Public Version

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of **COMPONENTS FOR CERTAIN ENVIRONMENTALLY-PROTECTED LCD DIGITAL DISPLAYS AND PRODUCTS CONTAINING SAME**	**Inv. No. 337-TA-1349**

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

Administrative Law Judge MaryJoan McNamara

(April 16, 2024)

Appearances:

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SELECTED SUMMARY FINDINGS

Pursuant to the Notice of Investigation, 88 Fed. Reg. 1404, dated January 10, 2023, this is the Initial Determination ("ID") of the Investigation in *Components for Certain Environmentally-Protected LCD Digital Displays and Products Containing Same*, United States International Trade Commission Investigation No. 337-TA-1349. *See* 19 C.F.R. § 210.42(a).

It is a finding of this ID that Complainants Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Research America, Inc., and Samsung International, Inc. ("Complainants" or "Samsung") have not proven by a preponderance of evidence that Respondent Manufacturing Resources International, Inc. ("Respondent" or "MRI") has violated subsection (b) of Section 337 of the Tariff Act of 1930, in the importation into the United States, the sale for importation, or the sale within the United States after importation of components for certain environmentally-protected LCD digital displays and products containing same.

It is a finding of this ID that MRI has infringed asserted claims 1 and 2 of U.S. Patent No. RE45,117 ("the '117 patent"). It is also a finding of this ID that asserted claims 1 and 2 of the '117 patent are not invalid. It is also a finding of this ID that one or more of Samsung's domestic industry products has satisfied the technical industry prong of the domestic industry requirement for the '117 patent. It is also a finding of this ID that Samsung has not satisfied the economic prong of the domestic industry requirement under Section 337(a)(3)(B) for the '117 patent.

It is a finding of this ID that MRI has not infringed asserted claims 4, 6, and 13 of U.S. Patent No. 8,223,311 ("the '311 patent"). It is also a finding of this ID that asserted claims 4, 6, and 13 of the '311 patent are invalid. It is also a finding of this ID that none of Samsung's domestic industry products has satisfied the technical industry prong of the domestic industry

requirement for the ’331 patent. It is also a finding of this ID that Samsung has not satisfied the economic prong of the domestic industry requirement under Section 337(a)(3)(B) for the ’331 patent.

It is a finding of this ID that MRI has not infringed asserted claim 12 of U.S. Patent No. 8,842,253 (“the ’253 patent”). It is also a finding of this ID that asserted claim 12 of the ’253 patent is invalid. It is also a finding of this ID that none of Samsung’s domestic industry products has satisfied the technical industry prong of the domestic industry requirement for the ’253 patent. It is also a finding of this ID that Samsung has not satisfied the economic prong of the domestic industry requirement under Section 337(a)(3)(B) for the ’253 patent.

However, if the Commission finds that there has been a violation, then this decision recommends: (1) a Limited Exclusion Order with a standard certification provision; and (2) that a 100% bond enter during the Presidential Review Period.

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e) 13[d]: “a flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel, the flow control device comprising: 213

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ABBREVIATIONS

The following shorthand references to the parties, related U.S. agencies, and related proceedings are used in this Initial Determination:

Complainants or Samsung	Complainants Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Research America, Inc., and Samsung International, Inc.
Respondent or MRI	Manufacturing Resources International, Inc
Parties	Samsung and MRI, collectively
CBP	U.S. Customs and Border Protection
USPTO or PTO	U.S. Patent and Trademark Office

The following abbreviations for pleadings, exhibits, briefs, transcripts, and Orders are used in this Initial Determination:

Compl.	Complaint
Resp.	Response of MRI to the Notice of Investigation and Complaint Under Section 337 of the Tariff Act of 1930, as Amended
CX	Complainant's exhibit
CDX	Complainant's demonstrative exhibit
CPX	Complainant's physical exhibit
CPBr.	Complainant's Pre-Hearing Brief
CBr.	Complainant's Initial Post-Hearing Brief
CRBr.	Complainant's Post-Hearing Reply Brief
CPSt.	Complainant's Pre-Hearing Statement
JX	Joint exhibit

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RX	Respondent's exhibit
RDX	Respondent's demonstrative exhibit
RPX	Respondent's physical exhibit
RPBr.	Respondent's Corrected Pre-Hearing Brief
RBr.	Respondent's Initial Post-Hearing Brief
RRBr.	Respondent's Post-Hearing Reply Brief
RPSt.	Respondent's Pre-Hearing Statement
Tr.	Evidentiary hearing transcript
Dep. Tr.	Deposition transcript
CMBr.	Complainant's Corrected Initial *Markman* Brief
RMBr.	Respondent's Initial *Markman* Brief
CPMBr.	Complainant's Post-Hearing *Markman* Brief
RPMBr.	Respondent's Post-Hearing *Markman* Brief
Joint CC Chart	Post-Hearing Joint Claim Construction Chart (Doc. ID No. 798654 (June 14, 2023))
***Markman* Order**	Order No. 28 (Oct. 4, 2023)
Second *Markman* Order	Order No. 32 (Feb. 27, 2024)

The following shorthand references to certain products and patents at issue are used in this Initial Determination:

'117 patent	U.S. Patent No. RE45,117
'311 patent	U.S. Patent No. 8,223,311

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'253 patent	U.S. Patent No. 8,842,253
Asserted Patents	The '117 patent, the '311 patent, and the '253 patent collectively
Accused Products	MRI's Generation 14 55-inch single-sided, single-sided (landscape), and double-sided products; MRI's Generation 14.5 55-inch double-sided (EV) product; MRI's Generation 15 55-inch single-sided, single-sided (slim), and double-sided products; MRI's Generation 11 75-inch single-sided and double-sided products; MRI's Generation 14 75-inch single-sided, single-sided (landscape), and double-sided products; MRI's Generation 14.5 and Generation 15 75-inch single-sided products; MRI's Generation 15 75-inch single-sided product; MRI's Generation 16 75-inch single-sided and double-sided products; MRI's Generation 11 86-inch single-sided, single-sided (hybrid), double-sided, and double-sided (hybrid) products; MRI's Generation 15 and Generation 16 86-inch single-sided products; and MRI's Generation 16 88-inch stretch product.
117 DI Products	OH46B and OH55A-S ("the Mid-Sized DI Products")
311 DI Products	OH75A and OH85N-S ("the Large-Sized DI Products")
253 DI Products	OH75A and OH85N-S ("the Large-Sized DI Products")

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I. INITIAL DETERMINATION ON VIOLATION OF SECTION 337, AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

A. Overview

The technology at issue in this Investigation relates to digital displays, typically liquid crystal display ("LCD"), that are suitable for outdoor use as menu boards at quick service food restaurants such as Burger King and McDonalds. Similar LCD outdoor display devices are often used for sales and marketing advertisements at venues such as stadiums and malls. The LCD outdoor display devices at issue are designed to withstand certain heat and cold. The products at issue in this Investigation have features that improve heat regulation in the display cases, and/or in or around the LCD cells themselves. The DI Products and the Accused Products, although differently designed, are designed to prevent degradation to the LCD components and/or other electronics from heat. This is important for LCD (and other types of panels) outdoor display devices because they often are exposed to direct sun exposure and high ambient temperatures for extended periods of time. One of the ways that heat is regulated in LCD (and other panel) outdoor display devices is by pulling external air into the device, passing the external air over warmer parts of the device so that the external air absorbs heat, and then expelling the warmed external air back out of the device. However, external air can be dirty; it can damage the electronics of the LCD display devices and the LCD cells themselves. To solve the problem of dirty external air, an internal flow path of clean air is isolated from the flow path of external air. The clean, internal air absorbs heat from the warmer components of the device. The dirtier, external air absorbs heat from the clean, internal air. The Accused Products and the DI Products are designed to deal with the same problems, with some notable differences.

As is reflected in the Summary Findings, there is not an ultimate finding of violation of

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Section 337. That is because Samsung has not met its burden of proof that it has significant investments in a domestic industry in the United States that practice any of the patents at issue in this Investigation.

B. Summary of Findings

A summary of this decision's findings is provided below.

Table No. 1: Summary of Findings

Patent	Asserted Claims	DI Claims	Determination
'117 patent	1 and 2	1 and 2	**No Violation**
'311 patent	4, 6, and 13	4, 6, and 13	**No Violation**
'253 patent	12	12	**No Violation**

II. BACKGROUND

A. Institution and Selected Procedural History

On December 5, 2022, Complainants Samsung Electronics Co., Ltd. ("SEC"), Samsung Electronics America ("SEA"), Samsung Research America, Inc. ("SRA"), and Samsung International, Inc. ("SII") (collectively, "Samsung" or "Complainants") filed a complaint ("Complaint") under Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, alleging infringement of claims 1, 2, 3, 4, 11, 12, and 13 of U.S. Patent No. 7,948,575 ("the '575 patent), claims 1, 2, 3, 6, 7, 8, and 9 of U.S. Patent No. 8,111,348 ("the '348 patent), claims 1, 2, and 5 of U.S. Patent No. RE45,117 ("the '117 patent"), claims 1, 10, 11, 12, 16, 17, 18, and 19 of U.S. Patent No. 8,842,253 ("the '253 patent"), and claims 1, 1, 3, 4, 6, 7, 8, 9, 10, 11, 12, and 13 of U.S. Patent No. 8,223,311 ("the '311 patent"). (Doc. ID No. 785613 (Dec. 5, 2022);[1] Compl.

[1] This is the official received date of the original Complaint.

at ¶ 3.).

On January 10, 2023, the Commission instituted this Investigation pursuant to subsection (b) of Section 337 of the Tariff Act of 1930, as amended, to determine:

> whether 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 products identified in paragraph (2) by reason of infringement of one or more of claims 1-3 and 11-13 of the '575 patent; claims 1-3 and 6-9 of the '348 patent; claims 1, 2, and 5 of the '117 patent; claims 1, 10-12, and 16-19 of the '253 patent; and claims 1-4 and 6-13 of the '311 patent, and whether an industry in the United States exists as required by subsection (a)(2) of section 337[.][2]

88 Fed. Reg. 1404-05 (Jan. 10, 2023).

The Notice of Investigation ("NOI") names as complainants: Samsung Electronics Co., Ltd. of Gyeonggi-do, Korea; Samsung Electronics America of Ridgefield Park, New Jersey; Samsung Research America, Inc. of Mountain View, CA; and Samsung International, Inc. of Chula Vista, California. *Id.* at 1404-05. The NOI names as respondent: Manufacturing Resources International, Inc. of Alpharetta, Georgia ("Respondent" or "MRI," and with Samsung, the "Parties"). (*Id.* at 1405.). Commission Investigative Staff ("Staff") is not a party in this Investigation. (*Id.*).

On January 31, 2023, MRI filed a response to the Complaint and NOI ("Response"). (Doc. ID No. 789058 (Jan. 31, 2023).). In the Response, MRI identified twelve (12) affirmative defenses ("MRI's Affirmative Defenses"). (Resp. at 23-38).

On April 13, 2023, the Parties filed their initial *Markman* Briefs. (Doc. ID No. 794330

[2] At issue in this Investigation are: U.S. Patent No. RE45,117 ("the '117 patent"), U.S. Patent No. 8,842,253 ("the '253 patent"), and U.S. Patent No. 8,223,311 ("the '311 patent"). *See, e.g.*, 88 Fed. Reg. 1404 (Jan. 10, 2023); Order No. 22.

(Apr. 13, 2023) ("CMBr.")[3]; Doc. ID No. 794253 (Apr. 12, 2023) ("RMBr.").). A *Markman* hearing was held on June 6, 2023. (*See* Order No. 11 (Apr. 26, 2023); Doc. ID No. 798030 (June 6, 2023).). On June 14, 2023, the Parties filed a Post-Hearing Joint Claim Construction Chart ("PH JCCC"). (Doc. ID No. 798654 (June 14, 2023).). On June 21, 2023, each party filed a Supplemental *Markman* Brief. (Doc. ID No. 799085 (June 21, 2023) ("CPMBr."); Doc ID No. 799055 (June 21, 2023) ("RPMBr."). On October 4, 2023, a *Markman* Order issued construing certain claim terms in dispute ("First *Markman* Order"). (Order No. 28.). In the October 4, 2023 *Markman* Order, the following claim terms were construed as indicated:

Claim Term	**Adopted Construction**
Display panel ('117 patent, independent claim 1)	Flat type display for displaying images As explanation, but not part of the claim construction itself, this would include both a Liquid Crystal Display and a Plasma Display Panel. (Order No. 28 at 15-24.)
Circuit board mounting part ('117 patent, independent claim 1 and dependent claim 2)	Not subject to 35 U.S.C. § 112, ¶ 6 Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 28 at 25-31.)
Display assembly ('253 patent, independent claim 11)	Module that includes a display panel As part of the explanation of the construction, but not part of the construction, the "display assembly" may, but is not required, to have a backlight and a circuit board to control the display panel and the backlight.

[3] On April 13, 2023, Complainants filed an unopposed motion for leave to refile their initial *Markman* brief, with some corrections, out of time. (Motion Docket No. 1349-002.). The Motion was granted. (Order No. 9 (April 14, 2023).). All discussion herein of Complainants' initial *Markman* brief refers to the corrected version filed on April 13, 2023.

	(Order No. 28 at 32-37.)
Flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel ('311 patent, independent claim 13)	Not subject to 35 U.S.C. § 112, ¶ 6 This clam term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 28 at 37-44.)
Control device [to control the fan to maintain a temperature of the housing] ('253 patent, independent claim 11)	Not construed in the first *Markman* Order (Order No. 28). Reserved for the evidentiary hearing. (Order No. 28 at 44-47.)
Flow rate controller control [sic] the fan according to the measured temperature to regulate the flow rate of the air in the channel ('311 patent, independent claim 13)	Subject to 35 U.S.C. § 112, ¶ 6 Function: to control air flow through the channel according to the measured temperature Structure: (None) Indefinite under 35 U.S.C. § 112 (Order No. 28 at 47-49.)

On February 27, 2024, a second *Markman* Order issued ("Second *Markman* Order"). (Order No. 32.). In the Second *Markman* Order, the following claim terms were construed as indicated:

Claim Term	**Adopted Construction**
Display assembly ('253 patent, independent claim 11)	Module that includes a display panel As part of the explanation of the construction, but not part of the construction, the "display assembly" may, but is not required, to have a backlight and a circuit board to control the display panel and the backlight. (Order No. 32 at 8-13.)
Flow control device [to impart turbulence to	Not subject to 35 U.S.C. § 112, ¶ 6

an air flow in the channel] ('311 patent, independent claim 1 and dependent claim 3)	This clam term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 32 at 13-19.)
Flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel ('311 patent, independent claim 13)	Not subject to 35 U.S.C. § 112, ¶ 6 This clam term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 32 at 19-25.)
Control device [to control the fan to maintain a temperature of the housing] ('253 patent, independent claim 11)	Subject to 35 U.S.C. § 112, ¶ 6 *Function*: to control the fan to maintain a temperature of the housing *Structure*: (None) Indefinite under 35 U.S.C. § 112 (Order No. 32 at 26-33.)
Flow rate controller control [sic] the fan according to the measured temperature to regulate the flow rate of the air in the channel ('311 patent, independent claim 13) Flow rate controller [to control air flow through the channel according to the measured temperature] ('311 patent, independent claim 1 and dependent claims 3 and 4)	Subject to 35 U.S.C. § 112, ¶ 6 Function: to control air flow through the channel according to the measured temperature Structure: (None) Indefinite under 35 U.S.C. § 112 (Order No. 32 at 34-45.)

The *Markman* Orders are incorporated herein by reference.

On August 24, 2023, Samsung filed an unopposed motion for partial termination of the Investigation. (Motion Docket No. 1349-013.). On September 11, 2023, Samsung's unopposed

motion for partial termination of the Investigation was granted. (Order No. 22.). As a result, the '575 patent and the '348 patent were terminated from this Investigation. On October 10, 2023, the Commission issued a decision determining not to review Order No. 22, so the '575 and '348 patents have been terminated. (Doc. ID No. 805631.). Therefore, as of the dates and conclusions of the evidentiary hearing ("Hearing") the following claims remain at issue in this Investigation ("Asserted Claims"): claims 1 and 2 of the '117 patent; claim 12 of the '253 patent; and claims 4, 6, and 13 of the '311 patent.

On August 4, 2023, MRI filed a motion for summary determination ("MSD") that Samsung failed to satisfy the economic prong of the domestic industry requirement, (Motion No. 1349-011), with a memorandum in support ("Mem"), (Attachment ID 2031840). Samsung filed its opposition on August 14, 2023. (Doc. ID 802309.). MRI's motion for summary determination was denied. (Order No. 24.).

In accordance with the deadline set forth in Order No. 5, Samsung filed one (1) motion *in limine* ("MIL")[4] (Motion Docket No. 1349-016 (Aug. 24, 2023) and MRI filed one (1) MIL[5] (Motion Docket No. 1349-014 (Aug. 24, 2023)). Samsung's and MRI's MILs were denied. (*See* Order Nos. 25 (Sept. 25, 2023), 26 (Sept. 25, 2023).).

The Hearing was held on October 4-6, 10, 11, 2023. (Doc. ID No. 805427 (Day 1, Oct.

[4] Samsung's MIL requested exclusion of certain opinions Samsung expected Mr. Flasck, one of MRI's experts, to offer during the Hearing with respect to fluid dynamics and flow simulations. Samsung argued, *inter alia*, that Mr. Flasck was expected to offer opinions beyond his expertise. As noted above, Samsung's MIL was denied.

[5] MRI's MIL requested exclusion of certain allegedly new theories about the quantitative significance of certain alleged Economic Prong investments that Samsung advanced in its Pre-Hearing Brief. MRI argued, *inter alia*, that Samsung newly focused on post-Complaint investments, investments in products other than the named domestic industry products, and other allegedly new analyses.

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4, 2023 Hearing Transcript); Doc. ID No. 805491 (Day 2, Oct. 5, 2023 Hearing Transcript); Doc. ID No. 805610 (Day 3, Oct. 6 Hearing Transcript); Doc. ID No. 805697 (Day 4, Oct. 11, 2023 Hearing Transcript); Doc ID No. 805780 (Day 5, October 12, 2023 Hearing Transcript).). There were no post-Hearing motions.

On February 7, 2024, the U.S. Patent Trial and Appeal Board ("PTAB") issued decisions, one for each patent still at issue in this Investigation, on whether to institute an *inter partes* review ("IPR") proceeding. *Manufacturing Resources International, Inc. v. Samsung Elecs. Co. Ltd.*, IPR2023-1201 (Paper No. 9) ("117 IPR"), IPR2023-01202 (Paper No. 10) ("311 IPR"), and IPR2023-01203 (Paper No. 11) ("253 IPR") (P.T.A.B. Feb. 7, 2024). For the '117 patent, MRI challenged claims 1, 2, and based on four (4) prior art references, three (3) of which (excluding the "Kaneco" reference) are at issue in this Investigation. However, in the 117 IPR two (2) of the prior art references were asserted in one of the two (2) grounds of invalidity and the other two prior art references were asserted in the other of the two grounds of invalidity as follows: (1) Karppanen '116 (RX-0083) and Takahashi (RX-0082); and (2) Nagayama (RX-0084) and Kaneco. The PTAB denied institution because, *inter alia*, neither Karppanen '116 nor Takahashi teaches two cooling fluid paths that are separated from each other. (117 IPR at 28-29; *see* Section IX.C, herein.).

For the '311 patent, MRI challenged asserted claim 4 based on the combination of Karppanen '116 (RX-0083), Gromatzky, (RX-0054), and Utsunomiya (RX-0087). (IPR2023-1202, Paper No. 10 at 8.). Each of the cited prior art references is at issue in this Investigation. MRI challenged asserted claims 6 and 13 based on the combination of Karppanen '116 (RX-0083) and Gromatzky (RX-0054). (*Id.*). The PTAB granted institution of the cited IPR because, *inter alia*, claim 1's (from which asserted claim 6 depends) recitation of "a temperature sensor to

measure the temperature of air discharged from the channel" constituted such "a slight modification" as to be "a predictable variation of Karppanen." The IPR cited prior art reference "Burke" that MRI has not relied on in this Investigation. (*Id.* at 23-24.). For claim 4, the PTAB determined that MRI "had not shown sufficiently how or why Utsunomiya's disclosed flowrates for an LCD projector would have been applied to Karppanen's backlit LCD display as modified by Gromatzky." (*Id.* at 32; *see also* Section IX.D.4 herein.).

For the '253 patent, MRI challenged asserted claim 12 based on, *inter alia*, Karppanen '116 (RX-0083) alone. (IPR2023-1203, Paper No. 11 at 9.). The PTAB granted institution of the cited IPR because, *inter alia*, claim 6's recitation of a "temperature sensor to measure a temperature of the air having passed through the front channel, and to send a resulting signal to the flow rate controller"[6] constituted such a "slight modification" as to be "a predictable variation of Karppanen." The IPR cited prior art reference "Burke" that MRI has not relied on in this Investigation. (*Id.* at 22-23.).

B. The Parties

1. Complainant Samsung Electronics Co., Ltd.

Samsung Electronics Co., Ltd. ("SEC") is a corporation organized and existing under the laws of the Republic of Korea with its principal place of business in Korea. (Compl. at ¶ 7; CBr. at 4.). SEC is the sole owner by assignment of all right, title, and interest to each Asserted Patent. (Compl. at ¶ 8.).

2. Complainant Samsung Electronics America, Inc.

Samsung Electronics America, Inc. ("SEA") is a corporation organized and existing

[6] Asserted claim 12 of the '253 patent contains very similar language. The PTAB's institution decision did not provide a separate analysis for claim 12.

under the laws of the State of New York with a principal place of business in New Jersey. (*Id.* at ¶ 9; CBr. at 4.). SEA is a wholly owned subsidiary of SEC. (Compl. at ¶ 10.). SEA's North American Display Office ("NADO") provides pre-sales support in connection with the Domestic Industry Products. (CBr. at 107-109.).

3. Complainant Samsung Research America, Inc.

Samsung Research America ("SRA") is a corporation organized and existing under the laws of the State of California with a principal place of business in California. (Compl. at ¶ 11.). SRA is a wholly owned subsidiary of SEA. (*Id.* at ¶ 12.). Samsung relied on Visual Solutions Lab ("VSL"), a business unit within SRA located in Irvine, CA, to support the economic prong of its domestic industry. (CBr. at 5, 114-116.).

4. Complainant Samsung International, Inc.

Samsung International, Inc. ("SII") is a corporation organized and existing under the laws of the State of New Jersey with a principal place of business in California. (*Id.* at ¶ 13.). SII is a wholly owned subsidiary of SEA. (CBr. at 5.). Some of SII's employees manage and control manufacturing for Samsung's manufacturing plant in Mexico. (CBr. at 113-114.). Samsung relied on SII's activities to support the economic prong of its domestic industry. (*Id.*).

5. Respondent Manufacturing Resources International, Inc.

Respondent Manufacturing Resources International ("MRI" or "Respondent") is a Georgia corporation organized and existing under the laws of Georgia. (*See* Resp. at ¶ 21.). MRI was founded by Mr. William Dunn[7] in December 2004, many years before the 2014 issue

[7] Mr. Dunn testified during the Hearing as the founder, president, and CEO of MRI. He is a listed inventor on over 200 patents and has worked with display technologies including military cockpit and workstation displays. (Tr. (Dunn) at 679:11-685:16, 689:22-692:3.).

date of the ’117 patent and ’253 patent and also before the 2012 issue date of the ’311 patent. (Tr. (Brand) at 650:23-666:13.).[8] MRI is a vertically integrated digital display company that conducts design, research, development, and manufacturing of digital displays, such as its BoldVu branded displays, at its facility in Alpharetta, Georgia. (*Id.*).

MRI obtains LCD Cells from [redacted] and incorporates them into its BoldVu branded outdoor display products, which include the Accused Products. (Tr. (Dunn) at 731:10-12, 742:19-25.). In 2014, MRI and LG Electronics formed a 50/50 partnership, LG-MRI, LLC (“LG-MRI”), to sell environmentally protected LCD digital displays. (JX-0033.0250 (Joint Venture Agreement); JX-0022.3121 (“History and Experience” of LG-MRI); JX-0033.0254.). MRI is the research, engineering, and manufacturing arm of the partnership, (CX-1015.0138), while LG-MRI is the marketing and sales arm. (JX-0022.121.).

III. JURISDICTION, IMPORTATION, AND STANDING

To have the authority to decide a case, a court or agency must have jurisdiction over either the parties or the property involved. *See Certain Steel Rod Treating Apparatus and Components Thereof*, Inv. No. 337-TA-97, Comm’n Opinion, 215 U.S.P.Q. 229, 231 (U.S.I.T.C. 1981). For the reasons discussed below, the facts and law support a finding that the Commission has jurisdiction over this Investigation.

A. *In Personam* Jurisdiction

MRI has appeared and responded to the Complaint and NOI and fully participated in this Investigation, which included participating in discovery and the Hearing, and by filing motions.

[8] At the time of the Hearing, Mr. Alan Brand was MRI’s Chief Financial Officer. (Tr. (Brand) at 650:19-22.). Mr. Brand testified about MRI’s corporate structure, operations, and history. (*Id.* at 650:23-666:13.).

(CBr. at 8; RRBr. at 9-15 (not contesting personal jurisdiction).). Thus, the Commission has personal jurisdiction over MRI. *See, e.g.*, *Certain Microfluidic Devices* ("*Microfluidic Devices*"), Inv. No. 337-TA-1068, Initial Determination, 2018 WL 5279172, at *16 (Sept. 20, 2018); *Certain Windshield Wiper Devices and Components Thereof* ("*Wiper Devices*"), Inv. No. 337-TA-881, Initial Determination, 2014 WL 2334287, at *6 (May 8, 2014) (unreviewed in relevant-part).

B. *In Rem* Jurisdiction

Section 337(a)(1)(B)(i) applies to the "[t]he importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or consignee, of articles that infringe a valid and enforceable United States patent." 19 U.S.C. § 1337(a)(1)(B)(i). A single instance of importation is sufficient to satisfy the importation requirement of Section 337. *Certain Optical Disc Drives, Components Thereof, and Prods. Containing the Same*, Inv. No. 337-TA-897, Order No. 101 at 3 (Sept. 22, 2014) (citations omitted) (EDIS Doc. 543438).

1. The Commission Has Jurisdiction Because MRI Purchases LCD Cells it Knows Will Be Imported, Then Incorporates the LCD Cells Into the Accused Products After Importation

"To determine whether the importation requirement is satisfied as to a particular respondent, the Commission applies a fact-intensive inquiry as to the extent of a respondent's conduct in causing infringing articles to enter the United States." *Certain Televisions, Remote Controls, & Components Thereof*, Initial Determination on Violation, USITC Inv. No. 337-TA-1263, 2022 WL 2827567, at *17 (June 28, 2022) ("*Televisions*"); *see also Certain Filament Light-Emitting Diodes & Prods. Containing Same (II)*, Initial Determination on Violation, USITC Inv. No. 337-TA-1220, 2021 WL 6102808, at *22 (Nov. 19, 2021); *in the Matter of*

Certain Subsea Telecommunications Sys. & Components Thereof, Initial Determination on Violation, USITC Inv. No. 337-TA-1098, 2021 WL 6102808, at *22 (Apr. 26, 2019); *in the Matter of Certain Subsea Telecomm. Sys. & Components Thereof*, USITC Inv. No. 337-TA-1098, 2020 WL 9312366, at *47 (Feb. 1, 2020).

"Whether the Commission has jurisdiction over certain activities is a question of law, and the Commission has broadly interpreted its jurisdiction under section 337." *Certain Intraoral Scanners & Related Hardware & Software*, Initial Determination, USITC Inv. No. 337-TA-1090, 2019 WL 2353507, at *11 (Apr. 26, 2019).

a) The Importation Requirement is Satisfied as to MRI Because MRI Purchased LCD Cells That MRI Knew Would be Imported and Shipped to it From Overseas.

MRI argued that the Commission lacks jurisdiction because MRI is not the "importer" of the LCD Cells that it purchases from [redacted] and then incorporates into the Accused Products. (RRBr. at 9-15.). MRI's argument is not supported for the following reasons.

The Commission "has jurisdiction to act if there is some nexus between a respondent's activities and the importation of the products accused of infringement." *Certain Cigarettes & Packaging Thereof*, Inv. No. 337-TA-643, Comm'n Op. at 8 (Oct. 1, 2009) ("*Cigarettes*") (citing *Certain Digital Satellite System (DSS) Receivers and Components Thereof*, Inv. No. 337-TA-392, USITC Pub. No. 3418, Notice of Comm'n Decision to Terminate the Investigation and to Vacate Portions of Initial Determination at 14 (U.S.I.T.C. April 2001) ("*DSS Receivers*"). Being "sufficiently involved in the manufacture and importation" of the infringing product "meet[s] the importation requirement, even if a [third-party] was the importer of record." *Certain Digital SetTop Boxes and Components Thereof*, Inv. No. 337-TA-712, Initial Determination, 2011 ITC

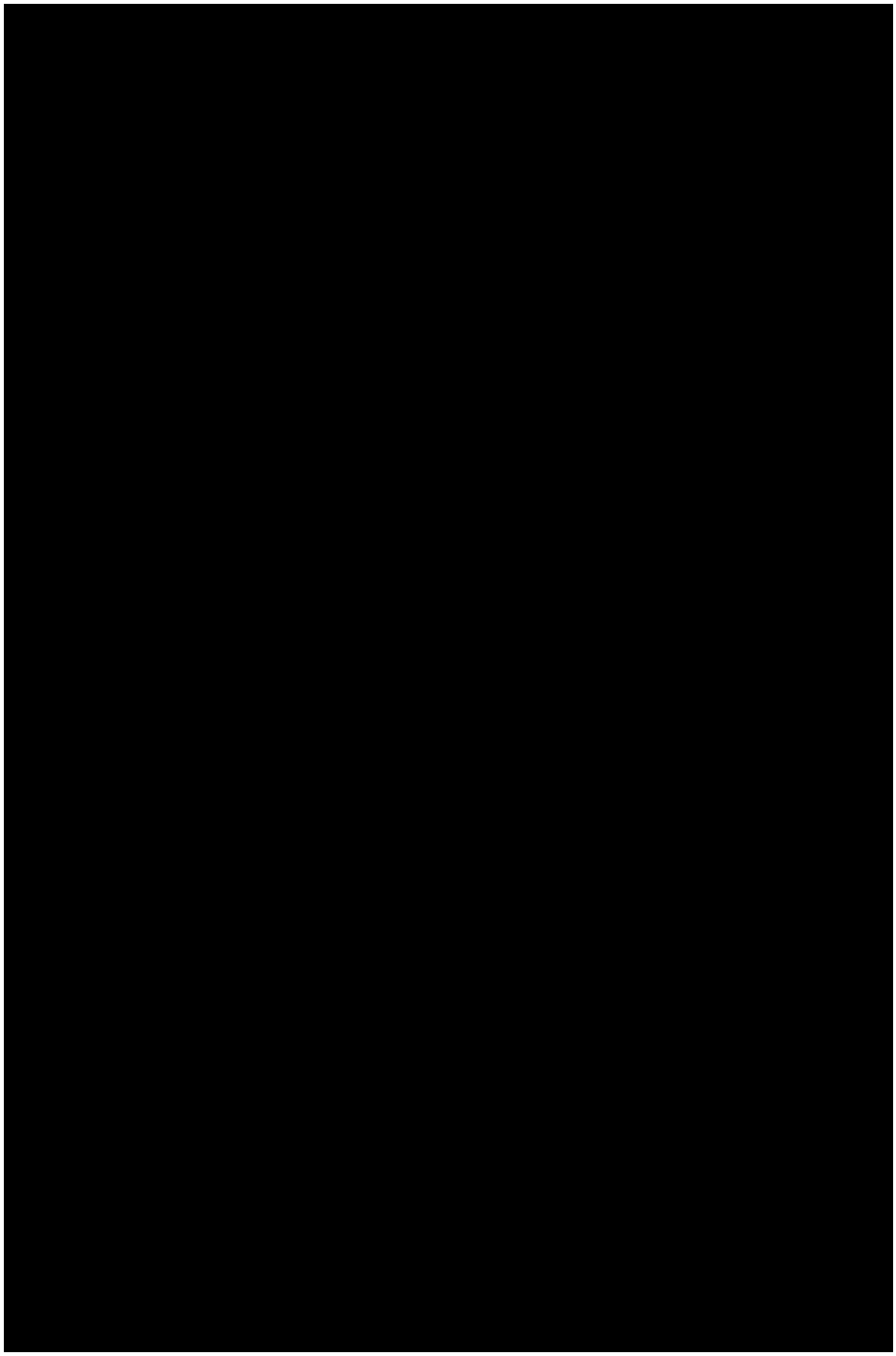
LEXIS 1070, at *24 (U.S.I.T.C., May 20, 2011) ("*SetTop Boxes*"). The party responsible for "importation" or the "sale for importation" referenced in Section 337(a)(1)(B)(i) does not have to be the same as the "owner, importer, or consignee." *Cigarettes*, 2009 WL 6751505, at *5-6 (Oct. 1, 2009).

Here, applying *Cigarettes* and *SetTop Boxes*, it is a finding of law that the requirements of Section 337(a)(1)(B)(i) have been satisfied because there is a nexus between MRI's activities and the imported LCD Cells that MRI incorporates into the Accused Products, which also supports a finding that MRI is sufficiently involved in importation. 19 U.S.C. § 1337(a)(1)(B)(i). MRI has purchased LCD Cells from [redacted] for use in MRI's accused BoldVu branded displays. (Tr. (Dunn) at 731:10-12 (testifying that MRI purchases [redacted]), 742:19-25 (testifying that [redacted] are used in MRI's BoldVu Accused Products); JX-0081C (March 25, 2022 MRI purchase order to [redacted]); JX-0082C (December 14, 2022 MRI purchase order to [redacted]); JX-0102C (June 2, 2022 MRI purchase order to [redacted].). MRI knew that the LCD Cells it purchased from [redacted] would be imported and shipped to MRI from outside the United States. (CX-0480C (Boyette Deposition)[9] at 67:2-7 (testifying that LCDs ordered from [redacted] are always shipped to MRI); JX-0119C.0003 (Declaration from Mr. Dunn ("Dunn Decl.") stating that [redacted] is the importer of the LCD Cells and that it ships the LCD Cells to MRI's headquarters in Alpharetta, Georgia).). A "Commercial Invoice & Packing List" MRI produced, which is

[9] Ms. Deena Boyette was designated as MRI's corporate representative on the topic of procurement. (Tr. (Dunn) at 750:4-14.). At the time of the Hearing, Ms. Boyette was MRI's Vice President of Procurement. (*Id.*).

excerpted in Figure 1 below, says that the LCD Cells are shipped from [redacted] to MRI's facility in Alpharetta, Georgia:

Figure 1: MRI's Commercial Invoice & Packing List (JX-0083)



(JX-0083.0001; *see also* JX-0074C (Bill of Lading produced by MRI listing [redacted] JX-0125.0002 (importation record produced by MRI for [redacted].

Based on the foregoing evidence, it is a finding of fact that MRI has purchased, from [redacted], LCD Cells for the purpose of using them in the Accused Products. It is also a finding of fact that MRI knew when it purchased the LCD Cells from [redacted], that the LCD Cells it purchased would be shipped to it from overseas. Therefore, based on MRI's activities, whether as a consignee or as an entity responsible for importation, it is a finding of law that the importation requirement is satisfied as to MRI because, applying the precedent set in *Cigarettes*, the foregoing facts establish at least, but clearly more than, "some nexus" between MRI's activities and importation.[10]

b) The Imported LCD Cells Are "Articles That Infringe" Because MRI Incorporated the Imported LCD Cells into the Accused Products

MRI argued that the Commission lacks jurisdiction because the imported LCD Cells are not accused of infringement, but rather are "standard, ***off-the-shelf*** products that [redacted] offers for sale to the public." (RRBr. at 9-15 (emphasis in original).). For the following reasons, MRI's argument is rejected.

The Commission and the Federal Circuit have held that imported articles need not be

[10] In Investigation No. 337-TA-1001, the Commission affirmed the ID's finding that Comcast is an importer within the meaning of Section 337 because Comcast is "sufficiently involved with the design, manufacture, and importation of the accused products" even though Comcast is not technically the "importer of record." *See Certain Digital Video Receivers and Hardware and Software Components Thereof*, Inv. No. 337-TA-1001, Comm'n Op. at 10 (Nov. 21, 2017). That decision was affirmed by the Federal Circuit. *Comcast Corp. v. International Trade Comm'n*, 951 F.3d 1301 (Fed. Cir. 2020). Here, although MRI is not technically the importer of record of the LCD cells, it is sufficiently involved in importation to be an importer within the meaning of Section 337.

infringing at the time of importation to qualify as "articles that infringe" under Section 337(a)(1)(B). For example, in *Certain Blood Cholesterol Testing Strips*, the products accused of infringement were imported blood cholesterol testing strips and blood cholesterol testing systems. Inv. No. 337-TA-1116, Comm'n Opinion (May 1, 2020) ("*Testing Strips*"). The patent claims at issue in *Testing Strips* were directed to methods of analyzing HDL cholesterol, including determining HDL cholesterol concentration, in bodily fluids such as whole blood. *Id.*at 5-7. The Commission determined that the accused testing strips and testing systems perform the claimed methods when used according to the Respondents' written "Directions for Use." The Commission also determined that Respondents' domestic use of the accused testing strips and testing systems constituted direct infringement, and so Respondents violated Section 337 by importing the products into the United States and directing those products to be used in a way that directly infringed the asserted method claims. *Id.* at 24. The Commission relied chiefly on the Federal Circuit's holdings in *Suprema, Inc. v. International Trade Commission*, 796 F.3d 1338 (Fed. Cir. 2015) (en banc) ("*Suprema*") and *Comcast Corp. v. International Trade Commission*, 951 F.3d 1301, 1308 (Fed. Cir. 2020) ("*Comcast*").

In *Suprema*, like in *Testing Strips*, the issue was whether the importation of devices that did not infringe at the time of importation, but were used by customers after importation in a manner that infringes, at the inducement of the seller, qualifies as an "unfair trade act" under Section 337. *Suprema*, 796 F.3d at 1345. To this question the Federal Circuit, sitting *en banc*, answered "yes." *Id.* at 1349. The Federal Circuit reasoned that induced infringement is:

> one kind of infringement, and when it is accomplished by supplying an article, the article supplied can be an "article that infringes" if the other requirements of inducement are met. Liability for inducement must be predicated on a finding of direct infringement. Yet direct infringement commonly occurs after inducement. Liability for inducement nevertheless attaches as of the time of the inducing

> activity, provided that direct infringement eventually occurs. The Commission's interpretation recognizes that the acts necessary for induced infringement, including acts of direct infringement, may not occur simultaneously at the time of importation. In many cases, such acts cannot occur at the time of importation. In that context, the Commission's interpretation that Section 337 grants it authority to prevent importation of articles that have been part of inducement as an unfair trade act is consistent with the statutory phrase "articles that infringe."

Id. (internal citations omitted) (emphasis added).

The Federal Circuit also reasoned that Section 337 "distinguishes the unfair trade act of importation from infringement by defining as unfair the importation of an article that will infringe, *i.e.* be sold, 'after importation.'" *Id.* As such, the statutory language "sale . . . after importation" confirms that the Commission may focus on post-importation activity to identify the "completion of infringement." *Id.*

Here, MRI uses the imported LCD Cells to manufacture the Accused Products in the United States. (Tr. (Dunn) at 742:19-25 (testifying that LCD Cells purchased from [redacted] are used in MRI's BoldVu products).). Applying the precedent set in *Suprema*, it is a finding of law that the imported LCD Cells are "articles that infringe" under Section 337(a)(1)(B)(i) because MRI uses them in post-importation activity, i.e., MRI incorporates them into the Accused Products, which results in "completion of infringement."

2. The Commission Has Jurisdiction Because MRI Sells Accused Products Incorporating the Imported LCD Cells Within the United States After Importation

In addition to prohibiting importation, Section 337(a)(1)(B)(i) prohibits "sale within the United States after importation by the owner, importer, or consignee, of articles that infringe a valid and enforceable United States patent." 19 U.S.C. § 1337(a)(1)(B)(i). The entity that is the "owner, importer, or consignee" at the time of sale does not have to be the same entity that is the "owner, importer, or consignee" at the time of importation. *In the Matter of Certain Laptops,*

Desktops, Servers, Mobile Phones, Tablets, & Components Thereof, Order No. 23 Denying Motion for Summary Determination, USITC Inv. No. 337-TA-1280, 2022 WL 1043915, at *3 (Mar. 24, 2022) ("*Laptops*") (rejecting the legal principal that "sale within the United States after importation" only means sales by parties who were "owners, importers, or consignees" at the time of importation).

Here, MRI did not dispute that it owns and sells the Accused Products within the United States after importation of the LCD Cells that MRI incorporates into the Accused Products. (RRBr. at 9-15.). MRI sells the Accused Products (that incorporate the Imported LCD Cells) to LG-MRI, LLC within the United States after importation. (CX-0486C (Brand Deposition) at 55:14-22 (testifying that MRI sells its 55-inch, 75-inch, and 86-inch outdoor digital displays, i.e., Accused Products, to LG-MRI); CX-0503C (Peter Kaszycki Dep. Tr.)[11] at 23:10-14 (testifying that the joint venture LG-MRI, LLC was formed in January 2014), 28:6-16 (testifying that starting in January 2014 [redacted] 42:18-44:16 (testifying that [redacted]), 83:19-84:1 (testifying that [redacted]), 92:2-93:16 (testifying that the joint venture is [redacted]); JX-0033.0250, 254 (Joint Venture Agreement); JX-0022.3121 ("History and Experience" of LG-MRI).).

MRI incorporates the imported LCD Cells (which are "articles that infringe" under

[11] Mr. Peter Kaszycki provided his deposition testimony on May 3, 2023. (CX-0503C (Kaszycki Dep. Tr.) at 1:18.). MRI designated Mr. Kaszycki to testify about certain topics on its behalf. (*Id.* at 12:5-16.). Mr. Kaszycki also appeared in his personal capacity, based on his personal knowledge. (*Id.* at 17:6-16.). At the time of his deposition, Mr. Kaszycki was Vice President of Business Development at MRI. (*Id.* at 21:9-13.). He was also CEO and President of LG-MRI. (*Id.* at 23:1-4.).

Section 337(a)(1)(B)(i)) into the Accused Products and sells the Accused Products within the United States after the LCD Cells are imported. Therefore, it is a finding of law that the Commission has jurisdiction based on MRI's "sale after importation within the United States."

C. Standing

Jurisdiction also requires standing. *See SiRF Technology, Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319, 1326 (Fed. Cir. 2016) (standing to bring an infringement suit is the same under Commission Rules as it would be in a Federal District Court case); *Certain Optical Disc Drives, Components Thereof and Prods. Containing Same*, Inv. No. 337-TA897, Opinion Remanding the Investigation at 4 (Jan. 7, 2015). Commission Rule 210.12 requires that intellectual property-based complaints filed by a private complainant "include a showing that at least one complainant is the exclusive license of the subject intellectual property." 19 C.F.R. § 210.12(a)(7).

