestic activities with its foreign activities showed its domestic labor expenses were significant. *Id.* at *18.

The case law discussed *supra* requires analysis of factors that may contribute substantially to the worth of alleged domestic industry products in ways that are not directly quantifiable. The factors include but are not necessarily limited to:

- Nature of the business enterprise
- Value added to the domestic industry products by domestic activities
- Relationship of domestic to foreign activity
- Importance of the domestic activities to the domestic industry products

The domestic industry analysis thus requires more than consideration of whether a particular dollar amount is significant itself or when compared with spending outside of the United States. Determining the issue correctly requires understanding the significance of the domestic activities in the context of the particular commercial enterprise and the U.S. marketplace.

4. Arguments of the Parties

a. Complainant’s position

Realtek states that it “formed Realcom in the Silicon Valley . . . in 2002, in order to gain access to the best analog engineering talent in the world that is located there – talent that is not generally available in Taiwan.” (CIB at 94.) Realtek continues that it has “realized a significant return on this substantial investment” because a team of { } analog engineers in California

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“have developed { } technologies that have allowed Realtek to produce commercially competitive 802.n 11 [sic] DI chips.” (*Id.*)

Realtek maintains that it need only demonstrate a “sufficiently focused and concentrated effort to lend support to a finding of a substantial investment” and that a “precise accounting is not necessary.” (*Id.* at 95-97 (citations omitted).) Realtek states that subsection (C) does not require actual production of the DI product in the United States, and that “because the legislative history makes clear that the product need not be made in the United States, it obviously follows that there is no requirement of testing, repair or service in the United States.” (*Id.* at 98) (citing S.Rep. No. 71, 100th Cong. 1st Sess., at 129 (1987)).) Realtek cites cases in which “consultation, implementation, fine tuning, and debugging” related to the use of intellectual property in domestic industry products has been “found sufficient to satisfy the domestic industry requirement.” (*Id.* at 98.)

Realtek maintains that the “substantial investment” referred to in subsection (C) refers to the articles protected by the patent, citing *InterDigital*, and “subsection C does not require research and development to relate directly to the bond pad claimed in the ‘928 Patent.” (*Id.* at 99-100 (citing *Certain Liquid Crystal Display Modules, Products Containing Same, and Methods for Using the Same*, Inv. No. 337-TA-634, Order No. 8, 2008 WL 5208700 (Nov. 7, 2008)).)

Realtek states that it has established the nexus between its domestic activities and the ‘928 Patent, “and the importance of its domestic activities to the domestic industry products.” (*Id.* at 102 (citing *Printing and Imaging*, 2011 WL 1303160).) In support of this contention, Realtek points first to “the talent and value of U.S. analog engineers,” and states that their work

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“had to take place in the United States and could not have been accomplished in Realtek’s Taiwan research and development center.” (*Id.* at 102-03.) Noting the competitiveness of the semiconductor industry and the 802.11n chip market, Realtek states that its commercial rivals { } “are also clustered in the Silicon Valley.” (*Id.* at 103-04.) Realtek avers it must conduct research and development activities there “to maintain competitive parity.” (*Id.* at 104.)

Realtek states that in 2011 and 2012, it “funded Realcom’s total operating expenses of approximately { } per year.” (*Id.*) During that time, “Realcom employed between { } people,” including the “team of highly-specialized analog engineers in Realcom’s General IP Group” (*Id.*)

According to Realtek, the Realcom engineers resolve the most complex research issues relating to “development of Realtek’s semiconductor chips, particularly with respect to analog engineering.” (*Id.*) Realtek says that the engineering group at Realcom provides architecture and preliminary designs to Realtek, “educates Realtek about the technology it develops,” and provides “fine tuning, and debugging of the { } IPs in the 802.11n DI Chips.” (*Id.* at 105.) The work of the { } Realcom engineers, Realtek states, improves the speed and reliability of Realtek’s DI Chips, which could not be offered commercially without Realcom’s contribution. (*Id.*)

Realtek next focuses on issues concerning the amount of its domestic research and development investment in the DI Chips. Realtek’s expert, Dr. Leonard, “determined the amount of Realtek’s United States research and development investment in the DI Chips for 2011 to 2012 to be { } This calculation included Realtek’s labor and employment, plant,

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property and equipment, and general administrative expenses related to Realcom's work tied directly to the 802.11n DI Chips." (*Id.* at 106.) Realtek asserts that this number can be considered significant because there is no "minimum" amount necessary to establish a domestic industry, and other decisions under subsection (C) have found the economic prong to be met based on similar numbers of employees to those working at Realcom. (*Id.* at 106-07.)

Realtek asserts that the comparison of its domestic and foreign expenditures is less pertinent under subsection (C), where "[a] low cost investment in research and development activities in the United States could result in an invaluable contribution to the performance and commercial viability of a product." (CIB at 108.) Realtek asserts that when the value added by the Realcom engineers is understood in terms of the importance of their work to the DI Chips and to Realtek, Realtek's domestic investment is "significant and substantial." (*Id.* at 109.)

Realtek states that Respondents' expert's "criticisms of Dr. Leonard's [calculations] are unwarranted and inconsequential," because Respondents' expert declined to provide alternative calculations. Realtek asserts that Respondents "fail to cite to any actual evidence showing that Dr. Leonard's calculations are incorrect," and therefore his opinion that Realtek's U.S. investment related to the DI Chips was { } in 2011 to 2012 must be accepted. (*Id.* at 112.)

According to Realtek, "the General IP group spent { } of its time in 2011 to 2012 on implementing, fine-tuning, improving, and debugging the { } IPs specifically for the 801.11n DI Chips." (*Id.* at 113.) Again, Realtek asserts that because Respondents "failed to adduce any evidence demonstrating that { } allocation was inaccurate," it must be accepted. (*Id.* at 112-113.)

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Realtek asserts that the { } accounts for work related to the DI Chips and no other Realtek products. (*Id.* at 113-15.) Realtek contends that, when read in context, { } testimony makes it “obvious” that his allocation refers to the DI Chips and no others. (*Id.* at 115-16.) As support for { } allocation, Realtek cites the testimony of Dr. Leonard. Dr. Leonard’s testimony, in turn, is based on his interviews with ““certain Realtek and Realcom employees who described and explained the function and importance of the { } technologies incorporated into the domestic industry 802.11n chips.”” (*Id.* at 116.) Realtek notes that Respondents’ expert “readily conceded during the hearing that Respondents have ‘no way from the record to come up with an alternative number.’” (*Id.* at 117.)³² Realtek again cites authority indicating that a precise accounting of domestic industry activities is not required, only ““a sufficiently focused and concentrated effort.”” (*Id.* at 118 (citing *Certain Electronic Devices, including Wireless Communication Devices, Portable Music and Data processing Devices, and Tablet Computers*, Inv. No. 337-TA-794, 2012 WL 4752221, at *321-22 (September 14, 2012)).) Realtek asserts that the analysis of Respondents’ expert is “unsound.” (*Id.* at 119.)

As to “value added,” Realtek states that the work done by Realcom “directly interoperate[s]” with the ‘928 patent, making it possible for Realtek to produce “faster and more reliable” DI Chips. (*Id.* at 120.) Without Realcom’s IP contributions, Realtek asserts that it

³² Realtek points to an offer of proof that is not part of the record for decision. (*Id.* at 117; *see also* Tr. at 838:13-20.) Realtek proffered the testimony of { } at hearing to bolster his witness statement. Realtek made no effort in advance of the hearing to supplement { } witness statement. Had Realtek timely sought to supplement the record, Realtek certainly would have been permitted to do so. Realtek was not permitted to supplement the record *for the first time at hearing* because of prejudice to Respondents, who had no notice of the new evidence and would have been unfairly surprised by Realtek’s belated effort to supplement { } testimony. (*See* Tr. at 453:8-455:6; Ground Rules 9.3 (“All direct witness testimony, with the exception of adverse witnesses, shall be made by witness statements in lieu of live testimony, and shall be filed and served on the date indicated in the procedural schedule”), 10.5.2 (“Cross-examination will be limited to the scope of the direct examination.”), 10.5.3 (“Redirect examination will be limited to matters brought out on cross-examination.”).)

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would not be able to offer “commercially viable” DI Chip[s] at all. Realtek asserts that this is undisputed on the record. (*Id.*)

Realtek illustrates the “interrelationship between the IPs and the ‘928 bond pad within the 802.11n DI Chips.” (*Id.* at 122.) Realtek first notes that the ‘928 bond pad in the DI Chips receives a high frequency radio signal (“RF”) from the antenna in a Wi-Fi device. Realtek states that the ‘928 bond pad protects the signal from noise. (*Id.* at 122-23.) {

}

Realtek summarizes its evidence of domestic industry and argues that its investment in research and development for the DI Chips is “sufficiently focused and concentrated” to satisfy the statutory requirements. (*Id.* at 126-28.)³³

In its reply brief, Realtek asserts that Respondents “mischaracterize the law” in several respects. Realtek asserts that there is no Commission precedent requiring a comparison of domestic and foreign assets. (CRB at 25-26.) Realtek maintains that if there is a requirement to compare domestic against foreign expenditure, it pertains only to subsections (A) and (B) of section 337(a)(3), not to subsection (C), because the “significance” of the patent holder’s expenditures is not at issue under subsection (C). (*Id.* at 26.) Realtek states that comparing domestic and foreign expenditures does not make sense under subsection (C) because “a low cost

³³ Realtek does not adequately explain what the “sufficiently focused and concentrated” standard means. If Realtek truly proposes a different standard for judging domestic industry under subsection (C), Realtek needs to specify what that standard requires. As presented by Realtek in its post-hearing briefs, the language “sufficiently focused and concentrated” lacks meaningful content.

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domestic investment in research and development activities can . . . result in an invaluable contribution to the performance and commercial viability of a product.” (*Id.* at 27-28.)³⁴

Realtek asserts that the substantial domestic investment need relate only to articles protected by the patent, not to the patent itself. (*Id.* at 28-29 (citing *InterDigital*, 707 F.3d at 1397-98).)

Realtek argues that its showing of a “quantitative investment of { } in research and development activities on the 802.11n DI Chips” is “substantial.” (*Id.* at 31-32.) Realtek argues that Respondents “offer no alternative calculations or allocations . . . and therefore Realtek’s calculation of its quantitative investment of { } stands un rebutted.” (*Id.* at 32.)

b. Respondents’ Position

Respondents assert that the Commission’s ruling in *Printing and Imaging* establishes a “new standard” for determining the economic prong of the domestic industry requirement. Respondents say the size or value of domestic investment is not sufficient alone to establish a domestic industry. According to Respondents, in a case “where investments related to the domestic-industry products occur outside the United States, the requirement for placing a complainant’s alleged domestic investment in context . . . includes the relative size and importance of the domestic investments as compared to the foreign investments.” (RIB at 96-97.)

³⁴ Realtek cites *Certain Stringed Musical Instruments and Components Thereof* as the “landmark” decision under subsection (C). (CRB at 27 (citing *Stringed Musical Instruments*, 2008 WL 213914 (May 16, 2008).) It is difficult to perceive how this citation supports Realtek’s case, since the Commission in *Stringed Musical Instruments* affirmed a finding of no violation due to the complainant’s *failure* to meet the domestic industry requirement. 2008 WL 213914, at *1. The complainant in *Stringed Musical Instruments* was an individual based in the U.S., the relevant market was for guitar parts which, “however defined is relatively small,” and complainant’s investment amounted to \$8,500 plus sweat equity, which the Commission found to be insufficiently documented, notwithstanding the Commission’s recognition that most people do not keep detailed accounts of their activities. *Id.* at *15.

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Respondents cite the Commission's recent holdings in *Kinesiotherapy* and other cases for the proposition that a "comparative analysis" is required, and that in a case like this "the complainant must show that its domestic investment is significant or substantial in relation to its total, worldwide investments." (*Id.* at 99.) Respondents claim that Realtek has not made such a showing.

Respondents assert that an entity seeking to establish a domestic industry under section 337(a)(3)(A) and (B) "need not prove that its investment is specifically directed to the patented elements of the articles protected by the patent." (*Id.*) Under subsection (C) however, Respondents state that a complainant must show that its investment "relates to articles protected by the patent." (*Id.* at 100 (citing *Microsoft Corp. v. Int'l Trade Comm'n*, 731 F.3d 1354 (Fed. Cir. 2013)).) In addition, the activities of a complainant relying on engineering or research and development must show that these activities are related to the invention claimed by the patent, Respondents state. (*Id.* at 100 (citing *Printing and Imaging*, 2011 WL 1303160).) Respondents assert that to establish the economic prong of the domestic industry requirement a complainant must demonstrate activities that are "directed to both (1) articles protected by the patent at issue and (2) the invention claimed by the patent at issue." (*Id.* at 101.)

Respondents maintain that subsection (C) requires substantial investment in *exploitation* of the patent, unlike subsections (A) and (B). (*Id.* at 100 (citing *Printing and Imaging*, 2011 WL 7628059, at *16; *Certain Ground Fault Circuit Interrupters and Products Containing Same*, Inv. No. 337-TA- 739, Comm'n Determination, 2012 WL 2394435 at *50 (Jun. 8, 2012).) They assert that the statutory language requires that a complainant relying on research and development must show that "these activities are related to the invention" claimed by the

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patent.” (*Id.* at 100-01 (citing *Video Game Systems*, 2011 WL 1523774, at *4 (citing *Coaxial Cable Connectors*, 2011 WL 746395, at *40)).) Respondents assert that Realtek “does not exploit the ‘928 Patent in the United States,” and that the { } IPs developed by the engineers at Realcom “are not related to the bond-pad technology claimed by the patent.” (*Id.* at 101-02.)

Respondents assert that not all of Realtek’s 802.11 compatible chips are included among the alleged DI Chips, which represent “only a portion of Realtek’s Wi-Fi chip product line.” (*Id.*) Respondents state that Wi-Fi products amount to about { } of Realtek’s total revenues. Respondents state that substantially all of Realtek’s sales of Wi-Fi products, including the alleged DI Chips, occur outside the U.S. Respondents note that Realcom in California { } (*Id.*)

Respondents trace the development of the { } IPs during the period from 2003 to 2008. (*Id.* at 103-04.) Respondents allege that the IPs are included in the DI Chips and many other Realtek products.³⁵ Respondents allege further that Realcom personnel generally were not concerned with whether or how the { } IPs may have been used by Realtek in its products. (*Id.* at 103; RX-0286C at Qs. 90-91; RX-0279C at 58:12-19; RX-0280C at 30:6-31:4.)

Citing the report of Realtek’s economic expert, Dr. Leonard, Respondents allege that Realcom incurred labor expenses of { } – { }

³⁵ Respondents state that “Realtek offers Wi-Fi chips that are compatible with other generations of the IEEE 802.11 standard, such as 802.11a, 802.11b, and 802.11g,” that are not identified as DI Chips by Realtek, “so not all of Realtek’s 802.11 compatible chips are included” among the alleged DI Chips. (RIB at 101; RX-0286C at Qs. 43-46; RX-0272; RX-0273; RX0274; RX-0275.) As pointed out by Respondents, based on the testimony of Realtek’s designated representative, Vice General Manager of Realtek Semiconductor { } the alleged DI Chips “do not even include all of Realtek’s 802.11n-compliant chips.” (RIB at 101-02; RX-0271C at 9:12-22; RX-0271C at 74:12, 75:3.)

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{ } – for work that can be allocated to the DI products.” (*Id.* at 104 (citing RX-0286C at Qs. 106-14, 158-163).) Respondents challenge Dr. Leonard’s estimate, “based on the testimony of { } Vice President of Realcom’s General IP group, that the { } engineers devoted { } of their time to projects related to” the DI Chips. (*Id.* at 105.) They state that Dr. Leonard 1) included expenses for employees in addition to the { } engineers; 2) based his estimate solely on the testimony of { } without corroborating evidence; and 3) included work related to the { } IPs generally, rather than work specifically related to the alleged DI Chips. Respondents also challenge as lacking corroboration Dr. Leonard’s allocation of expenses for plant and equipment costs, as well as general and administrative costs. (*Id.* at 105-07.) Respondents maintain that Realtek must prove a domestic industry under subsection (C) of section 337(a)(3), rather than subsections (A) or (B) because Realtek’s alleged DI Chips are manufactured outside the U.S. (*Id.* at 107.)³⁶

Respondents assert that Realtek’s claimed investments in the U.S. are “quantitatively insubstantial.” (*Id.* at 108.) They state that Realcom’s investment in the R&D related to the { } IPs, which “do not practice the ‘928 Patent,” amounts to “less than { } of Realcom’s annual

³⁶ Respondents cite *Certain Products Having Laminated Packaging, Laminated Packaging, and Components Thereof (Laminated Packaging)*, which notes that “unlike” subsections (A) and (B) of section 337 (a)(3), subsection (C) does not require actual production of the protected articles in the U.S., “if it can be demonstrated that substantial investment and activities of the type enumerated are taking place in the U.S.” Inv. No. 337-TA-874, Initial Determination, 2013 WL, 3756326, at *20 (July 5, 2013) (citations omitted). As noted above, *InterDigital* similarly states that the production requirements of paragraph 337(a)(3)(A) and (B) are not applicable under subsection (C). 707 F.3d at 1303 n.4. These decisions assume that a showing under (A) and (B) would involve manufacturing in order to lay emphasis on the fact that subsection (C) contains no such requirement. By holding that manufacturing is not a requirement to qualify as a domestic industry under subsection (C), the decisions may raise an implication that manufacturing *is* required to qualify as a domestic industry under subsections (A) and (B). The elements of subsections (A) and (B) – investment in plant, equipment, labor or capital – also seem to suggest a manufacturing requirement. On the other hand, there is some precedent supporting the argument that, in certain cases, even under subsections (A) and (B), a domestic industry “may encompass more than the manufacturing of the patented item.” *Schaper*, 717 F.2d at 1373. In any event, the issue need not be decided here. For the same reasons pertaining to its expenditures on research and development, Realtek’s investment in labor, plant, and equipment, in context, is not significant.

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operating expenses. (*Id.*) Viewed in the context of Realtek’s worldwide investment in R&D related to the alleged DI Chips, Respondents state that Realtek spent less than { } of its R&D expenses in the U.S., and employed less than { } of its total workforce on the DI Chips – “none of which was directed to the bond-pad technology claimed by the ‘928 Patent.” (*Id.* at 108-09.) Respondents also note that Realtek’s annual investment in development of its “overall Wi-Fi product portfolio totaled approximately { } in 2011 and { } in 2012.” (*Id.* at 109.) The claimed domestic investments in the development of Wi-Fi products generally total { } Respondents assert. (*Id.*) Respondents claim that counsel for Realtek “effectively conceded” this point when he said during his opening statement at hearing that “the dollars and cents may be relatively low.” (*Id.* at 109 n.47.)