There is no dispute that Samsung has proven that the inventors of the Asserted Patents assigned the Asserted Patents to Samsung Electronics Co., Ltd., and so Samsung has standing. For the '117 patent: (CX-1896 (Lim Dep. Tr.) at 56:10-12; Tr. (Lim) at 333:23-335:7; JX-0009 at -588-589.). For the '311 patent: (CX-1389 (Min Dep. Tr.) at 58:19-20; JX-0011 at -596.). For the '253 patent: (JX-0011 at -598; JX-0007 at -926.).

Therefore, there is standing under Section 337 because Samsung Electronics Co., Ltd. owns by assignment the right, title and interest in the Asserted Patents.

IV. OVERVIEW OF RELEVANT TECHNOLOGY

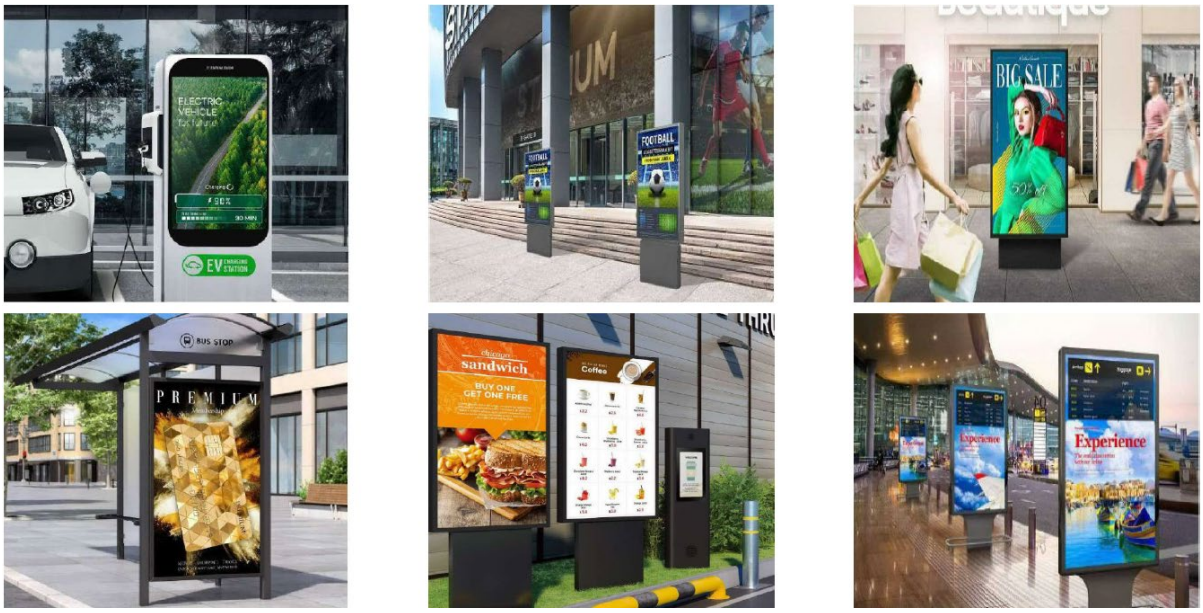
The technology at issue in this Investigation relates to electronic display devices including liquid crystal displays (LCDs). (Joint Technology Stipulation (Doc. ID 794829) at 1-2.). An LCD typically has three main components: the liquid crystal panel (or cell), an electronic driver circuit, and a backlight. (*Id.*). The backlight illuminates the liquid crystal panel and the

electronic driver circuit controls the display of images on the LCD. (*Id.*).

Such electronic display devices may be used as advertising kiosks in outdoor environments such as at bus stops, drive-thru restaurants such as McDonalds, or Burger King (and others), kiosks at outdoor shopping centers, or other environments where they are subjected to higher temperatures and/or sunlight.

An example of a Samsung electronic display device is illustrated below:

Figure 2: Exemplary Samsung Outdoor Electronic Displays)



(CDX-0001.0004.).

Pictures of exemplary MRI outdoor displays are reproduced below:

Figure 3: Exemplary MRI Outdoor Electronic Displays



(RDX-0001C.0002.). Exposure to sunlight and/or to higher ambient temperatures can create temperatures within the display that cause damage. (CBr. at 5-6; RBr. at 3-4.).

According to the claims of the '117 patent, the display panel is cooled by a first cooling fluid path and the electronic driver circuit is cooled by a second cooling fluid path. ((Joint Technology Stipulation (Doc. ID 794829) at 2.).

According to the claims of the '253 patent, which shares a common specification with the '311 patent, the display device has a display assembly enclosed within a housing and an airflow channel formed between a display panel of the display assembly and a front side of the housing. (*Id.* at 3.). According to the claims of the '311 patent, the liquid crystal display device has a liquid crystal panel that is spaced apart from a protection panel to form an airflow channel. (*Id.*).

V. THE PRODUCTS AT ISSUE

A. MRI's Accused Products

The products Samsung accuses of infringing the Asserted Patents are:

- MRI's Generation 14 55-inch single-sided, single-sided (landscape), and double-sided products;
- MRI's Generation 14.5 55-inch double-sided (EV) product;
- MRI's Generation 15 55-inch single-sided, single-sided (slim), and double-sided products;
- MRI's Generation 11 75-inch single-sided and double-sided products;
- MRI's Generation 14 75-inch single-sided, single-sided (landscape), and double-sided products;
- MRI's Generation 14.5 and Generation 15 75-inch single-sided products;
- MRI's Generation 15 75-inch single-sided product;
- MRI's Generation 16 75-inch single-sided and double-sided products;
- MRI's Generation 11 86-inch single-sided, single-sided (hybrid), double-sided, and double-sided (hybrid) products;
- MRI's Generation 15 and Generation 16 86-inch single-sided products; and
- MRI's Generation 16 88-inch stretch product.

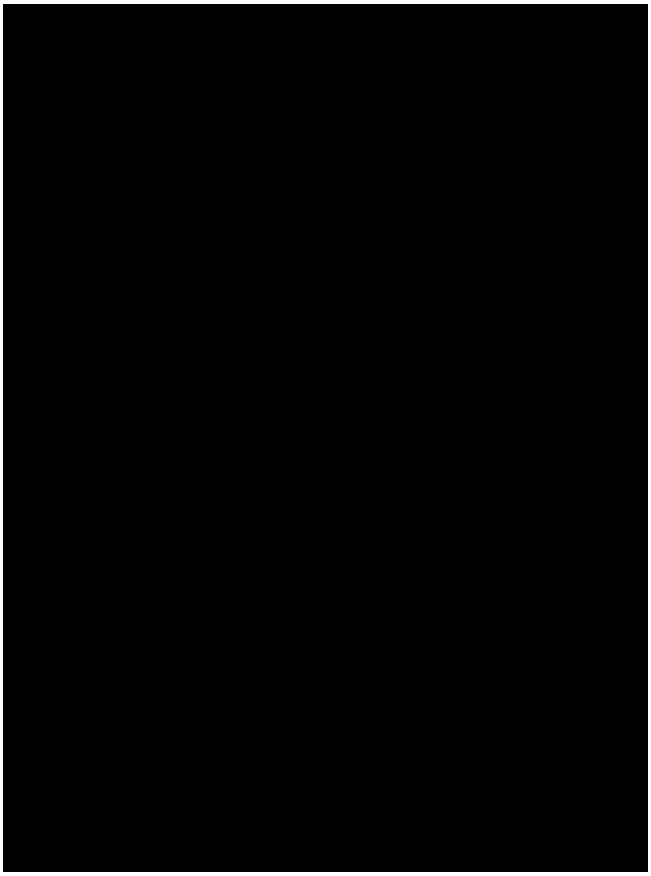
(CBr. at 7-8; CDX-0008C.0011.).

Samsung's expert Dr. Bruce Smith[12] inspected certain Accused Products and provided

[12] Dr. Bruce Smith testified during the Hearing as an expert witness on behalf of Samsung. At the time of the evidentiary hearing, Dr. Smith was a professor at the Rochester Institute of Technology, where he taught various programs in the College of Engineering and the College of Science. (Tr. (Smith) at 439:6-

the following photograph (JX-1004.0001) of an MRI Generation 15 55-inch single-sided product:

Figure 4: Dr. Smith's Photograph of an Accused MRI Generation 15 55 Inch Single-Sided Outdoor Display



(CDX-0008C.0012.).

14.). Dr. Smith provided testimony to support Samsung's infringement allegations and Samsung's allegations regarding the technical prong of domestic industry. (*Id.* at 439:15-23.). Dr. Smith also provided testimony to rebut MRI's invalidity allegations. (*Id.* at 1238:21-1270:25.). Dr. Smith was accepted as a POSITA, and was qualified to testify, without objection, on the subject matter for which he was called to testify. (Tr. (Smith) at 439:6-447:15.). Although MRI took issue with Dr. Smith's alleged lack of experience with thermal management of electronic displays and with temperature sensors, (RBr. at 1, 10, 12, 15, 17, 20, 26, 40, 46, 47, 50, 74, 78, 83), MRI did not object to Dr. Smith's admission as an expert and did not argue that Dr. Smith does not qualify as a POSITA. It is a finding of fact that Dr. Smith is a POSTIA and that his expert testimony was based on sufficient expertise. (Tr. (Smith) at 439:6-447:15.).

Samsung listed the Accused Products in a chart that is reproduced below.

Display Size	Generation	Configuration
55 inch	14	Single-sided
		Single-sided (landscape)
		Double-sided
	14.5	Double-sided (EV)
	15	Single-sided
		Single-sided (slim)
		Double-sided
75 inch	11	Single-sided
		Double-sided
	14	Single-sided
		Single-sided (landscape)
	14	Double-sided
	14.5	Single-sided
	15	Single-sided
	16	Single-sided
		Double-sided
86 inch	11	Single-sided
		Single-sided (hybrid)
		Double-sided
		Double-sided (hybrid)
	15	Single-sided
	16	Single-sided
88 inch	16	Stretch

(*Id.*).

B. Samsung's DI Products

The Domestic Industry Products in this Investigation are part of Samsung's "OH Series" line of outdoor digital display products. The OH Series were first introduced in the United States market in 2015 with the "OHF" designation, but "OHF" products are no longer sold. (Tr. (Shim)

at 73:11-25.).[13]

For claims 1 and 2 of the ’117 patent, Samsung relied on its OH46B and OH55A-S (“the Mid-Sized DI Products” or “the 117 DI Products”) products to satisfy the technical prong of domestic industry. Dr. Smith provided the following images of the Mid-Sized DI Products:

Figure 5: Excerpt of Dr. Smith’s Demonstrative Depicting the Products that Allegedly Practice Claims 1 and 2 of the ’117 Patent



(CDX-0008C.0077.).

Samsung relied on its OH75A and OH85N-S (“the Large-Sized DI Products”) products to

[13] At the time of the evidentiary hearing, Mr. John Shim was the director of solutions enablement at the North American Display Office, i.e., NADO, of SEA. (Tr. (Shim) at 65:5-66:18.). NADO provides technical support to SEA account managers in the United States and Canada, including technical support for the OH Series Products at issue in this Investigation. (*Id.* at 67:4-68:13.).

satisfy the technical prong of domestic industry for claims 4, 6, and 13 of the ’253 patent and claim 12 of the ’311 patent (“the 253 DI Products”). Dr. Smith provided the following images of the Large-Sized DI Products:

Figure 6: Excerpt from Dr. Smith’s Demonstrative Depicting the Products that Allegedly Practice Claims 4, 6, and 13 of the ’253 Patent and Claim 12 of the ’311 Patent



(CDX-0008C.0077.).

The 46-inch OH46B and the 55-inch OH55A-S products are typically used as drive-thru menu boards at quick serve restaurants (“QSR”) such as McDonalds, Starbucks, Dunkin’ Donuts, and Burger King. (Tr. (Shim) at 69:17-71:4.). The larger OH75A and OH85N-S products are typically used for digital sign information, advertisements, or away binders[14] in places like stadiums and malls. (*Id.* at 71:5-22.).

VI. THE ASSERTED PATENTS

The Asserted Patents in this Investigation are: the ’117 patent, the ’311 patent, and the

[14] An “away binder” is a map of a location indicating where things are located.

’253 patent.

A. PERSON OF ORDINARY SKILL IN THE ART

1. Legal Standard

A hypothetical person is a person of ordinary skill and “ordinary creativity.” *KSR Int’l Co. v. Teleflex, Inc*., 550 U.S. 398, 420 (2007). “Factors that may be considered in determining [the] level of ordinary skill in the art include: (1) the educational level of the inventor[s]; (2) type of problems encountered in the art; (3) prior art solutions to the problems; (4) rapidity with which inventions are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Envtl. Designs Ltd. v. Union Oil Co. of California*, 713 F.2d 693, 696-97 (Fed. Cir. 1983) (citations omitted). “These factors are not exhaustive but merely a guide to determining the level of ordinary skill in the art.” *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007).). The hypothetical person of skill is also separately presumed to have knowledge of all the relevant prior art in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 693, 697 (Fed. Cir. 1983).

2. Definition of a Person of Ordinary Skill in the Art

The Parties did not advance argument or evidence for why either version of the Person of Ordinary Skill in the art (“POSITA”) is the correct one. There is no evidence that the technology at issue requires formal education and no evidence that a POSITA would not collaborate with those in related fields if necessary. Therefore, Samsung’s proposal was adopted except that Samsung’s proposal that a POSITA have an understanding of “product design issues and failure modes associated with electronic displays” is overly broad in the context of the Asserted Patents. (Order No. 28 at 13-14.).

The ’311 patent, the ’253 patent, and the ’117 patent are all directed to the issue of

cooling electronic displays. (JX-0002 ('311 Patent) at 1:15-19 (Field of the Invention: "[t]he present general inventive concepts relates to a liquid crystal display device, and, more particularly, to a liquid crystal display device with a heat dissipation structure to cool a liquid panel of the device"); (JX-0003 ('253 Patent) at 1:19-23 (same as '311 patent); JX-0001 ('117 Patent) at 1:19-24 (Field of the Invention: "[a]pparatuses consistent with the present invention relate generally to a panel type display device and, more particularly, to a panel type display device capable of minimizing temperature increase in the interior of a case and a display panel"). The '348 patent and the '575 patent are directed to liquid crystal displace devices to be installed outdoors. (JXM-0002) ('348 Patent) at 1:20-23; JXM-0001 ('575 Patent) at 1:17-20.).

Therefore, the level of ordinary skill in the art that is adopted here is the level of ordinary skill that was adopted in the *Markman* Order. (Order No. 28 at 14.). A POSITA would have had either: (1) a bachelor's degree in a pertinent discipline, such as mechanical engineering, electrical engineering, physics, applied physics, product design, or a related field and at least two years of experience in working with electronic displays; or (2) at least five years of experience in working with electronic displays. A POSITA's experience working with electronic displays would include experience working with thermal management associated with electronic displays and design issues associated with outdoor electronic displays. A POSITA would have been able to consult with person(s) skilled in other arts if necessary.

B. Claim Construction

In the First *Markman* Order, the following terms were construed as indicated:

'117 Patent Claim Term	**Adopted Construction**
Display panel ('117 patent, independent claim 1)	Flat type display for displaying images As explanation, but not part of the claim construction itself, this would include both a

	Liquid Crystal Display and a Plasma Display Panel. (Order No. 28 at 15-24.)
Circuit board mounting part ('117 patent, independent claim 1 and dependent claim 2)	Not subject to 35 U.S.C. § 112, ¶ 6 Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 28 at 25-31.)
'311 Patent Claim Term	**Adopted Construction**
Flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel ('311 patent, independent claim 13)	Not subject to 35 U.S.C. § 112, ¶ 6 This clam term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 28 at 37-44.)
Flow rate controller control [sic] the fan according to the measured temperature to regulate the flow rate of the air in the channel ('311 patent, independent claim 13)	Subject to 35 U.S.C. § 112, ¶ 6 Function: to control air flow through the channel according to the measured temperature Structure: (None) Indefinite under 35 U.S.C. § 112 (Order No. 28 at 47-49.)
'253 Patent Claim Term	**Adopted Construction**
Display assembly ('253 patent, independent claim 11)	Module that includes a display panel As part of the explanation of the construction, but not part of the construction, the "display assembly" may, but is not required, to have a backlight and a circuit board to control the display panel and the backlight. (Order No. 28 at 32-37.)
Control device [to control the fan to maintain a temperature of the housing]	Not construed in the first *Markman* Order (Order No. 28). Reserved for the evidentiary hearing.

('253 patent, independent claim 11)	(Order No. 28 at 44-47.)

In the Second *Markman* Order, the following terms were construed as indicated:

'311 Patent Claim Term	**Adopted Construction**
Flow control device [to impart turbulence to an air flow in the channel] ('311 patent, independent claim 1 and dependent claim 3)	Not subject to 35 U.S.C. § 112, ¶ 6 This clam term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 32 at 13-19.)
Flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel ('311 patent, independent claim 13)	Not subject to 35 U.S.C. § 112, ¶ 6 This clam term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 32 at 19-25.)
Flow rate controller control [sic] the fan according to the measured temperature to regulate the flow rate of the air in the channel ('311 patent, independent claim 13) Flow rate controller [to control air flow through the channel according to the measured temperature] ('311 patent, independent claim 1 and dependent claims 3 and 4)	Subject to 35 U.S.C. § 112, ¶ 6 Function: to control air flow through the channel according to the measured temperature Structure: (None) Indefinite under 35 U.S.C. § 112 (Order No. 32 at 34-45.)
'253 Patent Claim Term	**Adopted Construction**
Display assembly ('253 patent, independent claim 11)	Module that includes a display panel As part of the explanation of the construction, but not part of the construction, the "display assembly" may, but is not required, to have a backlight and a circuit board to control the display panel and the backlight.

	(Order No. 32 at 8-13.)
Control device [to control the fan to maintain a temperature of the housing] ('253 patent, independent claim 11)	Subject to 35 U.S.C. § 112, ¶ 6 *Function*: to control the fan to maintain a temperature of the housing *Structure*: (None) Indefinite under 35 U.S.C. § 112 (Order No. 32 at 26-33.)

VII. INFRINGEMENT

Samsung argued that MRI's Accused Products literally infringe the following claims:[15]

- Independent claim 1 and dependent claim 2, which depends from claim 1, of the '117 patent (*see* Section VII.B above);
- Dependent claim 12, which depends from claim 11, of the '253 patent (*see* Section VII.D above); and
- Dependent claim 4, which depends from claim 3, which depends from claim 2, which depends from claim 1; dependent claim 6, which depends from claim 1; and independent claim 13 of the '311 patent (*see* Section VII.C above).

A. Legal Standard: Literal Infringement

"Determination of infringement is a two-step process which consists of determining the scope of the asserted claim (claim construction) and then comparing the accused product . . . to the claim as construed." *Certain Sucralose, Sweeteners Containing Sucralose, and Related Intermediate Compounds Thereof*, Inv. No. 337-TA-604, Comm'n Opinion at 36 (U.S.I.T.C.,

[15] Samsung did not, in its Initial Post-Hearing Brief or Post Hearing Reply Brief, argue infringement under the doctrine of equivalents as to any claim element at issue in this Investigation. So, Samsung waived the issue. *See* G.R. 10.1.

April 28, 2009) (citing *Litton Sys., Inc. v. Honeywell, Inc.*, 140 F.3d 1449, 1454 (Fed. Cir. 1998)).

An accused device literally infringes a patent claim if it contains each limitation recited in the claim exactly. *Litton*, 140 F.3d at 1454. Each patent claim element or limitation is considered material and essential. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991). In a Section 337 investigation, the complainant bears the burden of proving infringement of the asserted patent claims by a preponderance of the evidence. *Enercon GmbH v. Int'l Trade Comm'n,* 151 F.3d 1376, 1384 (Fed. Cir. 1998). If any claim limitation is absent, there is no literal infringement of that claim as a matter of law. *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1247 (Fed. Cir. 2000).

B. The '117 Patent

U.S. Patent No. ("the '117 patent"), titled "Panel Display Device," was filed on February 23, 2012 as U.S. Patent Application Serial No. 13/403,559 ("the '559 application"). (JX-0001 ('117 Patent) at (54), (22), (21).). The '559 application issued as the '117 patent on September 9, 2014, and names Joon Kang, Jin Ilyun Cho, and Jeong Su Lim[16] as the inventors. (*Id.* at (45), (75).). The '559 application was filed as a reissue application based on U.S. Patent No. 7,667,964, which issued from U.S. Patent Application Serial No. 11/872,057 filed on October 15, 2007. The '117 patent claims priority to Korean Patent Application No. 10-2007-0002081,

[16] Jeong Su Lim testified at the Hearing as a fact witness on behalf of Samsung. At the time of the Hearing, he was a product engineer within the visual display division and had been working for Samsung Electronics for more than 27 years. He was called to testify about the evolution of display technology since 2001 including ways to address heating issues arising from the use of backlight units and circuit boards, his development of a solution to these heating issues using two separate cooling paths, Samsung's internal process for pursuing patent protection, and the patent process that was followed for his two-cooling path solution. (Tr. (Lim) at 315:3-327:10, 331:21-333:22; CX-0515C.0014; CX-1957.).

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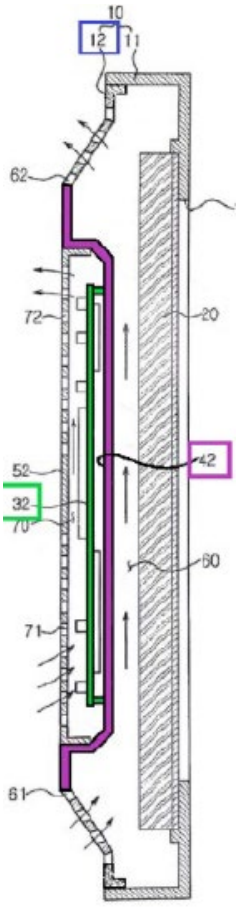
which was filed on January 8, 2007. (*Id.* at (30).).

1. The Specification of the '117 Patent

The '117 patent provides, among other things, panel display devices, such as Liquid Crystal Display (LCD) or Plasma Display Panel (PDP) devices, that are capable of minimizing temperature increase in the interior of the case and display panel. (JX-0001 ('117 Patent) at 1:55-59.). In some display devices, there is a front case and a rear case, a display panel and circuit boards mounted in an interior of the case, and air inlets formed at a lower portion of the rear case through which air flows, such that air flowing through the lower air inlets cools down the display panel and the circuit boards in the interior of the case and is exhausted through upper air outlets. (*Id.* at 1:32-42.). According to the '117 patent, this arrangement causes the internal temperature of the case to increase due to inter-heating between the display panel and the circuit boards, which, in turn, causes the surface temperature of the panel to increase and, in the case of an LCD panel, causes deterioration of the liquid crystal. (*Id.* At 1:43-51.).

The '117 patent addresses the foregoing problem by providing a first cooling path that cools the display panel and a second cooling path that cools at least one circuit board, wherein the first and second cooling paths are separated from each other. (*Id.* at 1:60-67.). A first exemplary embodiment of the foregoing is depicted in Figure 1 of the '117 patent, which is reproduced below. The display device has a case 10 with a front case 11 and a rear case 12, a display panel 20 which can be an LCD or PDP, air inlets 61, upper air outlets 62, first cooling path 60, air flow holes 71, air flow holes 72, second cooling fluid path 70. (*Id.* at 2:58-3:2, 3:13-33.).

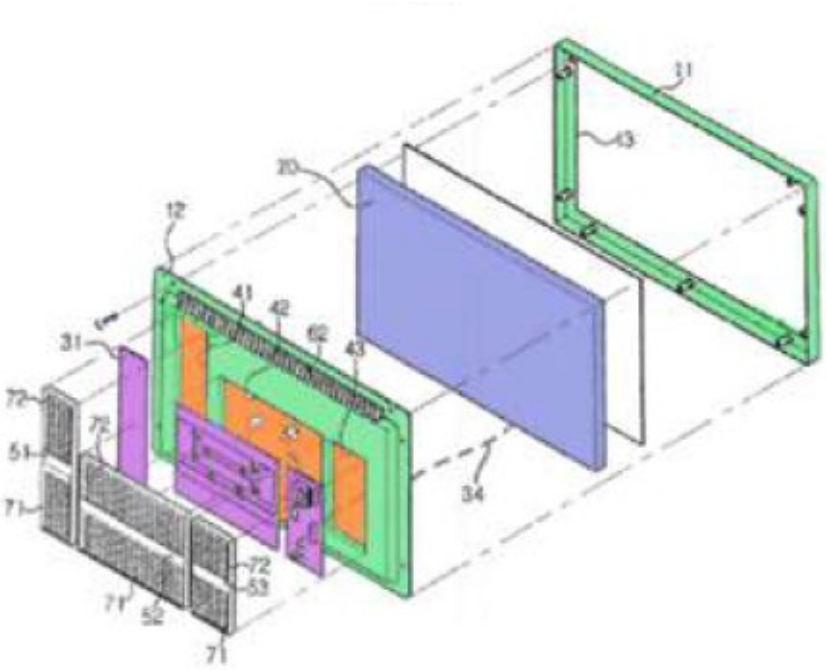
Figure 7: Annotated Version of Figure 1 of the ’117 Patent from CMBr. at 14



(*Id.* at Figure 1, 2:53-3:59.).

The first embodiment is also illustrated in Figure 2 of the ’117 patent, reproduced below, which depicts circuit boards 31, 32, and 33, circuit board mounting parts 41, 42, and 43, and covers 51, 52, and 53 for covering the circuit board mounting parts. (*Id.* at 3:3-12.). Figure 2 of the ’117 patent, below, shows how the air flow holes 71 and 72 are formed on the covers 51, 52, and 53. (*Id.* at 3:38-41.).

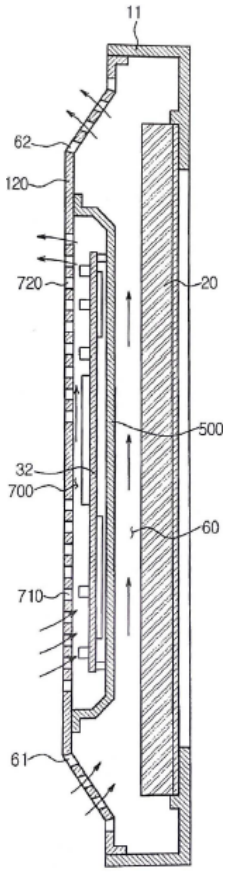
Figure 8: Annotated Version of Figure 2 of the ’117 Patent from RMBr. at 9



(*Id.* at ’117 patent, Figure 2, 3:3-12, 3:60-65.).

A second exemplary embodiment is depicted in Figure 3 of the ’117 patent, reproduced below in Figure 9, which shows a partition plate 500, which replaces the circuit board mounting part used in the first exemplary embodiment, mounted on an inner surface of a rear case 120, a plurality of air flow holes 710 and 720 for air flow through a second cooling path 700 formed on the rear case 120, a first cooling fluid path 60 and air inlets and outlets 61 and 62, respectively, formed at the lower and upper portions of the rear case 120.

Figure 9: Figure 3 of the ’117 Patent



(*Id.* at Figure 3, 3:66-4:15.).

2. The Claims of the ’117 Patent

Samsung argued that the Accused Products infringe claims 1 and 2 of the ’117 patent. (CBr. at 18-39.). MRI disputed that the Accused Products infringe every limitation except for the preamble and limitation 1[c]. (*See, e.g.*, Tr. (Richard Flasck)[17] at 955:8-14 (discussing RDX-

[17] MRI called Mr. Richard Flasck as its expert to testify about non-infringement of the Accused Products, and whether certain alleged DI Products practice claims of certain of the Asserted Patents, and invalidity and unenforceability of the ’311 patent and the ’253 patent. (Tr. (Flasck) at 942:3-950:13). Mr. Flasck was accepted as a POSITA and was qualified to testify, without objection, on the subject matter for which he was called to testify. (*Id.*). Although Samsung argued that Mr. Flasck “is not a fluid dynamics expert,” (CBr. at 62-63), Samsung did not conduct *voir dire*, did not object to Mr. Flasck’s admission as

005C.0012).). Any appeal argument which MRI may try to make with respect to the preamble and limitation 1[c] is deemed abandoned, withdrawn, and/or waived under Ground Rules 7.2 and 10.1. For the reasons discussed below, the Accused Products infringe claims 1 and 2 of the '117 patent.[18]

The '117 patent claims are directed to "an electronic display device having a display panel mounted in an interior of a case, a circuit board mounting part on a rear surface of the case, a first cooling path which cools the display panel, and a second cooling fluid path which cools a circuit board." (Joint Technology Stipulation (Doc. ID No. 794829) at 2.).

At issue in this Investigation are claims 1 and 2 of the '117 patent:

1. A panel display device comprising:

a case;

a display panel mounted in an interior of the case;

at least one circuit board which controls the display panel;

a first cooling fluid path which cools the display panel; and

a second cooling fluid path which cools the circuit board,

wherein the first and second cooling fluid paths are separated from each other, and

wherein the case includes a circuit board mounting part provided on a rear surface of the case and partitioned from a space in which the display panel is mounted such that the circuit board is received in the circuit board mounting part, the first cooling fluid path includes a space between a rear

an expert, and did not argue that Mr. Flasck does not qualify as a POSITA. It is a finding of fact that Mr. Flasck qualifies as a POSITA and that his expert testimony was credible and based on competent expertise. (Tr. (Flasck) at 942::3-950:3; RX-167.).

[18] This element-by-element analysis includes exemplary citations to evidence for the 55" Accused Products. Corresponding documentation for the other Accused Products listed in Attachment A of Samsung's Initial Post-Hearing Brief shows the same elements and those models infringe for the same reasons set forth herein.

surface of the display panel and an inner surface of the case, and the second cooling fluid path includes an internal space of the circuit board mounting part.

3. The panel display device as claimed in claim 1, wherein the case includes front and rear cases coupled to each other, and the rear case includes a circuit board mounting part provided on an outer surface of the rear case such that the circuit board is mounted in the circuit board mounting part.

3. Claim Construction for the '117 Patent

In the First *Markman* Order, the following terms of the '117 patent were construed as indicated:

Claim Term	Adopted Construction
Display panel ('117 patent, independent claim 1)	Flat type display for displaying images As explanation, but not part of the claim construction itself, this would include both a Liquid Crystal Display and a Plasma Display Panel. (Order No. 28 at 15-24.)
Circuit board mounting part ('117 patent, independent claim 1 and dependent claim 2)	Not subject to 35 U.S.C. § 112, ¶ 6 Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 28 at 25-31.)

4. Claim 1

a) 1[pre]: "A panel display device comprising"

The Accused Products are panel display devices, which MRI did not dispute. (Tr. (Flasck) at 955:8-14 (citing RDX-0004C.0012); Tr. (Bruce Smith) at 465:9-16; JX-1004 (Photo of Accused BoldVu); JX-0869C.0002 (Gen. 15 55" SS Tech. Manual); JX-843C.0003 (Gen. 14 55" SS), JX-849C.0002 (Gen. 14.5 55" DS), JX-861C.0027 (Gen. 15 55" DS), JX-866C.0003 (Gen. 15 55" SS (Slim)).).

Samsung provided persuasive, unrebutted, documentary and testimonial evidence. For these reasons, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products meet the preamble of claim 1 of the '117 patent.

b) 1[a]: "a case"

Samsung's expert, Dr. Smith, testified that the Accused Products include a case comprising a [redacted], as required by claim 1 of the '117 patent. (Tr. (Smith) at 465:20-466:24; JX-0598C (Gen. 15 55" SS CAD); CX-1488C.0007 (MRI's 1331 DI Chart); *see also* Attachment A. One example of this case is shown below in Figure 10, which is Dr. Smith's annotated photograph from an MRI technical manual for the Generation 15 55" SS.

Figure 10: Dr. Smith's Demonstrative of Annotated Photograph of Generation 15 55" SS



(CDX-0008C.0040 (citing JX-0869C.0056 (Gen. 15 55" SS Tech. Manual)); Tr. (Smith) at 476:19-477:16 (discussing CDX-0008C.0040).)

Dr. Smith testified that [redacted] is part of the claimed case because [redacted]. (Tr. (Smith) at 466:21-24.). [redacted] (Tr. (Smith) at 460:4-10; Tr. (Michael Brown)[19] at 803:9-806:14; *see also* Attachment B at 1.).

MRI's expert, Mr. Flasck, testified that there is no case in the Accused Products because [redacted] (Tr. (Flasck) at 969:17-24.). However, Mr. Flasck's testimony is incorrect because claim 1 does not require [redacted] Moreover, as Samsung pointed out from the image in JX-0869C.0056 (shown in the immediately preceding figure), [redacted] and together form a complete unit. (CBr. at 22.). That is the claimed case.

Mr. Flasck also testified that the [redacted], which MRI refers to as a [redacted] is not part of the case because it is an "internal component."[20] (Tr. (Flasck) at 963:3-6, 966:6-10.).[21] However, MRI's employee Mr. Brown testified that the [redacted]. (Tr. (Brown) at 812:9-813:11; 869:4-12; RDX-

[19] When he testified during the Hearing on October 6 and 10, 2023, Mr. Michael Brown was Vice President of Mechanical Engineering at MRI. (Tr. (Brown) at 783:21-784:2; RPSt. at 2.). MRI identified Mr. Brown as a fact witness to testify about "the design, development, and functionality of the Accused Products." (RPSt. at 2.).

[20] MRI also argued that the [redacted] is not part of the claimed case because it does not include a circuit board mounting part. MRI's argument is addressed below with regard to limitation 1[g].

[21] Mr. Flasck did not define what he meant by "internal component." (Tr. (Flasck) at 963:3-6.).

0004C.0013.). In other words, MRI's own technical employee's testimony contradicts, and thus undermines, Mr. Flasck's testimony. Mr. Brown's demonstrative slide that illustrates how the [redacted] reproduced below as Figure 11.

Figure 11: Brown Demonstrative Showing Air Flow in Accused Products



(RDX-0004C.0013 (citing JX-0598C (annotated)); Tr. (Brown) at 812:9-813:11.).

Mr. Flasck testified that the only case in the Accused Products is comprised of the [redacted] (Tr. (Flasck) at 964:8-965:1.).

However, as Samsung noted in attorney argument, Mr. Flasck's arbitrary narrowing of the scope of "case" to only the outer-most components is not supported by the specification or claim language and was not addressed during claim construction. (CBr. at 23.). Moreover, MRI's assertion is belied by Mr. Flasck's testimony that the '117 patent covers an "inner case,"

not the outer-most case of the device, when he provided his opinion on validity, and specifically, the Takahashi prior art reference.

> Q. Now in your opinion – it's your opinion, sorry, that the wall embedded liquid crystal panel unit in Takahashi includes a case as required by claim 1, correct?
>
> A. Yes.
>
> Q. And you've identified what you contend is a case in green on slide 34, correct?
>
> A. Yes.
>
> Q. And in your opinion the case is defined by element 23 on the left and element 22 on the right, correct?
>
> A. Yes.
>
> Q. Now elements 22 and 23 are ***not*** the outermost case in Takahashi, correct?
>
> A. That's correct, Takahashi has an inner case and an outer case.
>
> Q. Elements 22 and 23 are the ***inner*** case in Takahashi, correct?
>
> A. Yes.
>
> Q. The outermost case is defined by elements 5 and 6, correct?
>
> A. Yes.
>
> Q. And so elements 22 and 23 are both completely inside what you call the outermost case, right?
>
> A. Yes.

(Tr. (Flasck) at 1089:11- 1090:8 (emphases added); *see also id.* at 1090:21-25 ("the case of relevance was 22 and 23").).

In other words, Mr. Flasck's testimony contradicts the claim language, the specification, the testimony of MRI's employee Mr. Brown, and his own testimony regarding invalidity over the Takahashi reference.

Moreover, limiting the claimed case to only the outer-most case would make no sense in the context of the '117 patent, which discloses mounting circuit boards to the rear or outer

surface of the case. (*See, e.g.*, JX-0001 at 2:53-57, 3:3-5, Fig. 1.). If the "case" were to include only the outer-most surface, circuit boards would be left exposed. The '117 patent explains that the claimed case has circuit boards mounted on its rear surface that are covered by another "rear cover." (JX-0001 at 3:24-46, Fig. 1.). MRI's Accused Products include [redacted] that MRI contended to be the rear case in the Accused Products is, in the context of the '117 patent, the "rear cover."

For the foregoing reasons, Dr. Smith's testimony and Samsung's arguments are more persuasive, more credible, and more supported by the evidence. Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice claim element 1[a] of the '117 patent.

c) 1[b]: "a display panel mounted in an interior of the case"

Dr. Smith testified that the Accused Products include a display panel mounted in an interior of the case. (Tr. (Smith) at 466:25-468:16.). Although MRI argued in its Pre-Hearing Brief that this limitation was not met (*see* RPBr. at 27-28), MRI failed to present during the Hearing evidence or argument on this issue that would have supported its pre-Hearing argument and therefore waived it under Ground Rule 10.1. Moreover, Samsung offered unrebutted testimony and evidence that the Accused Products include a "display panel," construed as "flat type display for displaying images," because the Accused Products include LCDs. (Tr. (Smith) at 466:25-467:17; *see, e.g.*, JX-0277C (Bill of Materials, Gen. 14 55" SS).).

Through its evidence, Samsung demonstrated that the display panel is mounted in the interior of the case. (Tr. (Smith) at 467:18-468:16 (discussing CDX-0008C.0033); JX-0598C.0001 (Gen. 15 55" SS CAD).). Moreover, photographs of the Accused Products and of Mr. Flasck's own Hearing demonstrative slides, reproduced below, are consistent with Dr.

Smith's, and show that the display panel is mounted in the interior of the [redacted] In other words, even if MRI had not waived its Pre-Hearing Brief argument that this claim element is not met, MRIs's own demonstrative evidence supports Samsung's position and undermines MRI's Pre-Hearing Brief argument.

Figure 12: Flasck Demonstrative Showing Display Panel of Accused Products



(RDX-0005C.0024 (citing JX-1159C; JX-1160C (annotated)).).

As Dr. Smith explained, whether the display panel [redacted] is irrelevant. (Tr. (Smith) at 467:25-468:16.). The display panel is still mounted [redacted]

[redacted]. (*Id.*).

Accordingly, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice claim element 1[b] of the '117 patent.

d) 1[c]: "at least one circuit board which controls the display panel"

The Accused Products include at least one circuit board that controls the display panel, which MRI did not contest. (Tr. (Smith) at 468:17-469:22; Tr. (Brown) at 806:20-807:5 (discussing RDX-0004C.0011); Tr. (Flasck) at 955:8-14.). MRI's technical manuals demonstrate that Accused Products [redacted] (Tr. (Smith) at 468:17-469:22; Tr. (John Schuch)[22] at 933:23-934:7; JX-0869C.0036, 0038 (Gen. 15 55" SS Tech. Manual); *see also* CBr. at Attachment A, which is incorporated herein by reference.).

For the foregoing reasons, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice claim element 1[c] of the '117 patent.

e) 1[d]: "a first cooling fluid path which cools the display panel and"

Dr. Smith testified that the [redacted] the claimed first cooling fluid path. (Tr. (Smith) at 469:23-471:18.). He presented CAD drawings for the Generation 15 55" SS Accused Products and MRI's 1331 DI charts showing that the [redacted] through what MRI calls a

[22] When he testified during the Hearing on October 10, 2023, Mr. John Schuch was the Vice President of Software Engineering for MRI. (Tr. (Schuch) at 917:24-918:2; RPSt. at 2.). MRI identified Mr. Schuch as a fact witness to testify about "the design, development, and functionality of the Accused Products." (RPSt. at 2.).

[redacted] and thereby cools the display panel.[23] (Tr. (Smith) at 471:9-18; JX-0598C (Gen. 15 55" SS CAD); CX-1488C.0013 (MRI's DI Chart); *see also* CBr. at Attachment B at 4.). The [redacted] cools the display panel by taking air [redacted] (*Id.*).

MRI's employee Mr. Brown testified that the [redacted] in the Accused Products [redacted] (Tr. (Brown) at 812:13-813:3, 806:1-5.). His demonstrative slide, which is reproduced above in Figure 11, shows an annotated CAD file for the Generation 15 55" SS Accused Product depicting [redacted] (RDX-0004C.0013 (citing JX-0598C.0001 (Gen. 15 55" SS CAD); Tr. (Brown) at 812:9-813:3 (discussing RDX-0004C.0013).).

Mr. Brown also testified that the Computational Fluid Dynamics (CFD) flow simulation video for the Generation 15 55" SS Accused Products shows [redacted] (Tr. (Brown) at 816:11-817:17, 817:22-818:18; JX-0626C (Flow Simulation for Gen. 15 55" SS Closed Loop Fans).).[24]

[23] CAD is an acronym for "computer-aided drafting." (*See, e.g.*, Tr. (Gale) at 356:20-23.). A CAD drawing is a "computer drawing of the three-dimensional structures," in this case, of the Accused Products. (*Id.*).

[24] In describing the design and development process for an MRI BoldVu display, Mr. Brown testified that the process [redacted]

Mr. Brown referred to the [redacted] (Tr. (Brown) at 865:21-866:14.). He explained that because [redacted], then without the cooling system the Accused Products would overheat:

Q. Now there's a [redacted] right?

A. Yes, there is.

Q. And the [redacted] right?

A. Yeah, that's correct.

Q. And, as a result, there's a lot of heat in there, correct?

A. Yes, there is.

Q. In fact, heat is a big problem, isn't it?

A. That's right.

Q. And unaddressed, that heat [redacted]

A. Well, I mean, [redacted]

(Tr. (Brown) at 866:15-867:6.).

Mr. Flasck, MRI's expert, also agreed that [redacted] is "cooling the [redacted] (Tr. (Brown) at 790:6-791:3.). He also testified that [redacted] (*Id.*). Mr. Brown explained that [redacted] *d.*). He stated that after [redacted] (*Id.* at 791:4-16.).

display." (Tr. (Flasck) at 962:3-10 [redacted]

Despite his testimony that the [redacted] is "cooling the display," Mr. Flasck contended that this path is not the first cooling path because [redacted] (Tr. (Flasck) at 961:22-962:13 (emphasis added); *see also id.* at 1073:2-1074:13 (discussing CDX-0015C.0002).). In other words, according to Mr. Flasck and MRI, the claimed first cooling fluid path must cool ***only*** the display panel and ***not*** the circuit board or anything else. (*See, e.g.*, CDX-0015C.0002.). Neither Mr. Flasck's opinion nor MRI's argument is adopted. MRI is seeking to rewrite the claims to import negative limitations, which is improper. *See, e.g.*, *Omega Eng'g., Inc. v. Raytek Corp.*, 334 F.3d 1314, 1322-23 (Fed. Cir. 2003) (overturning district court claim construction incorporating a negative limitation where neither the plain and ordinary meaning nor the language of the claims required the negative limitation). Furthermore, MRI did not seek to have "a first cooling fluid path" construed during the *Markman* proceedings. Thus, what may be MRI's attempt at an untimely claim construction argument has been waived pursuant to Ground Rule 1.14.1.