With respect to value added, Respondents assert that Realtek engineers outside the U.S. “are responsible for conceiving and designing the Alleged DI Products and ultimately implementing the product designs in the finished products.” (*Id.* at 110.) They cite testimony that the “most important core IP” is provided by the R&D group at Realtek in Taiwan. Respondents assert that the testimony from Realtek, Realcom, and Dr. Leonard that Realcom’s contribution is critical to the DI Chips is unsubstantiated. (*Id.* at 111.)

Respondents reiterate that Realtek’s domestic activities related to the DI Chips “pale in comparison to its overall R&D investment in those products: { } compared to { } (*Id.*)

Respondents assert that Realtek has no meaningful commercial contact with the United States, noting that the DI Chips “are manufactured in China and Taiwan by { } (*Id.* at 112.) Further, “all product testing and packaging” is done in Taiwan,

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and “there is no evidence of any manufacturing-related activities such as assembly, quality control, service, repair, installation, or packaging conducted in the U.S.” (*Id.*) Moreover, Respondents assert, the majority of the design and development activities related to the DI Chips also takes place outside the U.S. Of the “four types” of design and development activities, “silicon, software, architecture and other,” “Realcom employees participated only in the development of the architecture for the { } IPs, along with a full team of Realtek engineers” in Taiwan. (*Id.*) Even that activity, according to Respondents, takes place largely outside the U.S. Final development and implementation of the { } IPs is conducted at the Realtek Research and Design Center in Taiwan, according to Respondents. (*Id.* at 112-13.)

Respondents note Realtek’s contention that its domestic R&D speeds up the operation of the DI Chips, but Respondents state that “nearly all the devices in a modern chip are aimed in some way at making it operate faster.” (*Id.*) Respondents maintain that a specific connection between the domestic R&D and the patented technology is required to demonstrate a domestic industry. (*Id.* at 115-16.)

Respondents also contend that Realtek must further allocate the amount of its investment to include only activities specific to the DI Chips, not efforts generally to develop the { } IPs. (*Id.* at 116-118.) Respondents point to alleged inconsistencies in the testimony provided by Dr. Leonard in this respect, claiming that he changed his testimony in response to Order No. 34 to make it appear that “the { } figure has been properly allocated to work directed solely to the Alleged DI Products.” (*Id.* at 118.) Respondents state that the evidence contradicts Dr. Leonard’s testimony and lacks corroboration, in any event. (*Id.* at 118-19.) “Accordingly,” Respondents allege, “Realtek has failed to identify the portion of its alleged investment in the

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General IP group at Realcom that was directed specifically to the Alleged DI Products.” (*Id.* at 119.)

Respondents note in their reply brief that Realtek did not supplement the record in response to Order No. 34, which pointed out several potential weaknesses in the proof offered by Realtek on the domestic industry issue. Respondents state that { } reports to Realtek in Taiwan did not include any technical descriptions that would support Realtek’s allegation that its expenditures in California were related to the DI Chips. (*Id.* at 38.)³⁷

Respondents argue that none of the work performed at Realcom is related to the patented technology. (RRB at 43.) Respondents characterize Realtek’s position as “that the { } IPs are related to the bond pads because they are used together in the same chips.” (*Id.* at 44.) Respondents also assert that Realtek should have allocated the work performed on the { } IPs as between work that was included in the DI Chips and other products. (*Id.* at 45-48.)

5. Discussion

a. Relationship of domestic activities to articles protected by the patent

A preliminary issue is whether Realcom’s research and development must be related to the ‘928 patent, or to articles that are protected by the ‘928 patent. The facts are clear: Realcom has performed no significant work during the relevant time period on the ‘928 patent itself.

³⁷ Respondents state that Realtek “refused to produce information related to its worldwide investments and expenses related to labor and capital or plant and equipment,” and that consideration of its domestic investments under subsections (A) and (B) of section 337(a)(3) therefore is foreclosed. (RRB at 40.) In light of the finding that Realtek’s investments under subsections (A) and (B) do not meet the domestic industry requirement, the argument is moot.

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Realcom has performed work on { } IPs that are incorporated in Realtek's DI chips, which also include the technology protected by the '928 patent, as found in Section VI.B.4.b.(4).(i), *infra*.

Respondents argue that under subsection 337(C), unlike (A) and (B), domestic activities must relate directly to the patent in issue. RIB at 100-101. The Federal Circuit's precedent requires rejection of Respondents' contention. *Microsoft* holds that a complainant must provide evidence that "domestic investment – e.g., in research and development – relates to an actual article that practices the patent" 731 F.3d at 1362 (citing *InterDigital*, 707 F.3d at 1299, 1304). *InterDigital* dealt squarely with this issue under subsection (C), holding that "the engineering, research and development, or licensing activities must pertain to products that are covered by the patent that is being asserted." 707 F.3d at 1298. *See also Kinesiotherapy*, Comm'n Op. at 27-28 (subsection (C) "requires only that an investment relate to the articles protected by the patent.") (citing 19 U.S.C. § 1337(a)(3).)³⁸

Further, the term "exploitation" – which Respondents assert carries the requirement under subsection (C) to relate expenditures to the patent, not merely the article -- also has been used with respect to the domestic industry showing required under subsections (A) and (B). In *Schaper Mfg. Co. v. Int'l Trade Comm'n*, 717 F.2d 1368 (1983), for example, which was decided before the amendment adding subsection (C) to the statute in 1988, *see InterDigital*, 707 F.3d at 1300, the Federal Circuit cited the House report accompanying the Trade Act of 1974. The report stated that "the patent must be *exploited* by production in the United States, and the industry in the United States generally consists of the domestic operations of the patent owner,

³⁸ The Commission decisions cited by Respondents predate *Microsoft*, *InterDigital*, and *Kinesiotherapy*. (See RIB at 115-16.)

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his assignees and licensees devoted to such *exploitation* of the patent.” 717 F.2d at 1372 (emphasis added). Since, as shown, the term “exploitation” in the legislative history of subsections (A) and (B) has not been construed to require that domestic expenditures relate to the actual patent, the term “exploitation” in subsection (C) likewise should not be construed to require such a relationship.

Realtek is correct, therefore, in stating that Commission precedent requires only that the substantial investment relate to a protected article, not the patented invention. It also appears, however, that the more closely related the domestic activities are to the patented technology, the greater may be the weight of the activities in determining whether they constitute a domestic industry under section 337. *Cf. Certain Video Game Systems and Wireless Controllers and Components Thereof*, Inv. No. 337-TA-770, Comm’n Op. at 70 (Oct. 28, 2013) (holding the complainant was entitled to rely on expenses that are “central” to exploitation of the patented technology); *Printing and Imaging*, 2001 WL 7628059 at *19 (noting significance of “whether complainant’s undertakings had a direct bearing on the practice of the patent.”) In *Kinesiotherapy*, the Commission noted that, in an earlier decision, *Certain Concealed Cabinet Hinges and Mounting Plates*, Inv. No. 337-TA-289, Comm. Op. at 23 (Jan. 9, 1990), “the Commission took into account in its domestic industry analysis a nonpatented component, which was an optional addition to the imported finished hinges. While according them reduced weight, the Commission did not find the expenditures irrelevant.” Comm’n Op. at 28. To similar effect, the Commission observed in *Kinesiotherapy* that, in another case, *Male Prophylactic*, “the Commission noted that the U.S. finishing operations were directed to the practice of certain patent claims.” Comm’n Op. at 35. Thus, the Commission in *Kinesiotherapy* also indicated that

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some weight may attach to the closeness of the connection between the domestic activity and the patent in issue.

Before turning to the analysis of the domestic industry issue in this case, I note that the factors identified in the headings below serve the purpose of dividing the discussion conveniently. The factors are merely guideposts for considering the facts, not legal “requirements.”

b. Application of pertinent factors

(1) Nature of the business enterprise

Realtek is an established company that designs but does not manufacture semiconductor chips that are used by other concerns in products such as computers, televisions, and mobile phones. Realtek admits that the DI Chips are manufactured in China and Taiwan; there is no manufacturing of the DI Chips in the United States.

The vast majority of Realtek’s sales take place in Taiwan and elsewhere in Asia. It is undisputed that Realtek engages in no commercial activities in the U.S. beyond the research and development presence it has maintained in California for a number of years. Realtek admits that its activities in the United States are conducted exclusively by its wholly owned subsidiary, Realcom, which functions as an adjunct to Realtek’s much more significant overseas enterprise. The primary function of Realcom is to develop technologies for incorporation into Realtek products. { } Specifically, Realcom does not engage in domestic post-production activities with respect to the DI Chips, such as testing or packaging. Realcom does not service, finish, repair or promote the domestic industry products in the United States.

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On the record before me, there is no evidence of any sales and marketing activities conducted by Realtek or its California subsidiary in the United States.³⁹

The only activity Realtek engages in domestically is the limited research and development undertaken at the Realcom facility. Realcom's analog engineers develop products and assist with engineering problems that come up in connection with installation in Realtek's devices. The { } analog engineers in California seek solutions to technical problems that Realtek's engineers in Taiwan assign to them. Their efforts to develop and refine Realtek's technology are directed by Realtek's engineers in Taiwan and the results are communicated exclusively back to Taiwan. The needs and requirements of Realtek in Taiwan, not market forces or conditions in the U.S., direct the efforts of the California engineers.

The research and licensing provisions in subsection (C) were intended to expand the protection of section 337 to universities and others who depend on the activities identified in subsection (C) to provide domestic revenue. *InterDigital*, 707 F.3d at 1301 (citing legislative history). Realtek is not such an entity, or a comparable entity.

(2) Relationship of domestic to foreign activity

Based on the numbers supplied by Realtek's own expert, Realtek's investment in DI Chips-related research and development at its California operation is minimal when compared to its overall R&D investment for these products: approximately { } compared to some { }

³⁹ Realtek states that sales and marketing activities are not required to qualify as a domestic industry under subsection (C). That statement is true enough. The dearth of commercial contact with the U.S. is noteworthy, however, in evaluating the overall context of Realtek's alleged domestic industry.

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This fact alone is not dispositive. For example, the patent related research activities in the United States of a large multinational corporation may appear insignificant compared to its global operations, simply by virtue of the company's size. Such activities may nonetheless be substantial, depending on all the other circumstances. In this case, viewing the relative expenditure on DI Chips domestically and abroad, in the context of all the other pertinent facts, it is plain that this metric does not help Realtek to establish that it has a domestic industry.

When compared with Realtek's overall operations, the { } Realtek spends on its San Jose research facility, of which { } admittedly is *unrelated* to the '928 patent, is not substantial. {

}

The huge disproportion between the company's domestic and foreign investments in R&D related to the DI Chips undercuts the argument that Realtek's alleged domestic industry is central to its Wi-Fi business, and makes it more likely that Realcom merely functions as an extension of business operations taking place overseas.

(3) Value added to the domestic industry products in the U.S. by domestic activities

The classic value added analysis applies in cases where components are imported and then features are added in the United States that result in a more marketable product. *See, e.g., Kinesiotherapy*, Comm'n Op. at 28. As noted in *Printing and Imaging*, the concept of value added is not as meaningful in non-manufacturing cases. *Printing and Imaging*, 2011 WL

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1303160, at *19 n.10 (citing *Male Prophylactic*, Comm'n Op. at 42-43).⁴⁰ Nevertheless, in a case that does not involve domestic manufacturing, a complainant still may be required to present evidence that would enable a comparison between its domestic and foreign activities. *See Printing and Imaging*, 2011 WL 1303160, at *17-18.

Realtek contends that the entire worldwide value of its DI Chips depends on the efforts of the { } analog engineers in California, and that it has, as a result, more than met the value added “requirement.” The value of Realcom’s research, even assuming it is critical, inures entirely to Realtek’s operations overseas, however. Adding value solely to a foreign corporation does not promote the legislative intent embodied in section 337. The Federal Circuit noted in *InterDigital* that Congress “recognized the development in the United States of industries that devoted substantial investment to the exploitation of patent rights through engineering” *Id.* By adding subsection (C) to section 337(a)(3), Congress sought to open the ITC to those industries. To the argument that, by adding subsection (C), Congress opened the ITC to foreign companies who sought a forum to litigate intellectual property disputes, “Congress has already given its response, which is that section 337 protects American industries, including American industries that are built on the exploitation of intellectual property through engineering, research and development, or licensing.” *See InterDigital*, 707 F.3d at 1304.

Subsection (C) on its face shows that Congress was concerned with protecting domestic *industries*. Congress was not concerned with protecting all domestic *activities*. As the Commission has held, the activities of a mere importer would not constitute a domestic industry

⁴⁰ The amount of domestic value added in *Male Prophylactic* was 34%. *Printing and Imaging*, 2011 WL 1303160, at *18.

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without some significant value added to the imported product *in this country*. See *Kinesiotherapy*, Comm'n Op. at 33 (citing *Schaper*, 717 F.2d at 1372-73). For the same reasons that Congress would not be concerned with protecting the activities of a mere importer of foreign goods, it would not be concerned with protecting a research outpost of a foreign company that exports ideas created in this country for exploitation abroad. Judging by what Congress mandated in section 337(a)(3), and based on the legislative history, Congress did not wish to extend the protection of the statute to entities that did not maintain a substantial investment in the domestic economy.

To prove that it has contributed value to the U.S. economy, Realtek states that it funds universities through Realcom “to foster further Wi-Fi research in the United States.” (CRB at 44.) Dr. Leonard testified that in February 2012, Realcom gave approximately { } to a WiFi research lab at UCLA. “The purpose of giving it was for the Realcom engineers, again, to have a connection to academia, find out what they were doing, get some ideas about what they were working on.” (Tr. at 549:23-550:2.) Based on the legislative history, section 337 was not intended to protect such activities.⁴¹

Realtek notes further that, after { } obtained his electrical engineering degree in Taiwan, he finished his schooling in the U.S. (Realtek does not make similar assertions about the other Realcom engineers). Realtek argues that { } and his team of highly-specialized engineers provide the type of high value-added, knowledge economy contributions that should be encouraged in the United States,” concluding that these contributions “are precisely the types

⁴¹ Respondents point out that evidence of Realcom’s alleged contribution of { } to UCLA in February 2012 was presented for the first time at hearing, and that Dr. Leonard testified at his deposition that he did not know what that expense represented. Respondents argue that the evidence should be excluded from consideration. The evidence came in without objection, however (*see* Tr. at 549:11-550:6), and will be considered.

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of activities Congress intended to protect when it added subsection (C).” (CRB at 45.) Realtek’s argument appears to be that Congress wished to encourage individuals with advanced scientific degrees to work in the U.S. Nothing in the statute or the legislative history of section 337 supports the hypothesis that this was the intent of the legislators. The question is not whether Realtek’s employees should be working in the U.S., but whether Congress enacted section 337 to protect Realtek’s intellectual property.

Realtek points out that subsection (C) was intended to liberalize the domestic industry requirement to encompass all those who hold U.S. intellectual property rights “who are engaged in activities genuinely destined to exploit their intellectual property in the United States.” (*Id.* at 43.) Under all the facts and circumstances appearing in the record, the value added by Realcom’s efforts do not represent an effort by Realtek to exploit the ‘928 patent *in the U.S.*⁴²

(4) Importance of the domestic activities to the DI Chips

Several issues arise with respect to the relationship between Realtek’s domestic activity and the ‘928 patent: 1) whether the { } allocation of Realcom’s costs to DI Chips is correct; 2) whether there should have been a further allocation to determine whether the amounts attributed to research relating to the DI Chips also were used in other, non-domestic industry Realtek products; and 3) whether there is an appropriate nexus between the DI Chips and the ‘928 patent.

⁴² Respondents assert that whatever value is assigned to the work Realcom performs relating to the DI Chips should be reduced to reflect the extent to which the same work relates to non-domestic industry products. (Realtek asserts that all of Realcom’s work on the { } IPs contributes only to the DI Chips, but this appears unlikely, as discussed below.) (*See infra* Section VI.A.4.b.(4).(ii).)

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(i) The { } Allocation

It is worth noting again that the absolute dollar amount is not determinative of the domestic industry issue. Obviously, the smaller the amount of domestic expenditure, the less likely it is that a substantial investment in a domestic industry will be found to exist. In this case, it is not only the relatively low amount spent on DI Chips-related research at Realcom, but the nature of the research operation in the U.S. and its relation to Realcom's parent in Taiwan, that indicates lack of a domestic injury.

Realtek admits that the { } IPs developed and supported by Realcom in the United States and incorporated into the domestic industry products do not directly practice any claims of the '928 patent. { } estimated the amount of work on the { } IPs as compared to other work done at Realcom that did not relate to the { } IPs. Based on his recollection and understanding of the work done under his supervision, { } calculated that { } of Realcom's expenses were attributable to work on the DI Chips, in the form of work on the { } IPs.

With respect to the { } allocation, Realtek relies entirely on the testimony of Dr. Lin, which is unsupported by documentary or testimonial evidence from other employees. As a result, Realtek is forced to rely on the notion that, because { } testimony is "unrebutted" it must be accepted.

Realtek overlooks the fundamental distinction between an advocate's burden of production and the burden of persuasion. When a party has satisfied its burden of production by putting in evidence to prove a point, it "does not mean that the party has satisfied the burden of persuasion -- it just means that the party has put in enough evidence to survive a motion for a directed verdict (or summary judgment motion)." *Certain Rubber Resins & Processes For*

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Manufacturing Same, Inv. No. 337-TA-849, Comm'n Op. at 58 (Jan. 15, 2014). The party retains its burden of persuasion. *Id.* The trier of fact may conclude that the evidence submitted is insufficiently persuasive to carry the point, even if it is unrebutted. In that case, the complainant will have satisfied the burden of production but not the burden of persuasion.

Contrary to Realtek's repeated assertions, Respondents need not present counter-evidence to prevail on the issue of allocation. Given that Respondents have no way to obtain evidence on this point except from Realtek, and Realtek claims that no documentary evidence exists, it is unsurprising that Respondents cannot adduce counter-evidence to rebut Realtek's allocation. All Respondents can do, which they have done, is to point out the ambiguities and weaknesses in Realtek's allocation. Nor does it advance Realtek's cause to assert that Respondents had the opportunity to cross-examine Realtek's witnesses. The cross-examination of Dr. Leonard on the { } allocation was as effective as it could have been, given the paucity of evidence on which he relied.

Realtek asserts that there is no basis for criticizing its calculations. But there also is no convincing basis for endorsing Realtek's calculations. { } testimony is credible as far as it goes, but it is not without ambiguity.⁴³ The fact that any discrepancies in Realtek's estimates would be slight (*see* CRB at 33), in part reflects the fact that Realtek's expenditures on Realcom are relatively small to begin with.

Realtek notes correctly that a "precise accounting is not necessary" to establish a sufficient domestic industry. (*Id.* (citing and quoting *Stringed Musical Instruments*, Comm'n

⁴³ Dr. Leonard's evidence on this point adds no persuasive weight to Realtek's allocation, because Dr. Leonard's analysis is based on the information he received from { } (*See* CX-0314C at Q. 106.)