Even if MRI had not waived its untimely claim construction argument, it would not be correct because there is no support in the specification or prosecution history that supports MRI's interpretation. As Samsung noted, nothing in the intrinsic record expressly requires that the cooling paths of claim 1 cool ***only*** the display panel or only the circuit board. (CBr. at 27-28; JX-0001.). Neither do the three (3) prosecution history excerpts that MRI cited as alleged

support for its interpretation. (RDX-0005C.0008 (showing excerpts JX-0004.0101, 0119, and 0133).).[25]

For example, Mr. Flasck testified that the applicants amended claim 1 to overcome a rejection based on the Chang reference. (Tr. (Flasck) at 953:4-14 (discussing JX-0004.0101, 119; RDX-0005C.0008).). However, as Samsung pointed out, that amendment related to the circuit board mounting part limitation and had nothing to do with the "first" or "second" cooling path limitations, which Mr. Flasck then acknowledged in his testimony.[26] (CBr. at 28.).

> Q. . . . Let's go to slide 8 from your demonstratives, please. Sir, you titled this slide "Samsung Distinguished the Invention from Prior Art Disclosing Two Cooling Paths Inside a Case," correct?
>
> A. It says, Chang also teaches a partition plate 44 for dividing an interior of the case into first and second cooling fluid paths.
>
> Q. I'm sorry, sir, my question was regarding the title of your slide. The title of your slide was "Samsung Distinguished the Invention from Prior Art Disclosing Two Cooling Paths Inside the Case," correct?
>
> A. Yes.
>
> Q. All right. And in support of that proposition, you cite portions of the file history from the original application in the '117 patent priority chain, correct?
>
> A. Yes.
>
> Q. So let's take a look at JX-4. And, again, if you would like the paper copy, it's in purple for patents, but JX-4 is the file history for U.S. 7,667,964. This is the patent which was later reissued as the '117 patent, correct?
>
> A. I believe so, yes.
>
> Q. And you've, of course, reviewed this document as part of your work on this

[25] RDX-0005C.0008 incorrectly cites to JX-0005.0101, 0119, and 0133. The correct citation is JX-0004.0101, 0119, and 0133.

[26] The '117 patent is a reissue of U.S. Patent No. 7,667,964 ("the '964 patent"). (JX-0001 ('117 Patent) at (64).).

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case, correct?

A. Yes.

Q. May I have JX-4.13, please. Let's take a look at claim 1. Mr. Flasck, this is claim 1 as originally filed, correct?

A. Could you give me a page number on it?

Q. Yes, sir. At page 13, so JX-4.13.

A. Yes.

Q. And all of these limitations are present in the '117 patent that's being litigated here today, correct?

* * *

Q. . . . So, Mr. Flasck, why don't I ask my question again, sir. My question was, all the limitations in the originally filed claim 1 are also present in claim 1 of the '117 patent that is being litigated today, correct?

A. All the limitations in the original claim are also present in the final patent claim.

(Tr. (Flasck) at 1076:14-1078:17 (discussing RDX-0005C.0008).).

By agreeing that "all the limitations in the originally filed claim 1 are also present in claim 1 of the '117 patent," which include the "first" and "second" cooling path limitations, Mr. Flasck conceded that those limitation were not added during prosecution to overcome the Chang reference. Amended claim 1, which was replicated in Mr. Flasck's demonstrative slide, is shown below in Figure 13.

Figure 13: Amended Claim 1

1. (original): A panel display device comprising:

a case;

a display panel mounted in an interior of the case;

at least one circuit board which controls the display panel;

a first cooling fluid path which cools the display panel; and

a second cooling fluid path which cools the circuit board,

wherein the first and second cooling fluid paths are separated from each other, and

wherein the case includes a circuit board mounting part provided on a rear surface of the case and partitioned from a space in which the display panel is mounted such that the circuit board is received in the circuit board mounting part, the first cooling fluid path includes a space between a rear surface of the display panel and an inner surface of the case, and the second cooling fluid path includes an internal space of the circuit board mounting part.

(JX-0004.0119.).

As indicated by the underlined text, the claim was amended to add the "circuit board mounting" limitation, and ***not*** the "first" or "second" cooling path limitations, which were already recited in the original claim. (*Id.*).

Moreover, the Notice of Allowance that Mr. Flasck relied on supports Samsung's position, not Mr. Flasck's position or MRI's. (Tr. (Flasck) at 953:4-14 (discussing JX-0004.0133).). Mr. Flasck agreed, (Tr. (Flasck) at 1082:21-24), that the excerpt he cited was for then claims 9-11 (RDX-0005C.0008), which he acknowledged "are not at issue at this stage of the investigation" (Tr. (Flasck) at 1082:20-1083:2). Then, independent claim 9, from which

claims 10 and 11 depend, and which issued as independent claim 8 of the '117 patent, requires a "partition plate [that] divides the case into a first space in which the display panel is mounted and a second space in which the circuit board is mounted" (*see, e.g.*, JX.0001 at cl. 8). Claim 1 does not include a "partition plate." (Tr. (Flasck) at 1080:12-1081:6; JX-0001 at cl. 1.). As Mr. Flasck also conceded, claim 8 demonstrates that the inventors knew how to draft claims where the first and second cooling paths cooled only the display panel or only the circuit board. (Tr. (Flasck) at 1081:7-10 ("Q. So you would agree that the applicant knew how to draft claims that specifically required the display panel and the circuit board to be in separate spaces, correct? A. I guess.").). So, the inventors chose to specifically draft the cited language in claim 8, not in claim 1.

Additionally, MRI alleged that the testimony of one of the inventors of the '117 patent, Mr. Jeong Su Lim,[27] proves that Samsung is entitled to less than the full scope of the claim. (*See, e.g.*, Tr. (MRI Closing) at 1349:17-1351:7 (implying that Mr. Lim "tells us what separate means . . . they don't have impact on each other" (citing Tr. (Lim) at 320:11-21)). Although Mr. Lim described "independent cooling" for the "heating coming from the circuit board" and the "heating coming from the backlight unit," nothing in Mr. Lim's testimony suggests that his intention was to invent a first cooling path that cooled the display panel ***but not the circuit board***. (Tr. (Lim) at 320:11-21).). To the contrary, referring to the prototype in his October 16,

[27] When he testified during the Hearing on October 5, 2023, Mr. Jeong Su Lim was a Principal Engineer at SEC. (CPSt. at 1.). He is one of the named inventors of the '117 patent. (JX-0001 at (75).). Samsung identified Mr. Lim as a fact witness to testify about "the background, conception, and reduction-to-practice of the inventions" of the '117 patent, "his assignment of the '117 Patent to Samsung, as well as issues related to secondary indicia of nonobviousness of the '117 Patent, including Mr. Lim's personal knowledge of the prior art and problems in the art due to heat accumulation and temperature increase in displays and other electronics, generally." (CPSt. at 1.).

2006 Invention Disclosure Form, which the '117 patent was intended to cover, Mr. Lim explained that the first cooling path cooled ***both*** the display panel and the main circuit board. (Tr. (Lim) at 328:5-330:2 (discussing CX-0515C.0014) ("Q. To recap, Mr. Lim, what components are located in the first cooling path in your prototype? A. Panel and main board."), 332:10-12.). In other words, during the Hearing Mr. Lim attempted to contradict his own Invention Disclosure Form.

Mr. Flasck also testified that the [redacted] in the Accused Products [redacted] and that the first cooling fluid path must cool ***both*** the backlight and the LCD cell of the display panel in order to satisfy this claim element. (Tr. (Flasck) at 1163:19-1165:5.). As an initial matter, Mr. Flasck contradicted on redirect examination his testimony on direct examination, *supra*, in which he said that [redacted] in the Accused Products is "cooling the display." (Tr. (Flasck) at 961:22-962:13.). This position was also flatly rejected by the *Markman* Order, which declined to adopt MRI's proposed construction which limited the term "display panel" to just a "screen." (Order No. 28 at 15, 19 ("Respondent's proposal to limit the claimed 'display panel' to just the 'screen' is rejected because nothing in the specification or prosecution history suggests that the 'display panel' should be limited to just the screen.").).

In addition, the specification of the '117 patent contradicts MRI's argument, which depicts the first cooling fluid path flowing behind the display panel (where the backlight would be) and not in front of the display panel (where the LCD cell is). (*See, e.g.*, JX-0001 at Fig. 1.). As recognized in the *Markman* Order, "Respondent's proposal to limit the display panel to just a 'screen' would thus exclude a preferred embodiment. '[A] claim construction that excludes a preferred embodiment . . . is rarely, if ever correct and would require highly persuasive evidentiary support.'" (Order No. 28 at 19 (citing *Kaufman v. Microsoft Corp.*, 34 F.4th 1360,

1372 (Fed. Cir. 2022).). *See also Outside the Box Innovations, LLC v. Travel Caddy, Inc.*, 695 F.3d 1285, 1310 (Fed. Cir. 2012) (it would be "highly unusual to construe routine patent claims so as to exclude the embodiments in the drawings" because the drawings generally illustrate preferred embodiments of the invention).

For these reasons, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice claim element 1[d] of the '117 patent.

f) 1[e]: "a second cooling fluid path which cools the circuit board"

Dr. Smith testified that the Accused Products include a second cooling fluid path which cools the circuit board. (Tr. (Smith) at 471:19-473:2.). MRI's arguments to the contrary mirror the negative limitations it sought to import with regard to the first fluid cooling path, and thus are rejected for the same reasons. *See Omega Eng'g.*, 334 F.3d at 1322-23.

Dr. Smith explained that [redacted] in the Accused Products [redacted] thus removes heat from and cools the circuit board. (Tr. (Smith) at 472:10-24; *see also* JX-0598C (Gen. 15 55" SS CAD).). Another Samsung expert, Dr. Bruce Gale,[28] also explained, using a Computational Fluid Dynamics ("CFD") flow simulation made by MRI, that there is [redacted] in the 55" Accused Products. (Tr. (Gale) at 358:14-360:12; JX-0618 (Simulation Video for Gen 14 55" SS Closed Loop).). Additionally, MRI's employee, Mr. Brown, acknowledged that the [redacted]

[28] When he testified during the Hearing on October 5, 2023, Dr. Bruce Gale was a Professor of Mechanical Engineering at the University of Utah. (CPSt. at 3.). Samsung identified Dr. Gale as an expert to testify about "infringement of the Asserted Patents, including the operation of MRI's Accused Products[,] . . . issues related to domestic industry (technical prong) of the Asserted Patents, including the operation of the domestic industry products, and other matters discussed in his expert report and deposition." (*Id.*). Dr. Gale was accepted as a POSITA and was qualified to testify, without objection, on the subject matter for which he was called to testify.

[redacted] (Tr. (Brown) at 809:16-19.). He also testified that the CFD flow simulation video for the Gen. 15 55" SS Accused Product shows [redacted] (Tr. (Brown) at 810:3-8, 816:11-817:17, 817:22-818:18; JX-0626C (Flow Simulation for Gen. 15 55" SS Closed Loop Fans).). Mr. Brown annotated a CFD screenshot for the Gen. 15 55" SS Accused Products, in Figure 14 below, to show [redacted] shown below.

Figure 14: Brown Demonstrative Showing the [redacted]

[redacted]

(RDX-0004C.0017 (citing JX-0626C (annotated)); Tr. (Brown) at 817:22-818:18.).

MRI argued that the [redacted] in the Accused Products is not the claimed second cooling fluid path because [redacted] Again, this argument essentially reads a negative limitation into the claims: that the second cooling fluid path which cools the circuit board be a second cooling fluid path which cools ***only*** the circuit board and ***not*** the display panel or anything else. (Tr. (Flasck) at 955:17-956:11; 1074:14-1075:19.). As explained above in Section VII.B.4.e), MRI's attempt to import a negative claim limitation is rejected because it is unsupported by the '117 patent. *See also Omega Eng'g.*, 334 F.3d at 1322-23. Dr. Smith's testimony, that the claim language at issue

does not preclude the second cooling fluid path from cooling components other than the circuit board as long as the circuit board is cooled, is more supported by the specification and thus more credible and persuasive. (Tr. (Smith) at 472:25-473:2.).

Accordingly, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice claim element 1[e] of the '117 patent.

g) 1[f]: "wherein the first and second cooling fluid paths are separated from each other, and"

Dr. Smith testified that the first and second cooling fluid paths in the Accused Products are separated from each other. (Tr. (Smith) at 473:3-474:3.). During the Hearing, several MRI witnesses testified that [redacted] as summarized below.

For example, MRI's employee Mr. Brown acknowledged that [redacted] (first cooling fluid path) [redacted] (second cooling fluid path) because [redacted]

Q. Thank you, Mr. Brown. [redacted]

A. No, it does not.

Q. Why not?

A. So, again, it's our design strategy, our design choice, [redacted]

* * *

Q. Does the [redacted] any of MRI's current BoldVu* products?

A. No, we don't do that in any product.

Q. Why not?

A. [redacted]

* * *

Q. And [redacted] correct?

A. It's one of [redacted], yes.

(Tr. (Brown) at 813:4-11, 815:12-18, 869:8-12.).

MRI's CEO and founder, Mr. William Dunn,[29] confirmed the same.

Q. The cooling system has what MRI calls a dual loop?

A. Yes.

Q. The CoolVu* system has [redacted]?

A. Yes.

Q. And it has [redacted], right?

A. Yes.

Q. The CoolVu* system has a [redacted]?

A. Yes.

Q. The [redacted], correct?

A. That's correct.

(Tr. (Dunn) at 738:3-14.).

Additionally, Mr. Flasck explained that the [redacted] and agreed with Mr. Brown's and Mr. Dunn's testimonies.

Q. Why did MRI design their system this way?

A. Oh, [redacted]

[29] When he testified during the Hearing on October 6, 2023, Mr. William Dunn was the CEO and founder of MRI. (RPSt. at 2.). MRI identified Mr. Dunn as a fact witness to testify about "MRI's facilities and operations, other issues related to remedy, the design, development, and functionality of the Accused Products, and MRI's own prior art to the Asserted Patents." (*Id.*).

[redacted]

Q. And did you hear testimony from Mr. Dunn and Mr. Brown about this specific design choice?

A. Yes. And they confirmed that, yes.

(Tr. (Flasck) at 960:15-961:1.).

Mr. Schuch, MRI's source code fact witness, also recognized the separateness [redacted] (Tr. (Schuch) at 926:19-927:10.). Furthermore, MRI's Product Requirements Documents state that these [redacted]e. (*See, e.g.*, JX-0173C.0005 (Gen. 15 55" SS PRD); *see also* CBr. at Attachment A.). Additionally, Dr. Smith testified that the first cooling fluid path in the Accused Products [redacted] including the second cooling fluid path. (Tr. (Smith) at 473:20-24; JX-0598C (Gen. 15 55" SS CAD).).

For the foregoing reasons, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice claim element 1[f] of the '117 patent.

h) 1[g]: "wherein the case includes a circuit board mounting part provided on a rear surface of the case and partitioned from a space in which the display panel is mounted such that the circuit board is received in the circuit board mounting part, the first cooling fluid path includes a space between a rear surface of the display panel and an inner surface of the case, and the second cooling fluid path includes an internal space of the circuit board mounting part."

Dr. Smith testified that the Accused Products include a circuit board mounting part provided on a rear surface of the case and partitioned from a space in which the display panel is mounted such that the circuit board is received in the circuit board mounting part. (Tr. (Smith) at

474:5-475:20; *see also* Attachment A.).

Dr. Smith explained that [redacted] is the circuit board mounting part in the Accused Products under the adopted plain and ordinary meaning construction. (Tr. (Smith) at 474:5-22; JX-0598C (Gen. 15 55" SS CAD); JX-0869C.0036, 0038 (Gen. 15 55" SS Tech. Manual).). The circuit board mounting part is [redacted] (Tr. (Smith) at 475:7-20; JX-0598C (Gen. 15 55" SS CAD).). The entirety of the [redacted] (Tr. (Smith) at 475:21-476:9.). [redacted] (second cooling fluid path) includes [redacted] (*Id.* at 476:10-18.). MRI's documents prove that the [redacted] of each Accused Product, including [redacted] (*See* JX-0598C (Gen. 15 55" SS CAD); CX-1488.0010 (MRI's 1331 DI Chart); *see also* CBr. at Attachment A, Attachment B at 5.).

Mr. Brown testified that the circuit boards in the Accused Products are mounted to the rear surface of the metal plate. (Tr. (Brown) at 869:13-16 ("Q. And in these accused BoldVu* products, electronic components are mounted to the back of that plate, right? A. We have circuit boards that are fastened there by screws, yes.").). MRI's technical manuals and videos corroborate Mr. Brown's testimony. (*See, e.g.*, JX-0897C.0051 (Gen. 15 86" SS Tech. Man.); CX-0259C (video showing circuit board being mounted to rear surface of metal plate); Tr. (Brown) at 869:13-873:11).). Photographs of the Accused Products, copied below, including

annotated JX-1160C, show how circuit boards, outlined in yellow in JX-1105C,

Figure 15: Photographs of the Accused Products Showing



(JX-1159C, JX-1160C (annotated in RDX-0005C.0024); *see also* RDX-0005C.0026).).

Mr. Brown, MRI's Vice President of Mechanical Engineering, confirmed that the

(Tr. (Brown) at 872:8-21.). He referenced a video showing this mounting process, for which a screenshot is provided below.

Figure 16: MRI Video Showing the Mounting Process of the Circuit Boards



(CX-0259C at 00:28.).

For the reasons discussed above, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice claim element 1[g] of the '117 patent.

5. Claim 2: "The panel display device as claimed in claim 1, wherein the case includes front and rear cases coupled to each other, and the rear case includes a circuit board mounting part provided on an outer surface of the rear case such that the circuit board is mounted in the circuit board mounting part."

Dr. Smith testified that the Accused Products infringe claim 2 of the '117 patent. (Tr. (Smith) at 477:11-23.). As Samsung noted, MRI's disputes with respect to claim 2 are tied to its disputes with respect to claim 1. (CBr. at 35; RRBr. at 35-36.).

Dr. Smith explained that [redacted] of the Accused Products is [redacted] (Tr. (Smith) at 476:5-10.). The [redacted] (*Id*.). The [redacted] (*Id.* at 476:11-16.). Dr. Smith demonstrated how the Accused Products meet the elements of claim 2 by annotating a photograph from a technical manual for one of the Accused Products, which is

shown below.

Figure 17: Smith Demonstrative Showing the Front and Rear Cases of the Accused Products



(Tr. (Smith) at 476:19-477:16 (discussing CDX-0008C.0040); JX-0869C.0056 (Gen. 15 55" SS Tech. Manual).).

For the foregoing reasons, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice the additional limitations recited in claim 2 of the '117 patent.

6. The Accused Products directly infringe the '117 patent.

Samsung has proven, by a preponderance of evidence, both factually and legally, that every element of the Asserted Claims is satisfied by the Accused Products. Therefore, it is a factual finding, and a legal determination of this ID, that Respondents have committed acts of direct infringement with their Accused Products.

7. Indirect Infringement

a) Instances of Direct Infringement

Samsung alleged that MRI's customers, end-users, and LG-MRI LLC ("LG-MRI")[30] (collectively, the "Direct Infringers"), directly infringe the '117 patent by making, using, selling, and/or selling for importation the Accused Products without a license from Samsung. (CBr. at 36.).

Samsung presented documentary and testimonial evidence that MRI's customers include companies such as [redacted], and others listed in MRI sales documents.[31] (*See* JX-0019C; CX-0503C (Peter Kaszycki Dep. Tr.) at 100:7-13 (listing some MRI legacy customers).). Sales to customers are circumstantial evidence of direct infringement by those customers. *See, e.g.*, *Golden Blount, Inc. v. Robert H. Peterson Co.*, 438 F.3d 1354, 1363 (Fed. Cir. 2006) (affirming finding that customers assembled accused products in an infringing configuration based on instruction sheets disseminated by accused indirect infringer).

LG-MRI, a 50/50 joint venture that MRI and LG Electronics created to sell outdoor LCD digital displays ("Joint Venture"), also directly infringes the '117 patent by selling the Accused Products. (*See, e.g.*, JX-0021C.0004, 0010-11; CX-1299C.0045 (LG-MRI, LLC and Precision Systems Integration are authorized resellers of the Accused Products); CX-0503C (Kaszycki Dep. Tr.) at 23:5-14, 39:16-40:14.).

[30] *See, e.g.*, JX-0021C (LG-MRI Company Overview).

[31] Other examples of direct infringement include instances of the Accused Products being designed, made, manufactured, pre-assembled, supplied, or sold for one or more of the MRI customers listed in Attachment D to Samsung's Initial Post-Hearing Brief.

MRI's and LG Electronics' joint venture agreement ("Joint Venture Ag.") [redacted] (*See* JX-0035C (Trademark and Technology License Agreement between MRI and LG-MRI LLC); JX-0036C (First Amendment to Trademark and Technology License Agreement between MRI and LG-MRI LLC); *see also* CX-0503C (Kaszycki Dep. Tr.) at 23:5-14, 28:6-16.). Each sale that LG-MRI makes is an act of direct infringement.

MRI has known of the Asserted Patents and its infringing activities since at least December 5, 2022, which is the date Samsung served MRI with the Complaint. *See, e.g.*, *Certain Mounting Apparatuses for Holding Portable Electronic Devices and Components Thereof*, Inv. 337-TA- 1086, Order No. 16, 2019 WL 2052683, at *4 (Apr. 16, 2019) (holding that knowledge of the patent was established from the service of the complaint and Notice of Investigation) ("*Mounting Apparatuses*"). MRI knew that the Accused Products cannot be used without infringing the Asserted Patents because Samsung notified MRI of this fact when it served the Complaint in this Investigation, if not before.

By MRI's own admission, [redacted] (Tr. (Brown) at 867:4-6 ("[W]ithout our cooling system, [redacted] *see also* Tr. (Dunn) at 737:22-24 [redacted] 755:6-9 [redacted]; Tr. (Schuch) at 921:7-14 [redacted]

[redacted]).).

Accordingly, Samsung presented compelling evidence that met its burden of proof that MRI had knowledge of the Asserted Patents and its infringing activities since at least the date Samsung served MRI with the Complaint. *Mounting Apparatuses*, Order No. 16, at 4.

a) Induced Infringement

MRI has induced, and continues to induce, end users of the Accused Products, including the Direct Infringers, to infringe the '117 patent. MRI induced end users to use the Accused Products in an infringing manner at least by supplying (or causing to be supplied) detailed instructions, Owner's Technical Manuals, and Operations/Installation Manuals, showing end users or their providers how to install the Accused Products and operate them in an infringing manner. (*See, e.g.*, JX-0897C.0015 (Gen. 15 86" SS Tech. Man.) ("[redacted]; *see also* CX-0465C (Douglas Bennett Dep. Tr.)[32] at 145:2-146:15 (discussing JX-0897C).).

The MRI manuals, which were drafted by MRI engineers and customer service employees, provide detailed instructions for installing and using the Accused Products, including steps such as [redacted]. (*See* CX-0503C (Kaszycki Dep. Tr.) at 104:15-

[32] Mr. Douglas Bennett provided his deposition testimony on May 12, 2023. (CX-0465C (Bennett Dep. Tr.) at 1:18.). MRI designated Mr. Bennett to testify about certain topics on its behalf. (*See, e.g.*, *id.* at 16:15-17:7.). At the time of his deposition, Mr. Bennett was Vice President of Engineering at MRI. (*Id.* at 46:8-14, 52:20-22; RPSt. at 2.). He was also Chief Technical Officer of LG-MRI. (CX-0465C (Bennett Dep. Tr.) at 50:17-22.). MRI identified Mr. Bennett as fact witness to testify about "the design, development, and functionality of the Accused Products." (RPSt. at 2.).

108:21; *see also* JX-0866C; JX-0849C; JX-0873C; JX-0870C; JX-0879C; JX-0881C; JX-0886C; JX-0901C; JX-0899C; JX-0900C; JX-0843C.). The MRI manuals also include a [redacted] that provides detailed instructions for infringing use of the Accused Products. (*See, e.g.*, JX-0897C.0001 (Gen. 15 86" SS Tech. Man.).). Additionally, the Accused Products include [redacted] (Tr. (Schuch) at 931:1-17.).

Moreover, MRI induced infringement by [redacted] (*See* CX-0510C.0001-3 (SmartVu Advanced Monitoring Portal).). MRI's support to Direct Infringers through MRI's customer service program is also confirmed by the testimony of Mr. Kaszycki, the CEO and President of MRI's marketing arm, LG-MRI. (*See* CX-0503C (Kaszycki Dep. Tr.) at 104:15-108:21.).

Therefore, the evidence confirms, and Samsung has met its burden of proof, that MRI has induced and continues to induce direct infringement of claims 1 and 2 of the '117 patent. *See Bio-Rad Labs.*, 998 F.3d at 1335 ("Induced infringement under 35 U.S.C. § 271(b) requires proof of underlying direct infringement, as well as proof that (1) 'the defendant knew of the patent,' (2) the defendant knew or should have known that 'the induced acts constitute patent infringement,' and (3) the defendant 'possessed specific intent to encourage another's infringement.'") (citation omitted).

b) Contributory Infringement

According to Samsung, MRI "contributes to the infringement of the '117 Patent by knowingly importing and/or selling critical components (such as LCD cells and modules)

specially made for the Accused Products to its customers and/or end-users, including the Direct Infringers." (CBr. at 37.). Samsung stated that:

> The Accused Products, and each critical component thereof are especially adapted for use in practicing the Asserted Claims of the '117 Patent. The Accused Products are used by at least the Direct Infringers and constitute material parts of the invention of the '117 Patent. They neither have any substantial non-infringing uses nor are they staple articles or commodities of commerce suitable for non-infringing use.

(*Id.* at 37-38.).

To support its allegations and arguments, Samsung cited MRI and LG-MRI public-facing documents that the imported LCD Cells and modules are specially made for outdoor display products. (*Id.* at 38 (citing CX-0440 (https://mri-inc.net/); CX-0464; CX-0511C (Case Studies – LG-MRI).). However, CX-0440 and CX-0464 are not part of the record.[33] Moreover, Samsung's argument that "[t]he critical components of the Accused Products are the [redacted] in its Initial Post-Hearing Brief were not supported by any testimonial or documentary evidence during the Hearing. (*Id.*).

Thus, although MRI may have known of the Asserted Patents and its infringing activities since at least December 5, 2022, Samsung failed to meet its burden of proof that MRI contributed to, and continues to contribute to, the direct infringement of claims 1 and 2 of the '117 patent. *See Bio-Rad Labs., Inc. v. Int'l Trade Comm'n*, 998 F.3d 1320, 1335 (Fed. Cir. 2021) ("Contributory infringement under 35 U.S.C. § 271I requires proof that (1) the defendant had 'knowledge of the patent in suit,' (2) the defendant had 'knowledge of patent infringement,'

[33] It is important to note that Samsung has relied on documents that Samsung did not submit into the record as exhibits. Samsung had the obligation to check its "admitted" exhibits lists, and the subsequently created Table of Contents that purportedly includes all Admitted Exhibits. (*See* G.R. 8.7.).

and (3) the accused product is not a staple article or commodity of commerce suitable for a substantial noninfringing use.") (citation omitted). In sum, without having provided evidence of a "substantial noninfringing use" for the Accused Products, even if it might appear to be intuitive that such might be true, Samsung's argument fails from a sufficiency of proof with respect to the third required element for contribution to or ongoing contribution to infringement.

C. The '311 Patent

U.S. Patent No. ("the '311 patent"), titled "Liquid Crystal Display Device Including Airflow Channel," was filed on June 5, 2009, as U.S. Patent Application Serial No. 12/478,832 ("the '832 application"). (JX-0002 ('311 Patent) at (54), (22), (21).). The '832 application issued as the '311 patent on July 17, 2012, and names Jin Sub Kim, Jin Hyun Cho, Sung Ki Kim, and Joon Kang as the inventors. (*Id.* at (75), (45).). The '311 patent claims priority to Korean Patent Application No. 10-2008-0055687, filed on June 13, 2008. (*Id.* at (30).).

1. The Specification of the '311 Patent

The '311 patent and the '253 patent share a common specification and so the description for the '253 patent provided below applies equally to the '311 patent and is not repeated here.

2. The Claims of the '311 Patent

At issue in this Investigation are claims 4, 6, and 13 of the '311 patent. Claim 4 depends from claim 3, which depends from claim 2, which depends from claim 1. Claim 6 depends from claim 1.

1. A liquid crystal display device, comprising:
   a liquid crystal panel;

   a protection panel separated from the liquid crystal panel by a channel;

   a flow control device to impart turbulence to an air flow in the channel, the flow control device comprising:

a temperature sensor to measure the temperature of air discharged from the channel; and

a flow rate controller to control air flow through the channel according to the measured temperature.

2. The liquid crystal display device according to claim 1, wherein the channel comprises:
an air inlet to guide air into the channel; and

a flow rate controller to control air flow through the channel according to the measured temperature.

3. The liquid crystal display device according to claim 2, wherein the flow control device further comprises a fan to force air through the channel,
wherein the flow rate controller controls the fan according to the detected temperature.

4. The liquid crystal display device according to claim 3, wherein:
the flow rate controller controls fan such that the air in the channel has a velocity in a range of 5 to 14 m/s.

6. The liquid crystal display device according to claim 1, wherein
the width of the channel is in a range of 5 to 25 mm.

13. A display device, comprising:
a liquid crystal panel to display an image;

a protection panel to protect the liquid crystal panel;

a channel formed between the liquid crystal panel and the protection panel;

a flow control device to control the flow rate of air in the channel to remote heat from a front side of the liquid crystal panel, the flow control device comprising:

a fan to force air through the channel;

a temperature sensor to measure the temperature of air discharged from the channel; and

a flow rate controller control the fan according to the measured temperature to regulate the flow rate of the air in the channel.

3. Claim Construction for the ’311 Patent

In the First *Markman* Order, (Order No. 28), the following terms of the ’311 patent were

construed:

Claim Term	Adopted Construction
Flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel ('311 patent, independent claim 13)	Not subject to 35 U.S.C. § 112, ¶ 6 This claim term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 28 at 37-44.)
Flow rate controller control [sic] the fan according to the measured temperature to regulate the flow rate of the air in the channel ('311 patent, independent claim 13)	Subject to 35 U.S.C. § 112, ¶ 6 Function: to control air flow through the channel according to the measured temperature Structure: (None) Indefinite under 35 U.S.C. § 112 (Order No. 28 at 47-49.)

In the Second *Markman* Order, (Order No. 32), the following terms of the '311 patent were construed:

Claim Term	Adopted Construction
Flow control device [to impart turbulence to an air flow in the channel] ('311 patent, independent claim 1 and dependent claim 3)	Not subject to 35 U.S.C. § 112, ¶ 6 This claim term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning. (Order No. 32 at 13-19.)
Flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel ('311 patent, independent claim 13)	Not subject to 35 U.S.C. § 112, ¶ 6 This claim term is not indefinite. Does not require construction and should be interpreted according to its plain and ordinary meaning.

	(Order No. 32 at 19-25.)
Flow rate controller control [sic] the fan according to the measured temperature to regulate the flow rate of the air in the channel ('311 patent, independent claim 13) Flow rate controller [to control air flow through the channel according to the measured temperature] ('311 patent, independent claim 1 and dependent claims 3 and 4)	Subject to 35 U.S.C. § 112, ¶ 6 Function: to control air flow through the channel according to the measured temperature Structure: (None) Indefinite under 35 U.S.C. § 112 (Order No. 32 at 34-45.)

4. Claim 1

Samsung argued that the Accused Products infringe claim 4 of the '311 patent, which depends from claim 3, which in turn depends from claim 2, which in turn depends from claim 1. Samsung also argued that the Accused Products infringe claim 6 of the '311 patent which depends from claim 1, and claim 13 of the '311 patent which is independent but for which the Parties rely exclusively on the arguments and evidence advanced for claims 4 and 6. Samsung used the following claim element designations for the '311 patent, which are taken from the demonstratives of Samsung's expert Dr. Smith:

Figure 18: Dr. Smith's Claim Element Designations for the '311 Patent (excerpts from CDX-0008C.0045-46, 63)

Claim 1 of the '311 Patent

Claim Element	Claim Language
1[pre]	A liquid crystal display device, comprising:
1[a]	a liquid crystal panel;
1[b]	a protection panel separated from the liquid crystal panel by a channel;
1[c]	a flow control device to impart turbulence to an air flow in the channel, the flow control device comprising:
1[c1]	a temperature sensor to measure the temperature of air discharged from the channel; and
1[c2]	a flow rate controller to control air flow through the channel according to the measured temperature.

Claims 2-4, 6 of the '311 Patent

Claim Element	Claim Language
2	The liquid crystal display device according to claim 1, wherein the channel comprises: an air inlet to guide air into the channel; and an air outlet to discharge air from the channel.
3	The liquid crystal display device according to claim 2, wherein the flow control device further comprises a fan to force air through the channel, wherein the flow rate controller controls the fan according to the detected temperature.
4	The liquid crystal display device according to claim 3, wherein: the flow rate controller controls fan such that the air in the channel has a velocity in a range of 4 to 14 m/s.
6	The liquid crystal display device according to claim 1, wherein: the width of the channel is in a range of 5 to 25 mm.

'311 Patent, Claim 13

Claim 13	Corresponding Elements of Claims 1 and 3	BoldVu Products
13[pre] A display device, comprising:	**1[pre]:** A liquid crystal display device, comprising:	✓
13[a] a liquid crystal panel to display an image;	**1[a]:** a liquid crystal panel;	✓
13[b] a protection panel to protect the liquid crystal panel;	**1[b]:** a protection panel separated from the liquid crystal panel by a channel;	✓
13[c] a channel formed between the liquid crystal panel and the protection panel; and		✓
13[d] a flow control device ***to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel***, the flow control device comprising:	**1[c]: a flow control device** ***to impart turbulence to an air flow in the channel***, the flow control device comprising:	
13[d1] a fan to force air through the channel;	**3**: The liquid crystal display device according to claim 2, wherein the flow control device further comprises a fan to force air through the channel, wherein the flow rate controller controls the fan according to the detected temperature.	✓
13[d2] a temperature sensor to measure the temperature of air discharged from the channel; and	**1[c1]**: a temperature sensor to measure the temperature of air discharged from the channel; and	✓
13[d3] a flow rate controller ***to control the fan according to the measured temperature to regulate the flow rate of the air in the channel***.	**1[c2]: a flow rate controller** ***to control air flow through the channel according to the measured temperature***.	

(CDX-0008C.0045-46, 63; Tr. (Smith) at 479:3-21, 497:16-498:14.).

MRI only disputed claim elements 1[c], 1[c1], and 1[c2].[34] Although claim 13 is independent, the Parties rely on the same arguments and evidence for claim 13 that they advanced for claims 4 and 6.

As described in greater detail below, MRI argued that its Accused Products do not practice claim element 1[c] because [redacted] in the Accused Products does not "impart turbulence" as required by the claim language. MRI's dispute with respect to claim element 1[c1] is based on its theory that [redacted] in the Accused Products does not measure the temperature of air "discharged from the channel" as required by

[34] For the claim elements that Samsung refers to as 1[c1] and 1[c2], MRI uses the designations 1[d] and 1[e] respectively.

the claim language. MRI's dispute with respect to claim element 1[c2] is that claim element 1[c2] requires controlling air flow through the channel according to the temperature defined in claim element 1[c1], which MRI argued is not present in the Accused Products.

For the reasons provided below, this ID finds in favor of Samsung's arguments, given the preponderance of evidence, with respect to claim element 1[c] (i.e., the Accused Products practice or satisfy claim element 1[c]) and in favor of MRI's arguments and evidence with respect to claim elements 1[c1] and 1[c2] (i.e., the Accused Products do not practice or satisfy claim elements 1[c1] and 1[c2]).

a) 1[pre]: "A liquid crystal display device, comprising"

b) 1[a]: "a liquid crystal panel"

c) 1[b]: "a protection panel separated from the liquid crystal panel by a channel; and"

MRI did not dispute that the Accused Products practice claim elements 1[pre], 1[a], and 1[b] of the '311 patent. (CBr. at 59-60; RRBr. at 41-61.). Therefore, it is a legal and a factual finding that Samsung has proven by a preponderance of evidence that the Accused Products practice the foregoing elements of claim 1 of the '311 patent and therefore they also literally infringe the referenced elements of claim 1 of the '311 patent. (Tr. (Smith) at 485:18-486:10; Tr. (Flasck) at 1003:1-6; JX-0277C; JX-0598C; JX-0173C.0003, 0004.).

Because MRI has not disputed that the Accused Products practice claim elements 1[pre], 1[a], and 1[b] of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to the foregoing claim elements under Ground Rule 10.1.

d) 1[c]: "a flow control device to impart turbulence to an air flow in the channel, the flow control device comprising:"

Claim element 1[c] was not construed in the original *Markman* order. (Order No. 28.). However, the "flow control device" term in claim 13 of the '311 patent was construed and determined not to be a means plus function term and not indefinite. Therefore, the "flow control device" term of claim 13 is subject to its plain and ordinary meaning. (Order No. 28 at 37-44.). For the same reasons as given in Order No. 28 for the "flow control device" term in claim 13 of the '311 patent, the "flow control device" term in claim 1 of the '311 patent is also construed not to be a means plus function term, not indefinite, and subject to its plain and ordinary meaning. (Order No. 32 at 13-19.).

Samsung's expert Dr. Smith testified that a POSITA at the time of the invention of the '311 patent would have understood "flow control device" to mean "something like a fan, a closed loop fan, that would circulate air in something like a channel." (Tr. (Smith) at 488:3-9.). MRI did not offer a different interpretation for the plain and ordinary meaning of "flow control device." (RRB at 41-50.). MRI did not dispute that the Accused Products include a flow control device as Samsung interprets that term. (*Id.*).

(i) Dr. Smith's testimony proves that the Accused Products have a "flow control device" [redacted] that circulates air through a "channel" [redacted]

Dr. Smith demonstrated through his testimony, reference to exhibits, and his demonstrative slides that the Accused Products have a "flow control device" [redacted] that imparts turbulence to air flow in the channel [redacted] Dr. Smith testified that the Accused Products have a [redacted] (Tr. (Smith) at 487:5-14, 488:10-

18, 489:5-490:2; CX-0265C.0001.). Dr. Smith illustrated the foregoing testimony using the following demonstrative:

Figure 19: Excerpt of Dr. Smith's Demonstrative Illustrating Accused Flow Control Device



(Tr. (Smith) at 487:5-14; CDX-0008C.0050.).

Dr. Smith presented an image of an MRI Computational Fluid Dynamics ("CFD") simulation[35] (JX-0909C) on an MRI Generation 15 55" single-sided product. The image of MRI's CFD simulation of its Generation 15 55" single-sided product bears annotations from MRI's Mike Brown, including a "CL Fan" annotation from Mike Brown, as depicted below.

[35] A CFD simulation involves using software to understand complex flows. (Tr. (Gale) at 346:7-12.).

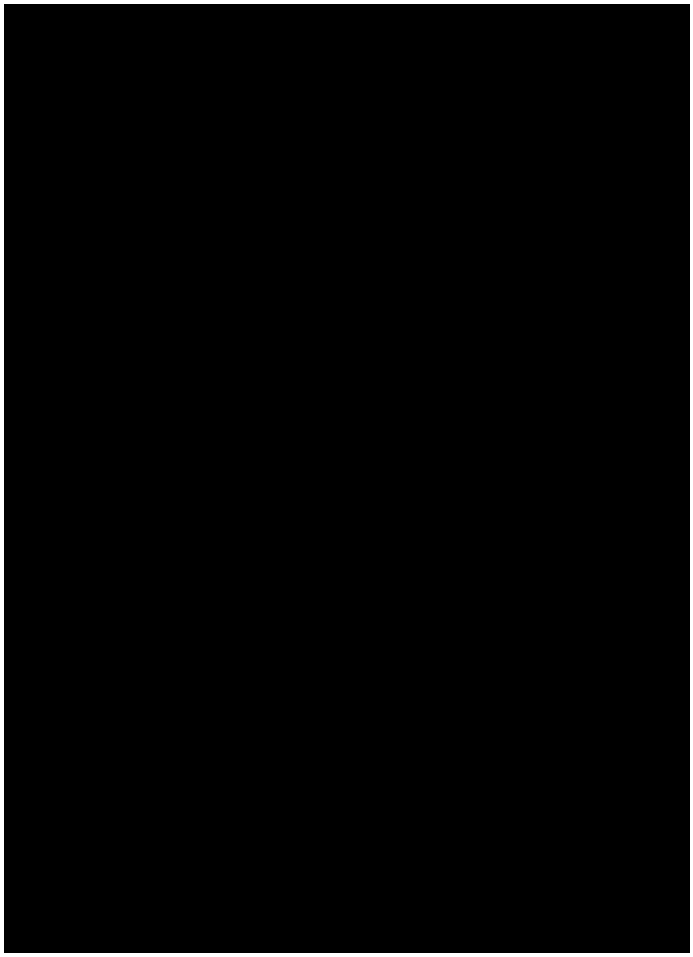
Figure 20: Excerpt of Dr. Smith's Demonstrative Showing "CL Fan" Annotation by Mike Brown on an MRI CFD Simulation of an MRI Generation 15 55" Single-Sided Product



(Tr. (Smith) at 487:15-20; CDX-0008C.0051.).

Dr. Smith also presented an image from a technical manual (JX-0869C.0036) for MRI's Generation 15 55" single-sided product with a [redacted] annotation from MRI, as depicted below.

Figure 21: Excerpt of Dr. Smith's Demonstrative Depicting [redacted] in MRI's Gen 15 55-inch Product



(Tr. (Smith) at 487:15-488:2; CDX-0008C.0051 [redacted] annotation in original, yellow highlighting added).).

Therefore, it is a factual and a legal finding of this ID that the Accused Products have a flow control device (closed loop fan).

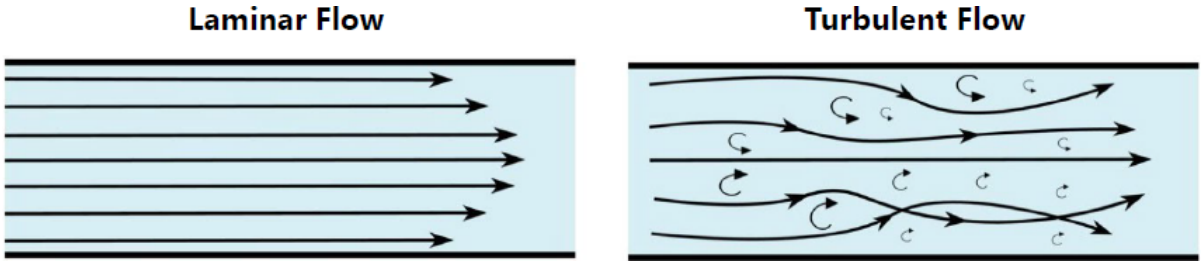
(ii) Dr. Gale's testimony proves that the flow control device in the Accused Products imparts turbulence to air flow in the channel.

To prove that the Accused Products impart turbulence as claimed, Samsung asked its fluid dynamics expert Dr. Bruce Gale to analyze Computational Fluid Dynamics (CFD)

simulations, that were generated by MRI in the ordinary course of business, of airflow in the Accused Products. (Tr. (Smith) at 490:3-10; Tr. (Gale) at 349:10-23.).