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Op. at 26).) It also is true, however, that some documentary support for the numbers presented is desirable to increase the persuasiveness of the amounts offered into evidence. Realtek even disputes this point, saying that “it is not necessary to ‘provide underlying documentation for sworn witness testimony.’” (*Id.* (citing and quoting *Certain Electronic Devices, Including Mobile Phone, Portable Music Players, and Computers*, Inv. No. 337-TA-701, Order No. 58, 2010 WL 5621540, at *3 (Nov. 18, 2010)).) The citation is inapposite. In contrast to the ALJ’s findings in *Electronic Devices*, where Nokia’s investments were deemed “*significant enough that any reasonable allocation would satisfy the economic prong*,” 2010 WL 5621540, at *6 n.8, that is certainly *not* so with respect to Realtek’s expenses on DI Chips, which are relatively low to start with *and* lack corroboration.

Again, Realtek’s assertions about what is “required” or necessary miss the point – underlying documentation to support a sworn statement is not always “required,” but underlying documentation certainly is helpful to carry the burden of persuasion, which Realtek has failed to do here.

(ii) Allocation as between DI- and Non-DI products using the { } IPs

At hearing, Realtek insisted that all of the Realcom engineers’ efforts on the IPs was related to the DI Chips. In other words, according to Realtek and its expert Dr. Leonard, there should be no further allocation as between work on IPs that benefitted the DI Chips as opposed to non-domestic industry products. (*See* Tr. at 489:21-25; 500:3-13; 523:14-22; 524:14-20; 526:20; 527:3.) This appeared to represent a change in Realtek’s position as previously articulated by { } whose earlier testimony indicated that { } of his team’s work related to

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the IPs as opposed to other kinds of work, but did not state that all of the work on the { } IPs related to the DI Chips and no others.

{ } agreed at his deposition that the { } IPs were used in other Realtek products besides the DI Chips. Realtek in its opposition to the motion for summary determination on domestic industry also seemed to concede that some of the work done by Realcom on the { } IPs benefitted non-DI products. Realtek admitted that “some of these technologies [the IPs] may be used in other products as well. . . .” (Complainant’s Opp. to Mot. for Summary Determination Based on Its Motion for Reconsideration at 6 (Motion Docket No. 859-040).)

Given the general applicability of the { } IPs, which are not specific to the ‘928 patent or the DI Chips, it seems unlikely that the { } IPs would have other uses, and that it was erroneous to assume a 100% correlation between the DI Chips and products using the { } IPs. Further, it is difficult to believe that { } could place such a precise estimate on the amount of work that was done for the DI Chips, since { } and his team, by his own testimony, were not actually informed how Realtek would utilize the technologies that Realcom was instructed to develop. Realcom’s other engineers testified that they do not know whether or how the { } IPs are used by Realtek.

The case law does not clearly require that expenditures be reduced to account for the use of the same technology in non-DI as well as DI products. In any event, further allocating Realtek’s expenditures as between the DI Chips and products that do not practice the patent would only further reduce a dollar amount that already is relatively low, all things considered.

(iii) Appropriate nexus between the DI Chips and the ‘928 Patent

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Realtek asserts that it proved the “requisite nexus” to the patented articles. Realtek cites the testimony of the Realcom engineers that the IPs contributed by Realcom interact directly with the bond pad technology claimed by the ‘928 patent to create a faster and more reliable 802.11n DI Chip. (CIB at 120 (citing CX-0314C at Qs. 76, 80, 82-83, 90-91; CX-0315C at Qs. 35, 42, 54, 58, 59; CX-0316C at Qs. 134-35, 139, 151, 158, 170; Tr. at 528:18, 529:9, 551:11, 552:5).) I accept this testimony as true and find that there is a nexus between the research and development conducted by Realcom and the DI Chips. The alleged relationship is general, however. It is difficult to identify a contribution of the { } IPs that is particularly related to the DI Chips — as Respondents assert, almost every technological advance makes chips more efficient. Thus, the connection between the research conducted on the { } IPs and the DI Chips does not add significant weight to the argument for finding a domestic industry.

c. Other Cases Cited by Realtek Are Not Persuasive In This Context.

The thrust of Realtek’s argument is that it has satisfied all the “requirements” to prove a domestic industry, and that the evidence it cannot adduce is not “required.” Realtek thus attempts to shoehorn its California operation into the statutory concept of a domestic industry. The shoe does not fit.

Realtek’s arguments are unavailing because they extract certain factors from the case law and ignore the context in which those factors were deemed relevant by the Federal Circuit, the Commission or the administrative law judge. As noted herein, context is critical to the issue of domestic industry. Congress requires that the domestic industry be “substantial” or “significant.” These are relative terms giving the Commission “broad discretion” to analyze the facts and reach a conclusion in a particular case. *Cf., Copperweld Corp., et al. v. United States*, 12 C.I.T. 148,

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156, 167, 682 F.Supp. 552, 561, 570 (Ct. Int'l Trade 1988) (reviewing legislative history of antidumping provisions).⁴⁴ The answer to the question of what is a domestic industry is not mathematically precise; the solution cannot be calculated by adding up all the statutory “requirements” and seeing whether they have been “satisfied.”

Realtek cites a number of cases that it contends support the conclusion that Realcom constitutes a domestic industry. Each of the cases is distinguishable in a meaningful way. Without discussing each case in detail, major points of distinction are discussed below. The overarching problem is, as noted above, that Realtek fails to take account of the pertinent context, which differs significantly in the cited cases from the context in which the present inquiry takes place.

In *Certain Integrated Circuit Devices and Products Containing the Same*, the ALJ found that the nature of the work performed domestically on the patented articles made it easy to conclude that the expenditures for these activities were significant. Inv. No. 337-TA-873, Order No. 32 (October 21, 2013). *Integrated Circuit*, however, concerned a small, California-based company. *Id.* at 8. In finding a domestic industry existed, the ALJ relied on specific evidence from the complainant concerning the time and place of the work done on the domestic industry products, the associated expenses, and the identity of the individuals who performed the work. The complainant’s specific allocation of its expenditures was presented in a declaration by its

⁴⁴ The memorandum opinion in *Copperweld* noted passages in the legislative history that indicated the Commission could consider, in its discretion, a variety of factors that it might deem “significant.” 682 F. Supp. at 561, 570. “For one industry, an apparently small volume of imports may have a significant impact on the market, for another, the same volume might not be significant,” the decision noted, citing the legislative history. It is reasonable to conclude that Congress had in mind the same broad grant of discretionary authority to the Commission when it enacted the domestic industry requirements in section 337(a)(3), using the relative terms “significant” and “substantial.”

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CEO. *Id.* at 17. The ALJ found that the CEO's calculations had not been shown to be "false or otherwise [to] lack credibility." *Id.* at 18. In 26 enumerated paragraphs, the ALJ then identified facilities costs attributable to each of the various projects that the complainant engaged in during the pertinent time period. *Id.* at 18-20. The ALJ identified additional expenditures and approved the allocations made by the company concerning labor and other costs, specifically with respect to each employee and each project worked on. In 165 enumerated paragraphs, the ALJ identified the extensive record evidence for other expenditures attributed by the complainant to work on the domestic industry products. *Id.* at 20-34. It is in this context that the ALJ then concluded, "[t]his is not a close case." *Id.* at 35. It is true that the ALJ found that layout design and testing of the Complainant's patent-protected chips showed the significance of the expenditures that the company made – "this goes without saying." *Id.* at 35. "However," the ALJ continued, "Complainant has also shown, for the sake of context, that its claimed domestic activities are significant *in light of its total operations.*" *Id.* (emphasis added).

In Realtek's case, by contrast, there is no evidence as to which employee conducted research on DI products, or when, or what he or she did. No documentary support has been presented for the allocation of { } of Realcom's expenditures to DI Chips. Realtek's evidence in this respect is somewhat ambiguous and definitely sparse. As a result, it is not "easy" as it was in *Integrated Circuit* to conclude that Realtek satisfies the domestic industry prong.

Moreover, it is not possible to conclude in the present context that the significance of Realcom's activities "goes without saying." Realcom's function is alleged to be "important" and "critical," but it is beyond dispute that the overwhelming majority of Realtek's work, whether it is research, marketing, design, production, etc., is conducted overseas. It is not self-evident that

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Realcom's activities, undertaken so far from the arena in which the vast majority of Realtek's business is conducted, is as important and critical as alleged. Realcom's contribution may be worthwhile – Realtek presumably would not maintain its California outpost otherwise – but the significance of Realcom's role simply is not substantiated – not, in any event, in the convincing way in which it was demonstrated in *Integrated Circuit*.⁴⁵

Realtek also cites *Certain Microcomputer Memory Controllers, Components Thereof and Products Containing Same* as a case in which “design work like that conducted by Realcom also was found to satisfy the economic prong.” (CIB at 128 (citing *Microcomputer Memory*, Inv. No. 337-TA-331, Order No. 6, 1992 WL 811299, at *2 (January 8, 1992).) Given the amounts involved, the ALJ concluded that, “[u]nder any reasonable definition, the investment in the exploitation of the chipsets covered by the patent claims in issue was substantial.” *Id.* at *3. Further, “[m]ost of the work associated with these costs was done at complainant's headquarters in California.” *Id.* at *2.

The ALJ in *Microcomputer Memory* stated that it was unnecessary “to compare the relative amount of work done in the United States to that done in a foreign country in manufacturing the products, or to compare value added by labor in a foreign country to the original cost of exploitation of the patents in the United States.” *Id.* at *3. The reason: “Under subsection (C) a *domestic* firm that spent a substantial amount of money exploiting its patented products in the United States has a domestic industry even if the firm manufactured the patented

⁴⁵ I do not doubt that the analog engineers in California are valued employees. There is no evidence, however, to support the assertion that they are tied to California in some way that transforms the work they perform for Realtek in Taiwan into a domestic industry.

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products abroad.” *Id.* (emphasis added). The decision in *Microcomputer Memory* does not by its terms apply to or even contemplate the analysis of domestic industry for a *foreign* company.

Realtek also points to *Microcomputer Memory* to support the argument that the domestic industry includes “collaboration between complainant’s engineers and prospective customers in the initial definition of the chipsets needed by the customer and the efforts of complainant’s engineers to debug the new designs.” (CIB at 128 (quoting *Microcomputer Memory*, 1992 WL 811299, at *2).) The activity described involves collaboration between chips engineers and “prospective customers.” In this case, Realcom’s engineers in California do not collaborate with any customers in the U.S. The evidence is that Realcom “collaborates” only with Realtek engineers in Taiwan. {

} This is a key distinction because, as noted above, one of the factors militating against finding a domestic industry is Realcom’s isolation from the U.S. marketplace.

Realtek also asserts that in *Certain Connecting Devices, for Use with Modular Compressed Air Conditioning Units*, the administrative law judge “found that the complainant established the existence of a domestic industry . . . based on the fact that the complainant had a facility in the United States that provided ‘engineering support’ for products manufactured in Mexico.” (CIB at 127 (Inv. No. 337-TA-587, Initial Determination, 2008 WL 618218, at *33 (Feb. 13, 2008)).) This statement is true, but it does not adequately describe the grounds for the decision.

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First, the complainant in *Connecting Devices* was an American company. 2008 WL at 618218 at *2. Although it imported the parts covered by the patent-in-issue, it sold those parts in the U.S. Further, it maintained a workforce to inspect the parts, to help customers use the parts, and to qualify vendors. In addition, the complainant continued to manufacture equipment for retooling in the U.S. *Id.* at 33. Realtek does not engage in such domestic activity. On balance, the only aspect of the *Connecting Devices* decision that lends weight to Realtek's argument is that expenditures for engineering support should count toward satisfaction of the economic prong. This proposition, however, is not in dispute.

“Similarly,” Realtek maintains, *Certain Switches and Products Containing Same* “also supports” Realtek's argument that it has established a domestic industry. (CIB at 127 (citing *Switches*, Inv. No. 337-TA-589, Initial Determination, 2007 WL 4203521, at *38 (Nov. 7, 2007)).) *Switches*, according to Realtek, involved a Taiwanese company and its California-based subsidiary.” (CIB at 127.) Realtek states that the company satisfied the economic prong because the subsidiary provided customer training and support, a limited amount of testing, minor repairs to returned products, a small amount of design work, and development of new products. (*Id.* at 127-28.) In *Switches*, it appears the domestic subsidiary served a variety of functions directly related to marketing the complainant's products in the United States; Realcom conducts no such activities. The more limited functions performed by Realcom's engineers, and the absence of any other activities connecting them to the U.S. marketplace, make it more difficult in this case than in *Switches* to find satisfaction of the economic prong.

To conclude: Realtek's best argument is that Realcom's production of analog engineering designs in California could be likened to “domestically-sourced components . . .

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[that] are crucial to the functionality of the [domestic industry product],” as in *Kinesiotherapy*, Comm’n Op. at 35. The activity in *Kinesiotherapy*, however, took place in the context of a small, start-up company developing a new market in the United States. Realtek, on the other hand, operates as an established player in the vast international market for semiconductor chips. Considering the overall context and all the pertinent facts concerning Realtek and its California subsidiary, the question is whether Realtek is the type of enterprise Congress intended to protect under section 337. In light of the purpose of section 337 as construed by the Federal Circuit and the Commission, the conclusion that Realtek is not that type of enterprise becomes clear.

Bolstering this conclusion is the attenuated relationship between the domestic activity conducted at Realcom and the patent-protected DI Chips. At most, { } of the research and development conducted at Realcom, { } involves the { } IPs that are used in the DI Chips. The { } is a mere estimate, moreover, based on no verifiable data, and is therefore weakly persuasive.

This is only to say that an amount that is already relatively low could actually be lower. In the end, however, it is not only the relatively low amount of Realtek’s expenditures in the U.S. that compels the conclusion that the statutory requirement of a domestic industry has not been proven, but the remoteness of the activities performed by the Realcom engineers from the domestic marketplace. Realtek’s research and development operation in the U.S. is neither substantial nor domestic. As a result, I find that Realtek has failed to prove the existence of a domestic industry.

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B. Technical Prong

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). A showing that the complainant practices an invalid claim of the asserted patent is not sufficient to meet this requirement, however. *Certain Audiovisual Components and Products Containing the Same*, Inv. No. 337-TA-837, Comm’n Op. at 33 (March 10, 2014).

Complainant’s Position: Complainant asserts that the DI Chips {

} practice claims 1-3 and 6-10 of the ‘928 patent. Complainant argues that the relevant structures of the DI Chips are all the same for the purposes of the technical prong of the domestic industry analysis. (CIB at 52 (citing CX-0336 at 217:7-16; CX-0313C at Q. 229).) Complainant asserts that Respondents only dispute whether the DI Chips meet the “spaced apart” limitation under Complainant’s proposed construction of that term. (*Id.* at 53.)

Complainant asserts that the DI Chips include an integrated circuit device having a pad structure formed thereon, a substrate, and an insulation layer formed on the substrate. (*Id.* at 53

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(citing CPX-0009C; CX-0123C; JX-0034C at 2-6; CX-0192C at 25-26; CX-0313C at Qs. 234, 237-238, 270, 273-274, 305, 308-309; CPX-0010C; JX-0036C at 2-6; CX-0193C at 1-34; CPX-0019C; CX-0122C; JX-0035C at 2-3.) Complainant states that Respondents do not dispute that the DI Chips meet these limitations of claim 1. (*Id.*)

Complainant states that the DI Chips include a lower electric-conduction layer formed in the insulation layer. (*Id.* at 54 (citing CPX-0009C; CX-0123C; JX-0034C at 7-9; CX-0192C at 24; CX-0313C at Qs. 239, 275, 284-287, 310, 319-322; CPX-0010C; JX-0036C at 7-9; CX-0193C at 1-2, 27-29; CPX-0019C; CX-0122C; JX-0035C at 7-8).) {

} Complainant continues that even under Respondents' proposed construction of "lower electric-conduction layer," the DI Chips meet this limitation. (*Id.* (citing CX-0313C at Qs. 248-251).)

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}

Complainant asserts that the DI Chips include a compound layer structure formed in the insulation layer and a first pad layer formed on the insulation layer and coupled to the compound layer structure. (*Id.* at 56 (citing CPX-0009C; CX-0123C; JX-0034C at 9-12; CX-0192C at 3-8;

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CX-0313C at Qs. 240-241, 276-277, 311-312; CPX-0010C; JX-0036C at 9-12; CX-0193C at 4-14; CPX-0019C; CX-0122C; JX-0035C at 9-12.) Complainant avers that Respondents do not dispute that the DI Chips meet these limitations of claim 1. (*Id.*)

Complainant argues that the first pad layer and compound layer structure are spaced apart from the lower electric-conduction layer in the DI Chips. (*Id.* at 57 (citing CPX-0009C; CX-0123C; JX-0034C at 13-17; CX-0192C at 3-25; CX-0313C at Qs. 242, 244-245, 278, 280-281, 288, 313, 315-316, 323; CPX-0010C; JX-0036C at 13-17; CX-0193C at 1-30; CPX-0019C; CX-0122C; JX-0035C at 13-17).) {

} Thus, Complainant argues that the lower electric-conduction layer is not only physically separated, but “sufficiently separated to provide electromagnetic isolation, or shielding from noise from the substrate.” (*Id.* (citing CX-0313C at Q. 242).) Complainant avers Respondents dispute only whether the DI Chips meet this limitation under Complainant’s proposed construction of “spaced apart.” (*Id.*)

Complainant argues that the DI Chips include a second pad layer formed on the insulation layer and coupled to the lower electric-conduction layer. (*Id.* at 58 (citing CPX-0009C; CX-0123C; JX-0034C at 18-25; CX-0192C at 3-25; CX-0313C at Qs. 243, 279, 314; CPX-0010C; JX-0036C at 18-27; CX-0193C at 1-28; CPX-0019C; CX-0122C; JX-0035C at 18-27).) Complainant avers that Respondents do not dispute that the DI Chips meet these limitations of claim 1. (*Id.*)

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Complainant says that in the DI Chips the compound layer structure comprises a first electric-conduction layer and a first connecting layer to couple the first electric-conduction layer to the first pad layer as recited in dependent claim 2. (*Id.* at 60 (citing CPX-0009C; CX-0123C; JX-0034C at 26-27; CX-0192C at 5-8; CX-0313C at Qs. 253, 289, 324; CPX-0010C; JX-0036C at 28-29; CX-0193C at 9-14; CPX-0019C; CX-0122C; JX-0035C at 28-29).)

Complainant states that in the DI Chips, the first connecting layer comprises a plurality of via plugs as recited in dependent claim 3. (*Id.* at 60-61 (citing CPX-0009C; CX-0123C; JX-0034C at 28-29; CX-0192C at 6; CX-0313C at Qs. 254, 290, 325; CPX-0010C; JX-0036C at 30-31; CX-0193C at 10-13; CPX-0019C; CX-0122C; JX-0035C at 30-31).)