Dr. Gale provided the following relevant technical background. Dr. Gale explained that turbulent airflow "has swirls and eddies, and it is essentially random in both time and space, meaning it changes in time and location." (Tr. (Gale) at 350:12-18.). In contrast, laminar flow "tends to be or is entirely predictable. It's a very flat and essentially layered flow." (*Id.* at 350:18-20.). Dr. Gale provided an illustration, as depicted below in Figure 22, to explain laminar versus turbulent flow:

Figure 22: Excerpt of Dr. Gale's Demonstrative Explaining Laminar Versus Turbulent Flow



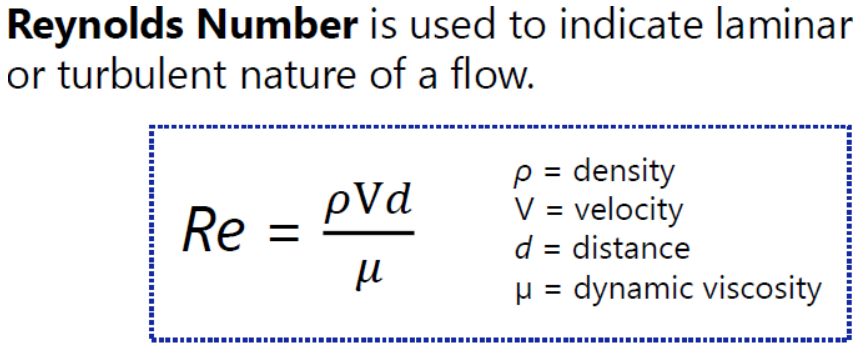
(Tr. (Gale) at 350:12-20; CDX-0006C.0004.).

MRI's expert Mr. Flasck also described the differences between laminar and turbulent flow, i.e., specifically that laminar flow is smooth and unmixed whereas turbulent flow is a "mixing" of air. (Tr. (Flasck) at 1010:1-11.).

Dr. Gale explained that engineers use a value called a Reynolds number to determine whether airflow is turbulent. (Tr. (Gale) at 351:10-23.). The Reynolds number is calculated using an equation in which density is multiplied by velocity which is multiplied by the characteristic distance of the flow, and then the result of the foregoing multiplication is divided by the viscosity of the flow, as depicted in Dr. Gale's demonstrative reproduced below as Figure

23:

Figure 23: Excerpt of Dr. Gale's Demonstrative Illustrating Calculation of the Reynolds Number



(Tr. (Gale) at 352:10-353:3; CDX-0006C.0004.).

Dr. Gale testified that he was asked to use 2300 as the threshold Reynolds number value for turbulence, and that in his experience 2300 is a "good number" to use that you would "find in essentially any engineering textbook in fluid mechanics." (Tr. (Gale) at 353:6-12.). According to the '311 patent, "[f]lows with a Reynolds number of not more than 2300 are defined as laminar and, if the Reynolds number exceeds 2300, the flow may be considered turbulent." (JX-0002 ('311 Patent) at 9:21-23.).

As part of his CFD analysis of the Accused Products, Dr. Gale presented a simulation video (JX-0618) of one of MRI's CFD simulations for an accused Generation 14 55" single-sided product. That simulation video depicts [redacted] (dark blue line) [redacted], as depicted below. (Tr. (Gale) at 358:14-361:21.).

Figure 24: Excerpt of Dr. Gale's Demonstrative Showing an Image of an MRI CFD Simulation of an Accused MRI Generation 14 55" Single-Sided Product



(Tr. (Gale) at 358:14-361:21; CDX-0006C.0012.).

Dr. Gale explained that he used the key on the right of CDX-0006C.0012 above, which contains , to determine the airflow velocity (which is one of the quantities necessary to calculate the Reynolds number according to the formula Dr. Gale provided in CDX-0006C.0004) , which is shown at the top left and also at the top right of Dr. Gale's demonstrative slide, CDX-0006C.0012. (Tr. (Gale) at 361:22-8.). Dr. Gale also described how, at any given location in the simulation video (JX-0618), the color of the arrows (*Id.* at 365:20-366:2; *see also* CDX-0006C.0012.).

Dr. Gale also explained how, for laminar flow, the airflow velocity is but in the simulation video (*Id.* at 366:3-

7.).

In support of his opinion, Dr. Gale also presented MRI spreadsheets that report [redacted] for four (4) CFD simulations for an accused Generation 14 55" single-sided product. (Tr. (Gale) at 362:9-363:18; JX-0693C.).

Using the airflow rates from the CFD simulations and spreadsheets, the temperatures from the spreadsheets, the channel width that MRI's Mr. Brown provided, and publicly available values for density and viscosity of air, Dr. Gale calculated a Reynolds number of [redacted] (Tr. (Gale) at 363:19-365:16; CDX-0006C.0014; Tr. (Brown) at 864:6-16.). Dr. Gale testified that he performed a similar analysis on other MRI products and reported his calculated Reynolds numbers in the "Reynolds Number" column of his demonstrative slide, CDX-0006C.0015, which is reproduced below. (Tr. (Gale) at 366:8-367:18.).

Figure 25: Dr. Gale's Demonstrative Summarizing the Results of His Analysis of MRI Products



(Tr. (Gale) at 366:8-367:18; CDX-0006C.0015.).

MRI presented the following three (3) theories of non-infringement, none of which is

persuasive. Each of MRI's theories is addressed below.

(iii) MRI did not present credible evidence of non-infringement.

First, MRI argued that the evidence proves that [redacted] is not turbulent. (RRBr. at 41-42.). MRI relied on the testimony of its employee Mr. Brown, who testified that the Accused Products were designed so that [redacted] (Tr. (Brown) at 821:1-822:18.). Mr. Brown testified that the Accused Products are [redacted] (*Id.*).

However, MRI did not provide evidence or explanation, and there is none in the Hearing record, that relates [redacted] In other words, there is no testimonial or documentary evidence in the record to inform a factfinder about the [redacted] Samsung's and MRI's experts agree that turbulent airflow is random and disordered, resulting in mixing of the air, whereas laminar airflow is predictable and unmixed. (Tr. (Gale) at 350:12-20; Tr. (Flasck) at 1010:1-11.) Neither expert discussed whether turbulent or laminar airflow would cause [redacted] Therefore, although it is a finding of this ID that the foregoing testimony from Mr. Brown is credible and unrebutted, it is also a finding of this ID that there is insufficient evidence in the record to conclude that a [redacted] in the Accused Products means the airflow is not turbulent.

(iv) MRI did not successfully undermine the probative value of its own CFD simulations.

Second, MRI argued that its own CFD simulations (which are the ones Dr. Smith and Dr.

Gale relied on) of the Accused Products are too unreliable, inaccurate, and/or unrepresentative to prove that the Accused Products impart turbulence. (RRBr. at 42.). MRI's employee, Mr. Brown, testified that MRI's CFD [redacted] (*Id.* at 793:5-794:23.).

However, Mr. Brown did not testify that MRI's CFD simulations were inaccurate or unrepresentative of the Accused Products. To the contrary, Mr. Brown said that the CAD models used in the CFD simulations were [redacted] and, when asked whether he would consider the CFD simulations to be reliable, Mr. Brown replied [redacted] (*Id.* at 877:10-22.).

Mr. Brown testified that the Accused Products are [redacted] (*Id.* at 878:19-879:12; JX-0171C.0010.). In addition, MRI's expert Mr. Flasck presented evidence (RX-0047) that CFD simulations can be used as a starting point to determine the critical Reynolds number defining the transition to turbulent flow. (Tr. (Flasck) at 1138:10-17, 1139:8-10.). Therefore, Mr. Brown's attempt to minimize the relevance of MRI's own CFD simulations by claiming [redacted] is unpersuasive. The idea that MRI would [redacted] strains credulity. Therefore, it is a finding of this ID that MRI's CFD simulations of its own products are relevant to the structures and features of those products (including the Accused Products) including whether those products "impart turbulence," and Dr. Smith's reliance on MRI's CFD simulations was reasonable.

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(v) MRI did not demonstrate that Dr. Gale's methodology was unreliable.

Third, MRI argued that Dr. Gale used an unreliable methodology to calculate the Reynolds number. (RRBr. at 43-49.). MRI argued that Dr. Gale's methodology is unreliable because he did not disclose the numerical values used for density and dynamic viscosity when applying the Reynolds number formula, even though their values vary with temperature and pressure. (*Id.* at 43-44.). But Dr. Gale testified "[t]hese are standard numbers that are literally in textbooks. You can find them online. Some people have them programmed into their calculator." (Tr. (Gale) at 402:20-403:4.). When asked whether he had "any question as to what those [values for density and viscosity] are," Dr. Gale answered "[a]bsolutely not. I know exactly – those values are very clear." (*Id.* at 403:7-12.). Moreover, when he was asked whether the values for density and viscosity would be clear to someone knowledgeable in the field of fluid dynamics, Dr. Gale testified "[y]eah, any – like I said, any undergraduate can tell you what the values are for those. Any undergraduate in mechanical engineering can tell you the value of those, the viscosity or the density." (*Id.* at 403:13-18.).

Notwithstanding Dr. Gale's testimony, MRI argued that neither Samsung nor Dr. Gale submitted any evidence from textbooks. (RRBr. at 44.). However, it is noteworthy that neither MRI nor any of its experts disclosed any values for density and viscosity that would result in a Reynolds number that is different from that which Dr. Gale calculated.

In the absence of any evidence that Dr. Gale used incorrect density and viscosity values, or that he otherwise incorrectly calculated the Reynolds number, Dr. Gale's reliance on publicly available information that would readily be consulted by individuals in the field was appropriate and credible. Therefore, it is a finding of fact that that the Reynolds numbers Dr. Gale calculated

are representative of the airflow in the Accused Products. Dr. Gale's testimony was credible on this point.

MRI also argued that Dr. Gale's methodology is unreliable because he simply concluded that airflow was turbulent if the Reynolds number was above 2300, rather than relying on any expertise to determine whether the calculated Reynolds number suggested laminar or turbulent flow.[36] (RRBr. at 45-46.). But that is incorrect. Dr. Gale testified that applying a Reynolds Number threshold of 2300 is "standard practice" and is what you would find in engineering textbooks. (Tr. (Gale) at 353:8-12, 395:8-18.). Dr. Gale also testified that the [redacted] depicted in each of MRI's CFD simulations is characteristic of turbulent flow. (*Id.* at 365:20-366:7.). These [redacted] are therefore consistent with Dr. Gale's calculated Reynolds Numbers—both suggest turbulent flow. In effect, MRI failed to rebut Dr. Gale's testimony with any of its own countervailing testimony. Therefore, Dr. Gale's use of a 2300 Reynolds Number threshold does not render his methodology unreliable.

Finally, MRI argued that Dr. Gale's methodology is unreliable because it failed to consider the geometry of the relevant channel in the Accused Products. (RRBr. at 46-48.).

To this point, MRI's expert Mr. Flasck testified that the threshold Reynolds number can vary based on geometry, surface, conditions, and aspect ratio "by orders of magnitude," and that a threshold value of 2300 is only relevant to "flow in a pipe." (Tr. (Flasck) at 1013:23-1014:21.).

Mr. Flasck presented evidence in the form of an article from "Cadence," a company that

[36] MRI referred to Dr. Gale as "just a mouthpiece for Samsung's attorney's argument and conclusions." (RRBr. at 46.).

specializes in computational fluid dynamics ("CFD") simulations, (Tr. (Flasck) at 1013:23-7), that says "[t]he Reynolds number in laminar flow can vary over a wide range, depending on system geometry," "[l]aminar flow tends to occur in Reynolds number values below approximately 2300 for enclosed systems, but the critical Reynolds Number could be very different in other systems," and "the critical Reynolds Number is not always clustered from 2,000 to 2,500, as is sometimes quoted in guides on CFD simulations." (RX-0047.0001-2.).

Dr. Gale acknowledged Mr. Flasck's observations that the relevant Reynolds number threshold can vary but explained that, [redacted] in the Accused Product, the relevant Reynolds Number threshold [redacted] and there are no conditions where the Reynolds Number threshold [redacted] (Tr. (Gale) at 395:22-396:4.).

There is no apparent dispute that the relevant Reynolds Number threshold for determining whether flow is turbulent varies based on, *inter alia*, the system geometry. Therefore, it is a finding of fact that, absent evidence that 2300 is the relevant Reynolds Number threshold for the system under consideration, calculating a Reynolds Number of 2300 or greater does not automatically lead to a conclusion that flow is turbulent.

For the display system under consideration in this Investigation, Mr. Flasck testified that [redacted] in the Accused Products is [redacted] (*Id.* at 1014:22-1015:8; *see also* RX-0047.0002 (Cadence article specifying a critical Reynolds Number of 500,000 for "flow along a flat plate").).

Neither Samsung nor its experts discussed the geometry of the channel in the Accused

Products. Although Dr. Gale testified that applying a Reynolds Number threshold of 2300 is "standard practice" and that this is the threshold that appears in textbooks, the context in which that 2300 threshold appears in those textbooks cannot be determined because those textbooks were not entered into evidence. Likewise, there is no other evidence of what would constitute a "standard practice" for applying Reynolds number thresholds. On the other hand, the '311 patent says that, if the Reynolds number for flow within the channel between the front panel and the LCD exceeds 2300, "the flow may be considered turbulent." (JX-0002 ('311 Patent) at 9:21-23.). This is some corroborating evidence that a Reynolds number threshold of 2300 is relevant for the type of geometry at issue in the Accused Products.

(vi) The weight of the evidence favors Samsung.

Weighing the available evidence, and considering testimony from both qualified, knowledgeable, and generally credible experts, it is a finding of fact that Dr. Gale's application of a Reynolds number threshold of 2300 is supported by a preponderance of evidence. The '311 patent addresses turbulent flow within the relevant channel and specifies the 2300 threshold, which corroborates Dr. Gale's opinion that 2300 is the relevant threshold and contradicts Mr. Flasck's opinion that the [redacted] Furthermore, the [redacted]

[37] The term "turbulence" was not presented for construction during *Markman* proceedings. It is a finding of this ID that neither Samsung nor MRI advocated a construction in any of their Post-Hearing Briefs. Any attempt to argue a construction has been waived under Ground Rule 1.14. Even if not waived, to the extent Samsung attempted to advocate construing turbulence as meaning a Reynolds number of 2300 or greater based on the patent specification, such construction is rejected. MRI correctly pointed out that statements such as the '311 patent's statement that flows with Reynolds numbers over 2300 "may be considered turbulent" are too open-ended and qualified to establish an express definition. (RRBr. at 49-50.). *Apple Inc. v. Wi-LAN Inc.*, 25 F.4th 960, 967-68 (Fed. Cir. 2022) (rejecting proposed construction because the Court "was not persuaded that the record in this case shows that the patentee clearly set forth this definition").

[redacted] seen in MRI's CFD simulations, which depict [redacted]

[redacted]

corroborate Dr. Gale's opinion and contradict Mr. Flasck.

For these reasons, although the question may be a close one, the evidence weighs in favor of a finding that the Accused Products satisfy this claim element. Therefore, it is a finding of fact that Samsung has proven by a preponderance of the evidence that the products Dr. Gale analyzed, (CDX-0006C.0015), satisfy this claim element.

e) 1[c1] "[the flow control device comprising] a temperature sensor to measure the temperature of air discharged from the channel; and"

Samsung presented MRI documents, MRI testimony, and expert testimony to prove the Accused Products satisfy this claim element. (CBr. at 64-66 (citations omitted).).

(i) Dr. Smith presented evidence that the Accused Products have a [redacted]

Samsung's expert Dr. Smith presented an image of an MRI CFD simulation (JX-0909C) on an MRI Generation 15 55" single-sided product. The image of MRI's CFD simulation of its Generation 15 55" single-sided product bears an annotation that says [redacted] that was added by MRI's VP of Engineering Mike Brown, as depicted below.

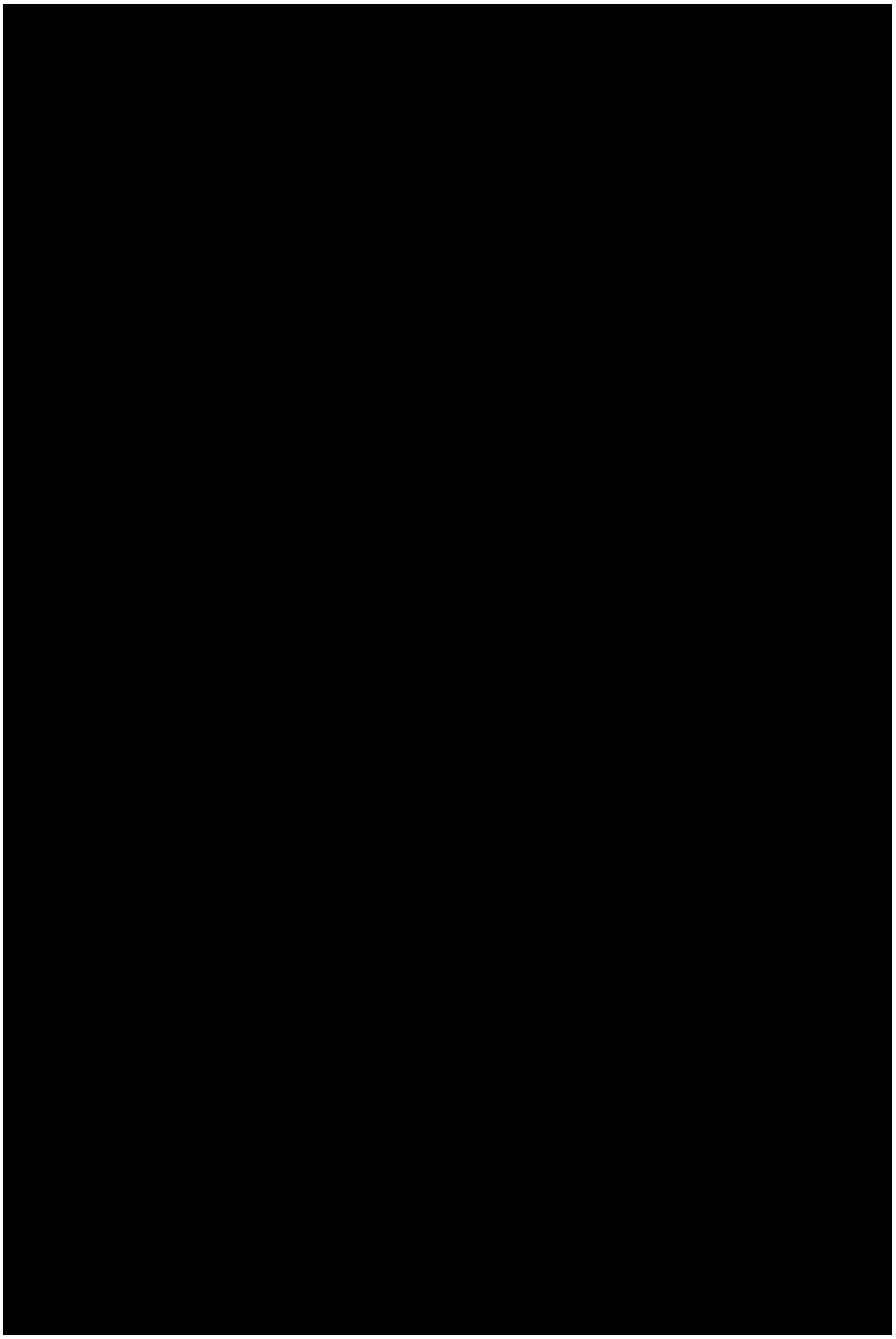
Figure 26: Excerpt of Dr. Smith's Demonstrative Showing [redacted] Annotations by Mike Brown on an MRI CFD Simulation of an MRI Generation 15 55" Single-Sided Product



(Tr. (Smith) at 490:11-19, 642:12-645:2; CDX-0008C.0054, 59.).).

Dr. Smith also presented an image from a technical manual (JX-0869C.0036) for MRI's Generation 15 55" single-sided product with a [redacted] annotation from MRI, as shown below.

Figure 27: Excerpt of Dr. Smith's Demonstrative Depicting [redacted] in MRI's Gen 15 55-inch Product



(Tr. (Smith) at 490:11-492:15; CDX-0008C.0054 [redacted] annotation in original, yellow highlighting added).).

(ii) MRI's Vice President of Mechanical Engineering Mr. Mike Brown presented evidence that the

MRI's Vice President of Mechanical Engineering and technical witness, Mr. Mike Brown, presented the image reproduced below of an MRI CFD simulation of an MRI Generation 15 15" single-sided product (JX-0626C) with his annotation (in red) depicting the location of the

Figure 28: Mr. Brown's Demonstrative Depicting Closed Loop Temp Sensor in a CFD Simulation of MRI's Gen 15 55-inch Single-Sided Product

(Tr. (Brown) at 855:2-20; RDX-0004C.0021.).

As depicted in Figure 28 above,

Mr. Brown also presented the following image of an MRI CFD simulation of an MRI Generation 14 55" single-sided product (JX-618C) with his annotation (in red) demonstrating the

location of the [redacted]

Figure 29: Mr. Brown's Demonstrative Depicting [redacted] in a CFD Simulation of MRI's Gen 14 55-inch Single-Sided Product



(Tr. (Brown) at 856:9-857:8; RDX-0004C.0022.).

As demonstrated in Figure 29 above, [redacted]

Mr. Brown testified that [redacted] in the two (2) Accused Products reflected in the figures above measures [redacted] (Tr. (Brown) at 856:5-8, 856:25-857:8.). Samsung's expert, Mr. Richard Goodin,[38] testified, and MRI's software engineer John Schuch confirmed, that in the "CoolVu" source code

[38] Mr. Richard Goodin earned a bachelor's degree in electrical engineering with a minor in mechanical engineering and a master's in nuclear engineering. (Tr. (Goodin) at 406:10-13, 407:15-20.). Mr. Goodin has a background in software, programming, and source code. (*Id.* at 407:21-409:13.). He was accepted without objection as an expert in the field of source code analysis. (*Id.* at 410:9-18.).

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that runs on the Accused Products there is [redacted] (Tr. (Goodin) at 420:3-421:8; Tr. (Schuch) at 939:23-940:1; CX-0424C.).

(iii) Samsung's infringement theory.

Samsung's infringement theory is that, because [redacted], it necessarily measures the "temperature of air discharged from the channel" as recited in the claim. (CBr. at 67 [redacted]

(iv) MRI's non-infringement theory.

By contrast, MRI's non-infringement theory is that [redacted] does not measure the "temperature of air discharged from the channel" as required by the claim because [redacted] Therefore, according to MRI and its expert, [redacted] (RRBr. at 51-59.).

(v) The closed loop temperature sensor is not where air is discharged from the channel.

Upon reviewing both Parties' Post-Hearing Briefs and the evidence as set forth above, there is no dispute about the physical location of [redacted] (CBr. at 64-66; RRBr. at 51-59.). In support of MRI's argument, Mr. Brown testified that [redacted] in all the Accused Products is always [redacted]

[redacted]

(Tr. (Brown) at 852:1-10 [redacted] 858:7-859:4; RRBr. at 51 (citing JX-0903C; JX-0905C; JX-0907C; JX-0909C; JX-0911C; JX-0913C; JX-0915C; JX-0917C; JX-0919C; JX-0921C; JX-0923C).). Therefore, it is a finding of fact that [redacted]

However, this narrow finding in MRI's favor about the *location* of the closed loop temperature sensor does not end the inquiry because the claim does not require any particular physical location for the temperature sensor.

(vi) The [redacted] does not measure the temperature of air discharged from the channel because [redacted]

There is a dispute between the Parties about whether [redacted] measures the temperature of the air discharged from the channel as required by the claim. Mr. Brown presented a CFD simulation video for an MRI Generation 15 55-inch single-sided product. (JX-626C.). He used it to help describe how closed [redacted] According to Mr. Brown, there is [redacted] (Tr. (Brown) at 808:9-809:9, 817:8-16; RDX-0004C.0011, 15.). Then, [redacted], as demonstrated in Figure 30 below, [redacted]

[redacted] (*Id.*). Then, [redacted] of the Accused Product and [redacted]. (*Id.*).

Figure 30: Mr. Brown's Demonstrative Depicting Two Parallel Airflow Paths of [redacted]



(Tr. (Brown) at 803:4-811:18; RDX-0004C.0011.).

Mr. Brown testified that [redacted] of the Accused Products [redacted] (Tr. (Brown) at 858:7-859:4.). Mr. Brown also testified that MRI intentionally placed [redacted] (*Id.*). Mr. Flasck corroborated Mr. Brown's testimony. (Tr. (Flasck) at 1007:17-1008:8.).

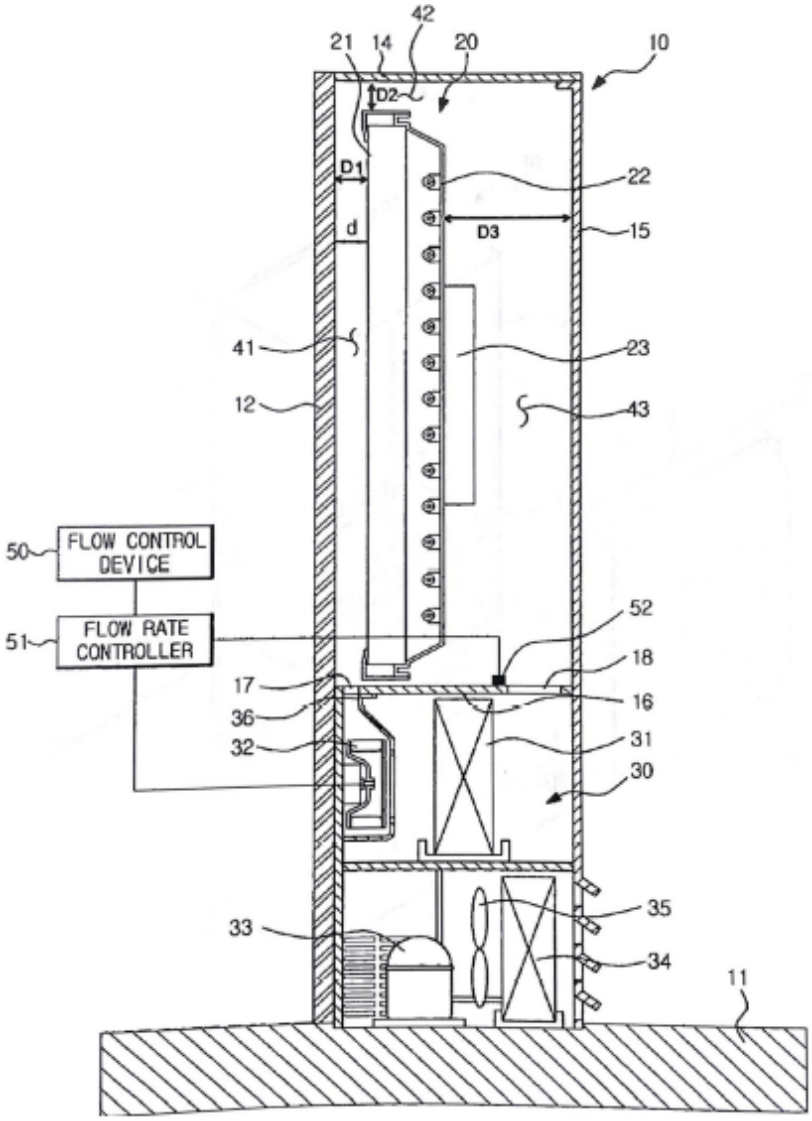
Neither Samsung nor its experts rebutted Mr. Brown's and Mr. Flasck's testimony that [redacted]. Neither Samsung nor its experts explained how, [redacted] of an Accused Product at a particular temperature, [redacted]

[redacted] as described by Mr. Brown and corroborated by Mr. Flasck in the citations above. In other words, [redacted]. Therefore, it is a finding of this ID that Samsung has failed to prove by a preponderance of evidence that this claim element is satisfied.

(vii) The Parties' claim construction arguments are rejected.

In addition to arguing the evidence, the Parties appear to attempt to argue claim construction for this claim element. (CBr. at 67; RRBr. at 57-58.). Although Samsung did not set forth specific claim language to construe, Samsung cites to the '311 patent at 8:61-9:2, 10:11-13 and Figure 2 for the proposition that a [redacted] may nevertheless infringe. (CBr. at 67.). Specifically, Samsung focuses on Figure 2 of the '311 patent, reproduced below in Figure 31, which depicts temperature sensor 52 that "measures the temperature of air emerging from the first channel 41" and "determines the temperature when the air absorbed as much heat as possible while passing through the first to third channels 41, 42, and 43, in order. For this reason, the temperature sensor 52 may be arranged near the outlet 18 provided at the partition 16."

Figure 31: Figure 2 of the '311 Patent Depicting Temperature Sensor 52



(JX-0002 ('311 Patent) at 5:1-6:43, 8:49-9:23.).

According to Samsung's reasoning, because the temperature sensor in Figure 2 is not located at the exit of the channel, the [redacted] in the Accused Products also does not have to be located at the exit of the channel. Samsung's argument may be correct in part but its conclusion is wrong. Samsung is correct that the temperature sensor need not be located at the exit of the channel, but Samsung's reasoning is wrong because its argument does

not lead to a conclusion of infringement. There is nothing in the '311 patent specification to suggest that, in accordance with the design and operation of the Accused Products, air exiting the channel 41 [redacted] before encountering the temperature sensor. As a result, Samsung's claim construction argument, and its infringement theory that relies on its claim construction argument, to the extent it is not waived, is not adopted. Samsung has failed to prove by a preponderance of the evidence that claim element 1[c1] of the '311 patent is practiced by any of the Accused Products.

f) 1[c2] "[the flow control device comprising] a flow rate controller to control air flow through the channel according to the measured temperature."

For the reasons explained in the First *Markman* Order, (Order No. 28), this claim term is subject to 35 U.S.C. § 112, ¶ 6. It is indefinite for lack of structure disclosed in the claims or specification for performing the recited function. (Order No. 28 at 47-49.).

In the alternative, if the claim construction ruling for this claim term is not upheld on appeal and it is determined on appeal, that there is sufficient structure to avoid application of 35 U.S.C. § 112, ¶ 6, then it is a finding of this ID that Samsung has proven by a preponderance of evidence that the Accused Products practice this claim element.

Samsung's proposed claim construction is that this claim term either does not require construction or is subject to its plain meaning "device, such as a circuit or chip for controlling a fan, [to control air flow through the channel according to the measured temperature]." (CRBr. at 26; *see also* CMBr. at 21-23.). Dr. Smith testified that a POSITA would have understood a flow rate controller to mean "an electronic circuit, an integrated circuit, a computer chip, maybe called a microprocessor." (Tr. (Smith) at 493:11-25.). Neither MRI nor its experts offered a different plain and ordinary meaning during the Hearing.

(i) Dr. Smith identified a chip in the Accused Products he contends is the claimed flow rate controller.

Dr. Smith presented photographs and excerpts from technical manuals for MRI's Generation 15 55" single-sided product (JX-0869C.0052-53) that depict a chip, referred to in the technical manuals as [redacted], that he contends is the claimed flow rate controller. (Tr. (Smith) at 492:16-493:10.). Samsung presented photographs of the digital controller board's structure from MRI's documentation, which are reproduced below. (CBr. at 68.).

Figure 32: Structure of MRI's [redacted]rd from CBr. at 68



(CIBr at 68 (citing JX-0897C.0066 (technical manual for MRI's Generation 15 86" single-sided product)).).

(ii) Mr. Schuch and Mr. Goodin described how the Accused Products control the [redacted] based on [redacted]

MRI's software engineer, Mr. John Schuch,[39] described the following software functionalities (each is called a "view") for the Accused Products:

Software	Function
BrightVu	[redacted]
GeoVu	
CoolVu	
StatusVu	

(Tr. (Schuch) at 919:6-923:10, 931:1-932:2.)

Mr. Schuch testified that the CoolVu software that runs on all of the Accused Products [redacted].[40] (Tr. (Schuch) at 933:3-934:3; *see also* Tr. (Goodin) at 416:23-418:21, 419:9-

[39] At the time of the Hearing, Mr. John Schuch was MRI's Vice President of software engineering and had been an MRI software engineer for about seventeen (17) years. (Tr. (Schuch) at 917:22-918:4.). Mr. Schuch leads the software development team that writes all the software for MRI's products. (*Id.* at 918:6-919:5.).

[40] In the cited testimony, Mr. Schuch referred generally to [redacted] at issue in this Investigation. Mr. Schuch's testimony on this point was not contradicted by any other

420:24 ([redacted] Tr. (Smith) at 494:1-11 (airflow in the Accused Products is [redacted]); JX-0173C.0003 (Product Requirements Document for Generation 15 55" single-sided product); CX-0420 [redacted] source code file for CoolVu); CX-0424 ([redacted] source code file for CoolVu).)

Mr. Schuch described the operation of CoolVu as reflected in the CoolVu source code, particularly with respect to the [redacted] (Tr. (Schuch) at 923:11-926:11.). Mr. Schuch testified that there is [redacted] Consequently, [redacted] (*Id.* at 926:12-930:13.).

Samsung's expert Mr. Rich Goodin analyzed MRI's CoolVu source code. (Tr. (Goodin) at 411:24-413:22.). Mr. Goodin described how he accessed and reviewed the MRI source code and testified that, based on his review, he determined that a section of code called [redacted] (*Id.* at 413:24-420:19.).

A summary of Mr. Goodin's description of how the source code works is reproduced below from his demonstrative slides:

witness and was not impeached on cross examination.

Figure 33: Mr. Goodin's Summary of CoolVu Source Code Functionality (excerpt of CDX-0007C.0009)



(CDX-0007C.0009; Tr. (Goodin) at 417:8-418:9.).

Mr. Goodin also provided the following flow diagram, Figure 34, that reflects his conclusions:

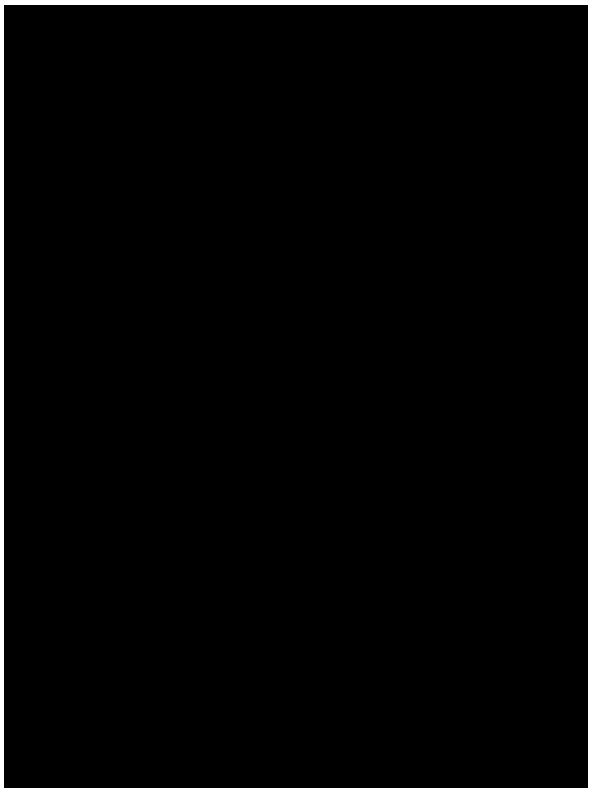
Figure 34: Mr. Goodin's Summary of Conclusions (excerpt of CDX-0007C.0013)



(CDX-0007C.0013; Tr. (Goodin) at 427:24-428:8.).

Finally, Samsung's expert, Mr. Goodin, also testified that, in the source code definition of [redacted] (Tr. (Goodin) at 419:22-420:24.). Mr. Goodin described how, [redacted] However, [redacted] (Tr. (Goodin) at 422:5-424:9.). Mr. Goodin provided an annotated depiction of a BoldVu product with the back removed from JX-0901C.0042, which depicts the two (2) closed loop fans:

Figure 35: Mr. Goodin's Annotation of Depiction of BoldVu Product with Back Cover Removed (excerpt of CDX-0007C.0005)



(CDX-0007C.0005; Tr. (Goodin) at 413:6-15.).

Based on the foregoing testimony of Dr. Smith, Mr. Goodin, and Mr. Schuch, it is a finding of this ID that the Accused Products have a flow rate controller [redacted] as Samsung proposes construing that claim term, and, that the Accused Products have software that controls [redacted]

(iii) MRI's non-infringement theory that because the Accused Products [redacted] then they also do not control airflow through the channel is rejected.

One of MRI's non-infringement theories is that the Accused Products do [redacted] (RRBr. at 59.). According to MRI and its expert Mr. Flasck, that means that the Accused Products also do not "control" airflow. (RRBr. At 59; Tr. (Flasck) at 1008:12-1009:13 [redacted] MRI's non-infringement theory requires an interpretation that "control" means or is the same as [redacted] Since there is no dispute that the Accused Products [redacted] (Tr. (Schuch) at 922:9-21), according to MRI there can be no infringement.

MRI's non-infringement theory is rejected because it appears to be an attempt to argue a claim construction for this term for the first time in its Post-Hearing Brief, and is therefore waived under Ground Rule 1.14.1 ("arguments that do not appear in the initial *Markman* briefs shall be deemed waived") and Ground Rule 7.2 ("contentions and theories of the case not set forth in detail [in the pre-hearing brief] shall be deemed abandoned or withdrawn").

Even if what appears to be MRI's belated claim construction argument were to be

considered and adopted, MRI's non-infringement theory would be and is rejected because MRI has not cited to any intrinsic evidence in the patent at issue to support its position that "control" must be limited to [redacted] Therefore, it is a finding of this ID that there is no intrinsic support for MRI's analysis, argument, or conclusion. MRI's claim construction argument is also rejected. To the extent MRI's argument is an infringement argument rather than a claim construction argument, neither MRI nor Mr. Flasck cited any corroborating evidence for Mr. Flasck's conclusory testimony that "controlling" requires [redacted] It is a finding of this ID that there is no corroborating evidence of record in this Investigation.

It is also a finding of this ID that Dr. Smith's, Mr. Goodin's, and Mr. Schuch's testimony describing how the Accused Products [redacted] is persuasive evidence that the Accused Products control airflow based on temperature as required by Samsung's proposed construction of the "flow rate controller" claim term.

(iv) MRI's non-infringement theory based on controlling the speed of the [redacted] is rejected.

MRI's other non-infringement theory is that the Accused Products [redacted]. (RRBr. at 60-61.). According to MRI, because the Accused Products [redacted], the Accused Products cannot control airflow according to "the measured temperature," i.e., what MRI refers to as the [redacted] (*Id.*).

The issue is whether the claim language "according to the measured temperature" precludes other temperatures from being measured and considered when controlling the fans.

MRI's argument again appears to be an attempt to argue claim construction for this term

for the first time in its Post-Hearing Brief, and is therefore waived under Ground Rule 1.14.1 ("arguments that do not appear in the initial *Markman* briefs shall be deemed waived") and Ground Rule 7.2 ("contentions and theories of the case not set forth in detail [in the pre-hearing brief] shall be deemed abandoned or withdrawn").

Even if what appears to be MRI's belated claim construction argument were considered, MRI has not cited to intrinsic evidence to support its position that "the measured temperature" precludes other temperatures. Consequently, MRI's argument suffers from a failure of proof. It is a finding of this ID that there is no such intrinsic support to MRI's argument and theory. MRI's claim construction argument and by extension its non-infringement theory are therefore rejected.

It is a finding of this ID, based on the testimony and evidence from Dr. Smith, Mr. Schuch, and Mr. Goodin referenced above, that Samsung has proven by a preponderance of evidence that claim element 1[c2] of the '311 patent is practiced by the Accused Products.

5. Claim 2: "the liquid crystal display device according to claim 1, wherein the channel comprises: an air inlet to guide air into the channel; and an air outlet to discharge air from the channel."

Assuming that the Accused Products practice claim 1 of the '311 patent, then MRI does not dispute that the Accused Products practice claim 2 of the '311 patent. (CBr. at 71; RRBr. at 61.). Therefore, because there is no dispute, and because Samsung's evidence is unrebutted, it is a legal and factual finding that Samsung has proven by a preponderance of evidence that the Accused Products practice the elements of claim 2 of the '311 patent. Additionally, as an extension, if it were determined that they infringe claim 1 of the '311 patent, then they also would literally infringe the elements of claim 2 of the '311 patent. (Tr. (Smith) at 495:5-17; Tr. (Flasck) at 1016:3-13 JX-0598C.).

Because MRI has not disputed that the Accused Products practice claim 2 of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim term under Ground Rule 10.1.

6. Claim 3: "the liquid crystal display device according to claim 2, wherein the flow control device further comprises a fan to force air through the channel, wherein the flow rate controller controls the fan according to the detected temperature."

MRI did not dispute that the Accused Products practice claim 3 of the '311 patent other than to reiterate their arguments regarding claim element 1[c2].[41] (CBr. at 71-72; RRBr. at 61.). Therefore, it is a legal and factual finding that Samsung has proven by a preponderance of evidence that the Accused Products practice the elements of claim 3 of the '311 patent. Therefore, if it were determined that they infringe claim 2 of the '311 patent, then they also would literally infringe the elements of claim 3 of the '311 patent. (Tr. (Smith) at 496:2-6; Tr. (Goodin) at 417:8-418:9; Tr. (Schuch) at 936:15-937:2; Tr. (Brown) at 873:22-874:3; Tr. (Flasck) at 1016:7-13.).

Because MRI has not disputed that the Accused Products practice claim 3 of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim element under Ground Rule 10.1.

7. Claim 4 is Not Infringed: "the liquid crystal display device according to claim 3, wherein: the flow rate controller controls fan such that the air in the channel has a velocity in a range of 4 to 14 m/s.

MRI did not dispute that the Accused Products practice claim 4 of the '311 patent other

[41] The claim element that Samsung denotes 1[c2] is denoted by MRI as 1[e].

than to reiterate their arguments regarding claim element 1[c2].[42] (CBr. at 72-73; RRBr. at 61-62.). Therefore, it is a legal and factual finding that Samsung has proven by a preponderance of evidence that the Accused Products practice the elements of claim 4 of the '311 patent.

If the non-infringement finding for claim 1 is reversed, then it is a determination of this ID that the Accused Products infringe claim 4. (Tr. (Smith) at 496:7-18; Tr. (Gale) at 361:22-362:8.).

Because MRI has not disputed that the Accused Products practice claim 4 of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim element under Ground Rule 10.1.

8. Claim 6 is Not Infringed: "the liquid crystal display device according to claim 1, wherein: the width of the channel is in a range of 5 to 25 mm."

MRI did not dispute that the Accused Products practice claim 6 of the '311 patent. (CBr. at 73; RRBr. at 62.). Moreover, given the weight of the evidence that Samsung introduced during the hearing, it is a legal and factual finding that Samsung has proven by a preponderance of evidence that the Accused Products practice the elements of claim 6 of the '311 patent. If it were determined that the Accused Products infringe claim 1 of the '311 patent, then they also would literally infringe the elements of claim 6 of the '311 patent. (Tr. (Smith) at 496:19-497:9; Tr. (Flasck) at 1016:3-6.).