Complainant says that in the DI Chips, the first pad layer is shaped like a polygon as recited in dependent claim 6. (*Id.* at 61 (citing CPX-0009C; CX-0123C; JX-0034C at 30; CX-0192C at 2-4; CX-0313C at Qs. 255, 291, 326; CPX-0010C; JX-0036C at 32; CX-0193C at 1-11; CPX-0019C; CX-0122C; JX-0035C at 32).)

Complainant asserts that the DI Chips include a passivation layer formed on the insulation layer to cover a part of the outer rim of at least one of the first and second pad layers as recited in dependent claim 7. (*Id.* (citing CPX-0009C; CX-0123C; JX-0034C at 31; CX-0313C at Qs. 256, 292, 327; CPX-0010C; JX-0036C at 33; CPX-0019C; CX-0122C; JX-0035C at 33).)

Complainant states that the DI Chips include at least one second connection layer for coupling the second pad layer to the lower electric-conduction layer as recited in dependent claim 8. (*Id.* at 62 (citing CPX-0009C; CX-0123C; JX-0034C at 32-37; CX-0192C at 9-23; CX-

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0313C at Qs. 257, 293, 328; CPX-0010C; JX-0036C at 34-42; CX-0193C at 14-28; CPX-0019C; CX-0122C; JX-0035C at 34-42).)

Complainant avers that the DI Chips include at least one second electric-conduction layer coupled between the second pad layer and the lower electric-conduction layer with the second connecting layer as recited in dependent claim 9. (*Id.* (citing CPX-0009C; CX-0123C; JX-0034C at 38-43; CX-0192C at 9-23; CX-0313C at Qs. 258, 295, 329; CPX-0010C; JX-0036C at 43-51; CX-0193C at 14-27; CPX-0019C; CX-0122C; JX-0035C at 43-51).)

Complainant asserts that in the DI Chips, a noise from the substrate is kept away from the first pad layer by the lower electric-conduction layer as recited in dependent claim 10. (*Id.* at 58 (citing CPX-0009C; CX-0123C; JX-0034C at 44; CX-0192C at 3-25; CX-0313C at Qs. 259-260, 295-296, 330-331; CPX-0010C; JX-0036C at 52; CX-0193C at 1-32; CPX-0019C; CX-0122C; JX-0035C at 51-52).) {

} Complainant avers

that Respondents do not dispute that the DI Chips meet the additional limitations of claim 2-3 and 6-10. (*Id.* at 58-62.)

Respondents' Position: Respondents argue that the DI Chips do not practice claim 1 of the '928 patent under Complainant's proposed construction of "spaced apart." Specifically, Respondents argue that under Complainant's proposed construction of "spaced apart"—which requires electromagnetic isolation—Dr. Walker has not provided any evidence that (1) the first pad layer and compound layer structure are electromagnetically isolated from the lower electric-

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conduction layer, or (2) that the first pad layer and compound layer structure are electromagnetically isolated from the substrate. (RIB at 54 (citing RX-0285C at Q. 147).)

Analysis and Conclusion: As a threshold matter, I find that Complainant has failed to meet the technical prong of the domestic industry requirement because it has not proven that the DI Chips practice a valid claim of the '928 patent. To meet the technical prong, Complainant must show that its DI Chips practice a *valid* claim of the '928 patent. *See Certain Audiovisual Components and Products Containing the Same*, Inv. No. 337-TA-837, Comm'n Op. at 33 (March 10, 2014). As explained above, claims 1-3 and 6-10 of the '928 patent are anticipated by prior art and are therefore invalid. (*See supra* Sections IV.B-C.) Thus, Complainant has failed to show that its DI Chips practice a *valid* claim of the '928 patent.

Assuming *arguendo* that claims 1-3 and 6-10 of the '928 patent were not invalid, I find that Complainant has proven by a preponderance of the evidence that its DI Chips practice claims 1-3 and 6-10 of the '928 patent. As summarized above, Complainant has submitted substantial evidence that all the limitations of claim 1 are met by the DI Chips. Respondents do not seem to dispute that the DI Chips contain all elements of claim 1 except for the limitation that the "first pad layer and the compound layer structure are spaced apart from the lower electric-conduction layer." (RIB. at 54.) Respondents argue that if Complainant's proposed construction of the term "spaced apart" is adopted, the DI Chips do not meet this limitation because Dr. Walker failed to provide any evidence that the first pad layer and the compound layer structure are electromagnetically isolated from the lower electric-conduction layer or from the substrate. (*Id.*) As discussed in Section III.B.2, *supra*, Complainant's proposed construction of "spaced apart" has been rejected and the plain and ordinary meaning of "spaced apart" does

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not include a requirement of electromagnetic isolation. {

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Under the plain and ordinary language of “spaced apart,” the DI Chips meet the “spaced apart” limitation. Therefore, I find that Complainant has proven by a preponderance of the evidence that the DI Chips practice claim 1 of the ‘928 patent.

Also as shown above, Complainant has submitted substantial evidence that all the limitations of claims 2-3 and 6-10 are met by the DI Chips. Respondents do not seem to dispute that the DI Chips meet the limitations of claims 2-3 and 6-10, nor have they produced any evidence to rebut the Complainant’s evidence. (See RIB at 54; RRB at 35; CX-0285C at Qs. 145-148.) Therefore, I find that Complainant has proven by a preponderance of the evidence that the DI Chips practice claims 2-3 and 6-10 of the ‘928 patent.

Although claims 1-3 and 6-10 are practiced by the DI Chips, because claims 1-3 and 6-10 are invalid, I find that Complainant has not met the technical prong of the domestic industry requirement.

VII. REMEDY & BONDING

A. Limited Exclusion Order

Complainant’s Position: Realtek contends that it is entitled to a permanent limited exclusion order directed to the accused { } the accused LSI { } and the accused Seagate Products incorporating the LSI { } Realtek states that LSI stipulated

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that the importation requirement in 19 U.S.C. §1337(a)(1)(B) is met with respect to products that contain the { } integrated circuit chip, the { } integrated circuit chip, the LuxorLite 1.0 integrated circuit chip, and the { } integrated circuit chip. Realtek states that Seagate's products are devices that incorporate the infringing LSI chips. Realtek states that Seagate stipulated that the importation requirement of 19 U.S.C. §1337(a)(1)(B) is met with respect to products that contain the infringing { } chips including the following product lines: { }

Realtek notes that the Commission has the authority to exclude downstream products that contain infringing component parts, and that an EPROMs analysis is not necessary to determine whether an exclusion order should cover downstream products of named respondents like Seagate. Nevertheless, Realtek presents its analysis of the EPROMs factors.⁴⁶

As to factor 1), Realtek states that LSI's { } are critical to the operation of the Seagate hard drives that incorporate them. Realtek referred to the testimony of Respondents' witnesses to demonstrate that the Seagate products derive significant value from the accused bond pads. (CIB at 131-32 (citing CX-0314C at Qs. 131, 137; CX-0043C at 118:13-120:9).) As to factor 2), Realtek states that the identity of the manufacturer of the downstream products, Seagate, is clear, because Seagate is a named respondent. (*Id.* at 132 (citing CX-0314C at Q. 138).) As to factor 3), Realtek states that an exclusion order will expedite the negotiation of licensing agreements. (*Id.* (citing CX-0314C at Q. 139).) Realtek states further that, without an exclusion order covering downstream products, Respondents could evade the order by

⁴⁶ See *Certain Erasable Programmable Read-Only Memories, Components Thereof, Products Containing Such Memories, and Processes for Making Such Memories*, Inv. No. 337-TA-276, Comm'n Op., 1989 WL 1716252, at *88 (May 1989), rev'd on other grounds sub nom. *Intel Corp. v. ITC*, 946 F.2d 821 (Fed. Cir. 1991).

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continuing to import Seagate products with infringing chips installed outside of the United States. Turning to factor 4), Realtek states that an exclusion order would block all downstream accused products and force respondents to negotiate a license agreement with Realtek or replace LSI's accused products with a non-infringing product. (*Id.* at 132-133 (citing CX-0314C at Q. 140).) Realtek states that Seagate already purchases a variant of the { } from LSI's competitor, { } Realtek states that a waiting period could be incorporated in the exclusion order to permit Seagate to find an alternate supplier. With respect to factor 5) Realtek states that there will be no burden imposed on third party consumers and products suppliers because good substitutes exist for the downstream accused products. { } compete with Seagate in the global hard drive market, Realtek states, with { } of the market, { } of the market, and { } of the market. (*Id.* at 133 (citing CX-0314C at Q. 141).) With respect to factor 6), Realtek states that there are substitutes for the downstream hard drives and the upstream hard drive controller chips. (*Id.* at 133-134 (citing CX-0314C at Q. 143).) Realtek states that the EPROM factors 7-9 all weigh in favor of issuing a permanent limited exclusion order.

Realtek maintains that no "ongoing" domestic industry requirement exists and cites Dr. Leonard's testimony that Realtek has continued to develop and implement the { } IPs during the 2011-2012 period. (CRB at 45-46 (citing CX-0314C at Q. 89).) Realtek asserts that a quarterly reporting requirement is not justified because Respondents failed to present sufficient evidence that Realtek's domestic activities no longer exist. Realtek also states that any waiting period in favor of Seagate should be "very limited."