Because MRI has not disputed that the Accused Products practice claim 6 of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived

[42] The claim element that Samsung denotes 1[c2] is denoted by MRI as 1[e].

its right to present any argument or evidence on appeal with respect to this claim term under Ground Rule 10.1.

9. Claim 13 is Not Infringed

For claim 13 of the ’311 patent, MRI only disputed whether the Accused Products include a “flow control device” as recited in claim element 13[d].

a) 13[pre]: “A display device, comprising”

b) 13[a]: “a liquid crystal panel to display an image”

c) 13[b]: “a protection panel to protect the liquid crystal panel”

d) 13[c]: a channel formed between the liquid crystal panel and the protection panel; and”

MRI did not dispute that the Accused Products practice claim elements 13[pre], 13[a], 13[b], and 13[c] of the ’311 patent. (CBr. at 73-74; RRBr. at 62-64.). Therefore, it is a legal and factual finding that Samsung has proven by a preponderance of evidence that the Accused Products practice the foregoing elements of claim 13 of the ’311 patent. Therefore, they also literally infringe the foregoing elements of claim 13 of the ’311 patent. (Tr. (Smith) at 497:16-498:14; Tr. (Flasck) at 1003:1-6; JX-0277C; JX-0598C; JX-0173C.0003, 0004.).

Because MRI has not disputed that the Accused Products practice claim elements 13[pre], 13[a], 13[b], and 13[c] of the ’311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim term under Ground Rule 10.1.

e) 13[d]: "a flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel, the flow control device comprising: a fan to force air through the channel; a temperature sensor to measure the temperature of air discharged from the channel; and a flow rate controller control the fan according to the measured temperature to regulate the flow rate of the air in the channel."

MRI did not dispute that the Accused Products practice claim element 13[d] of the '311 patent other than to reiterate their arguments regarding claim element 1[c2].[43] (CBr. at 74-75 ("[a]s to limitation 13[d], the flow control device discussed above with respect to limitation 1[c] [redacted] RRBr. at 62 ("[f]or the same reasons discussed above with respect to limitation 1[e], the Accused Products do not satisfy limitation 13[d].").

For the reasons provided in Order No. 28, the claim term "flow rate controller control the fan according to the measured temperature" is subject to 35 U.S.C. § 112, ¶ 6. It is indefinite for lack of structure disclosed in the claims or specification for performing the recited function. (Order No. 28 at 47-49.).

Samsung's claim construction was that this claim term either does not require construction or is subject to its plain meaning "device, such as a circuit or chip for controlling a fan, [to control air flow through the channel according to the measured temperature]." (CRBr. at 26; *see also* CMBr. at 21-23.). Dr. Smith testified that a POSITA would have understood a flow rate controller to mean "an electronic circuit, an integrated circuit, a computer chip, maybe called a microprocessor." (Tr. (Smith) at 493:11-25.). Neither MRI nor its experts offered a different plain and ordinary meaning. Therefore, if the claim construction in Order No. 28 is not upheld,

[43] The claim element that Samsung denotes 1[c2] is denoted by MRI as 1[e].

then it is a finding that Dr. Smith's interpretation of the plain and ordinary meaning of this claim would be correct.

Samsung presented the same infringement theory for claim element 13[d] as it presented for claim elements 1[c], 1[c1], 1[c2], and claim 3. (CBr. at 74 ("("[a]s to limitation 13[d], the flow control device discussed above with respect to limitation 1[c] [redacted] MRI did not offer a rebuttal other than the same argument MRI made in rebuttal for claim element 1[c], 1[c1], and 1[c2]. (RRBr. at 62 ("[f]or the same reasons discussed above with respect to limitation 1[e], the Accused Products do not satisfy limitation 13[d]."). Therefore, for the same reasons as already stated above for claim elements 1[c], 1[c1], 1[c2], and for claim 3 it is a finding that Samsung has failed to prove by a preponderance of evidence that the Accused Products practice claim element 13[d] of the '311 patent and therefore the Accused Products do not literally infringe claim element 13[d] of the '311 patent. (Tr. (Smith) at 497:16-499:15; Tr. (Goodin) at 417:8-418:9; Tr. (Schuch) at 938:4-21; CX-0419C; JX-0173C.0003-4; JX-0869C.0052-53).).

10. The Accused Products do not directly infringe claim 4, claim 6, or claim 13 of the '311 patent.

Samsung has failed to prove, by a preponderance of evidence, that every element of any one of the Asserted Claims is satisfied by the Accused Products. The Accused Products do not have the claimed "temperature sensor" as recited in claim element 1[c1] and in claim element 13[d] of the '311 patent. Therefore, it is a finding of this ID that MRI's Accused Products do not directly infringe the recited claims in this paragraph.

11. The Accused Products do not indirectly infringe claim 4, claim 6, or claim 13 of the '311 patent.

Samsung argued that the Accused Products indirectly infringe claims 4, 6, and 13 of the

’311 patent based upon the same underlying acts of alleged direct infringement that Samsung contended support its allegations that MRI’s Accused Products indirectly infringe the ’117 patent. (CBr. at 75.).

Proving indirect infringement requires proof of an underlying predicate act of direct infringement. *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 572 U.S. 915, 921, 134 S. Ct. 2111, 2117, 189 L. Ed. 2d 52 (2014) (“our case law leaves no doubt that inducement liability may arise “if, but only if, [there is] ... direct infringement”); *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 526, 92 S. Ct. 1700, 1706, 32 L. Ed. 2d 273 (1972) (“it is established that there can be no contributory infringement without the fact or intention of a direct infringement”).

Because Samsung has failed to prove an underlying predicate act of direct infringement, Samsung has also failed to prove that the Accused Products indirectly infringe the ’311 patent. Therefore, it is a finding of fact and of law that MRI’s Accused Products do not indirectly infringe the ’311 patent.

D. The ’253 Patent

U.S. Patent No. 8,842,253 (“the ’253 patent”), titled “Liquid Crystal Display Device Having Air Conditioner,” was filed on February 28, 2013, as U.S. Patent Application Serial No. 13/780,137 (“the ’137 application”). (JX-0003 (’253 Patent) at (54), (22), (21).). The ’137 application issued as the ’253 patent on September 23, 2014, and names Jin Sub Kim, Jin Hyun Cho, Sung Ki Kim, and Joon Kang as the inventors. (*Id.* at (72), (45).). The ’137 application is a continuation of U.S. Patent Application Serial No. 13/530,312 filed on June 22, 2012 which is a continuation o the ’832 application filed on June 5, 2009. The ’253 patent claims priority to Korean Patent Application No. 10-2008-0055687, filed on June 13, 2008. (*Id.* at (30).).

1. The Specification of the ’253 Patent

The ’253 patent provides, among other things, an LCD device with a heat dissipation structure to remove or release heat incident on a front side of the liquid crystal panel. (JX-0003 (’253 Patent) at 1:52-56.). This is achieved by providing a liquid crystal panel, a protection panel arranged a predetermined distance from the liquid crystal panel, and a flow control device to impart turbulence to an air flow in a channel, which is defined between the liquid crystal panel and the protection panel. (*Id.* at 1:65-2:4.). The flow control device may be a cooling fan to blow air in the channel, may include a temperature sensor to detect a temperature of air having passed through the channel, and may include a flow control device to regulate a flow rate of air in the cooling fan. (*Id.* at 2:5-13.).

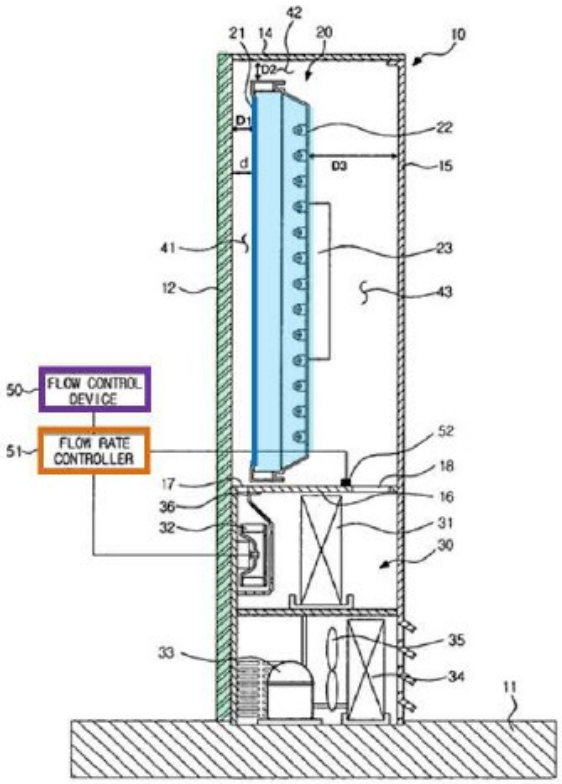
For example, Figures 2 and 3 of the ’253 patent, reproduced below as Figure __, depict a housing 10 partitioned into upper and lower spaces by a partition 16. In the upper space there is a liquid crystal panel assembly 20 with liquid crystal panel 21, backlight unit 22, and circuit board 23 to control operation of the liquid crystal panel 21 and the backlight unit 22.

The liquid crystal panel assembly 20 is spaced apart from the protection panel 12, the rear panel 15, and the top panel 14. Air in the housing passes through first channel 41 defined between the liquid crystal panel assembly 20 and the protection panel 12, thereby cooling the front of the liquid crystal panel 21, then the air flows through second channel 41 defined between the liquid crystal panel assembly 20 and the top panel 14, and then the air through a third channel defined between the liquid crystal panel 20 and the rear panel 15, thereby cooling the circuit board 23 and the backlight unit 22.

The lower space has an air conditioner 30 with an evaporator 31, a cooling fan 32, compressor 33, condenser 34, and air blowing fan 35. After flowing through channels 1, 2, and

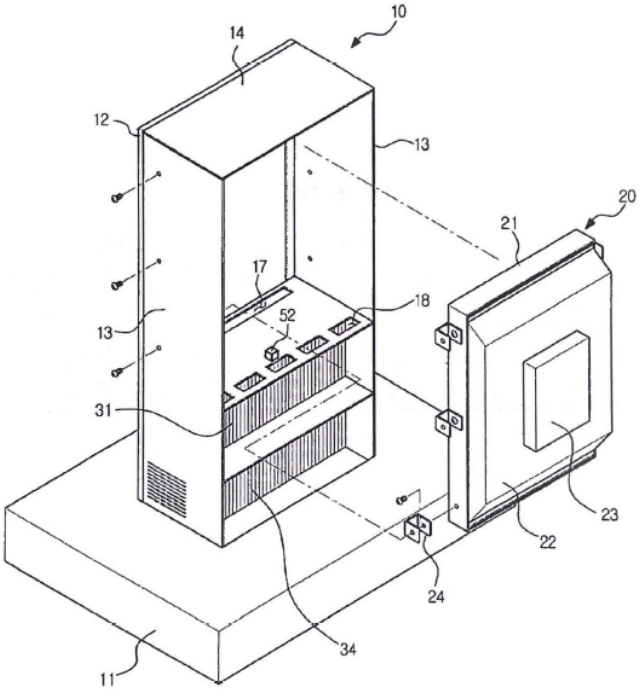
3, air flows through opening 18 toward the evaporator 31. Air blown by the cooling fan 32 moves to the first channel 41 via air inlet 17 and there is an exit 36 arranged at the inlet 17 such that air emerging from the exit 36 passes through the first channel 17. (*Id.* at 5:4-6:45.). Figures 2 and 3 of the ’253 patent are reproduced below in Figures 36 and 37.

Figure 36: Annotated Version of Figure 2 of the ’253 Patent from RMBr. at 12



(*Id.* at Figure 2, 5:1-6:45.).

Figure 37: Figure 3 of the ’253 Patent



(*Id.* at Figure 3, 5:1-7:9.).

According to the ’253 patent, if the air passing through the first channel 41 is turbulent, the heat removed from the front side of the liquid crystal panel 21 is greater as compared to when there is laminar flow in the first channel 41. (*Id.* at 6:28-41.). Therefore, the liquid crystal display device includes flow control device 50 to regulate the flow of air in the cooling fan 32 based on the temperature around the liquid crystal panel assembly 20 such that turbulent flow is maintained in the first channel 41. (*Id.* at 8:53-9:27.).

The ’253 patent claims are directed to “a display device that has a display assembly enclosed inside a housing and, for most claims, controlling an air flow to a channel between a display panel of the display assembly and a front side of the housing.” (Joint Technology Stipulation (Doc. ID No. 794829) at 3.).

2. The Claims of the '253 Patent

At issue in this Investigation is claim 12 of the '253 patent, which depends from claim 11:

> 11. A display device, comprising:
>
> a housing;
>
> a display assembly enclosed inside the housing;
>
> a sensor to measures a temperature of air in the housing;
>
> a fan configured to blow the air around the display assembly; and
>
> a control device to control the fan to maintain a temperature of the housing
>
> wherein the sensor transmits a resulting signal to the control device and the control device controls the fan based on the resulting signal.
>
> 12. The display device according to claim 11, wherein the display assembly is enclosed inside the housing to form a front channel between a display panel of the display assembly and a front side of the housing.

3. Claim Construction for the '253 Patent

In the First *Markman* Order, (Order No. 28), the following terms of the '253 patent were construed:

Claim Term	Adopted Construction
Display assembly ('253 patent, independent claim 11)	Module that includes a display panel As part of the explanation of the construction, but not part of the construction, the "display assembly" may, but is not required, to have a backlight and a circuit board to control the display panel and the backlight. (Order No. 28 at 32-37.)
Control device [to control the fan to maintain a temperature of the housing] ('253 patent, independent claim 11)	Not construed in the first *Markman* Order (Order No. 28). Reserved for the evidentiary hearing. (Order No. 28 at 44-47.)

In the Second *Markman* Order (Order No. 32), the following terms of the '253 patent were construed:

Claim Term	Adopted Construction
Display assembly ('253 patent, independent claim 11)	Module that includes a display panel As part of the explanation of the construction, but not part of the construction, the "display assembly" may, but is not required, to have a backlight and a circuit board to control the display panel and the backlight. (Order No. 32 at 8-13.)
Control device [to control the fan to maintain a temperature of the housing] ('253 patent, independent claim 11)	Subject to 35 U.S.C. § 112, ¶ 6 *Function*: to control the fan to maintain a temperature of the housing *Structure*: (None) Indefinite under 35 U.S.C. § 112 (Order No. 32 at 26-33.)

4. Claim 11

Samsung argued that the Accused Products infringe claim 12 of the '253 patent, which depends from independent claim 11. MRI argued that the Accused Products do not practice claim elements 11[b] and 11[d] based only on a rejected claim construction argument that the claimed "display assembly" requires a backlight. In other words, if the claim construction adopted in Order No. 28 is upheld, then MRI's non-infringement argument cannot succeed.

MRI also argued that the Accused Products do not practice claim elements 11[e] and 11[f] based on the theory that the Accused Products do not "maintain" a temperature of the housing as required by the claim language. MRI also argued that the Accused Products do not practice claim element 11[f] based on the theory that the Accused Products do not control the

[redacted] based only on a signal from the [redacted].

For the reasons explained below, this ID finds in favor of Samsung's arguments that Samsung has met its evidentiary burden of proof with respect to claim elements 11[b] and 11[d]. However, this ID finds in favor of MRI's non-infringement argument and evidence for claim element 11[e] and by extension for claim element 11[f]. However, this decision finds in Samsung's favor with respect to MRI's independent non-infringement theory for claim element 11[f] because Samsung has the better, more persuasive evidence based on a preponderance standard for claim element 11[f]. Therefore, this ID finds in favor of MRI based on the evidence that the Accused Products do not practice claim elements 11[e] and 11[f] and therefore do not literally infringe claim 12 of the '253 patent.

a) **11[pre]: "A display device, comprising:"**

b) **11[a]: "a housing"**

c) **11[b]: "a display assembly enclosed inside the housing"**

d) **11[c]: "a sensor to measure a temperature of air in the housing"**

e) **11[d]: "a fan configured to blow the air around the display assembly; and"**

MRI did not dispute that the Accused Products practice claim elements 11[pre], 11[a], 11[b], 11[c], and 11[d] of the '253 patent, so long as the adopted claim constructions are upheld. However, MRI maintains its claim construction dispute with respect to the claimed "display assembly," which implicates only claim elements 11[b] and 11[d]. (CBr. at 91-94; RRBr. at 69-76.).

MRI's claim construction dispute with respect to the claim term "display assembly" rises and falls on whether the construction of that term as adopted in this Investigation, i.e., "module

that includes a display panel," means the claimed "display assembly" must include a backlight. (RRBr. at 75 (citing MRI's Post-Hearing *Markman* Brief (Doc. ID 799055) at 18-20).). For the reasons provided in the First *Markman* Order, (Order No. 28 at 35-37), it is a finding of this ID that the claimed "display assembly" may, but is not required to, include a backlight.

The reason, as is also explained in the Second *Markman* Order, (Order No. 32 at 8-13), is because the specification of the '253 patent is not limited to LCDs, but rather can also include panels, such as OLEDs, that do not require backlights. Therefore, MRI's non-infringement argument for claim elements 11[b] and 11[d] based on its claim construction argument that the claimed "display assembly" must have a backlight is rejected. Neither MRI's originally proposed claim construction nor its non-infringement theory can succeed given the intrinsic evidence cited in the specification and given the documentary and testimonial evidence that was presented during the Hearing about the scope of the '253 patent. The claimed "display assembly" includes both LCDs with a backlight as well as non-LCDs without a backlight. (JX-0003 ('253 Patent) at 3:12-15, 5:11-16, Figures 1 and 2.).

Therefore, it is a finding that Samsung has proven by a preponderance of documentary and testimonial evidence that the Accused Products practice the foregoing elements of claim 11 of the '253 patent. They also literally infringe the foregoing elements of claim 11 of the '253 patent. (Tr. (Smith) at 500:4-501:18; Tr. (Flasck) at 1020:17-21, 1024:13-21; Tr. (Brown) at 639:10-15, 851:20-25; JX-0909C; JX-0173C.0003; JX-0277C; JX-0869C.0002; JX-0348C; JX-0598C.).

f) 11[e]: "a control device to control the fan to maintain a temperature of the housing"

For the reasons provided in the Second *Markman* order, (Order No. 32), this claim term is

subject to 35 U.S.C. § 112, paragraph 6. (Order No. 32 at 26-33.). It is indefinite because the claims and specification fail to recite sufficiently definite structure- for performing the function to "maintain a temperature of the housing." (*Id.*). However, if that claim construction is not upheld, then for the following reasons the Accused Products do not practice this claim element.

Samsung argued that the [redacted] in the Accused Products is the claimed "control device," which is the same component that Samsung contends qualifies as the claimed "flow rate controller" recited in claim element 1[c2] of the '311 patent. (CBr. at 94-95.). Samsung presents much the same arguments and evidence for claim element 11[e] of the '253 patent as for claim element 1[c2] of the '311 patent. (*Id.*). If the construction of "control device" in Order No. 32 is not upheld, then it is a finding that the [redacted] in the Accused Products is the claimed "control device."

Samsung's expert Mr. Goodin testified that the Accused Products attempt to avoid excessive temperatures [redacted] (Tr. (Goodin) at 417:8-425:4.). According to Samsung, the CoolVu software [redacted] (CBr. at 95; *see also* Tr. (Smith) at 502:8-12.).

In other words, Samsung's argument is that the claim language "maintain a temperature of the housing" is satisfied if the Accused Products [redacted]

However, claim element 11[e] of the ’253 patent differs from claim element 1[c2] of the ’311 patent because claim element 11[e] of the ’253 patent says the control device is to control the fan to ***maintain*** the temperature of the ***housing***, whereas claim element 1[c2] of the ’311 patent does not recite maintaining temperature at all. MRI argued that this difference is material because to “maintain a temperature of the housing” as recited in claim element 11[e] of the ’253 patent means something different than to “control air flow . . . according to the measured temperature” as recited in claim element 1[c2] of the ’311 patent. (RRBr. at 69-74.).

MRI relied for its arguments upon the difference between the ’253 patent’s title “Liquid Crystal Display Device Having Air Conditioner,” (JX-0003 (’253 Patent) at 2), and the ’311 patent’s title, “Liquid Crystal Display Device Including Airflow Channel,” (JX-0002 (’311 Patent) at 2.). (RRBr. at 70-71.). MRI also relied on Mr. Flasck’s testimony that maintaining a temperature requires “more than simply turning on and controlling fans,” it requires “that you have a set temperature that you want to achieve and you want that temperature to be – to be constant, that is, not changing over time.” (Tr. (Flasck) at 1021:21-1022:19.).

Several of MRI’s witnesses including its founder Mr. Dunn, its software engineer Mr. Schuch, and its expert Mr. Flasck, testified that the Accused Products cannot “maintain” their temperature because the Accused Products [redacted] (Tr. (Dunn) at 722:22-723:4 (Accused Products do not have [redacted]); Tr. (Schuch) at 925:4-18 (nothing in the CoolVu software indicating that the Accused Products [redacted]); Tr. (Flasck) at 1021:21-1022:3 (Accused Products cannot maintain a temperature [redacted]).).

Samsung counterargued that MRI and Mr. Flasck attempted to write new language into

the claim that requires setting a specific temperature to maintain and are therefore making untimely new claim construction arguments. (CBr. at 96.). Samsung also argued that, because the Accused Products [redacted], and because the source code indicates that the Accused Products [redacted], then the Accused Products "maintain" the temperature as required by the claim language. (*Id.*).

(i) The scope of the claim term "maintain."

The Parties' competing arguments and evidence over this claim element imply a dispute over the scope of the claim term "maintain." (*See, e.g.*, (Tr. (Goodin) at 417:8-425:4 (Accused Products [redacted]); Tr. (Flasck) at 1021:21-1022:19 (Accused Products [redacted].). Samsung's arguments and evidence necessarily imply that "maintain" a temperature encompasses attempting to prevent the temperature from exceeding a threshold. MRI's arguments and evidence necessarily imply that "maintain" a temperature requires keeping the temperature at a set point.

To resolve the Parties' dispute over the scope of "maintain," we first consult the claim language. Claim 1 of the '311 patent does not recite the "maintain a temperature" language of claim 11 of the '253 patent. That difference in claim language does suggest that "maintain a temperature of the housing" in claim 11 of the '253 patent does not have the same meaning as the "control air flow through the channel according to the measured temperature" language of claim 1 of the '311 patent. However, the intrinsic evidence does not clarify what the difference in meaning is. Although the title of the '253 patent references the LCD device having an air

conditioner whereas the ’311 patent title does not, nothing in the claim language requires the presence of an air conditioner. It would be inappropriate to rewrite the claims to require an air conditioner based solely on one reference to an air conditioner in the title of the patent. *Moore U.S.A., Inc. v. Standard Reg. Co.*, 229 F.3d 1091, 1111 (Fed. Cir. 2000) (“the bar on importing limitations from the written description into the claims applies no less forcefully to a title”) (citing *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1312 (Fed. Cir. 1999) (“[I]f we do not read limitations into the claims from the specification that are not found in the claims themselves, then we certainly will not read limitations into the claims from the patent title”)). Therefore, it is a finding of law that the ’253 patent specification does not impose any special definition or disavowal such that the claim language “maintain a temperature of the housing” requires the presence of an air conditioner.

With respect to the prosecution history, MRI did not argue that it provides a special definition for this claim term or otherwise limits its meaning or scope. Upon review of the prosecution history, it is a finding of law that the prosecution history does not provide a special definition or a disavowal regarding this claim term.

Neither Samsung nor MRI offered dictionaries, treatises, or other extrinsic evidence to corroborate their respective experts’ interpretation of this claim term. However, given the competing interpretations of the expert witnesses and the importance of temperature regulation in the context of the technology at issue, this is not a situation in which the meaning of the claim language as understood by a person of skill in the art is “readily apparent even to lay judges,” such that claim construction “involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005).

During *Markman* proceedings, the Parties neither requested nor argued for a construction of this claim term. (*See, e.g.*, Joint CC Chart.). Moreover, the Parties neither argued nor presented evidence that this claim term has a single plain and ordinary meaning. Therefore, this is also not a situation in which the Parties offer differing views on the plain and ordinary meaning. Thus, there is no affirmative obligation in this case to resolve a legal dispute over claim scope. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008) (determination that a claim term "needs no construction" or has its plain and ordinary meaning "may be inadequate when a term has more than one 'ordinary' meaning or when reliance on a term's 'ordinary' meaning does not resolve the parties' dispute").

(ii) Samsung did not prove by a preponderance of evidence that the Accused Products "maintain" a temperature of the housing.

It is a finding of this ID that there is no factual dispute about how the Accused Products function. Samsung's expert Mr. Goodin credibly and persuasively testified about how the Accused Products [redacted] (Tr. (Goodin) at 417:8-425:4.). However, it is also a finding that the testimony of Samsung's infringement expert Dr. Smith, that when the Accused Products [redacted] is completely conclusory. (Tr. (Smith) at 502:8-12.). It is a finding of law that Samsung failed to satisfy its burden of proving by a preponderance of evidence that the Accused Products satisfy this claim element.

Moreover, the testimony of MRI's non-infringement expert Mr. Flasck, while also somewhat conclusory, at least reasons that the '253 patent title recites an air conditioner, which can have a set point temperature, and so a set point temperature is allegedly required. (Tr.

(Flasck) at 1019:19-1020:16, 1021:21-1022:19; *see also* (Tr. (Dunn) at 721:9-724:25 (Question: "Mr. Dunn, are there scenarios in which [redacted] Answer: "Absolutely, yes," 723:15-724:25; Tr. (Schuch) at 922:22-923:10.). It is a finding of fact that Mr. Flasck's testimony is more credible and supported by evidence. Therefore, the weight of the evidence favors MRI.

MRI's other non-infringement argument is that the referenced claim element of the '253 patent requires maintaining the temperature of the "housing," [redacted] (RRBr. at 72-73 ("the claim requires that a 'temperature of the housing' be maintained—not simply that 'a temperature of air in the housing' be maintained."). MRI argued that Dr. Smith failed to conduct testing to correlate the temperature of [redacted] to the temperature of the housing. (RRBr. at 73; Tr. (Smith) at 630:3-17, 631:6-23.). However, Samsung correctly pointed out that the plain language of the claim does not require the temperature of the housing to be measured. (CBr. at 96.). Therefore, MRI's non-infringement argument based on alleged failure to measure the temperature of the housing is not supported by the evidence or specification language.

g) 11[f]: "wherein the sensor transmits a resulting signal to the control device and the control device controls the fan based on the resulting signal."

Samsung argued, as it did for claim element 1[c2] of the '311 patent, that the claimed "control device" of claim element 11[f] of the '253 patent is the [redacted] (CBr. at 96-97; Tr. (Smith) at 502:13-503:3; JX-0869C.0052, 53.). Dr. Smith testified that the technical manual for MRI's Generation 15 55" single-sided Accused Product, (JX-0869C.0052, 53), depicts the [redacted]

[redacted] (Tr. (Smith) at 502:13-503:3; CDX-0008C.0073.).

MRI's non-infringement theory is that, as an initial matter, there is no "control device" for the reasons MRI gave for claim element 11[e] of the '253 patent. (RRBr. at 74.). MRI is correct that claim element 11[f] recites the same "control device" as in claim element 11[e]. Since it is a finding of this ID that Samsung failed to prove by a preponderance that the Accused Products have the "control device" recited in claim element 11[e], it is also a finding of this ID that the Accused Products do not satisfy claim element 11[f] of the '253 patent.

In addition, MRI argued that the Accused Products do not practice claim element 11[f] o the '253 patent because the Accused Products [redacted]. Therefore, MRI argued that the Accused Products cannot control airflow according to [redacted], or "the measured temperature," i.e., or what MRI refers to as the [redacted] (RRBr. at 74-75.).

MRI's argument requires an interpretation that "the measured temperature" means "only the measured temperature and no other temperature." Again, MRI appeared to be arguing claim construction for this term for the first time in its Post-Hearing Brief. MRI has waived any such argument under Ground Rule 1.14.1 ("arguments that do not appear in the initial *Markman* briefs shall be deemed waived") and Ground Rule 7.2 ("contentions and theories of the case not set forth in detail [in the pre-hearing brief] shall be deemed abandoned or withdrawn").

Even if MRI had not waived its belated claim construction argument, it would be rejected because MRI has not cited to any intrinsic evidence that limits "the measured temperature" to

"only the measured temperature." (RRBr. at 74-75 (failing to cite any intrinsic evidence).).

It is a finding of this ID that there is no intrinsic support for limiting the claimed "measured temperature" to "only the measured temperature."

Moreover, neither MRI nor its experts submitted competent corroborating extrinsic evidence such as technical treatises or dictionaries to support their claim interpretation. MRI's non-infringement theory constitutes unsupported, belated attorney argument. MRI's claim construction argument and by extension its non-infringement theory are therefore rejected.

Although MRI's non-infringement argument based on interpreting claim element 11[f] of the '253 patent to exclude multiple temperatures is rejected for lack of intrinsic support and lack of corroborating extrinsic evidence, it is a finding of law that the Accused Products do not practice this claim element because this claim element recites the "control device" of claim element 11[e] of the '253 patent. For the reasons set forth above for claim element 11[e], the Accused Products do not have the recited "control device."

If this ID's finding that the Accused Products do not practice claim element 11[e] is reversed, then for the foregoing reasons it is a finding that the Accused Products practice claim element 11[f].

5. Claim 12 is Not Infringed: "The display device according to claim 11, wherein the display assembly is enclosed inside the housing to form a front channel between a display panel of the display assembly and a front side of the housing."

MRI did not dispute that the Accused Products practice claim 12 of the '253 patent. (CBr. at 98; RRBr. at 69-76.). Given Samsung's evidentiary record, it is a finding that Samsung has proven by a preponderance of evidence that the Accused Products practice claim 12 of the '253 patent. (Tr. (Smith) at 503:4-13; Tr. (Flasck) at 1025:22-25; Tr. (Brown) at 865:7-10).).

If this ID's finding that the Accused Products do not practice every element of claim 11 of the '253 patent from which claim 12 depends is reversed, then for the reasons herein it is a finding that the Accused Products practice claim 12 of the '253 patent. If that were the case, then the Accused Products would also literally infringe claim 12 of the '253 patent.

Because MRI has not disputed that the Accused Products practice claim 12 of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

6. The Accused Products do not directly infringe claim 12 of the '253 patent.

Samsung has failed to prove, by a preponderance of evidence, that every element of asserted claim 12 of the '253 patent is satisfied by the Accused Products. Samsung failed to prove by a preponderance that the Accused Products have the claimed "control device" as recited in claim elements 11[e] and 11[f], which are incorporated into asserted claim 12 via claim 12's dependency from claim 11. Therefore, it is a finding of this ID that Respondents have not committed an act of direct infringement.

7. The Accused Products do not indirectly infringe claim 12 of the '253 patent.

Samsung argued that the Accused Products indirectly infringe claim 12 of the '253 patent based on the same underlying acts of alleged direct infringement that Samsung contended underly its argument that the Accused Products infringe for the '117 patent. (CBr. at 99 (internal citations omitted).).

Proving indirect infringement requires proof of an underlying predicate act of direct infringement. *Limelight Networks, Inc.*, 572 U.S. at 921; *Deepsouth Packing*, 406 U.S. at 526.

Because Samsung has failed to prove an underlying predicate act that the Accused Products directly infringe the ’253 patent, Samsung has also failed to prove that the Accused Products indirectly infringe the ’253 patent. Therefore, it is a finding of this ID that MRI’s Accused Products do not indirectly infringe the ’253 patent.

VIII. TECHNICAL PRONG OF THE DOMESTIC INDUSTRY REQUIREMENT

Complainants rely on the following claims to satisfy the technical prong of the domestic industry requirement:

- **The ’117 patent**: Independent claim 1 and dependent claim 2, which depends from claim 1, of the ’117 patent
- **The ’311 patent**: Dependent claim 4, which depends from claim 3, which depends from claim 2, which depends from claim 1; dependent claim 6, which depends from claim 1; and independent claim 13 of the ’311 patent; and
- **The ’253 patent**: Dependent claim 12, which depends from claim 11, of the ’253 patent.

A. Legal Standard

A complainant in a patent-based Section 337 investigation must demonstrate that it is practicing or exploiting the patents at issue. *See* 19 U.S.C. § 1337(a)(2) and (3); *Certain Infotainment Sys., Components Thereof, & Automobiles Containing the Same*, USITC Inv. No. 337-TA-1119, Comm’n Opinion, 2022 WL 834247, at *16 (U.S.I.T.C. Feb. 1, 2022). “It is sufficient to show that the domestic industry practices any claim of that patent, not necessarily an asserted claim of that patent.” *Id.*

The test for claim coverage for the purposes of the technical prong of the domestic industry requirement is the same as that for infringement. *Id.* The technical prong of the

domestic industry can be satisfied either literally or under the doctrine of equivalents. *Certain Marine Air Conditioning Sys., Components Thereof, & Prod. Containing the Same*, Comm'n Opinion, USITC Inv. No. 337-TA-1346, 2024 WL 1176054, at *12-13 (U.S.I.T.C. Mar. 11, 2024).

B. The '117 Patent

Samsung relied on its OH46B and OH55A-S products (collectively, "the '117 DI Products" or "Mid-Sized Products"), depicted below in Figure 38, to satisfy the technical prong of domestic industry for claims 1 and 2 of the '117 patent.

Figure 38: Dr. Smith's Demonstrative Slide Depicting the 117 DI Products



(CDX-0008C.0077 (Dr. Smith Demonstrative Slide).).

MRI only disputed that the 117 DI Products practice limitations 1[d]-1[g]. (Tr. (Flasck) at 996:21-997:13, 997:14-25, 998:1-23, 998:24-999:6.). Any argument with respect to the

preamble and limitations 1[a]-[c] is deemed abandoned, withdrawn, and/or waived under Ground Rules 7.2 and 10.1. For the reasons discussed below, it is a finding of law that the 117 DI Products practice claims 1 and 2 of the '117 patent.

1. Claim 1

a) 1[pre]: "A panel display device comprising"

MRI did not dispute that the 117 DI Products are panel display devices. (Tr. (Smith) at 508:4-19 (discussing CDX-0008C.0083); JX-1498C.0001 (OH46B Exploded Views); JX-1499C.0001 (OH55A-S Exploded Views); JX-1509C (OH46B CAD); JX-1510C (OH55A-S CAD); Tr. (Flasck) at 996:17-20.). Thus, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products meet the preamble of claim 1 of the '117 patent.

Because MRI has not disputed that the 117 DI Products practice this claim element, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim element under Ground Rule 10.1.

b) 1[a]: "a case"

MRI did not dispute that the 117 DI Products comprise a case. (Tr. (Flasck) at 996:17-20.). The 117 DI Products include a case [redacted] as demonstrated below in Figure 39. (Tr. (Smith) at 508:4-19 (discussing CDX-0008C.0083).).

Figure 39: Smith Demonstrative Demonstrating Exploded Views of the Components of the 117 DI Products



(CDX-0008C.0083 (citing JX-1498C.0001 (OH46B Exploded Views); *see also* JX-1499C.0001 (OH55A-S Exploded Views).).

Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice claim element 1[a] of the '117 patent.

Because MRI has not disputed that the 117 DI Products practice this claim element, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim element under Ground Rule 10.1.

c) 1[b]: "a display panel mounted in an interior of the case"

The 117 DI Products include a display panel mounted in an interior of the case, which MRI did not dispute. (Tr. (Smith) at 508:4-19; Tr. (Flasck) at 996:17-20.). The LCDs in the 117 DI Products are a "flat type display for displaying images." (Tr. (Smith) at 508:4-16.). The LCDs are . (Tr. (Smith) at 508:4-19 (discussing CDX-0008C.0083); JX-1498C.0001

(OH46B Exploded Views); JX-1499C.0001 (OH55A-S Exploded Views); Attachment C at 1.).

Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice claim element 1[b] of the '117 patent.

Because MRI has not disputed that the 117 DI Products practice this claim element, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim element under Ground Rule 10.1.

d) 1[c]: "at least one circuit board which controls the display panel"

The 117 DI Products include at least one circuit board that controls the display panel, which MRI did not dispute. (Tr. (Smith) at 508:20-510:2; Tr. (Flasck) at 996:17-20.). Dr. Smith explained that [redacted] control the display panel. (Tr. (Smith) at 508:20-510:2 (discussing CDX-0008C.0084-85); JX-1498C.0001 (OH46B Exploded Views); JX-1499C.0001 (OH55A-S Exploded Views); JX-1505C.0020 (OH46B Training Manual); JX-1506.0022 (OH55A-S Training Manual); JX-1503C.0001-0002 (OH46B Service Manual, § 5, Wiring Diagram); JX-1504C.0001-0002 (OH55A-S Service Manual, § 5, Wiring Diagram); CBr. at Attachment C, at 2-3.).

Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice claim element 1[c] of the '117 patent.

Because MRI has not disputed that the 117 DI Products practice this claim element, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim element under Ground Rule 10.1.

e) 1[d]: "a first cooling fluid path which cools the display panel and"

Dr. Smith testified that the 117 DI Products include a first cooling fluid path which cools the display panel. (Tr. (Smith) at 510:3-24.). He explained that the first cooling path is [redacted], thereby cooling the display panel. (Tr. (Smith) at 510:3-15 (discussing CDX-0008C.0086).).

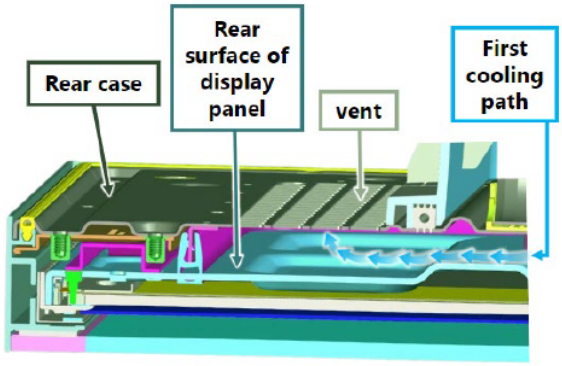
Figure 40: Smith Demonstrative with Annotated OH46B Service Manual Depicting [redacted]



(CDX-0008C.0086; JX-1500C.0001 (OH46B Service Manual, § 3, Disassembly and Reassemble); JX-1501C.0001 (OH55A-S Service Manual, § 3, Disassembly and Reassemble); JX-1507C.0017 (OH46B User Manual); JX-1508C.0017 (OH55A-S User Manual).).

Dr. Smith labeled the first cooling fluid path in a cross-sectional screenshot created from the CAD files, copied below. (Tr. (Smith) at 510:16-24).).

Figure 41: Smith Demonstrative Depicting First Cooling Fluid Path in the 117 DI Products



(CDX-0008C.0086; JX-1509C (OH46B CAD); JX-1510C (OH55A-S CAD).).

Although MRI disputed that the 117 DI Products practice this claim element, as MRI noted, Mr. Flasck did not rebut Dr. Smith's testimony. (Tr. (Flasck) at 996:17-20.). The only testimony Mr. Flasck provided on this issue is copied below.

> Q. Let's look at 1[d] and 1[g]. Were you here when Dr. Smith pointed to CAD drawings and annotated images regarding Samsung's domestic industry products?
>
> A. Yes.
>
> Q. Do those CAD drawings and annotated images that Dr. Smith pointed to for the first cooling fluid path show that air flows in a first cooling fluid path to cool the display panel as claimed?
>
> * * *
>
> A. Oh. His position is that it did, but he is incorrect.
>
> * * *
>
> Q. And have you seen any evidence in the domestic industry products that [redacted]
>
> A. No.

(Tr. (Flasck) at 996:21-997:13, 997:21-25.).

Mr. Flasck's conclusory testimony that Dr. Smith's testimony was "incorrect" without any further support is given little, if any, weight. *See, e.g.*, *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1358 (Fed. Cir. 2019) ("Conclusory expert testimony does not qualify as substantial evidence."). The lack of supporting evidence also undermines the credibility of Mr. Flasck's conclusory testimony.

Furthermore, Mr. Flasck acknowledged during cross-examination that in the 117 DI Products, [redacted]

> Q. . . . I'm showing you a demonstrative which we have marked as CDX 15.4. Do you see that on your screen?
>
> A. I see it.
>
> Q. This image depicts various features of the Samsung mid-sized domestic industry products, correct?
>
> A. Yes.
>
> Q. And you cited this in your rebuttal expert report, correct?
>
> A. Yes.

[redacted]

[redacted]

(Tr. (Flasck) at 1129:12-1130:16 (testifying about CDX-0015C.0004).).

Mr. Flasck's cross-examination demonstrative, CDX-0015C.0004, is replicated below.

Figure 42: Flasck Cross-Examination Demonstrative Showing [redacted] of the 117 DI Products

[redacted]

(CDX-0015C.0004 (citing Flasck Reb. Rpt. at ¶ 40).).

For these reasons, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice claim element 1[d] of the '117 patent.

f) 1[e]: "a second cooling fluid path which cools the circuit board"

Dr. Smith testified that the 117 DI Products also include a second cooling fluid path which cools the circuit board. (Tr. (Smith) at 510:25-511:18.). Dr. Smith explained that the second cooling fluid path in the 117 DI Products is comprised of [redacted]

[redacted]

[redacted] Tr. (Smith) at 510:25-511:8 (discussing CDX-0008C.0087); *see also* JX-1502C.0001 (OH46B Service Manual, § 4, Troubleshooting); CX-1908C.0001 (OH55A-S Service Manual, § 4, Troubleshooting).). The second cooling fluid path is depicted in orange in the cross-sectional screenshot below.

Figure 43: Smith Demonstrative Depicting Second Cooling Fluid Path in the 117 DI Products



(CDX-0008C.0087; Tr. (Smith) at 511:9-18 (discussing CDX-0008C.0087); JX-1509C (OH46B CAD); JX-1510C (OH55A-S CAD).).

Like the "first cooling fluid path" limitation 1[d], MRI disputed that the 117 DI Products meet or practice the "second cooling fluid path" limitation 1[e]. However, Dr. Smith's testimony was again unrebutted. Similar to limitation 1[d], Mr. Flasck provided only cursory, conclusory testimony that did not adequately rebut Dr. Smith's opinions.

> Q. And what about the second cooling fluid path as set forth in elements [e], [f], and [g], does his testimony – Do you agree with his testimony that [redacted] in the domestic industry products?

A. I disagree.

Q. And have you seen any evidence in the domestic industry products that air [redacted]

A. No.

(Tr. (Flasck) at 997:14-25.).

Beyond his testimony that he "disagree[d]" with Dr. Smith, Mr. Flasck provided no additional explanation or evidence from the intrinsic record in support of his statements. Thus, Mr. Flasck's testimony is given little, if any, weight. *See, e.g.*, *TQ Delta*, 942 F.3d at 1358. The lack of any supporting evidence also undermines the credibility of his testimony.

Additionally, Mr. Flasck conceded on cross-examination that the 117 DI Products include [redacted] (Tr. (Flasck) at 1130:17-1131:20 (discussing CDX-0015C.0004); *see* Fig. 1 [redacted] Mr. Flasck's testimony and opinion contained in his rebuttal expert report confirmed that [redacted] (Tr. (Flasck) at 1130:24-1131:25 (referencing RX-0170C (Flasck Reb. Rpt.) at ¶ 41, where he discussed the same diagram shown in CDX-0015C.0004).).

Accordingly, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice claim element 1[e] of the '117 patent.

g) 1[f]: "wherein the first and second cooling fluid paths are separated from each other, and"

Dr. Smith testified that the first and second cooling fluid paths in the 117 DI Products are separated from each other. (Tr. (Smith) at 511:19-512:17.). Dr. Smith testified that, based upon

their structures, [redacted]. (Tr. (Smith) at 511:19-512:3.). Dr. Smith illustrated the two separate cooling fluid paths in [redacted]

Figure 44: Smith Demonstrative Depicting [redacted] Cooling Fluid Paths

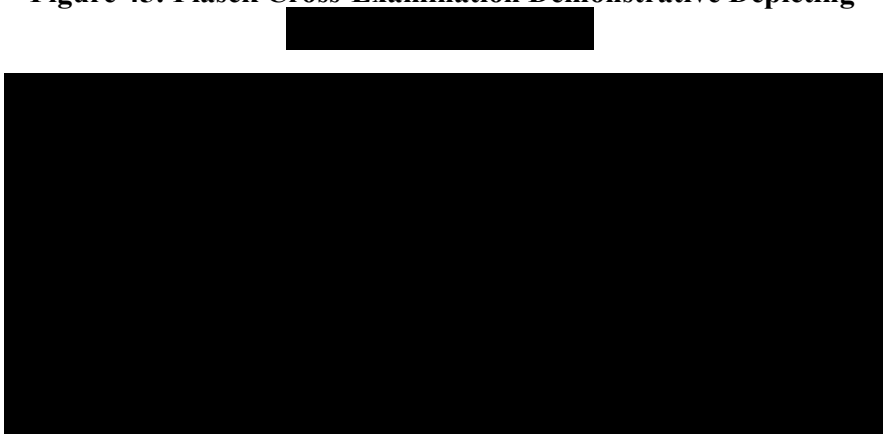
[redacted]

(CDX-0008C.0088; Tr. (Smith) at 511:19-512:3 (discussing CDX-0008C.0088); *see also* JX-1509C (OH46B CAD); JX-1510C (OH55A-S CAD).).

MRI argued that the 117 DI Products do not practice this claim element. However, Mr. Flasck's conclusory testimony that he "disagree[d]" with Dr. Smith's testimony with respect to this limitation without any further support is given little, if any, weight. *See, e.g.*, *TQ Delta*, 942 F.3d at 1358. The lack of supporting evidence, let alone explanation, also undermines the credibility of his testimony.

Moreover, during cross-examination, with reference to the diagram of the 117 DI Products replicated below, Mr. Flasck agreed that [redacted] (Tr. (Flasck) at 1129:8-1132:25.).

Figure 45: Flasck Cross-Examination Demonstrative Depicting



(CDX-0015C.0004; CX-0801C).).

Mr. Flasck's testimony confirms that the

For the foregoing reasons, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice claim element 1[f] of the '117 patent.

h) 1[g]: "wherein the case includes a circuit board mounting part provided on a rear surface of the case and partitioned from a space in which the display panel is mounted such that the circuit board is received in the circuit board mounting part, the first cooling fluid path includes a space between a rear surface of the display panel and an inner surface of the case, and the second cooling fluid path includes an internal space of the circuit board mounting part."

Dr. Smith testified that the 117 DI Products include a circuit board mounting part, which is the portion of the rear case to which the circuit boards are mounted. (Tr. (Smith) at 512:18-514:24.). The circuit board mounting part in the 117 DI Products is depicted in the exploded view drawing shown below in Figure 46.

Figure 46: Smith Demonstrative Depicting Exploded View of Circuit Board Mounting Part



(CDX-0008C.0090; Tr. (Smith) at 512:18-513:7 (discussing CDX-0008C.0090); JX-1498C.0001 (OH46B Exploded Views); JX-1499C.0001 (OH55A-S Exploded Views).).

Dr. Smith testified that [redacted] (Tr. (Smith) at 513:15-20.). He explained that the [redacted] (Tr. (Smith) at 513:21-514:24.). Dr. Smith illustrated the two claimed spaces in a cross-sectional CAD screenshot for the 117 DI Products, which is depicted below in Figure 47.

Figure 47: Smith Demonstrative Depicting the Two Claimed Spaces



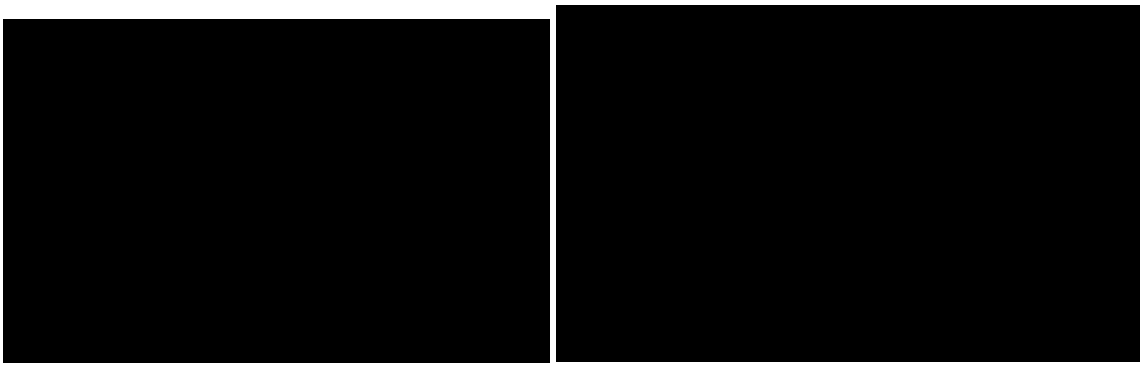
(CDX-0008C.0091; Tr. (Smith) at 513:21-514:24 (discussing CDX-0008C.0091); JX-1509C (OH46B CAD); JX-1510C (OH55A-S CAD).).

MRI argued that the 117 DI Products do not practice this claim element based solely on an improper attempt to reargue claim construction for the claim term "circuit board mounting part," which was construed to have its plain and ordinary meaning. (*See Markman* Order at 25.). There is extensive description in the *Markman* Order of the application of the plain and ordinary meaning based upon the specification. (*Id.* at 25-31.). Mr. Flasck testified that the circuit board in the 117 DI Products is [redacted] and therefore is not received in any "special printed circuit board mounting part." (Tr. (Flasck) at 998:1-23.). As Samsung noted in attorney argument, it is unclear from Mr. Flasck's testimony exactly what a "special" part would entail. (CBr. at 47.). Nevertheless, the claim does not require a "special" part—the claim only requires that part of the claimed case be where a circuit board is received. (JX-0001 ('117 Patent) at cl. 1.).

A comparison between the rear case of the 117 DI Products with the circuit boards in place (left) and with the circuit boards removed (right) in Figure 48, below, demonstrates that [redacted], which is the

circuit board mounting part.

Figure 48: Photograph Comparing [redacted] With and Without Circuit Boards



(JX-1500C.0004, 0006 (OH46B Service Manual, § 3, Disassembly and Reassemble).).

For the reasons discussed above, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice claim element 1[g] of the '117 patent.

2. Claim 2: "The panel display device as claimed in claim 1, wherein the case includes front and rear cases coupled to each other, and the rear case includes a circuit board mounting part provided on an outer surface of the rear case such that the circuit board is mounted in the circuit board mounting part."

Dr. Smith testified that the 117 DI Products practice claim 2 of the '117 patent. (Tr. (Smith) at 514:25-515:13.). MRI argued that the 117 DI Products do not practice claim 1 of the '117 patent based solely on MRI's proposed construction of "circuit board mounting part." (Tr. (Flasck) at 998:24-999:6.). That limitation is satisfied for the reasons given above for claim 1. (*See* Section VIII.B.1.g), *supra*.). Dr. Smith testified that the 117 DI Products include front and rear cases coupled to each other. (Tr. (Smith) at 514:25-515:7 (discussing CDX-0008C.0092); JX-1498C.0001 (OH46B Exploded Views); JX-1499C.0001 (OH55A-S Exploded Views); JX-1509C (OH46B CAD); JX-1510C (OH55A-S CAD).). The rear case includes a circuit board

mounting part provided on its outer surface, which is [redacted]. (Tr. (Smith) at 515:8-13; *see also* JX-0001 ('117 Patent) at cl. 2.).

Accordingly, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice the additional limitations recited in claim 2 of the '117 patent.

3. Samsung satisfied the technical prong of the domestic industry requirement for the '117 patent.

For the reasons provided in this section, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 117 DI Products practice claims 1 and 2 of the '117 patent.

C. The '311 Patent

Samsung relied on its OH75A and OH85N-S products ("the '311 DI Products"), which are depicted below in Figure 49, to prove the technical prong of domestic industry for claims 4, 6, and 13 of the '311 patent.

Figure 49: Excerpt of Dr. Smith's Demonstrative Depicting the Products That Allegedly Practice Claim 12 of the '311 Patent



(CDX-0008C.0077.).

Dr. Smith testified that he reviewed Samsung product documentation proving that the Samsung OH75A and OH85N-S Products practice claims 4, 6, and 13 of the '311 patent, (*id.* at 515:20-531:17), and claim 12 of the '253 patent, (*id.* at 531:18-534:22.). Dr. Smith testified that MRI does not dispute that Samsung's OH75A and OH85N-S Products practice claim elements 1[pre] through 1[b] of the '311 patent, (Tr. (Smith) at 519:8-13), and claim elements 11[pre] through 11[b] of the '253 patent, (*id.* at 532:18-22).

For the reasons provided in Order No. 28, the "flow rate controller" claim term in claim element 1[c2] and 13[d3] of the '311 patent is subject to 35 U.S.C. § 112, ¶ 6. It is indefinite for lack of structure disclosed in the claims or specification for performing the recited function. (Order No. 28 at 47-49.). However, if that claim construction is not upheld, then for the reasons provided below, a finding that Samsung has proven by a preponderance of evidence that the 311 DI Products practice claims 4, 6, and 13 of the '311 patent, and therefore has satisfied the technical prong of the domestic industry requirement for the '311 patent, would be correct.

The remainder of this section of the ID regarding the technical prong of domestic industry for the '311 patent applies only if the "flow rate controller" claim construction of Order No. 28 at 47-49 is not upheld.

1. Claim 1

MRI argued that that the 311 DI Products do not practice claim elements 1[c], 1[c1], and 1[c2] of the '311 patent. (CBr. at 75-76; RRBr. at 65-66.). MRI's arguments are the same for all three (3) claim elements. First, MRI argued that Samsung did not present testimony from any Samsung fact witness. Second, MRI argued that Samsung's experts Dr. Smith and Dr. Gale did not inspect or test any of Samsung's 311 DI Products and did not speak to any Samsung witness

about Samsung's 311 DI Products. (RRBr. at 65-66.). MRI further argued that Smith's "ill-informed speculation regarding unauthenticated documents that may or may not relate to the OH75A and OH85N-S products" is "insufficient to carry Samsung's burden of demonstrating those products practice the claims of the '311 patent." (RRBr. at 66.). In other words, MRI's arguments are based on the theory that Samsung's evidence is insufficient for Samsung to meet its burden of proof.

However, MRI's arguments are merely attorney argument unsupported by affirmative evidence. As set forth below, Dr. Gale and Dr. Smith testified that the '311 DI Products practice claims 4, 6, and 13 of the '311 patent and cited to documentary evidence. Based on the totality of evidence, as more fully cited and explained below in Sections VIII.C.1.a)-VIII.C.6.f), it is a finding of this ID that Samsung has not proven by a preponderance of evidence that the '311 DI Products practice claims 4, 6, and 13 of the '311 Patent.

a) 1[pre]: "A liquid crystal display device, comprising"

b) 1[a]: "a liquid crystal panel"

c) 1[b]: "a protection panel separated from the liquid crystal panel by a channel; and"

MRI did not dispute that the '311 DI Products practice claim elements 1[pre], 1[a], and 1[b] of the '311 patent. (CBr. at 75-76; RRBr. at 65-66.). Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the '311 DI Products practice the foregoing elements of claim 1 of the '311 patent. (Tr. (Smith) at 518:11-519:13; Tr. (Flasck) at 1056:18-23; CX-0796C.0001 (OH85N-S service manual, product specifications); CX-0773C.0001 (OH75A/OH85N-S cross-sectional engineering drawings)).).

Because MRI has not disputed that the '311 DI Products practice claim elements 1[pre],

1[a], and 1[b] of the ’311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

d) 1[c]: “a flow control device to impart turbulence to an air flow in the channel, the flow control device comprising:”

For the claimed “flow control device,” Dr. Smith identified [redacted], as illustrated in his demonstrative reproduced below in Figure 50. (Tr. (Smith) at 519:14-520:1.).

Figure 50: Excerpt of Dr. Smith’s Demonstrative Illustrating Flow Control Device in the ’311 DI Products



(Tr. (Smith) at 519:14-520:1; CDX-0008C.0099.).

Dr. Smith presented design specifications, CAD drawings, service manuals, and photographs depicting and describing [redacted] in the ’311 DI Products. (Tr. (Smith) at 520:2-22; JX-1493C.0086 (OH75A user manual); JX-1491C.0002 (OH75A/OH85N-S fan specification); JX-1481C.0093 (OH75A design specification); JX-0802C (OH75A CAD file); CX-0803C (OH85N-S CAD file); CX-0795C.0004 (OH85N-S Service Manual); CX-0783C.0001 (OH85N-S [redacted]).).

With respect to the claim’s recitation of “to impart turbulence to an air flow in the

channel," Dr. Gale used Samsung CAD drawings, product specifications, fan specifications, and witness testimony to create CFD simulations from which he could calculate a Reynolds number, just like he did for the Accused Products. (Tr. (Gale) at 368:6-383:14; CX-0755C (OH75A flow simulation); CX-1914C (OH85N-S flow simulations); CX-1019C; CX-1074C; CX-1075C; CX-1080C; CX-1081C.0033; CX-0805C; CX-1082C.0006; JX-1481C.0034; JX-1485C; JX-1486C; JX-1487C; JX-1488C).). Dr. Gale testified that his CFD simulations depicted airflows where the airflow velocity near the wall of the channel is different than the airflow velocity near the center of the channel, which is indicative of turbulent flow. (Tr. (Gale) at 380:22-381:11.). Dr. Gale used airflow velocity and temperature expected under ordinary operating conditions to calculate a Reynolds number for the air flow in the relevant channel in the '311 DI Products and concluded from the calculated Reynolds numbers that airflow in the channel would be turbulent under such conditions, as depicted in Dr. Gale's demonstrative reproduced below.

Figure 51: Excerpt of Dr. Gale's Demonstrative Listing His Calculated Reynolds Numbers and Conclusions as to Turbulence for the 311 DI Products at Various Operating Conditions

Product	Fan Speed	Flow Rate (m/s)	Reynolds Number	Turbulence
OH75A	[redacted]			Turbulent
				Turbulent
				Turbulent; at least transitioning to turbulent
				Turbulent; at least transitioning to turbulent
OH85N-S				Turbulent
				Turbulent
				Turbulent; at least transitioning to turbulent
				Transitioning to turbulent

(Tr. (Gale) at 381:21-382:7; CDX-0006C.0027.).

Dr. Smith relied on Dr. Gale's analysis and conclusions to support his opinion that the

’331 DI Products practice this claim element. (Tr. (Smith) at 520:23-521:5.).

Neither MRI nor its experts presented an affirmative, evidenced-based rebuttal case with respect to the claim limitation at issue. Instead, MRI’s response is limited to attacking the sufficiency of Samsung’s evidence and the methodology of its experts. (RRBr. at 65-66.). However, MRI did not dispute the authenticity or accuracy of the Samsung engineering documents on which Dr. Smith and Dr. Gale relied.

MRI’s argument that Dr. Gale “undisputedly did not provide any opinions on whether the OH75A and OH85N-S products practice any claim of the ’311 Patent” is unpersuasive. Dr. Gale testified credibly and competently about how he analyzed the airflow conditions in the relevant channel of the ’311 DI Products, calculated Reynolds numbers, and concluded that the airflow would be turbulent under normal operating conditions. (Tr. (Gale) at 368:6-383:14.). Dr. Smith relied on Dr. Gale’s testimony, which was appropriate, and which is not an uncommon practice. *See, e.g., Arctic Cat Inc. v. Bombardier Recreational Prod. Inc.*, 876 F.3d 1350, 1369-70 (Fed. Cir. 2017) (agreeing with district court that expert’s testimony, which relied in part on discussions with another expert and a review of the other expert’s report, was admissible).

Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the ’311 Patent DI Products practice claim element [1c] of the ’311 patent.

e) 1[c1]: “a temperature sensor to measure the temperature of air discharged from the channel; and”

Dr. Smith presented CAD files, product diagrams, and deposition testimony from Samsung engineer Wunkil Lee demonstrating the location of the temperature sensor [redacted] in the ’311 DI Products. (Tr. (Smith) at 521:6-522:14; CX-0802C (OH75A CAD); CX-803C (OH85N-

S CAD); JX-1489C (OH75A/OH85N-S temperature sensor diagram); RX-0185C (Lee Deposition Transcript) at 45:13-23, 46:13-17.). Other than MRI's counterarguments for claim element 1[c] which are rejected, MRI did not rebut Samsung's arguments and evidence. (RRBr. at 65-66; *see also* Section VIII.C.1.d), *supra*.).

Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the '311 DI Products practice claim element 1[c1] of the '311 patent.

f) 1[c2]: "a flow rate controller to control air flow through the channel according to the measured temperature."

For the reasons provided in Order No. 28, this claim term is subject to 35 U.S.C. § 112, ¶ 6 and is indefinite for lack of structure disclosed in the claims or specification for performing the recited function. (Order No. 28 at 47-49.).

If the claim construction is not upheld, then for the following reasons a finding that the 311 DI Products practice this claim element would be correct. Samsung proposed during claim construction that this claim term either does not require construction or is subject to its plain meaning "device, such as a circuit or chip for controlling a fan, [to control air flow through the channel according to the measured temperature]." (CRBr. at 26; *see also* CMBr. at 33.). Dr. Smith testified that a POSITA would have understood a flow rate controller to mean "an electronic circuit, an integrated circuit, a computer chip, maybe called a microprocessor." (Tr. (Smith) at 493:11-25.). Neither MRI nor its experts offered a contrary meaning. Therefore, if the construction adopted in Order No. 28 is not upheld, then it is a finding that Samsung's proposed claim construction would be correct.

If the construction adopted in Order No. 28 is not upheld and Samsung's proposed claim construction is adopted, then a finding that the 311 DI Products practice this claim element

would be correct. Dr. Smith explained that Samsung's [redacted] corresponds to the claimed "flow rate controller." Dr. Smith explained how the [redacted] (Tr. (Smith) at 522:15-525:25; JX-1485C.0008 (OH75A Fan Control Specification); JX-1486C (OH75A/OH85N-S Fan Speed Lookup Table); JX-1487C.0009 (OH85N-S Fan Control Specification); CX-0793C.0002; CX-0798C.0004; RX-0185C (Lee Deposition Transcript) at 64:12-15, 66:22-24, 69:25-70:5, 82:2-9, 82:18-22.). MRI did not provide a rebuttal.[44]

Therefore, if the claim construction adopted in Order No. 28 is not upheld, then for the same reasons as explained above, a finding that Samsung has proven by a preponderance that this claim element is satisfied would be correct.

2. Claim 2: "the liquid crystal display device according to claim 1, wherein the channel comprises: an air inlet to guide air into the channel; and an air outlet to discharge air from the channel."

MRI did not dispute that the '311 DI Products practice claim 2 of the '311 patent, other than its counterarguments for claim 1 that have already been rejected. (CBr. at 82; RRBr. at 65-66.). Therefore, it is a finding that Samsung has proven by a preponderance of evidence that the '311 DI Products practice claim 2 of the '311 patent. (Tr. (Smith) at 525:23-526:15; CX-0802 (OH75A CAD File); CX-0773C.0001 (OH75A/OH85N-S Cross-Sectional Engineering Drawing).).

Because MRI has not disputed that the '311 DI Products practice the additional elements

[44] Mr. Flasck opined that the '311 DI Products do not practice this claim element because the 311 DI Products do not measure the airflow rate, although MRI did not argue that point in its brief. (Tr. (Flasck) at 1059:2-5.). That opinion is based on Mr. Flasck's erroneous interpretation of "control" to require "measure," which is discussed above in Section VII.C.4.f)(iii) of this ID related to infringement of this claim element.

of claim 2 of the ’311 patent, and because MRI did not adduce rebutting evidence during the Hearing, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

3. Claim 3: “the liquid crystal display device according to claim 2, wherein the flow control device further comprises a fan to force air through the channel, wherein the flow rate controller controls the fan according to the detected temperature.”

MRI did not dispute that the ’311 DI Products practice claim 3 of the ’311 patent, other than its counterarguments for claim 1 that have already been rejected. (CBr. at 82-83; RRBr. at 65-66.). Therefore, it is a finding that Samsung has proven by a preponderance of evidence that the ’311 DI Products practice the elements of claim 3 of the ’311 patent. (Tr. (Smith) at 527:6-528:5; Tr. (Flasck) at 1059:9-13; CX-0802C (OH75A CAD File).

Because MRI has not disputed that the ’311 DI Products practice the additional elements of claim 3 of the ’311 patent, and because MRI did not adduce rebutting evidence during the Hearing to that which Samsung produced, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

4. The ’311 DI Products Practice Claim 4: “the liquid crystal display device according to claim 3, wherein: the flow rate controller controls fan such that the air in the channel has a velocity in a range of 4 to 14 m/s.

MRI did not dispute that the ’311 DI Products practice claim 4 of the ’311 patent, other than its counterarguments for claim 1 that have already been rejected. (CBr. at 83; RRBr. at 65-66.). Therefore, it is a finding that Samsung has proven by a preponderance of evidence that the ’311 DI Products practice the elements of claim 4 of the ’311 patent. (Tr. (Smith) at 528:6-19; Tr. (Gale) at 368:6-383:14; CDX-0006C.0027; CX-0802 (OH75A CAD File); CX-0773C.0001 (OH75A/OH85N-S Cross-Sectional Engineering Drawing).).

Because MRI has not disputed that the ’311 DI Products practice the additional elements of claim 4 of the ’311 patent, and because MRI did not adduce rebutting evidence during the Hearing to that which Samsung produced, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

5. The ’311 DI Products Practice Claim 6: “the liquid crystal display device according to claim 1, wherein: the width of the channel is in a range of 5 to 25 mm.”

MRI did not dispute that the ’311 DI Products practice claim 6 of the ’311 patent. (CBr. at 84; RRBr. at 65-66.). Therefore, it is a finding that Samsung has proven by a preponderance of evidence that the ’311 DI Products practice the elements of claim 6 of the ’311 patent. (Tr. (Smith) at 528:20-529:13; Tr. (Flasck) at 1059:9-13; CX-0802 (OH75A CAD File); CX-0773C.0001-2 (OH75A/OH85N-S Cross-Sectional Engineering Drawing).).

Because MRI has not disputed that the ’311 DI Products practice the additional elements of claim 6 of the ’311 patent, and because MRI did not adduce rebutting evidence during the Hearing to Samsung’s evidence, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

6. The ’311 DI Products Practice Claim 13

MRI did not raise any new responsive arguments specifically for claim 13 of the ’311 patent that were not raised for the other claims of the ’311 patent. (RRBr. at 65-66.). The reasons for rejecting MRI’s counterarguments have been explained previously and therefore are not repeated here.

a) 13[pre]: “A display device, comprising”

b) 13[a]: “a liquid crystal panel to display an image”

c) 13[b]: “a protection panel to protect the liquid crystal panel”

d) 13[c]: a channel formed between the liquid crystal panel and the protection panel; and"

MRI did not argue that the '311 DI Products do not practice claim elements 13[pre], 13[a], 31[b], and 13[c] of the '311 patent. (CBr. at 84-85; RRBr. at 65-66.). Dr. Smith persuasively and credibly testified that claim elements 13[pre], 13[a], 13[b], and 13[c] of the '311 patent correspond to the previously discussed elements of claims 1 and 3 of the '311 patent. Accordingly, Dr. Smith relied on the same evidence and reasoning for the foregoing elements of claim 13 as he did for claims 1 and 3 of the '311 patent. (Tr. (Smith) at 529:14-530:13.). Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the '311 DI Products practice the foregoing elements of claim 13 of the '311 patent.

Because MRI did not dispute during the Hearing that the '311 DI Products practice claim elements 13[pre], 13[a], 13[b], and 13[c] of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing that would counter Samsung's documentary and testimonial evidence, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

a. 13[d]: "a flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel, the flow control device comprising:

b. 13[d1]: "a fan to force air through the channel"

Samsung argued that the '311 DI Products practice claim elements 13[d] and 13[d1] for the same reasons provided for claim element 1[c] of the '311 patent. (CBr. at 84-85; Tr. (Smith) at 529:14-530:13.). MRI did not respond to Samsung's technical domestic industry arguments for the 311 DI Products for these claim elements. (RRBr. at 65-66.).[45] Therefore, for the same

[45] Mr. Flasck opined, but MRI did not argue in its brief, that this claim element is not satisfied because

reasons provided in this ID in Section VIII.C.1.d) above for claim element 1[c] of the '311 patent, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the '311 DI Products practice the foregoing two claim elements.

Because MRI has not disputed that the '311 DI Products practice claim elements 13[d] and 13[d1] of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing to counter Samsung's credible and persuasive documentary and testimonial evidence, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

e) 13[d2]: "a temperature sensor to measure the temperature of air discharged from the channel; and"

Samsung argued that the '311 DI Products practice this claim element for "similar reasons as to limitation 1[c2]." (CBr. at 85; Tr. (Smith) at 529:14-530:13.). MRI did not respond to Samsung's technical domestic industry allegations for this claim element. (RRBr. at 65-66.). Therefore, for the same reasons provided in Section VIII.C.1.f) this ID above for claim element 1[c2] of the '311 patent, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the '311 DI Products practice this claim element.

Because MRI has not disputed that the '311 DI Products practice claim 13[d2] of the '311 patent, and because MRI did not adduce rebutting evidence during the Hearing to counter Samsung's credible and persuasive documentary and testimonial evidence, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground

the '311 DI Products "do not control the flow rate of air." (Tr. (Flasck) at 1060:16-22.). As noted in this ID above for claim element 1[c2] of the '311 patent, that opinion is based on Mr. Flasck's erroneous interpretation of "control" to require "measure." Mr. Flasck's erroneous interpretation of "control" to require "measure" is discussed above in the section of this ID related to infringement of claim element 1[c2] of the '311 patent.

Rule 10.1.

f) 13[d3]: "a flow rate controller control the fan according to the measured temperature to regulate the flow rate of the air in the channel."

For the reasons provided in Order No. 28, this claim term is subject to 35 U.S.C. § 112, ¶ 6. It is indefinite for lack of structure disclosed in the claims or specification for performing the recited function. (Order No. 28 at 47-49.).

If that claim construction is not upheld, then a finding that the 311 DI Products practice this claim element would be correct. Samsung argued during *Markman* proceedings and again during the Hearing that this claim term either does not require construction or is subject to its plain meaning, i.e., a "device, such as a circuit or chip to control the fan according to the measured temperature to regulate the flow of the air in the channel." (CRBr. at 26; CMBr. at 34.). Dr. Smith testified that a POSITA would have understood a flow rate controller to mean "an electronic circuit, an integrated circuit, a computer chip, maybe called a microprocessor." (Tr. (Smith) at 493:11-25.). Neither MRI nor its experts offered a contrary meaning. Therefore, if the claim construction in Order No. 28 is not upheld, then Samsung's plain and ordinary meaning proposal would be correct.

The Parties' arguments and evidence for this claim element are the same as for claim element 1[c2]. (CBr. at 84-85; RRBr. at 65-66; Tr. (Flasck) at 1061:2-7.).

Therefore, if the *Markman* construction is not upheld because there is sufficient structure to avoid invoking 35 U.S.C. § 112, ¶ 6, then Samsung's claim construction proposal would be correct. A finding that the 311 DI Products practice this claim element for the same reasons set forth in this ID for claim element 1[c2] would also be correct.

7. Samsung has not satisfied the technical prong of the domestic industry requirement for the ’311 patent.

For the reasons explained above, if the “flow rate controller” claim constructions adopted in Order No. 28 are not upheld, then it is a finding that Samsung’s proposed plain and ordinary meaning constructions are adopted and that Samsung has proven by a preponderance of evidence that the ’311 DI Products practice claims 4, 6, and 13 of the ’311 patent would be correct. However, because of the indefiniteness claim construction adopted in Order No. 28, Samsung cannot satisfy the technical prong of the domestic industry requirement.

D. The ’253 Patent

Samsung relied on its OH75A and OH85N-S products (“the ’253 DI Products”), which are depicted below and are the same as the ’311 DI Products, to prove the technical prong of domestic industry with respect to claim 12 of the ’253 patent. Claim 12 of the ’253 patent depends from independent claim 11.

Figure 52: Excerpt of Dr. Smith’s Demonstrative Depicting the Products That Allegedly Practice Claims 4, 6, and 13 of the ’253 Patent



(CDX-0008C.0077.).

1. Claim 11

For the reasons explained in the Second *Markman* Order, the "control device" claim term in claim 12 of the '253 patent is subject to 35 U.S.C. § 112, paragraph 6. (Order No. 32 at 26-33.). It is indefinite because the claims and specification fail to recite sufficiently definite structure for performing the function to "maintain a temperature of the housing." (*Id.*). However, if that claim construction is not upheld, then a finding that the 253 DI Products practice claim 12 of the '253 patent would be correct. The rest of this section of the ID regarding the technical prong of domestic industry for the '253 patent applies only if the claim construction of "control device" in Order No. 32 is not upheld.

MRI's counterarguments for the technical prong of domestic industry for claims 11 and 12 of the '253 patent are the same as for claims 1, 2, 3, 4, 6, and 13 of the '311 patent, except for one of MRI's counterarguments regarding claim element 11[e] that is specifically addressed below in Section VIII.D.1.c). (RRBr. at 76-78.). Those counterarguments are rejected for claims 11 and 12 of the '253 patent for the same reasons they were rejected for claims 1, 2, 3, 4, 6, and 13 of the '311 patent.

a) 11[pre]: "A display device, comprising:"

b) 11[a]: "a housing"

c) 11[b]: "a display assembly enclosed inside the housing"

a) 11[c]: "a sensor to measure a temperature of air in the housing"

b) 11[d]: "a fan configured to blow the air around the display assembly; and"

MRI did not dispute that the '253 DI Products practice claim elements 11[pre], 11[a],

11[b], 11[c], and 11[d]. (CBr. at 99-101; RRBr. at 76-78.).[46] Therefore, it is a finding of this ID that Samsung has proven by a preponderance of evidence that the '311 DI Products practice the foregoing elements of claim 11 of the '253 patent. (Tr. (Smith) at 531:19-533:14; CX-0784.0001; CX-0786C.0001; CX-0802C.).

Because MRI did not dispute that the 253 DI Products practice claim elements 11[pre], 11[a], 11[b], 11[c], and 11[d] of the '253 patent, and because MRI did not adduce rebutting evidence during the Hearing to counter Samsung's credible and persuasive documentary and testimonial evidence, MRI has waived its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

c) 11[e]: "a control device to control the fan to maintain a temperature of the housing"

For the reasons explained in the Second *Markman* Order, this claim term is subject to 35 U.S.C. § 112, paragraph 6. (Order No. 32 at 26-33.). It is indefinite because the claims and specification fail to recite sufficiently definite structure for performing the function to "maintain a temperature of the housing." (*Id.*). If that claim construction is not upheld, then it is a finding that the 253 DI Products practice this claim element.

Samsung argued that this claim element is satisfied "for the same reasons described above for claim 1[c2] of the '311 patent." (CBr. at 101; Tr. (Smith) at 533:14-22.). Therefore, for the same reasons explained in Section VIII.C.1.f) for claim element 1[c2] of the '311 patent,

[46] Mr. Flasck opined, but MRI did not argue in its brief, that claim element 11[c] is not satisfied by the '253 DI Products because [redacted] (Tr. (Flasck) at 1062:2-9.). But claim element 11[c] does not recite any particular location for the sensor. Claim element 11[c] requires the sensor to measure "a temperature of air in the housing." Mr. Flasck did not opine that the temperature sensor Dr. Smith references does not measure "a temperature of air in the housing," and so Dr. Smith's opinion to that effect and MRI's allegations in that regard are unrebutted.

if the claim construction adopted in Order No. 32 is not upheld, then Samsung's proposed construction of "control device" is adopted.[47]

As explained above in the infringement section of this ID, Section VII.D.4.f), the Parties disputed the scope of "maintain a temperature of the housing" as recited in claim element 11[e] of the '253 patent, but the Parties did not request a claim construction or argue for any particular plain and ordinary meaning. Dr. Smith's testimony that this claim element is satisfied for the same reasons as claim element 1[c2] of the '311 patent is unpersuasive because he did not explain how the 253 DI Products practice the additional "maintain" requirement of claim element 11[e] of the '253 patent. On the other hand, MRI argued in its Responsive Post-Hearing Brief, (RRBr. at 77), and Mr. Flasck described during his testimony, that deposition testimony from two Samsung corporate representatives Sung Ki Kim[48] and Wunkil Lee prove that the 253 DI Products do not practice claim element 11[e] of the '253 patent. (Tr. (Flasck) at 1062:15-1063:10.). Mr. Flasck described [redacted] (Tr. (Flasck) at 1062:15-25.). Mr. Flasck also described how Mr. Lee [redacted] (Tr. (Flasck) at 1063:5-10.).

The evidentiary record in this Investigation reflects that, if the claim construction adopted in Order No. 32 is not upheld, then it is a finding that the 253 DI Products do not practice claim element 11[e] of the '253 patent.

[47] Dr. Smith testified, and Mr. Flasck did not rebut, that a POSITA would have understood "control device" to mean "the same thing as a controller and, in particular, a flow rate controller. A electronic circuit, a chip, something like that." (Tr. (Smith) at 533:14-22.).

[48] Sung Ki Kim is also a named inventor on the '253 patent.

d) 11[f]: "wherein the sensor transmits a resulting signal to the control device and the control device controls the fan based on the resulting signal."

Samsung argued that the '253 DI Products practice this claim element "for the same reasons described with respect to claim 1[c2] of the '311 patent." (CBr. at 102.). MRI did not dispute that the 253 DI Products practice claim element 11[f] of the '253 patent. (RRBr. at 76-78.).[49] Therefore, based on the reasons and evidence explained above in this ID for claim element 1[c2], it is a finding of this ID that Samsung has proven by a preponderance of evidence that the 253 DI Products practice claim element 11[f] of the '253 patent.

Because MRI has not disputed that the 253 DI Products practice claim element 11[f] of the '253 patent, and because MRI did not adduce rebutting evidence during the Hearing that would counter Samsung's documentary and credible testimonial evidence, MRI has waived, abandoned or withdrawn its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

2. The '253 DI Products Do Not Practice Claim 12: "The display device according to claim 11, wherein the display assembly is enclosed inside the housing to form a front channel between a display panel of the display assembly and a front side of the housing."

MRI did not dispute that the 253 DI Products practice the additional elements of claim 12 of the '253 patent, apart from MRI's disputes regarding underlying independent claim 11. (CBr. at 102; RRBr. at 76-78.). Samsung argued that the '253 DI Products practice claim 12 of the '253 patent based on the same reasoning and evidence provided for claim element 1[b] of the

[49] Mr. Flasck opined, but MRI did not argue in its Post-Hearing Briefs in the section on this claim element, that there is a failure of evidence to show that claim element 11[f] of the '253 patent is practice by the '253 DI Products. (Tr. (Flasck) at 1063:11-14.). Mr. Flasck's opinion is contrary to the record in this Investigation, as explained above for claim element 1[c2] of the '311 patent. MRI has waived, withdrawn or abandoned the right to raise this issue on appeal under Ground Rule 10.1.

’311 patent. (CBr. at 102.). Therefore, based on the reasons and evidence discussed above in Section VIII.C.1.c) of this ID proving that the ’311 DI Products practice claim element 1[b] of the ’311 patent, it is a finding of this ID that Samsung has proven by a preponderance of evidence that, if this ID’s finding that the 253 DI Products do not practice claim 11 of the ’253 patent were reversed, then a finding that the 253 DI Products practice claim 12 of the ’253 patent would be correct. (Tr. (Smith) at 534:13-22; Tr. (Flasck) at 1053:17-21; CX-0802C.).

Because MRI has not disputed that the ’253 DI Products practice the additional elements of claim 12 of the ’253 patent, and because MRI did not adduce rebutting evidence during the Hearing that countered Samsung’s documentary and testimonial evidence, MRI has waived, abandoned, or withdrawn its right to present any argument or evidence on appeal with respect to this claim under Ground Rule 10.1.

3. Samsung has not satisfied the technical prong of the domestic industry requirement for the ’253 patent.

For the reasons provided above, if the claim construction adopted in Order No. 32 is not upheld, then a finding that Samsung has not proven by a preponderance of evidence that the ’253 DI Products practice claim 12 of the ’253 patent would be correct.

IX. INVALIDITY

MRI argued that the Asserted Claims are invalid for anticipation and/or obviousness.

A. Legal Standards

1. Anticipation

A determination that a patent is invalid as being anticipated under 35 U.S.C. § 102 requires a finding, based upon clear and convincing evidence, that each and every limitation is found either expressly or inherently in a single prior art reference. *See Celeritas Techs. Inc. v. Rockwell Int’l Corp*., 150 F.3d 1354, 1361 (Fed. Cir. 1998). Anticipation is a question of fact,

including whether a limitation, or element, is inherent in the prior art. *In re Gleave*, 560 F.3d 1331, 1334-35 (Fed. Cir. 2009). The limitations must be arranged or combined the same way as in the claimed invention, although an identity of terminology is not required. *Id.* at 1334 ("the reference need not satisfy an *ipsissimis verbis* test"); MPEP § 2131.

In addition, the prior art reference's disclosure must enable one of ordinary skill in the art to practice the claimed invention "without undue experimentation." *Gleave*, 560 F.3d at 1334-35; *see also* 35 U.S.C. §112(a) or pre-AIA 35 U.S.C. §112. A prior art reference that allegedly anticipates the claims of a patent is presumed enabled; however, a patentee may present evidence of nonenablement to overcome this presumption. *Impax Labs., Inc. v. Aventis Pharmaceuticals Inc*., 468 F.3d 1366, 1382 (Fed. Cir. 2006). "[W]hether a prior art reference is enabling is a question of law based upon underlying factual findings." *Gleave*, 560 F.3d at 1335.

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. 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*, 122 F.3d 1476, 1479 (Fed. Cir. 1997) (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966)).

After claim construction, "[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*, 383 U.S. at 17). The existence of secondary considerations of non-obviousness does not control the obviousness determination; a court must consider "the totality of the evidence" before reaching a decision on obviousness. *Richardson-Vicks*, 122 F.3d at 1483.

The Supreme Court clarified the obviousness inquiry in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 389 (2007). The Supreme Court said:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* and *Anderson's-Black Rock* are illustrative–a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.
>
> Following these principles may be more difficult in other cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. 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. To facilitate review, this analysis should be made explicit.
>
> * * *
>
> 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.

KSR, 550 U.S. at 417-19.

The Federal Circuit has since held that when a patent challenger contends that a patent is invalid for obviousness based on a combination of several 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, or carry out the claimed process, 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) (citations omitted).

> The TSM[50] test, flexibly applied, merely assures that the obviousness test proceeds on the basis of evidence–teachings, suggestions (a tellingly broad term), or motivations (an equally broad term)–that arise before the time of invention as the statute requires. As *KSR* requires, those teachings, suggestions, or motivations need not always be written references but may be found within the knowledge and creativity of ordinarily skilled artisans.

Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc., 520 F.3d 1358, 1365 (Fed. Cir. 2008).

B. The Scope and Content of the Prior Art

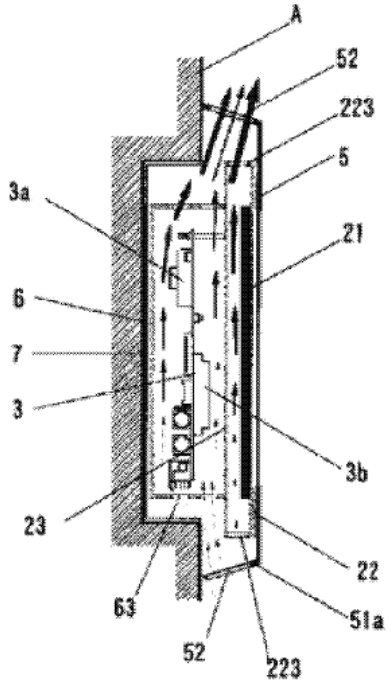
1. Japanese Patent Publication No. 2003-075858 ("Takahashi") (RX-0082)

MRI relied upon Japanese Patent Publication No. 2003-075858 ("Takahashi") (RX-0082), to Ken Takahashi, to assert that claims 1 and 2 of the '117 patent are anticipated an/or obvious. (RBr. at 9.). Takahashi was published on March 12, 2004. (RX-0082 (Takahashi) at (43).). The Parties agreed that Takahashi is prior art to the '117 patent. (RBr. at 9; CRBr. at 11-13.).

[50] TSM is an acronym that stands for teaching, suggestion, motivation.

Takahashi relates to a wall-embedded liquid crystal panel unit ("display device") that can release heat in the absence of ventilation on the back side of the mounting surface. (RX-0082 (Takahashi) at [0007].). Takahashi's display is illustrated in Figure 4 of Takahashi, which is replicated below.

Figure 53: Figure 4 of Takahashi



(RX-0082 (Takahashi) at Fig. 4; *see also* Tr. (Smith) at 1241:23-1243:12 (discussing CDX-0009.0009 (citing RX-0082 (Takahashi) at Fig. 4 (annotated)).).

As shown above in Takahashi Figure 4, Takahashi's display device includes a front cover 5, which protrudes outside of its wall mounting surface, and a rear cover 6. (RX-0082 (Takahashi) at [0015].).

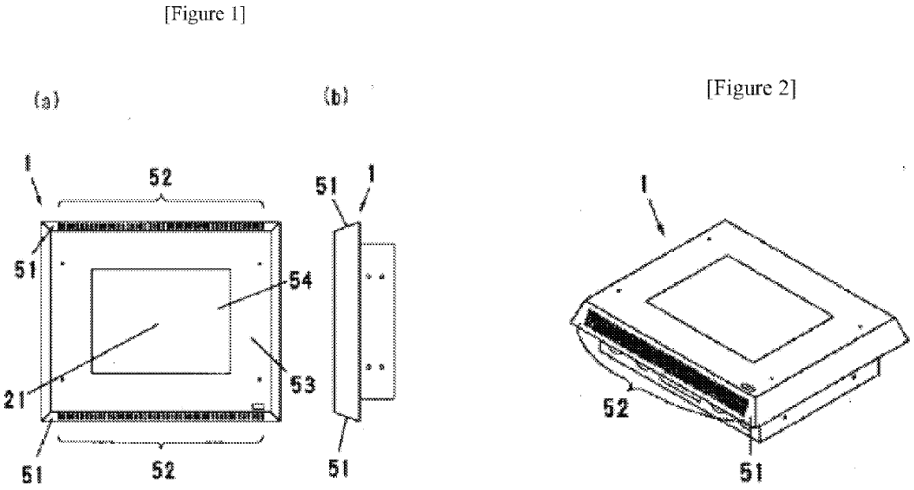
Figure 4 also shows that the display device includes a plurality of ventilation openings 52 on the top and bottom for releasing heat generated from the interior components. (*Id.* at [0015], Fig. 4; *see also id.* at [0008] ("a plurality of ventilation openings are provided to release heat

from the peripheral wall of the projection, and the heat generated from the mounting part of the printed circuit board of the panel body through the same ventilation opening"); Tr. (Flasck) at 1094:6-22.).