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Respondents' Position: Respondents contend that Realtek is not entitled to any remedy because there is no evidence that Realtek's domestic industry is ongoing. Alternatively, Respondents state that a limited exclusion order should be coupled with a reporting requirement to ensure ongoing domestic activities. Respondents state that Realtek's domestic industry is based on R&D between 2003 and 2008 on the { } IPs incorporated into the DI Chips, and on consultation and fine-tuning provided by Realcom engineers in 2011 and 2012 related to the same IPs. (RIB at 123 (citing RX-0277C at 104:16-105:13, 106:20-107:5, 122:11-24).) Respondents state there is no evidence in the record of specific examples of work related to the DI Chips in 2011, 2012, or at present. Respondents assert that a quarterly reporting requirement would be necessary if any form of remedy were deemed appropriate. Respondents also state that, if a limited exclusion order is entered against Seagate, the order should include a six to 12 month waiting period to permit Seagate to find replacement chips without disruption to its business.

Conclusions and Analysis: No violation of section 337 has been found. Should the Commission find a violation of section 337, I recommend that the Commission issue a limited exclusion order that applies to Respondents as well as all of their affiliated companies, parents, subsidiaries, or other related business entities, or their successors or assigns, and covers the certain integrated circuit chips and products containing same found to infringe the '928 patent. I recommend that any limited exclusion order include a six month waiting period to permit Respondent Seagate to replace the accused chips with non-infringing chips. I also recommend that Realtek be required to submit to the Commission a quarterly report in which Realtek will certify that it continues to maintain a domestic industry with respect to the DI Chips and will

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specify the nature of the activities that constitute the domestic industry, including the names of individuals working on the pertinent IPs, the amount of their time devoted to specific IPs, and their particular activities related to DI products during each quarter.

B. Cease & Desist Order

Complainant's Position: Realtek says that to obtain a cease and desist order, a complainant bears the burden to show that a respondent has a commercially significant inventory of infringing imports in the U.S. (CIB at 134.) Realtek states that "at least" Seagate's {

} chips are shipping and include the infringing { } (CIB at 134 (citing CX-0058C at 112:20-113:9; CX 0061C, CX-0058C at 114:6-21); *see also* JX-0047C).) Realtek maintains that, because Seagate has a commercially significant inventory of its accused products in the U.S., a cease and desist order should issue to enjoin Seagate from selling, marketing, distributing and advertising the products in this country. Realtek reiterates that Seagate has inventory in the United States of drives that contain infringing chips but again points to no evidence of the amount of such inventory.

Respondents' Position: Respondents state that Realtek has failed to meet its burden of proving that a cease and desist order should issue. Respondent states that there is no evidence that LSI has any inventory of the accused { } chips in the United States, and the amount of Seagate accused products held in inventory in the United States is insufficient to warrant issuance of a cease and desist order. If such an order is issued against Seagate, Respondents seek a six- to 12-month waiting period.

Conclusions and Analysis: Section 337 provides that the Commission may issue a cease

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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).

Realtek has submitted evidence that Seagate hard drives incorporating the infringing chips have been shipped to the United States, but has not submitted evidence indicating how many are in inventory. Realtek has pointed to no evidence that LSI has any inventory of the accused { } in the United States, and no evidence of the amount of accused products that have been shipped by Seagate to the United States. Accordingly, it is impossible to determine on this record whether the amount of inventory is significant. Realtek has failed to carry its burden to demonstrate that a cease and desist order should issue, and if a violation is found, I do not recommend issuance of a cease and desist order against LSI or Seagate.

C. Bonding

Complainant’s Position: Realtek notes that the Commission may base its bond

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calculation on a price differential between the complainant's and the respondents' products, or on alternative approaches, including a "reasonable royalty" theory, where there is evidence in the record as to the amount of such a royalty. Realtek states that "[b]ecause the evidence and testimony showed that no meaningful price differential can be calculated and that Realtek has not licensed the '928 Patent, Respondents should be required to post a 100% bond." (CIB at 135.)

Realtek agrees with Respondents that Realtek's chips do not compete with LSI's chips or Seagate's products, stating that a price differential analysis therefore cannot be used to set the bond. Realtek also states that the reasonable royalty approach cannot be used {

} Realtek argues that in such circumstances, "the Commission typically imposes a 100% bond." (CRB at 50 (citing *Certain Liquid Crystal Display Modules, Products Continuing Same, and Methods using the Same*, Inv. No. 337-TA-634, Comm'n Op., 2009 WL 4087135, at *3 (November 24, 2009).)

Respondents' Position: Respondents assert that there is no evidence that Realtek suffers any economic harm as a result of Respondents' importation, because the "LSI and Seagate products do not compete with any Realtek products." (RIB at 127.) Respondents state that the DI Chips are Wi-Fi chips that are manufactured and sold outside the United States, "unlike the accused LSI chips." (*Id.*) Respondents state further that the Complainant does not service the Wi-Fi chips in the United States. (*Id.*) Respondents argue that no bond would be appropriate, because there is no evidence in the record to support the necessity of a bond to offset any competitive advantage. Respondents argue in the alternative that, even if a bond were appropriate, Realtek has failed to meet its burden to support the amount of the bond, because Realtek has not provided evidence concerning a price differential or an established royalty.

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Respondents reply that a bond should not be required but, if a bond is imposed, it should be no greater than 3.3% of the value of the LSI semiconductor chips at issue, which Respondents state was the median royalty rate in the semiconductor industry in 2012. (RRB at 48 (citing RX-286C at Qs. 240-243).)

Conclusions and Analysis: In the event that the Commission finds a violation and determines to order a remedy, 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. The purpose of the bond is to protect the complainant from injury during the 60-day period. 19 C.F.R. §§ 210.42(a)(1)(ii), 210.50(a)(3). The complainant has the burden of supporting the amount of any bond it proposes. *Certain Rubber Antidegradants, Components Thereof, and Products Containing Same*, No. 337-TA-533, Comm'n Op., 2008 WL 1727623, at *25 (Jul. 13, 2006), vacated on other grounds sub nom. *Sinorgchem Co. v. Int'l Trade Comm'n*, 511 F.3d 1132 (Fed. Cir. 2007).

The parties agree that a bond based on price differential or reasonable royalty is not practicable here. The question is whether in the absence of those two methods Realtek is entitled to a bond of 100%.

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. *See Liquid Crystal*, 2009 WL 4087135, at *3 (determining that price differential calculation was impractical because “the pricing data of record demonstrates that no meaningful price comparison can be performed” due to the number of products sold by the parties and the variety of features in the products in the investigation). The Commission in *Liquid Crystal* also found that a reasonable

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royalty rate could not be calculated because the royalty rate analysis “specifically excluded three of the four patents-in-suit in this investigation.” *Id*; see also *Variable Speed Wind Turbines*, Comm’n Op., 1996 WL 1056209, at *16 (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, at *17 (Aug. 23, 2005) (imposing a bond of 100% based on a finding that the parties had numerous models and product 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, and the proposed royalty rate appeared to be *de minimis* and without adequate support in the record).

The record in this case does not justify the imposition of a 100% bond. Here, Realtek admits it has no products that compete with LSI’s and Seagate’s products at issue in this Investigation, whether those Realtek products utilize the ‘928 patent or not. {

} Realtek has made no effort in its briefing of these issues to explain why, without a bond, it would be harmed in these circumstances. Since Realtek has presented neither evidence nor argument to explain how it would be harmed by the importation

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of infringing products during the Presidential review period, I do not recommend that the Commission impose a bond if it 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,⁴⁷ and *in personam* jurisdiction.
2. Except with respect to LSI's { } there has been an importation into the United States, sale for importation, or sale within the United States after importation of the accused { } chips and Seagate products containing LSI's { } chips, 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. 6,787,928 as required by 19 U.S.C. § 1337(a)(2).
4. Claims 1-10 of U.S. Pat. No. 6,787,928 are invalid pursuant to 35 U.S.C. § 102.
5. Claims 4-5 of U.S. Patent No. 6,787,928 are invalid pursuant to 35 U.S.C. § 103.
6. Claim 10 of U.S. Patent No. 6,787,928 is not invalid pursuant to 35 U.S.C. § 112.

⁴⁷ Except with respect to LSI's { }

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7. The accused { } and Seagate Products literally infringe claims 1-3 and 6-9 of U.S. Patent No. 6,787,928.

8. The accused { } literally infringe claims 1-10 of U.S. Patent No. 6,787,928.

9. There is no violation of 19 U.S.C. § 1337(a)(1)(B) with respect to U.S. Pat. No. 6,787,928.

X. ORDER

Based on the foregoing, and the record as a whole, it is my Final Initial Determination that there is not a violation of 19 U.S.C. § 1337(a)(1)(B) in the sale for importation, the importation into the United States, and the sale after importation into the United States, of the accused { } chips and Seagate products containing { }

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 *in camera* treatment continuing after the date this Investigation is terminated.

The initial determination portion of the Final Initial and Recommended Determination,

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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).

On or before March 31, 2014, the parties shall submit to the Office of Administrative Law Judges *a joint statement* regarding whether or not they seek to have any portion of this document deleted from the public version. The parties' submission shall be made by hard copy and must include a copy of this Initial Determination with red brackets indicating any portion asserted to contain confidential business information to be deleted from the public version. The parties' submission shall include an index identifying the pages of this document where proposed redactions are located. The parties' submission concerning the public version of this document need not be filed with the Commission Secretary.

SO ORDERED.

Issued: March 21, 2014
DATE

Dee Lord
Dee Lord
Administrative Law Judge

**CERTAIN INTEGRATED CIRCUIT
CHIPS AND PRODUCTS CONTAINING
THE SAME**

Inv. No. 337-859

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **ORDER** was served upon the following parties via first class mail delivery on *April 21, 2014.*



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

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