MRI's expert, Mr. Flasck, agreed that all the air that enters the Takahashi display device enters through the same vent opening 52 at the bottom of the front cover. (Tr. (Flasck) at 1092:19-1093:5.). Takahashi discloses that heat is radiated and dissipated externally using a single air path from the bottom ventilation openings 52 through the top ventilation openings 52. (RX-0082 (Takahashi) at [0025]-[0026].). Mr. Flasck confirmed that all the air exits through the same vent opening 52 at the top of the rear cover. (Tr. (Flasck) at 1093:6-14.).

As depicted below in Figures 1 and 2 of Takahashi, the bottom and top ventilation openings 52 are located only at the front of the display.

Figure 54: Figures 1 and 2 of Takahashi



(RX-0082 (Takahashi) at Figs. 1, 2; *see also* Tr. (Flasck) at 1093:19-1094:1 (admitting same).).

Takahashi explains that all air inside the Takahashi display device flows in a vertical direction. (RX-0082 (Takahashi) at [0022] ("the heat generated inside the unit is ventilated and

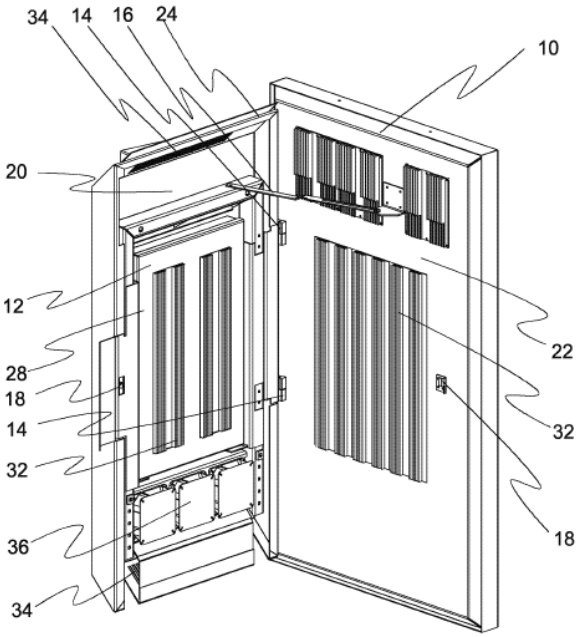
radiated only in the vertical direction on the front side of the front cover"); *see also* Tr. (Flasck) 1094:23-1095:12.).

2. International Patent Publication No. 2007/116116 A1 ("Karppanen '116") (RX-0083)

MRI relied upon International Patent Publication No. WO 2007/116116 A1 ("Karppanen '116") (RX-0083), to Pasi Karppanen, Niko Suomela, and Markku Pyykönen, to assert that claims 1 and 2 of the '117 patent are obvious in view of Karppanen '116 in combination with Takahashi. (RBr. at 20.). Karppanen '116 was filed as a PCT Application on April 11, 2006, and published on October 18, 2007. (RX-0083 (Karppanen '116) at (22), (43).). The Parties agreed that Karppanen '116 is prior art to the '117 patent. (RBr. at 20; CRBr. at 13-14.).

Karppanen '116 relates to an electronic information board with a display casing 10 and a device casing 12, separated by a shared cooling space. (RX-0083 (Karppanen '116) at 6:16-21, 7:9-10.). This is shown below in Figure 1 of Karppanen '116, which Samsung's expert, Dr. Smith, discussed during the Hearing.

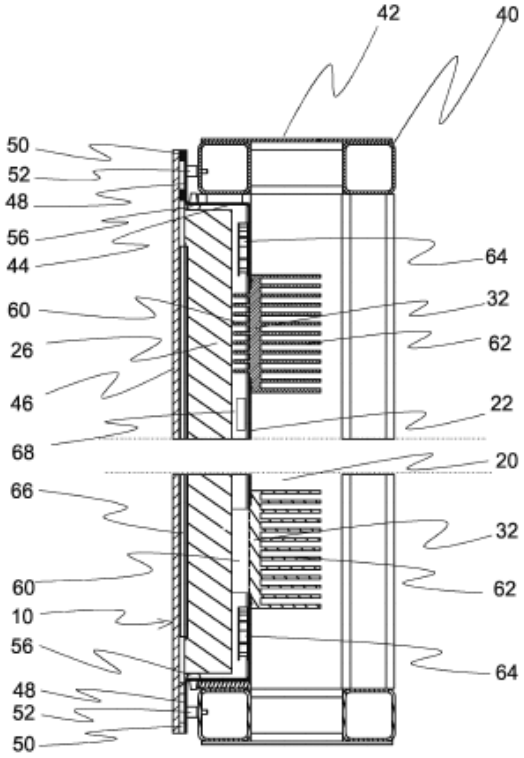
Figure 55: Figure 1 of Karppanen ’116



(*Id.* at Fig. 1; *see also id.* at 3:36-37, 6:21-24, 7:9-10, Fig. 2; Tr. (Smith) at 1245:1-17 (discussing CDX-0009.0013).).

As shown above in Figure 1 of Karppanen ’116 and below in Figure 2 of Karppanen ’116, “[t]he display element 26 of the information board (Fig. 2) has been placed inside the display casing, and the electronic equipment needed in the control of the display element have been placed inside the device casing.” (RX-0083 (Karppanen ’116) at 6:21-24.).

Figure 56: Figure 2 of Karppanen ’116



(RX-0083 (Karppanen ’116) at Fig. 2.).

As shown above in Karppanen ’116 Figure 1, “[t]he information board has a closed display casing 10, to the back wall 22 of which a cover 24 opening on hinges 14 has been connected.” (*Id.* at 6:17-19.). “A closed device casing 12 has been fastened to the bottom of the cover. The display element 26 of the information board (Fig. 2) has been placed inside the display casing, and the electronic equipment needed in the control of the display element have been placed inside the device casing.” (*Id.* At 6:20-24.). Karppanen describes:

> In normal use, the display casing and the device casing are turned against each other to a closed position and locked to each other by locking means 18 on one side of the casings. In the closed position, there remains a cooling space 20 between the display casing and the device casing, delimited by the cover 24 and the display casing (Fig. 2).
>
> (*Id.* at 7:7-11.).

3. U.S. Patent No. 6,493,440 ("Gromatzky") (RX-0054)

U.S. Patent No. 6,493,440 to Jonathan A. Gromatzky and Joseph D. Long ("Gromatzky") is the primary reference MRI relied on to prove obviousness of claims 4, 6, and 13 of the '311 patent. (RBr. at 38.). Gromatzky issued on December 10, 2002 from U.S. Patent Application No. 09/840,338 filed on April 23, 2001. (RX-0054.0001.). The Parties agree that Gromatzky is prior art to the '311 patent.

Gromatzky is titled "Thermal Management For a Thin Environmentally-Sealed LCD Display Enclosure." (*Id.*). Gromatzky describes a thermal management system for a thin depth LCD display enclosure that is suitable for use in environmentally sensitive conditions. (*Id.*).

4. International Patent Publication No. 2007/116125A1 ("Karppanen '125") (RX-0086)

International Patent Publication No. 2007/116125A1 to Pasi Karppanen ("Karppanen '125") is a secondary reference MRI relied on to prove obviousness of claims 4, 6, and 13 of the '311 patent. (RBr. at 38.). Karppanen '125 was published on October 18, 2007 from International Application No. PCT/FI2007/050091 filed on February 22, 2007. (RX-0086.0001.). The Parties agree that Karppanen '125 is prior art to the '311 patent.

Karppanen '125 is titled "Electronic Information Board." (*Id.*). Karppanen '125 describes an electronic information board comprising a frame, a flat display element such as an LCD for presenting information, and a cooling system comprising a circulating fan within the display casing. (*Id.*).

5. U.S. Patent No. 7,075,261 ("Burstein") (RX-0085)

U.S. Patent No. 7,075,261 to Steven Burstein ("Burstein") is a secondary reference MRI relied on to prove obviousness of claims 4, 6, and 13 of the '311 patent. (RBr. at 38.). Burstein

issued on July 11, 2006 from U.S. Patent Application No. 10/119,983 filed on April 10, 2002. (RX-0085-0001.). The Parties agree that Burstein is prior art to the '311 patent.

Burstein is titled "Method and Apparatus for Controlling Fan." (*Id.*). Burstein describes a method and apparatus for controlling a fan wherein a predetermined amount of current is supplied to the fan, the speed at which the fan rotates is monitored, and once the fan has reached a minimum speed then the amount of current supplied is reduced such that the fan rotates at the minimum speed. (*Id.*).

6. International Patent Publication No. 2008/050660A2 ("Utsunomiya") (RX-0087)

International Patent Publication No. 2008/050660A2 to Motoyasu Utsunomiya ("Utsunomiya") is a secondary reference MRI relied on to prove obviousness of claims 4, 6, and 13 of the '311 patent. (RBr. at 38.). Utsunomiya published on May 2, 2008 from International Patent Application No. PCT/JP2007/070297 filed on October 11, 2007. (RX-0087.0001.). The Parties agree that Utsunomiya is prior art to the '311 patent.

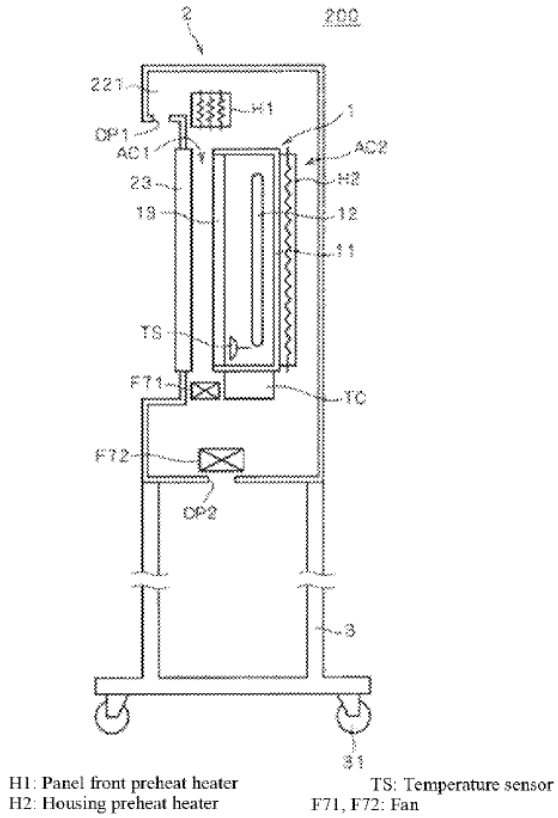
Utsunomiya is titled "Apparatus for Cooling Heat Generating Spot of Electronic Device, Cooling Method Therefor, and Liquid Crystal Protector Apparatus." (*Id.*). Utsunomiya describes a silent cooling apparatus for cooling a heat generating spot of an electronic device, wherein the electronic device includes a plurality of components which are disposed side by side to have the same in-plane direction. (*Id.*). The cooling apparatus of Utsunomiya has a first air cooling unit for feeding an air stream to a heat generating spot of the electronic device in an orientation of an in-plane direction and with a second air cooling unit for feeding an air stream to the heat generating spot in the in-plane direction in a different orientation from the air stream by the first air cooling unit. (*Id.*).

7. Japanese Patent Publication No. 2006-163217A ("Nagayama") (RX-0084)

MRI relied upon Japanese Patent Application Publication No. 2006-163217A to Takahisa Nagayama ("Nagayama") (RX-0084), to assert that claim 12 of the '253 patent is obvious. (RBr. at 20.). Nagayama was filed December 10, 2004 and published on June 22, 2006. (RX-0084 (RX-0084.00021 (Nagayama) at (43), (22).). The Parties agreed that Nagayama is prior art to the '253 patent. (RBr. at 72-73; CRBr. at 61-62.).

Nagayama relates to an outdoor display device 200 having device box 2, a liquid crystal panel 13, and backlight 12, as depicted in Figure 9 of Nagayama, which Mr. Flasck discussed during the Hearing:

Figure 57: Figure 9 of Nagayama



(Nagayama (RX-0084) at Abstract, [0001], [0015], Figure 9; Tr. (Flasck) at 1047:5-15.).

C. The ’117 Patent

1. Overview

MRI asserted that claims 1 and 2 of the ’117 patent are invalid as anticipated and/or as obvious, based on two (2) prior art references, separately and/or in combination: Takahashi (RX-0082) and Karppanen ’116 (RX-0083). For the following reasons, the ’117 patent is not invalid as anticipated and/or obvious.[51]

2. Takahashi Does Not Anticipate or Render Obvious the Asserted Claims of the ’117 Patent

Takahashi does not disclose claim elements 1[e], 1[f], or claim 2 of the ’117 patent. Moreover, MRI did not present sufficient evidence that one of ordinary skill in the art would have been motivated to modify Takahashi in the manner MRI alleged in order to cure those deficiencies. *See, e.g.*, *Beiden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). Thus, for the reasons discussed below, it is a finding of this ID that Takahashi does not anticipate or render obvious claims 1 and 2 of the ’117 patent.

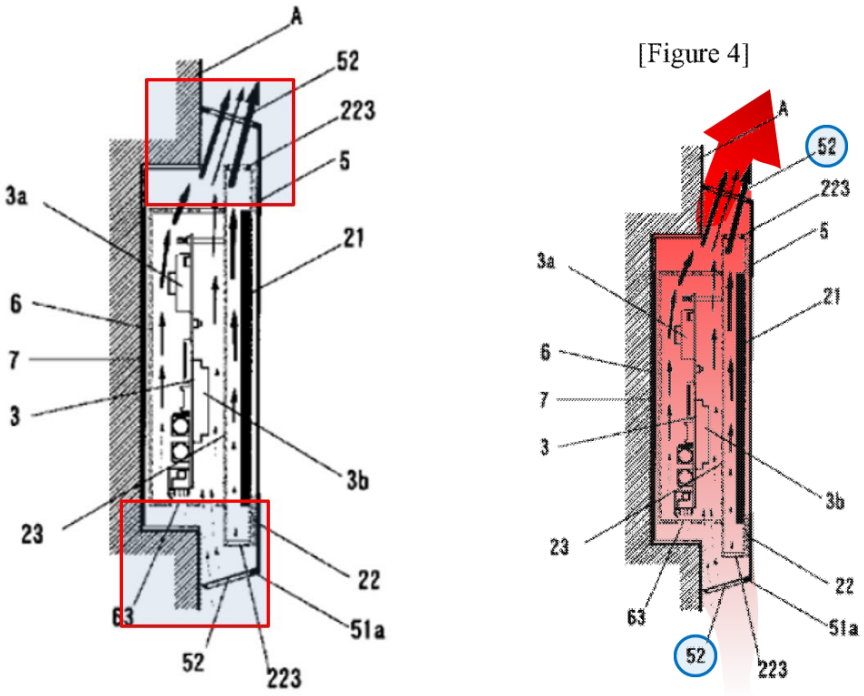
a) Takahashi Does Not Disclose the Claimed “Second Cooling Fluid Path” (1[e]) “wherein the first and second cooling fluid paths are separated from each other” (1[f])

Takahashi does not disclose claim element 1[e] (“a ***second*** cooling path which cools the circuit board”) and 1[f] (“wherein the first and second cooling fluid paths are ***separated*** from each other”). (JX-0001 (’117 Patent) at cl. 1 (emphases added).). Takahashi discloses a ***single*** air path, from a ***single***-entry point to a single exit. As Samsung pointed out in annotated Takahashi Figure 4 below, the shared vents are shown in annotated Figure 4 on the left, and the

[51] *See* Section II.A, *supra* (discussing PTAB’s denial of institution of IPR for the ’117 patent because, *inter alia*, neither Takahashi (RX-0082) nor Karppanen ’116 (RX-0083) teaches two cooling fluid paths that are separated from each other).

single air path is shown in annotated Takahashi Figure 4 on the right.

Figure 58: Annotated Figure 4 of Takahashi



(CRBr. at 15 (citing RX-0082 (Takahashi) at Fig. 4 (annotated); *see also* Tr. (Smith) at 1241:23-1243:12 (discussing CDX-0009.0009).).

As shown in the annotated Takahashi Figures above, Takahashi's display device includes "vent openings 52" at the top and bottom of front cover 5, that allow air to be ventilated upwards through the display device. (RX-0082 (Takahashi) at [0025]-[0027].). Dr. Smith, Samsung's expert, explained that this air flow is a ***single*** air flow path from the vent opening 52 at the bottom of the display device to vent opening 52 at the top of the display device.

> A. . . . Takahashi is called a wall embedded liquid crystal panel. I've highlighted it here on this slide. It uses two vent openings 52. These are on the bottom of the display unit or the liquid crystal display panel unit.
>
> Air enters through the bottom. It travels upwards through the elements within the display unit and exits out of a single exhaust opening or vent opening 52, as described here in these excerpts from the Takahashi patent.

> Q. You mentioned the vent openings. What about the airflows? How many airflow paths does Takahashi disclose?
>
> A. Well, there is a ***single*** airflow path that enters through vent opening 52 on the bottom and then is exhausted through vent openings 52 on the top, just a ***single*** one.

(Tr. (Smith) at 1242:1-13 (emphases added).).

Dr. Smith also testified that Takahashi does not disclose ***first*** and ***second*** cooling paths that are ***separated*** from each other as required by claim 1 because all the air has a ***shared*** entry and ***shared*** exit. MRI's expert, Mr. Flasck, not only did not rebut Dr. Smith's testimony, but also, he confirmed it.

> Q. Turning to slide 10, then, and the '117 patent, what does the '117 patent specification say about the first and second cooling paths that are described in claims 1 and 2 of the '117 patent?
>
> A. Well, it describes these as separate. We've seen Fig. 1 now several times, and I think I've used a very similar annotation a few days ago.
>
> There two cooling paths. I've labeled these, the ***first*** cooling path in pink, that's 60, that enters through opening 61 and exits through opening 62. And there's a ***second*** cooling path that is labeled 70 that enters and exits through opening 71 and 72. There's no mixing between these. These are ***separate*** paths.
>
> Q. You say there's no mixing, that they are separate. How are the first and second cooling paths separated as described in this portion of the specification of the '117 patent that we're looking at on slide 10?
>
> A. Just in that way, there is no mixing of the air that travels through the first cooling path with the air that travels through the second cooling path.
>
> Q. Does the '117 patent disclose any embodiment in which the claimed first and second cooling fluid paths mix inside the case?
>
> A. It does not.
>
> Q. Let's turn, then, back to the Takahashi disclosure and slide 11 of your presentation. Does Takahashi disclose first and second fluid cooling paths that are separated from one another?
>
> A. No. Again, there's just a ***single*** cooling path that enters through the bottom and exits through the top, and the elements inside of the wall mounted display are

cooled with it, with the single cooling path.

(Tr. (Smith) 1242:14-1243:20; *see also* Tr. (Flasck) 1093:2-14 ("Q. . . . And now all of the air that enters the Takahashi display enters through the vent opening 52 at the bottom of the front cover, correct? A. Yes. Q. There's also a vent opening 52 at the top of front cover 5, correct? A. Yes. Q. . . . Now all of the air that exits the Takahashi display exits through the vent opening 52 at the top of the rear cover, correct? A. Yes.").).

The arrangement of the air flow cooling path as described and confirmed by both experts, Dr. Smith and Mr. Flasck, is the only arrangement of air flow that Takahashi discloses. (RX-0082 (Takahashi) at [0025]-[0027]; Tr. (Smith) at 1241:23-1242:13; Tr. (Flasck) at 1092:22-1093:14.). Notably, Takahashi explicitly refers to the air flow path as a single path. (RX-0082 (Takahashi) at [0023] ("forming ***a*** vent ***path*** through the vent openings 52"), [0017] ("It is designed so as not to obstruct ***the*** vertical ventilation ***path*** inside the panel unit main body") (emphases added).).

MRI argued, supported by Mr. Flasck's testimony, that Takahashi satisfies the separate cooling paths claim element because there is no "inter-heating" between liquid crystal panel body 21 and driving printed circuit board 3 in Takahashi and that the claims do not require the cooling paths ***not*** to mix. (RBr. at 14-15; Tr. (Flasck) at 979:21-980:9.). MRI's argument and Mr. Flasck's opinion are inconsistent with the intrinsic record. The claim language and specification of the '117 patent require two (2) cooling paths that are separated from each other, which Dr. Smith explained, irrefutably, do not mix because they are "separate paths." (JX-0001 ('117 Patent) at 5:60-63 ("wherein the first and second cooling fluid paths are separated from each other such that air flow from the second cooling fluid path to the first cooling fluid path is prohibited"), Fig. 1; Tr. (Smith) 1242:14-1243:8 ("There's no mixing between these. These are separate paths. . . . [T]here is no mixing of the air that travels through the first cooling path with the air that travels through the second cooling path."); CDX.0008C.0006 (citing JX-0001 at Fig.

1 (annotated).).

In sum, unlike the '117 patent, which discloses and claims ***two*** air paths that are ***separate*** and do not mix at any point, Takahashi discloses just ***one*** path, where air mixes at multiple points inside the device.

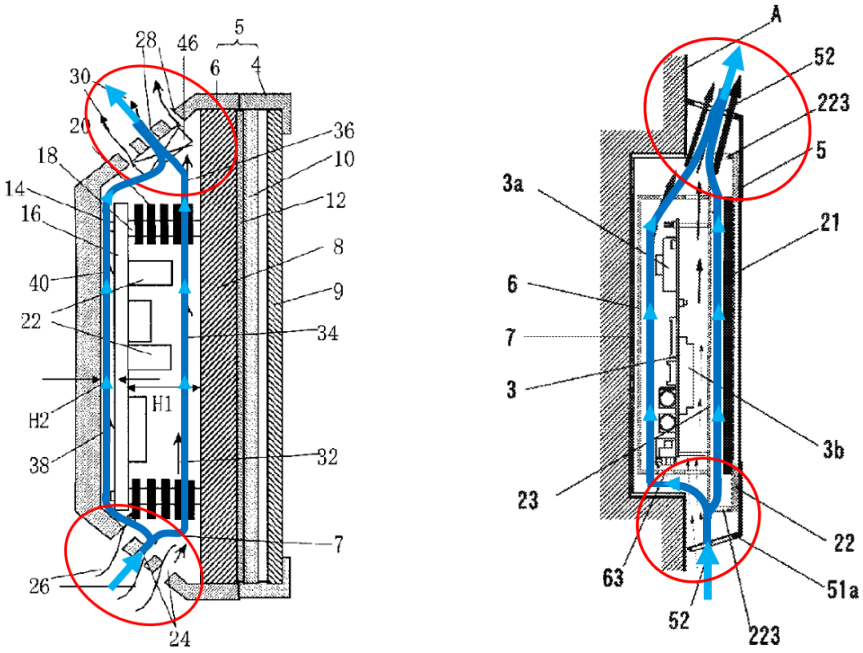
Additionally, Samsung argued that the inventors of the '117 patent specifically sought to improve upon single cooling path techniques used in Takahashi. (CRBr. at 17.). Samsung pointed to Japanese Patent Unexamined Publication No. 2006-162641 ("JP '641") that was both discussed in the Background of the Invention section of the '117 patent and identified in the '964 patent file history[52] as prior art over which the '117 patent was allowed. (*Id.* (citing JX-0001 ('117 Patent) at 1:32-51; JX-0004.0049 ('964 Patent File History)).). As Samsung noted, JP '641 was assigned to Matsushita Electric, the same assignee of the Takahashi reference. (JX-0004.0049 ('964 Patent File History); *see also* Tr. (Flasck) at 1123:25-1124:9.). Furthermore, MRI's expert, Mr. Flasck, acknowledged that the problem JP '641 attempted to solve is "efficiently dissipating heat generated in the plasma display to a rear space formed by a rear case and radiating heat to the outside." (Tr. (Flasck) at 1123:17-24; JX-0004.0049 ('964 Patent File History).).

As described in the Background of the Invention section of the '117 patent, JP '641 discloses a "display device that includes a case having front and rear cases, a display panel mounted in an interior of the case, and circuit boards mounted in the interior of the case," similar to the device disclosed in Takahashi. (JX-0001 ('117 Patent) at 1:32-51.). Like Takahashi, JP

[52] The '117 patent was filed on February 23, 2012 as U.S. Patent Application Serial No. 13/403,559 ("the '559 application"). (JX-0001 ('117 Patent) at (21)-(22).). The '559 application, which issued as the '117 patent, is a reissue of U.S. Patent No. 7,667,964 ("the '964 patent"). (*Id.* at (64).).

’641 discloses using one set of vents for the inlet and one set of vents for the outlet, with air mixing. (*Compare* JX-0004.0063 (Fig. 1 of JP ’641) *with* RX-0082 (Takahashi) at Fig. 4.). Samsung provided the following annotated figures, Figure 1 of JP ’641 (left) and Figure 4 of Takahashi (right) below, to highlight the similarity between Takahashi and JP ’641.

Figure 59: Annotated Figures 1 and 4 of JP ’641



(CRBr. at 18 (citing JX-0004.0063 (Fig. 1 of JP ’641) (annotated); RX-0082 (Takahashi) at Fig. 4 (annotated).).

Samsung contended that both JP ’641 and Takahashi relate to display devices that are cooled by air flowing in through a common vent at the bottom and out through a common vent at the top. As Samsung noted, prior to the ’117 patent, displays included a display panel and circuit boards cooled by the same cooling path, like those disclosed in JP ’641 and Takahashi. (CRBr. at 9 (citing JX-0001 (’117 Patent) at 1:32-51; JX-0004.0049 (’964 File History); Tr. (Flasck) at 1123:9-1126:9).). According to the ’117 patent, this arrangement causes the internal temperature

of the case to increase due to inter-heating between the display panel and the circuit boards, which causes the surface temperature of the panel to increase and, in the case of an LCD panel, causes deterioration of the liquid crystal. (JX-0001 ('117 Patent) at 1:43-51.). Thus, the claimed invention of the '117 patent was to solve this problem by providing a first cooling path that cools the display panel and a second cooling path that cools at least one circuit board, wherein the first and second cooling paths are separated from each other. (*Id.* at 1:60-67.).

Samsung argued that single cooling path techniques such as those taught by JP '641, which the '964 patent overcame, should apply equally to Takahashi. (*Id.* at 18; *see also* Tr. (Flasck) at 1126:7-9 (acknowledging that JP '641 does not disclose two (2) separate cooling fluid paths).). Although Samsung did not cite to any cases in support of its argument, its reasoning that Takahashi and JP'641 teach a similar, single cooling path, is somewhat persuasive, and is thus given some weight.

For the foregoing reasons, MRI has not met its burden and proven by clear and convincing evidence that Takahashi anticipates claim 1 of the '117 patent, and claim 2 of the '117 patent, which depends from claim 1.

b) One of Ordinary Skill Would Not Have Been Motivated to Modify Takahashi as MRI Proposed

MRI contended that it would have been obvious and well within the skill of a person of ordinary skill in the art, or POSITA, to "slightly modify the display device of Takahashi" to have the air that passes through the device in Takahashi "enter and exit the device at individual inlets and outlets," that is to include two (2) separate cooling paths. (RBr. at 17 (citing Tr. (Flasck) at 981:10-19).). However, again, as Samsung pointed out, prior to the '117 patent, displays included a display panel and circuit boards cooled by the same cooling path similar to a device

disclosed in Takahashi. (CRBr. at 9 (citing JX-0001 ('117 Patent) at 1:32-51; JX-0004.0049 ('964 File History); Tr. (Flasck) at 1123:9-1126:9).).

> During the Hearing, MRI's expert, Mr. Flasck's, testimony was limited on this issue.
>
> Q. Okay. Let's say independent ventilation openings, inlets and outlets, were required by the claims. Let's just say that. Would Takahashi still invalidate this limitation?
>
> A. Yes.
>
> Q. Why?
>
> A. Because even though I don't think it's required, it would be obvious to a person of ordinary skill in the art to simply put a baffle in Takahashi separating the – or keeping the two flows separate near the inlets and outlets.

(Tr. (Flasck) at 981:10-19).).

Beyond this ***conclusory*** statement that such a modification would be obvious, Mr. Flasck provided ***no*** additional explanation or support for his opinion, which also undermines the credibility of his testimony. (Tr. (Flasck) at 981:10-19.). Thus, his opinion is given little, if any, weight. *See, e.g.*, *Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (citing *Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) ("It is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate")).

In rebuttal, Dr. Smith testified that there is no teaching in Takahashi that would have motivated or even suggested to one of ordinary skill to separate the airflow in Takahashi into two (2) separate paths. (Tr. (Smith) 1243:15-1244:8 ("Well, there's nothing in Takahashi that would motivate one to do that. It appears from the description of the patent that everything that the patent set out to do is accomplished through the structure displayed with a single path and single openings on the top and bottom.").).

MRI bears the burden to clearly and convincingly demonstrate that a skilled artisan

would have been motivated to modify the airflow in Takahashi into two (2) separate paths. As discussed above, Mr. Flasck's testimony that MRI relied upon does not articulate why one of ordinary skill would be motivated to make such a modification, i.e., two (2) separate cooling paths. This cannot satisfy MRI's burden of "clear and convincing" evidence.

Accordingly, MRI has not met its burden to prove by clear and convincing evidence that Takahashi renders obvious claim 1 of the '117 patent, and claim 2 of the '117 patent, which depends from claim 1.

3. Karppanen '116 in Combination with Takahashi Does Not Render the Asserted Claims of the '117 Patent Obvious

As explained in detail below, Karppanen '116 in combination with Takahashi does not render the asserted claims 1 and 2 obvious because Karppanen '116 fails to disclose claim element 1[g] and the additional elements recited in claim 2. Moreover, MRI did not present adequate evidence that a person of ordinary skill in the art would have been motivated to modify Karppanen '116 with Takahashi in the manner MRI proposed, as described below. Thus, for the following reasons, it is a finding of this ID that Karppanen '116 in combination with Takahashi does not render obvious claims 1 and 2 of the '117 patent.

a) Karppanen '116 Does Not Disclose a "Case . . . I[ing] a Circuit Board Mounting Part Provided on a Rear Surface of the Case . . .Such That the Circuit Board Is Received in the Circuit Board Mounting Part . . ." as Required by Claim 1

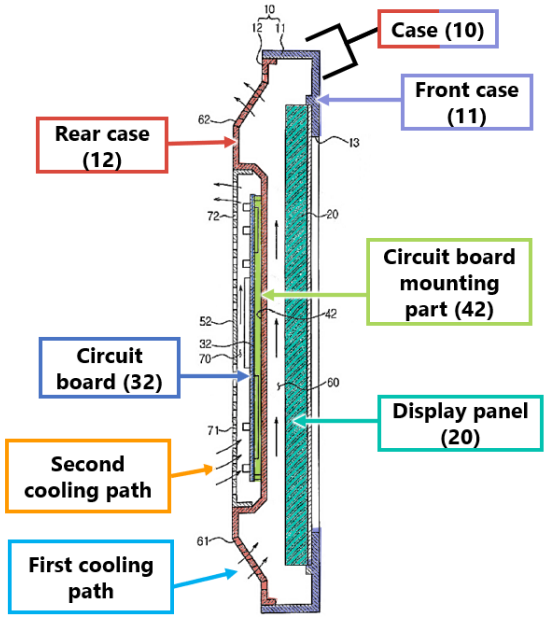
Dr. Smith, Samsung's expert, testified that Karppanen '116 does not disclose the elements of claim element 1[g] ("the case includes a circuit board mounting part provided on a rear surface of the case . . . and the second cooling fluid path includes an internal space of the

circuit board mounting part").[53] (Tr. (Smith) at 1244:9-20.). MRI's expert Mr. Flasck also conceded that Karppanen '116 does not explicitly disclose this claim element. (Tr. (Flasck) at 988:20-24 ("Q. . . . Does Karppanen disclose element 1[g]? A. Not explicitly. Karppanen discloses that the electronics, that is, the printed circuit boards, are in the device casing 12, but he doesn't – and he doesn't say where except that the cooling solution is similar.").). Merely reciting components, or leaving out a necessary element of a claim is not enough here.

Dr. Smith testified that this claim element of the '117 patent requires that the circuit boards 32 be mounted to the ***rear*** surface 12 (red box to the left) of the case 10 in which the display panel 20 is mounted, as illustrated below in annotated Figure 1 of the '117 patent.

[53] During the *Markman* proceedings in this Investigation, the term "circuit board mounting part" was given its plain and ordinary meaning. (*See* Order No. 28 at 25.). In its decision denying the institution of *inter partes* review, PTAB did not separately construe this claim term. (IPR2023-01201, Paper No. 9 at 11 (Feb. 7, 2024) ("Petitioner proposes a construction for 'circuit board mounting part' which appears in each of claims 1, 2, and 5. Pet. 19-25. Our decision, however, does not depend on any construction of the term 'circuit board mounting part.' Thus, it is not necessary to construe this term.").).

Figure 60: Annotated Figure 1 of the '117 Patent



(CDX-0008C.0006 (citing JX-0001 ('117 Patent) at Fig. 1 (annotated)); Tr. (Smith) at 449:7-450:6 (discussing CDX-0008C.0006); *see also* JX-0001 ('117 Patent) at 2:53-57 ("a plurality of circuit boards 31, 32 and 33 mounted at a rear of the case 10"), 3:3-5 ("circuit board mounting parts 41, 42 and 43 for respectively mounting the circuit boards 31, 32 and 33 are provided on a rear surface of the rear case 12").).

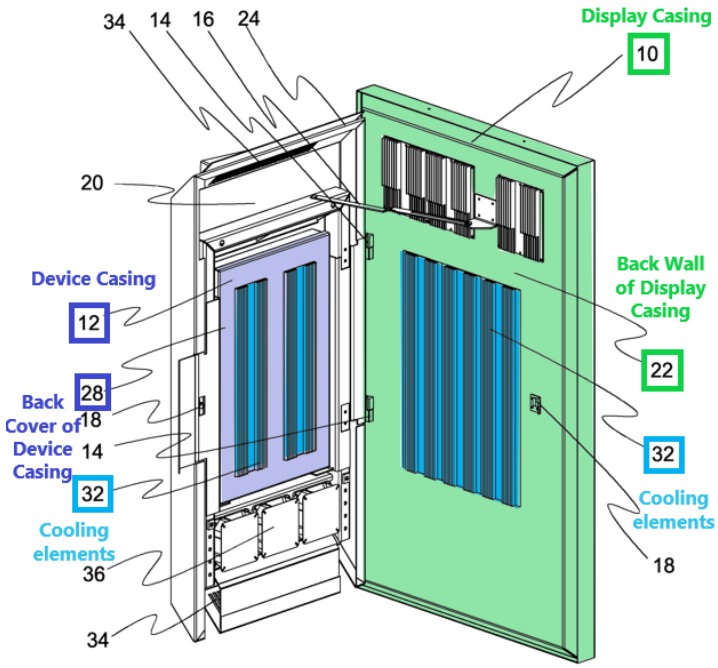
However, referring to annotated Figure 1 of Karppanen '116, shown below, Dr. Smith explained that Karppanen '116, unlike the '117 patent, involves ***two*** (2) cases on opposite sides of the display device: one which houses the display 10 (i.e., annotated in green on the right and labeled "Display Casing"), and the other which houses the circuit boards and other electronics 12 (i.e., annotated in purple on the left and labeled "Device Casing").

> Q. So let's look at that in a little more detail. Turning to slide 13, can you walk us through Fig. 1 of the Karppanen '116 reference as you've interpreted it?
>
> A. Sure. Fig. 1, as we see here, this excerpt at – I don't remember if it's paragraph or column 16 – I think it's paragraph 6, I'm sorry, paragraph 6 – Karppanen '116 is called an Electronic Information Board, and that Electronic Information Board shown in Fig. 1 has two cases. These are called closed display casing 10, and that houses the display panel.

> And there's also a closed device casing 12 on the other side, so I've highlighted the display casing in green, the closed – I'm sorry, the closed device casing on the other side, on the left hand side, element 12, that is the section of the information board where the electronic equipment is placed. So there are two cases in Karppanen '116, a display case 10 and the device casing 12.

(Tr. (Smith) at 1245:1-17; *see also* RX-0083 (Karppanen '116) at 3:36-37, 6:21-24, 7:9-10, Fig. 2.).

Figure 61: Annotated Figure 1 of Karppanen '116



(CDX-0009.0013 (citing RX-0083 Karppanen '116) at Fig. 1 (annotated).).

As Samsung noted, it is unclear which structures in Figure 1 that Mr. Flasck and MRI have contended is the claimed "case" that is required by claim 1 of the '117 patent. It is not clear if it is the device casing 12, which is annotated in purple on the left, or the display casing 10, which is annotated in green on the right. On the one hand, Mr. Flasck testified that in Karppanan '116, "the case is actually two cases, a front case display case 10 and a rear case electronics in the device case 12." (Tr. (Flasck) at 986:9-16, 1126:12-1127:3 (discussing RDX-0005C.0046).).

On the other hand, MRI appears to have argued that the claimed case is only the display casing 10 as shown above in annotated Figure 1 of Karppanan. (RBr. at 21.). Neither MRI nor its expert agreed which of the distinct display casing 10 or device casing 12 is the "case" that is required by claim 1 of the '117 patent.

In either event, MRI's and Mr. Flasck's explanations fall short of the necessary proof. MRI has not provided sufficient proof that Karppanen '116 discloses claim element 1[g], which recites "wherein the case includes a circuit board mounting part provided on a rear surface of the case and partitioned from a space in which the display panel is mounted such that the circuit board is received in the circuit board mounting part, the first cooling fluid path includes a space between a rear surface of the display panel and an inner surface of the case, and the second cooling fluid path includes an internal space of the circuit board mounting part." (JX-0001 ('117 Patent) at cl. 1.).

In contrast, Dr Smith persuasively testified that if the "case" in Karppanan '116 is the display casing 10, then Karppanen '116 fails to disclose circuit boards mounted to its ***rear*** surface, i.e., back wall 22. In other words, circuit boards mounted to a rear surface of the display casing 10 are simply missing and not disclosed in Karppanen '116. Thus, the "case," i.e., display casing 10, in Karppanen '116 does not include a circuit board mounting part provided on its rear surface as required by claim 1. The explanation of why is reflected below in Dr. Smith's quoted testimony.

> Q. And did you hear Mr. Flasck testify that the component in Karppanen '116 described as the back cover 28 is, quote, "circuit board mounting part provided on the rear surface of the case," quote, as recited in claim 1 of the '117 patent?
>
> A. Yes, I recall it.
>
> Q. Do you agree with him in that regard?

> A. No, I don't. In order for the back cover – and Mr. Flasck called this the rear cover – of the device casing to be a circuit board mounting part, it would have to be mounted onto the ***back wall***, which is ***22***, of the ***display*** case, and it's not.
>
> Q. And how do you conclude that the back cover – strike that. Why isn't the back cover 28 in your view provided on a rear surface of the case, as that term is used in the claims of the '117 patent?
>
> A. Well, as I said before, even in the closed position, that back cover isn't on the rear surface of the case, it's separated by the rear surface of the case at least by the shared common cooling path and the cooling elements 32.

(Tr. (Smith) at 1247:17-1248:13 (emphases added).).

As Dr. Smith pointed out, and as shown above in annotated Figure 1 of Karppanen '116, Karppanen '116 discloses that the circuit boards are on the ***other*** side of the unit, in a completely ***different*** device casing 12 (which is annotated above in purple in Figure 1 of Karppanen '116) and which is separated by cooling elements 32 and the cooling space 20. (Tr. (Smith) at 1245:18-1247:4, 1247:17-1248:13; RX-0083 (Karppanen '116) at 6:21-24 ("The display element 26 of the information board (Fig. 2) has been placed inside the display casing, and the electronic equipment needed in the control of the display element have been placed inside the device casing."), 3:36-37 ("[T]here is a common cooling space between the display casing and the device casing[.]"), 7:9-10 ("In the closed position, there remains a cooling space 20 between the display casing and the device casing . . . .").

Dr. Smith also testified that if the "case" in Karppanan '116 is the display casing 10 and device casing 12 together, Karppanen '116 still fails to disclose circuit boards mounted to the ***rear*** surface because one of ordinary skill would have understood that within this device casing 12, circuit boards would have been mounted to the ***inner*** surface of the rear cover 24, as shown above in annotated Figure 1 of Karppanen '116 (as opposed to the rear surface of the case, as claimed by the '117 patent). (CDX-0009.0013 (citing RX-0083 Karppanen '116) at Fig. 1

(annotated); *see also* RX-0083 (Karppanen '116) at 6:22-24 ("the electronic equipment needed in the control of the display element have been placed ***inside*** the device casing") (emphasis added).

> Q. Now if I were to ask you to assume for sake of argument that the display casing 10 and the device casing 12 in this Fig. 1 of Karppanen together form a case, is a back cover 28 provided on a rear surface of the case?
>
> A. So now, as you've asked me to assume, we're putting these two cases together and considering that the case.
>
> Q. Right.
>
> A. Well, what 28 is called in the patent is the back cover of the device casing. It's called the back cover. And Mr. Flasck calls it the rear cover. It's not called the rear cover; it's the back cover.
>
> ***In the closed position, this back cover of the device casing is not on the rear surface of his case***. Instead, the rear surface of the case in that case, in that situation, where you want to take the case to be comprised of display casing and device casing, wouldn't be 28, it would have to be something on the outside of the device casing, something like panel 24.

(Tr. (Smith) at 1248:14-1249:7 (emphasis added).).

MRI and Mr. Flasck have failed to clearly and convincingly demonstrate how either configuration allegedly discloses the claimed "case," that is display casing 10 alone or together with device casing 12, which includes a circuit board mounting part on its rear surface.

For these reasons, MRI has not met its burden and proven by clear and convincing evidence that Karppanen '116 discloses claim element 1[g] of claim 1 of the '117 patent.

b) Karppanen '116 Does Not Disclose the Additional Elements Recited in Claim 2

Claim 2 of the '117 patent depends from claim 1 and adds the element that the case comprises a front case and a rear case coupled together. In addition to the missing element of claim 1 discussed above, Karppanen '116 also does not disclose the elements of claim 2 ("the rear case includes a circuit board mounting part provided on an outer surface of the rear case

such that the circuit board is mounted in the circuit board mounting part"). (Tr. (Smith) at 1249:8-18.).

To the extent MRI argued that device casing 12 (or rear cover 28 of the device casing) is the claimed "rear case," it is incorrect for several reasons. As an initial matter, the device casing 12 of Karppanen '116 is not part of the display casing 10, which is required because claim 2 states that ***the case of claim 1*** comprises the front and rear case, not that there is a ***different*** case coupled to the case of claim 1. (RX-0083 (Karppanen '116) at 7:6-8; JX-0001 ('117 Patent) at cl. 2.). MRI's argument fails for this reason alone.

Even assuming, *arguendo*, that claim 2 allows for there to be a different case that comprises the front and rear case, MRI provided ***no*** explanation why circuit boards would be mounted to rear cover 28, other than Mr. Flasck's ***unsupported*** and ***conclusory*** testimony that the circuit board can only be mounted to either the "back surface or front surface."

> Q. . . . Does Karppanen disclose element 1[g]?
>
> A. Not explicitly. Karppanen discloses that the electronics, that is, the printed circuit boards, are in the device casing 12, but he doesn't – and he doesn't say where except that the cooling solution is similar. But there are only a couple of obvious places to mount the printed circuit board in the device casing 12. You either mount it on the back surface or the front surface.

(Tr. (Flasck) at 988:20-989:3; *see also id.* at 993:8-20; RBr. at 27; RX-0083 (Karppanen '116) at 7:31-34.).

The problem with Mr. Flasck's testimony is that he cannot and does not say with certainty where the circuit board mounting part of claim 2 of the '117 patent would be located in Karppanen '116. He merely speculated about where that rear case with a circuit board mounting part of claim 2 would occur structurally in Karppanen '116, without any supporting citation or explanation. Mr. Flasck's unsupported testimony undermines the credibility of his opinion.

Yorkey, 601 F.3d at 1284. Therefore, his testimony is afforded little weight.

By contrast, Dr. Smith testified clearly that circuit boards in Karppanen '116 would have been mounted to the inner surface of the rear cover 24, not to the rear surface of cover 28. (Tr. (Smith) at 1248:14-1249:7.). He explained clearly given the structure of the double cases and what they contain in Karppanen '116 that mounting the claimed circuit boards on back cover 28 of Karppanen '116 would interfere with the cooling elements 32 that are also provided on back cover 28, thereby preventing the two cases, i.e., the display casing 10 and the device casing 12, from closing. (*Id.* at 1249:24-1251:3.). Additionally, as discussed for claim 1, rear cover 28 would not be the rear surface of the device case. (*Id.* at 1249:8-18.). MRI's and Mr. Flasck's explanations, in addition to being unclear, create clear structural problems that Dr. Smith's explanations resolve.

For the reasons discussed above, MRI has not met its burden of proving by clear and convincing evidence that Karppanen '116 discloses the additional elements recited in claim 2 of the '117 patent.

c) Claims 1 and 2 Would Not Have Been Obvious over Karppanen '116 in Combination with Takahashi

Karppanen '116 discloses as the invention circuit boards that are not mounted on the back of the display casing, but rather in their own device casing which extends from the rear cover on the opposite side of the device. (RX-0083 (Karppanen '116) at 3:23-26 ("The basic idea of the invention is that the display element and the electronics required for controlling the display are located separately from each other for facilitating the arrangements for temperature control and cooling of the information board."), 12:5-7 (claim 1) ("the information board has a display casing (10), inside which the display element has been placed, and a device casing (12), inside

which the electronic equipment needed in the control of the display element have been placed").).

As Samsung pointed out, modifying Karppanen '116 such that circuit boards are mounted to the rear surface of the display casing could not be done without destroying the purported invention of Karppanen '116. (CRBr. at 24.). *Medtronic, Inc. v. Teleflex Innovations S.a.r.l.*, 69 F.4th 1341, 1347-50 (Fed. Cir. 2023) (substantial evidence supported PTAB's finding claims not unpatentable because proposed modifications would have resulted in "the destruction of [reference's] entire purpose"). It would require removing the circuit boards from the ***device*** casing and relocating them to the ***display*** casing. Such a modification would undermine the "basic idea" of Karppanen '116, which is to have "the display element and the electronics required for controlling the display . . . located separately from each other for facilitating the arrangements for temperature control and cooling of the information board." (RX-0083 (Karppanen '116) at 3:23-26.). *Medtronic*, 69 F.4th at 1347-50. Moreover, if the circuit boards, i.e., "electronics," and the "display element" are both in the display casing, the device casing in the modified device would serve no purpose at all. *Id.*

MRI and Mr. Flasck argued that the proximity of display casing 10 and device casing 12 would have made it obvious and "advantageous" to modify Karppanen '116 so that the circuit boards are mounted to back wall 22 of the display casing instead of rear cover 28 of the device casing 12. (RBr. at 24-25; Tr. (Flasck) at 991:17-992:5.).

However, Dr. Smith testified that a person of ordinary skill would not have been motivated to apply Takahashi or modify Karppanen '116's device as MRI proposed. (Tr. (Smith) at 1250:4-15.). Dr. Smith explained that the two (2) references disclose different types of displays. Takahashi is directed to a wall-embedded display while Karppanen '116 is directed

to a freestanding information board that at most could be mounted to a wall, but not in a wall. (Tr. (Smith) at 1250:4-15; RX-0082 (Takahashi) at [0005]-[0006]; RX-0083 (Karppanen '116) at 3:23-26, 7:2-5.).

> Q. And do you agree that a person of ordinary skill in the art would have been motivated to add a circuit board mounting part to Karppanen '116 based on the disclosure of the Takahashi reference?
>
> A. No, I don't think so, for a couple of reasons.
>
> Q. Why is that?
>
> A. One is, if we look at what these – what these inventions are, what these patents describe, the Karppanen '116 display assemblies, an information board, it is freestanding. There are two parts to it, as we talked about, a display part and a device part that are hinged together.
>
> Takahashi, on the other hand, is a wall embedded display. This is inserted into a wall. I think it's labeled as A on the left side of Takahashi. It's shaded in gray. It's the wall itself. So a combination of these things, I don't think one would look to one for the other.

(Tr. (Smith) at 1249:24-1250:15.).

Therefore, there is no place for a circuit board mounting part on the ***rear*** surface of the case as required by claim 1 in the Takahashi wall-embedded display.

Mr. Flasck's conclusory opinions are clearly based on impermissible hindsight. *See Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 162 (Fed. Cir. 2021) (vacating PTAB's finding of reasonable expectation of success combining prior art references because "[t]he only support for such a finding is pure conjecture coupled with hindsight reliance on the teachings in the [challenged] patent").

For the foregoing reasons, MRI has not met its burden and proven by clear and convincing evidence that Karppanen '116 in combination with Takahashi renders obvious claims 1 and 2 of the '117 patent.

D. The ’311 Patent

MRI argued that claims 4, 6, and 13 of the ’311 patent are invalid for obviousness over Gromatzky (RX-0054) in view of Karppanen ’125 (RX-0086), Burstein (RX-0085), and Utsunomiya (RX-0087). (RBr. at 38-53.).

1. Claim 1

For claim 1 of the ’311 patent, MRI relied on Gromatzky (RX-0054) as its primary reference and the following three secondary references: Karppanen ’125 (RX-0086), Burstein (RX-0085) and Utsunomiya (RX-0087). For the reasons explained below, MRI has not proven by clear and convincing evidence that claim 1 of the ’311 patent would have been obvious.

a) 1[pre]: “A liquid crystal display device, comprising”

There is no dispute that Gromatzky discloses a liquid crystal display device. (RBr. at 40-41; CRBr. at 32-42.). Therefore, it is a finding of this ID that Gromatzky discloses claim element 1[pre] of the ’311 patent. (Tr. (Flasck) at 1282:16-1283:1, 1033:24-1034:11; Gromatzky (RX-0054) at Figure 1, 2:52-3:32 (“LCD display 10”).).

b) 1[a]: “a liquid crystal panel”

There is no dispute that Gromatzky discloses a liquid crystal display device comprising a liquid crystal panel. (RBr. at 40-41; CRBr. at 32-42.). Therefore, it is a finding of this ID that Gromatzky discloses claim element 1[a] of the ’311 patent. (Tr. (Flasck) at 1282:16-1283:1, 1033:24-1034:11; Gromatzky (RX-0054) at Figure 1, 2:52-54 (“LCD module 26”).).

c) 1[b]: “a protection panel separated from the liquid crystal panel by a channel; and”

There is no dispute that Gromatzky discloses a liquid crystal display device comprising a protection panel separated from the liquid crystal panel by a channel. (RBr. at 40-41; CRBr. at 32-42.). Therefore, it is a finding of this ID that Gromatzky discloses claim element 1[b] of the

’311 patent. (Tr. (Flasck) at 1282:16-1283:1, 1033:24-1034:11; Gromatzky (RX-0054) at 4:32-36 (“transparent lens 18”).).

d) 1[c]: “a flow control device to impart turbulence to an air flow in the channel, the flow control device comprising:”

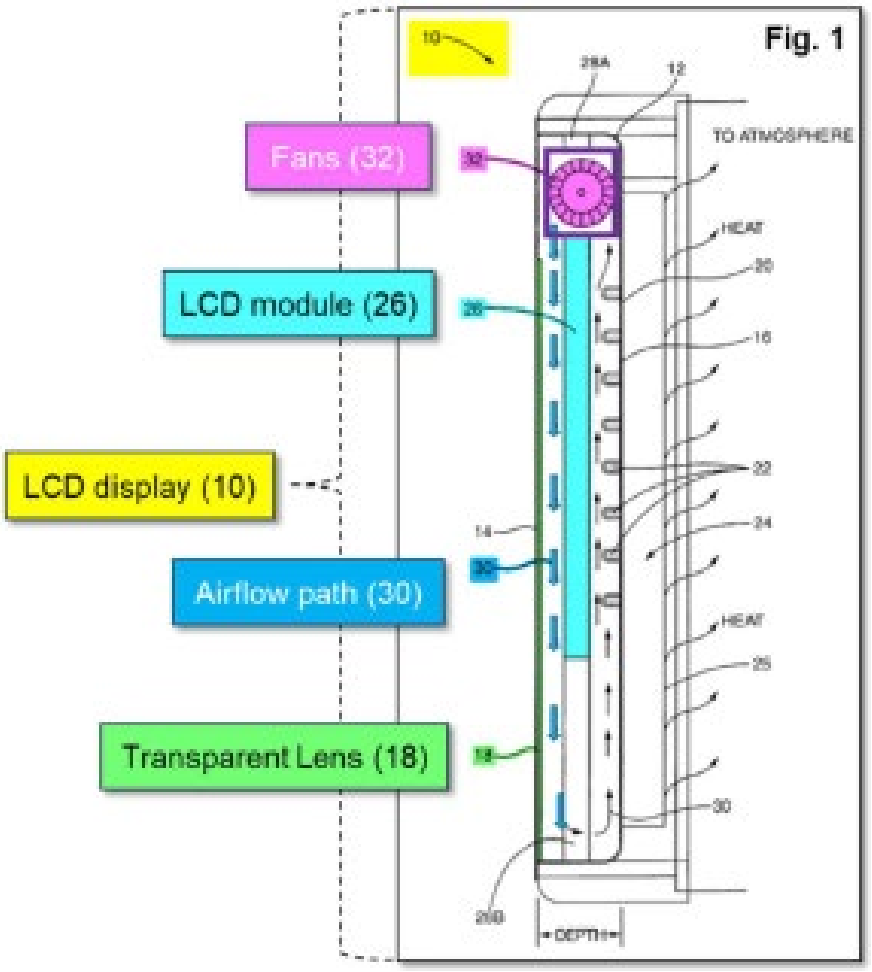
There is no dispute that Gromatzky discloses a liquid crystal display device comprising a flow control device to impart turbulence to an air flow in the channel. (RBr. at 41-42; CRBr. at 32-42.). Figure 1 of Gromatzky depicts LCD display 10 with fans 32, which may be any kind of air movement device including “those that generate turbulent air,” that are placed in the airflow path 30 in order to “dissipate the heat in the ambient air, thereby cooling the LCD module 26, an airflow path 30 is created around the LCD module 26 by placement of the LCD module 26 between the lens 18 and the backlight assembly 20.” (Gromatzky (RX-0054) at Figure 1, 4:32-5:20 (“fans 32”).). Therefore, it is a finding of this ID that Gromatzky discloses claim element 1[c] of the ’311 patent. (Tr. (Flasck) at 1034:12-1037:1.).

Burstein and Karppanen ’125 reinforce Gromatzky’s disclosure of a fan control device that imparts turbulence. Burstein teaches that controlling a fan “typically involves a fan control unit executing a fan control algorithm.” (Burstein (RX-0085) at 1:1-52; Tr. (Flasck) at 1035:9-18.). Karppanen ’125 discloses a control unit for controlling operation of “circulating fans 72” in a cooling system for an electronic display. (Kappanen ’125 (RX-0086) at 9:11-25; Tr. (Flasck) at 1035:19-1036:7.). Mr. Flack’s testimony that it would be obvious to apply the foregoing teachings to the thermal management system of Gromatzky to control the fan disclosed therein was persuasive and unrebutted. (Tr. (Flasck) at 1036:8-1037:1.). Therefore, it is a finding of this ID that Gromatzky in combination with Burstein and Karppanen ’125 renders obvious claim element 1[c] of the ‘311 patent.

e) 1[c1]: "a temperature sensor to measure the temperature of air discharged from the channel; and

This claim element was vigorously disputed by the Parties. (RBr. at 42-47; CRBr. at 33-41.). Figure 1 of Gromatzky depicts LCD display 10 with front portion 14, lens 18 (the claimed "protection panel"), fans 32 (the claimed "flow control device"), airflow path 30 (the claimed "channel") to cool the LCD module 26 (the claimed "liquid crystal panel"), wherein the LCD module 26 is situated between the lens 18 and the backlight assembly 20, as illustrated in Mr. Flasck's demonstrative, which is reproduced below as Figure 62:

Figure 62: Excerpt of Mr. Flasck's Demonstrative Illustrating Figure 1 of Gromatzky



(RDX-0005C.0120C; Gromatzky (RX-0054) at Figure 1, 4:32-5:20; Tr. (Flasck) at 1033:24-1037:1.).

MRI conceded that Gromatzky does not expressly disclose the existence of or the use of a temperature sensor. (RBr. at 43.). However, MRI argued, and Mr. Flasck testified, that because Gromatzky discloses a thermal management system wherein the speed of the fans is controlled, a POSITA would understand that the thermal management system "inherently has to have a temperature sensor somewhere." (RBr. at 43; Tr. (Flasck) at 1037:2-13.). MRI did not argue in its Response to the Complaint, (Doc. ID 789058), or in its Pre-Hearing Brief, (Doc. ID 802971 at 75-76), that Gromatzky or any other reference inherently discloses this claim element or any other claim element. Although Samsung did not argue that MRI waived its inherency argument, it is a finding of this ID that MRI did waive its inherency argument.

MRI's inherency argument, if not wived, would be rejected because it is not supported by the evidentiary record. To prove inherency, "mere possibility is not enough. Inherency may not be established by probabilities or possibilities." *PersonalWeb Techs., LLC v. Apple, Inc.*, 917 F.3d 1376, 1382 (Fed. Cir. 2019) (internal citations and quotations omitted); *see also Endo Pharms. Sols. Inc. v. Custopharm, Inc.*, 234 F. Supp. 3d 587, 599–600 (D. Del. 2017), *aff'd,* 894 F.3d 1374 (Fed. Cir. 2018) ("in the context of an obviousness inquiry, inherency may supply a missing claim limitation only if the limitation at issue is the natural result of the combination of prior art elements") (internal citations and quotations omitted). The portion of Gromatzky that MRI relied on as allegedly inherently disclosing a temperature sensor, (RX-0054 at 4:52-5:20), describes a system for dissipating heat in an LCD device that consists of a fan that circulates ambient air through an airflow path around an LCD module. However, Gromatzky does not disclose how, in that system, the fan's speed is controlled. To the contrary, Gromatzky discloses

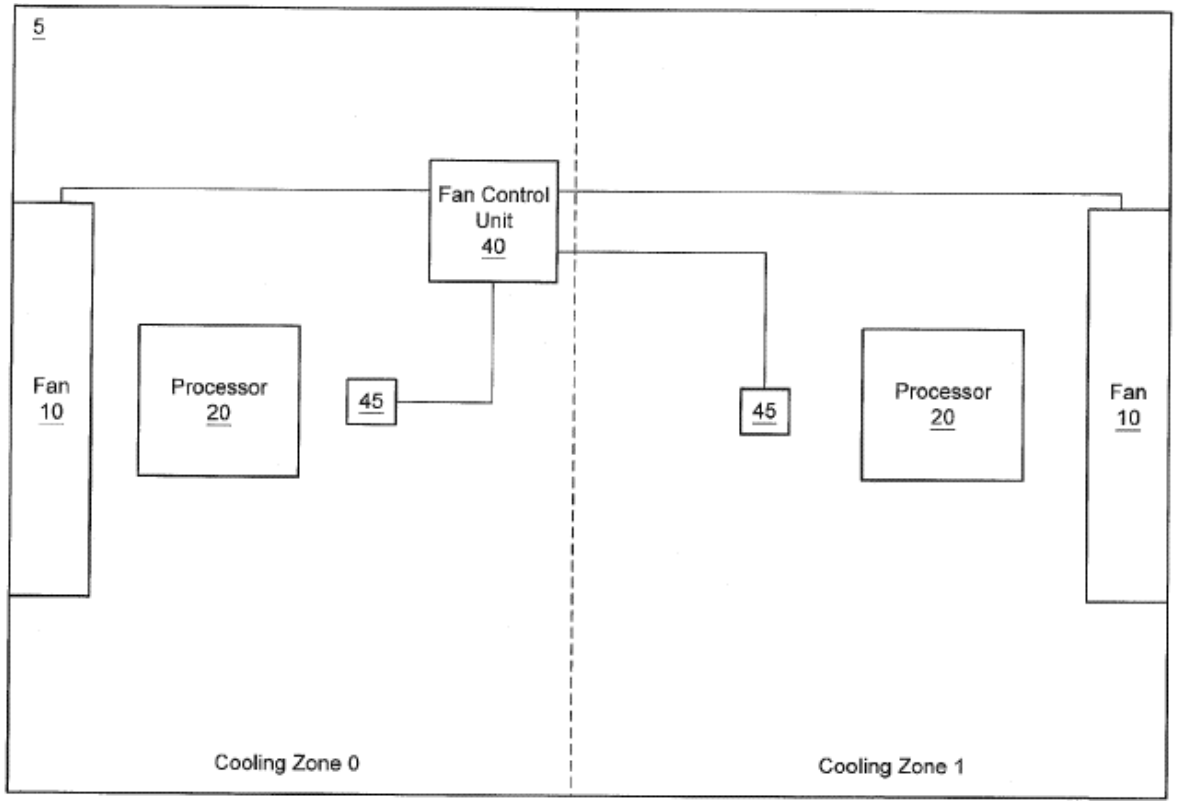
an embodiment in which the fan's speed is 3,400 revolutions per minute, i.e., a constant. (Gromatzky (RX-0054) at 5:15-16.). There is no teaching or suggestion of a temperature at which the fan will turn on or at which the fan speed will change. MRI has not satisfied the "high standard" required to prove existence of a claim limitation in the prior art in an obviousness analysis. *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1195 (Fed. Cir. 2014). Therefore, it is a finding of this ID that Gromatzky does not disclose a temperature sensor, either expressly or inherently.

As alleged proof that the claimed temperature sensor would be obvious in view of Gromatzky, MRI references a German patent publication, DE 20 2007 000 047 U1 to Achim Hannemann ("Hanneman"), which discloses an LCD display unit with a "volumetric flow channel" that is provided between an LCD and a protective glass, wherein a medium such as air can be fed through the volumetric flow channel to remove heat generated by the LCD and/or by eternal irradiation. (Hanneman, Main Claim (RX-0088.0015).). In Hanneman, the interior temperature "is monitored by at least one temperature sensor that is advantageously arranged in the upper region of the display unit." (Hanneman, ¶ [0019] (RX-0088.0017).). Hanneman also teaches that "[t]he number of the temperature sensors and their physical location within the display unit can vary without modifying the spirit of the invention." (*Id.*). However, Hanneman neither teaches nor suggests that the temperature sensor measures the temperature of air discharged from the "volumetric flow channel." (*Id.*). Therefore, it is a finding of this ID that Hanneman, when considered in view of Gromatzky, does not render obvious the claimed temperature sensor "to measure the temperature of air discharged from the channel."

MRI also relied on the cooling system disclosed in Burstein and the cooling system disclosed in Karppanen '125. (RBr. at 43.). Mr. Flasck testified that Burstein discloses a

temperature sensor (element 45 of Figure 1A of Burstein) that may be present within each cooling zone depicted in Figure 1A of Burstein. (Tr. (Flasck) at 1037:20-1038:2.). Figure 1A of Burstein, reproduced below in Figure 63, depicts a computer system 5 with cooling zone 0 and cooling zone 1. Each cooling zone may have a temperature sensor 45 that may be coupled to a fan control unit 40 to control operation of the fan 10 to prevent overheating caused by the processor, as depicted below. (Burstein (RX-0085) at 1:45-60.).

Figure 63: Figure 1A of Burstein With Temperature Sensors 45



(Burstein (RX-0085) at Figure 1A, 1:37-3:18; Tr. (Flasck) at 1037:20-1038:2.).

Based at least on the foregoing, it is a finding of this ID that Burstein discloses temperature sensors.

In Karppanen ’125 the transducers (i.e., temperature sensors) are not included in the

Figures of that patent publication. However, Karppanen '125 teaches that temperature sensors are placed in the display device and display casing and they "measure the temperature and are connected to the control unit in the device casing of the information board. The control unit controls the operation of the circulating fans 72 based on the measured temperatures in accordance with a predetermined logic." (Karppanen '125 (RX-0086) at 9:14-19; Tr. (Flasck) at 1037:20-1038:2.). Mr. Flasck testified that the temperature sensors of Karppanen '125, despite measuring the temperature of the device casing and display casing, are similar to temperature sensors that would be used to measure the temperature of air flow. (Tr. (Flasck) at 1309:7-1310:16.). Based at least on the foregoing, it is a finding of this ID that Karppanen '125 discloses temperature sensors.

However, it is also a finding of this ID that neither Burstein nor Karppanen '125 discloses a temperature sensor that measures the temperature of air discharged from the channel between the liquid crystal panel and the protection panel as recited in claim element 1[d] of the '311 patent. For this aspect of the claim, MRI relied solely on the testimony of Mr. Flasck, who testified that Gromatzky would be modified to have a temperature sensor that is attached to either the liquid crystal panel itself or at the exit of the channel (i.e., the air flow path 30 of Gromatzky). (RBr. at 44; Tr. (Flasck) at 1038:3-15, 1296:9-22.).

According to Mr. Flasck, placing the temperature sensor directly on the liquid crystal panel "gives you much more limited visibility in terms of risks," whereas placing the temperature sensor at the exit of the channel is preferred approach because doing so would provide "the most information" and "would give you a good idea of the heat environment and health of the whole device, because that's measuring the maximum temperature of air in that channel." (Tr. (Flasck) at 1296:23-1298:13, 1038:3-15.). Therefore, according to Mr. Flasck, a

POSITA would modify Gromatzky to place a temperature sensor at the exit of the channel (i.e., air flow path 30) of Gromatzky. (*Id.* at 1038:3-1039:6.). Relying on Mr. Flasck's testimony, MRI argued that modifying Gromatzky to include the claimed temperature sensor would be obvious because it involves no more than the combination of well-known, familiar elements according to known methods to yield no more than predictable results. (RBr. at 46.).

There are two (2) problems with MRI's obviousness theory. The first problem is that, as Samsung and its expert Dr. Smith explained, neither MRI nor its expert has provided an adequate reason why the system disclosed in its primary reference Gromatzky would be modified to include a temperature sensor. (CRBr. at 33-40; Tr. (Smith) at 1252:10-1258:9).). Gromatzky does not teach that temperature should be measured or that the fan speed should depend on temperature. Contrary to MRI's and Mr. Flasck's conclusory assertions that Gromatzky discloses that the speed of its fans are controlled, and therefore must have a temperature sensor to provide the input to control the speed of its fans, Gromatzky does not say that the fan's speed is controlled but rather discloses an embodiment in which fan speed is a constant 3,400 revolutions per minute. (Gromatzky (RX-0054) at 5:15-16.). Therefore, it is a finding of this ID that MRI has not proven by clear and convincing evidence that it would be obvious to modify the system of Gromatzky to include a temperature sensor.

The second problem with MRI's obviousness theory is that none of the prior art of record in this Investigation teaches or suggests that the temperature of air that is discharged from the channel between the liquid crystal panel and the protection panel should be "measured." Although Mr. Flasck offered his opinion that placement of a temperature sensor at the exit of the air flow path 30 of Gromatzky would be "preferred" because it would provide "the most information," Mr. Flasck did not corroborate his testimony with any intrinsic or extrinsic

evidentiary support.

To the contrary, the prior art of record is either ambiguous with respect to when and where temperature is measured, or teaches that a different temperature than the temperature of air discharged from the channel is measured.

For example, as Samsung argued and Dr. Smith testified, in the Karppanen '125 reference the transducers measure the temperature of the display casing 50 and device casing 60, i.e., the temperature of components of the device rather than the temperature of air flow. (RX-0086 (Karppanen '125) at 9:9-21; Tr. (Smith) at 1256:10-1257:8.). Samsung also argued, and Dr. Smith also testified, that Burstein discloses temperature sensors within a generalized "cooling zone" and does not specify what airflow(s) the temperature sensors measure. (RX-0085 (Burstein) at Fig. 1A; Tr. (Smith) at 1255:4-15.).

Hanneman teaches that the physical location of a temperature sensor can be varied "without modifying the spirit of the invention." (Hanneman, ¶ [0019] (RX-0088.0017).). Hanneman's teaching that the physical location of the temperature sensor can be varied is at odds with MRI's and Mr. Flasck's position that it would be most advantageous to place the temperature sensor at the exit from the channel.

In short, the only evidence in the record that measuring the temperature of air flow discharged from a channel is preferred and/or would provide the most information is Mr. Flasck's own opinion. Mr. Flasck's opinion, without more explanation and citation to facts, prior art evidence, and intrinsic evidence, is insufficient for MRI to satisfy its burden of proving invalidity by clear and convincing evidence. *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012) (affirming district court's grant of judgment as a matter of law of no invalidity because the district court correctly determined that expert's

obviousness opinions were "conclusory and factually unsupported" and, as such, "fraught with hindsight bias").

Therefore, it is a finding of fact and of law that MRI has not proven by clear and convincing evidence that it would be obvious over the prior art to have a temperature sensor that measures the temperature of air flow exiting the channel (air exiting the air flow path 30 of Gromatzky).[54]

f) 1[c2]: a flow rate controller to control air flow through the channel according to the measured temperature."

For the reasons provided in Order No. 28, this claim term is subject to 35 U.S.C. § 112, ¶ 6 and is indefinite for lack of structure disclosed in the claims or specification for performing the recited function. (Order No. 28 at 47-49.). However, if that claim construction is not upheld, then the correct finding would be that MRI has not proven by clear and convincing evidence that this claim element would have been obvious.

Samsung's claim construction proposal is that this claim term either does not require construction or is subject to its plain meaning, which Samsung argued is "device, such as a circuit or chip for controlling a fan, [to control air flow through the channel according to the measured temperature]." (CRB. At 26.). Dr. Smith testified that a POSITA would have understood a flow rate controller to mean "an electronic circuit, an integrated circuit, a computer chip, maybe called a microprocessor." (Tr. (Smith) at 493:11-25.). Neither MRI nor its experts offered a contrary meaning. Therefore, if the claim construction adopted in Order No 28 is not

[54] The PTAB determined that MRI had shown a reasonable likelihood of prevailing on obviousness over Karppanen '116 (RX-0083) in view of Gromatzky (RX-0054). (IPR2023-1202, Paper No. 10 at 23-24.). The PTAB applied a lower standard of preponderance of evidence, MRI's expert had not been subjected to cross examination, and the PTAB relied on a prior art reference "Burke" that MRI did not cite or otherwise rely on in this Investigation. (*Id.*).

upheld, then it is a finding of this ID that Samsung's proposed claim construction would be correct.

Applying Samsung's proposed construction, for the same reasons as provided above for claim element 1[c1], there is not clear and convincing evidence in the record that it would be obvious to modify Gromatzky to include a flow rate controller to control the air flow through the channel according to the temperature of the air flow discharged from the channel. (RBr. at 47-48; CRBr. at 40.). Although MRI is correct that Burstein and Karppanen '125 both disclose systems comprising a fan that is controlled based on temperature, and Mr. Flasck opined that those disclosures render obvious this claim element, (Tr. (Flasck) at 1039:7-1040:18), neither Burstein nor Karppanen '125 suggests that the temperature should be the temperature of air flow discharged from the channel as claimed.

To the contrary, according to Samsung's argument and Dr. Smith's testimony, Karppanen '125 discloses transducers that measure the temperature of the display casing 50 and device casing 60, i.e., the temperature of components of the device rather than the temperature of air flow. (RX-0086 (Karppanen '125) at 9:9-21; Tr. (Smith) at 1256:10-1257:8.). Similarly, Dr. Smith explained that Burstein discloses temperature sensors within a generalized "cooling zone" and does not specify what airflow(s) the temperature sensors measure. (RX-0085 (Burstein) at Fig. 1A, 2:37-3:11; Tr. (Smith) at 1255:4-15.). Hanneman teaches that the physical location of a temperature sensor can be varied "without modifying the spirit of the invention." (Hanneman, ¶ [0019] (RX-0088.0017).).

In other words, the prior art that MRI relies on either teaches that the temperature sensor should be attached to the display casing and/or the device casing, (Karppanen '125 at 9:9-21), or fails to specify the location of the temperature sensor and the airflow that it measures. The prior

art therefore does not suggest positioning the temperature sensor such that it measures the air flow discharged from the channel as required by the claim. Therefore, it is a finding of this ID that the prior art neither discloses nor would lead a POSITA to use a flow rate controller to control air flow through the channel of Gromatzky according to the temperature of air discharged from the channel.

Therefore, it is a finding of this ID that MRI has not proven by clear and convincing evidence that it would be obvious over the prior art to have a flow rate controller to control air flow through the channel according to the temperature of air flow exiting the channel (air exiting the air flow path 30 of Gromatzky).

2. Claim 2: "the liquid crystal display device according to claim 1, wherein the channel comprises: an air inlet to guide air into the channel; and an air outlet to discharge air from the channel."

There is no dispute that Gromatzky discloses the subject matter of claim 2 of the '311 patent. (RBr. at 49; CRBr. at 32-42.). Therefore, it is a finding of this ID that Gromatzky discloses the subject matter of claim 2 of the '311 patent. (Tr. (Flasck) at 1040:22-1041:5; Gromatzky (RX-0054) at Fig. 1; RDX-0005C.0132.). Claim 2 depends from claim 1. If the finding of this ID that claim 1 is not obvious were reversed, then a correct finding would be that claim 2 is invalid for obviousness.

3. Claim 3: "the liquid crystal display device according to claim 2, wherein the flow control device further comprises a fan to force air through the channel, wherein the flow rate controller controls the fan according to the detected temperature."

There is no dispute that Gromatzky discloses the subject matter of claim 3 of the '311 patent. (RBr. at 49; CRBr. at 32-42.). It is a finding of this ID that Gromatzky discloses the subject matter of claim 3 of the '311 patent. (Tr. (Flasck) at 1034:17-1035:8, 1041:6-1042:6;

Gromatzky (RX-0054) at Fig. 1 (fan 32 and airflow path 30), 4:52-63; RDX-0005C.0132.). Claim 3 depends from claim 2 which in turn depends from claim 1. If the finding of this ID that claim 1 is not obvious were reversed, then a correct finding would be that claim 3 is invalid for obviousness.

4. Claim 4 is Not Obvious: "the liquid crystal display device according to claim 3, wherein: the flow rate controller controls fan such that the air in the channel has a velocity in a range of 4 to 14 m/s.

There is no dispute that Gromatzky, Burstein, and Karppanen '125 do not disclose a flow rate controller that controls a fan such that the air in the channel has a velocity in the range of 4 to 14 m/s. (RBr. at 49; CRBr. at 44.).

For this claim element, MRI relied on Mr. Flasck's that a "velocity in a range of 4 to 14 m/s" is a "common velocity for cooling air" and that a "ubiquitous cooling fan, a 4-inch tube actual fan with a CFM of 100, which is quite common, has that – has that velocity coming out of the fan itself." (Tr. (Flasck) at 1042:7-20.).

MRI also relied on the Utsonomiya reference, (RX-0087), which discloses a cooling air velocity "in a range of 4.5 to 8 meters per second or increased from 8 to 18 meters per second." (Utsonomiya (RX-0087) at 5:20-26.). In addition to disclosing a specific range of air flow velocities that falls within the range of velocities recited in claim 4 of the '311 patent, Utsonomiya teaches reducing the temperature of a liquid crystal panel by increasing airflow velocity within the range of velocities recited in claim 4 of the '311 patent. (*Id.* at 4:25-5:26.). Mr. Flasck testified that a POSITA would use the airflow velocities recited in Utsonomiya in the system of Gromatzky because "the technology is similar, the problem is similar, overheating; the solution is similar, using fans to blow air through channels; and what Utsonimiya adds is the specific velocity range that would work." (Tr. (Flasck) at 1043:20-1044:2, 1293:6-1294:2.).

Samsung argued that a POSITA would not be motivated to apply the airflow velocities of Utsonimiya to the airflow path of Gromatzky because Utsonomiya and Gromatzky are not directed to similar technology. (CRBr. at 44-45.). Dr. Smith explained that Utsonomiya is directed to open-loop cooling methods for liquid crystal projectors that use extremely small liquid crystal displays and a lens to project an image illuminated by a high intensity lamp. Moreover, the specific airflow velocities recited are laminar and were measured for a device operating within a 25°C temperature environment, and not the outdoor environments in which the display device of the ’311 patent operates, which can be affected by temperatures that range much higher and much lower than a 25°C temperature environment. (CRBr. at 44-45; Tr. (Smith) at 1260:4-1264:3.). In contrast, the system that Gromatzky teaches and discloses is suitable for an LCD display that is environmentally sealed, exposed to external heat such as sunlight, and uses a closed (internal) airflow path. (Gromatzky (RX-0054) at 1:7-9, 1:59-63, 2:64-3:2.).

As an initial matter, claim 4 includes all the limitations of claim 1 and therefore it is a finding of this ID that claim 4 is not invalid for all the same reasons provided above for why claim 1 is not invalid.

Further, it is a finding of this ID that MRI has not proven by clear and convincing evidence that it would be obvious to use the airflow velocity recited in claim 4 in the airflow path (element 30 of Figure 1) of Gromatzky.

As has already been explained and found above for claim 1 of the ’311 patent, the system described in Gromatzky, like the Accused Products and the Domestic Industry Products, uses internal (i.e., closed loop) air flowing through a channel between a protection panel and a liquid crystal panel to cool the liquid crystal panel while it is operated in an outdoor environment and

while it is exposed to solar radiation and high ambient temperatures. (*See* Sections IX.D.1.d)-IX.D.1.f).). In contrast, Utsnomiya is directed to cooling a liquid crystal projector apparatus using ambient (i.e., open loop) air that is operated in a 25°C environment. (Utsonomiya (RX-0087) at Abstract, 1:8-10, 3:23-4:12, 5:9-22, Fig. 3B, Fig. 4; Tr. (Smith) at 1260:21-1261:23, 1263:7-1264:3.). Given these differences, MRI failed to prove by clear and convincing evidence that Utsonomiya's teachings are applicable to Gromatzky.

Neither MRI nor Mr. Flasck cited a single example in which aspects of thermal management systems for liquid crystal display projectors were used in liquid crystal display devices. Similarly, neither MRI nor Mr. Flasck cited a single example in which aspects of thermal management systems with open loop airflow were used for closed loop airflow, or where aspects of thermal management systems suitable for liquid crystal devices that are not operated outdoors in sunlight and at elevated temperatures were used for outdoor, environmentally sealed liquid crystal displays. Under these circumstances, it is a finding of fact that a POSITA would not have applied the airflow velocities of Utsonomiya, which is directed to liquid crystal display projectors, to liquid crystal displays. *Indivior Inc. v. Dr. Reddy's Lab'ys, S.A.*, 930 F.3d 1325, 1345 (Fed. Cir. 2019) (affirming district court finding that a POSITA would not have made the claimed modification because the prior art reference was "in a different field addressing a different problem" and because the prior art reference did not emphasize the modification in any meaningful way").

Finally, although Mr. Flasck offered his opinion that the claimed range of velocities is "common" in the field, only a single disclosure in one prior art reference (Utsonomiya) discloses airflow velocities within the claimed range of airflow velocities. A single disclosure in a single prior art reference does not reflect that this claim element is "common" in the field and is

insufficient to supply a missing claim element. *DSS Tech. Mgmt., Inc. v. Apple Inc.*, 885 F.3d 1367, 1374 (Fed. Cir. 2018) (cautioning that applying common knowledge in an obviousness analysis typically involves providing "a known ***motivation to combine***, not to supply a missing claim limitation," a claim limitation that is "unusually simple and the technology particularly straightforward," and "cannot be used as a wholesale substitute for reasoned analysis and evidentiary support") (emphasis in original) (internal citations and quotations omitted).

It is a finding of this ID that MRI has not adduced sufficient evidence that there is a standard or common range of airflow velocities known in the field to a POSITA, let alone one that is so common as to render the claim obvious from the cited prior art.

For the foregoing reasons, MRI has not proven by clear and convincing evidence that the prior art of record renders obvious claim 4 of the '311 patent. Based on the present record, it would not have been obvious to use a temperature sensor that measures the temperature of air discharged from the channel of Gromatzky as recited in claim element 1[c1] and 1[c2].

Also, based on the present evidentiary record it would not have been obvious to use the claimed range of air flow velocities in the channel of Gromatzky based on the disclose flow velocities of Utsunomiya.[55]

5. Claim 6 is Not Obvious: "the liquid crystal display device according to claim 1, wherein: the width of the channel is in a range of 5 to 25 mm."

For this claim element, MRI relied on an embodiment of Gromatzky that has a channel

[55] The PTAB determined that MRI had not shown a reasonable likelihood of prevailing with respect to obviousness of claim 4 because MRI had not sufficiently shown how or why Utsunomiya's disclosed flow rates would have been applied to Karppanen '125 (RX-0083) as modified by Gromatzky (RX-0054). (IPR2023-1202, Paper No. 10 at 32.). In other words, this ID's findings with respect to MRI's proofs for obviousness using Karppanen '125, Utsunmiya and Gromatzky are consistent with the PTAB's findings, albeit using a higher proof standard.

width of 9.4 millimeters. (RBr. at 51; Gromatzky (RX-0054) at 4:32-45 (LCD module 26 is spaced "approximately 9.4 millimeters" from transparent lens 18); Tr. (Flasck) at 1044:3-12.); *see also* Figure 1 of Gromatzky).

In contrast, Samsung argued that the embodiment of Gromatzky that has a 9.4 mm channel width is separate from the embodiment of Gromatzky that teaches using turbulent airflow. (CRBr. at 41.). MRI counter argued that, because Gromatzky teaches that laminar airflow is more efficient than turbulent airflow and thus allows for a fan that is smaller in size and can move the same amount of air in a smaller airflow path, (Gromatzky (RX-0054) at 5:6-13), a POSITA would not have had a reasonable expectation of successfully implementing a fan generating turbulent air in a channel with 9.4 mm width at the time of the invention. (*Id.*).

Gromatzky's disclosure of a 9.4 mm channel width and its teaching that a fan generating turbulent flow may be used both refer to Figure 1. (Gromatzky (RX-0054) at 2:63-5:20.). Gromatzky does not teach that the system depicted in Figure 1 cannot function with turbulent airflow in the channel 30 when the channel 30 had a width of 9.4 millimeters. To the contrary, Gromatzky teaches that the width of the channel 30 in Figure 1 may be 9.4 millimeters. Additionally, when referring to the fan 32 that moves air through the airflow path 30 of Figure 1, Gromatzky expressly teaches that "the present invention may use any type of fan 32, including those that generate turbulent air" and can have its speed "adjusted to move air in the desired manner and efficiency." (*Id.* at 5:17-20.). Gromatzky's express teaching that this combination of channel width and turbulent air flow is within the scope of its invention constitutes clear and convincing evidence that there would be a reasonable expectation of success.

Therefore, if this ID's finding that claim 1 is not obvious were reversed, then a correct finding would be that claim 6 also would be obvious.

6. Claim 13 is Not Obvious

The arguments and evidence advanced by the Parties with respect to obviousness of claim 13 of the '311 patent are the same as they advanced with respect to obviousness of claim 1 of the '311 patent. (RBr. at 52-53; CRBr. at 42-43.). Therefore, it is a finding of law that, for the same reasons provided for claim 1, claim 13 is also not obvious in view of the prior art given the insufficiency of proof. However, if this ID's finding that claim 1 is not obvious were reversed, then a correct finding would be that claim 13 is obvious.

a) **13[pre]: "A display device, comprising"**

b) **13[a]: "a liquid crystal panel to display an image"**

c) **13[b]: "a protection panel to protect the liquid crystal panel"**

d) **13[c]: a channel formed between the liquid crystal panel and the protection panel; and"**

e) **13[d]: "a flow control device to control the flow rate of air in the channel to remove heat from a front side of the liquid crystal panel, the flow control device comprising:**

f) **13[e]: "a fan to force air through the channel"**

There is no dispute that Gromatzky discloses claim elements 13[pre], 13[a], 13[b], 13[c], 13[d], and 13[e]. (RBr. at 52; CRBr. at 42-43.). Therefore, it is a finding of this ID that Gromatzky discloses the foregoing claim elements. (Tr. (Flasck) at 1044:16-1045:4; Tr. (Smith) at 1259:18-1260:4.).

g) **13[f]: "a temperature sensor to measure the temperature of air discharged from the channel; and"**

h) **13[g]: "a flow rate controller control the fan according to the measured temperature to regulate the flow rate of the air in the channel."**

For claim elements 13[f] and 13[g], the Parties' dispute is the same as for claim elements

1[c1] and 1[c2]. (RBr. at 52-53; CRBr. at 42-43.); *see also* Sections IX.D.1.e)-IX.D.1.f). For the same reasons provided in this ID for claim elements 1[c1] and 1[c2], it is a finding of this ID that Mr. Flasck's opinions are too conclusory to prove, by clear and convincing evidence, that it would be obvious to use a temperature sensor to measure the temperature of air discharged from the channel in the system of Gromatzky. (Tr. (Flasck) at 1045:5-24; Tr. (Smith) at 1259:18-1260:9.).

E. The '253 Patent

MRI argued that claim 12 of the '253 patent, which depends from claim 11 of the '253 patent, is invalid as obvious over the prior art as described in more detail below for each claim element. (RBr. at 72-85.).

1. Claim 11

For claim 11 of the '253 patent, MRI relied on two (2) primary prior art references: Nagayama (RX-0084) and Karppanen '116 (RX-0083) in view of one secondary reference: Burstein (RX-0085). (RBr. at 72.).

a) Nagayama (RX-0084)

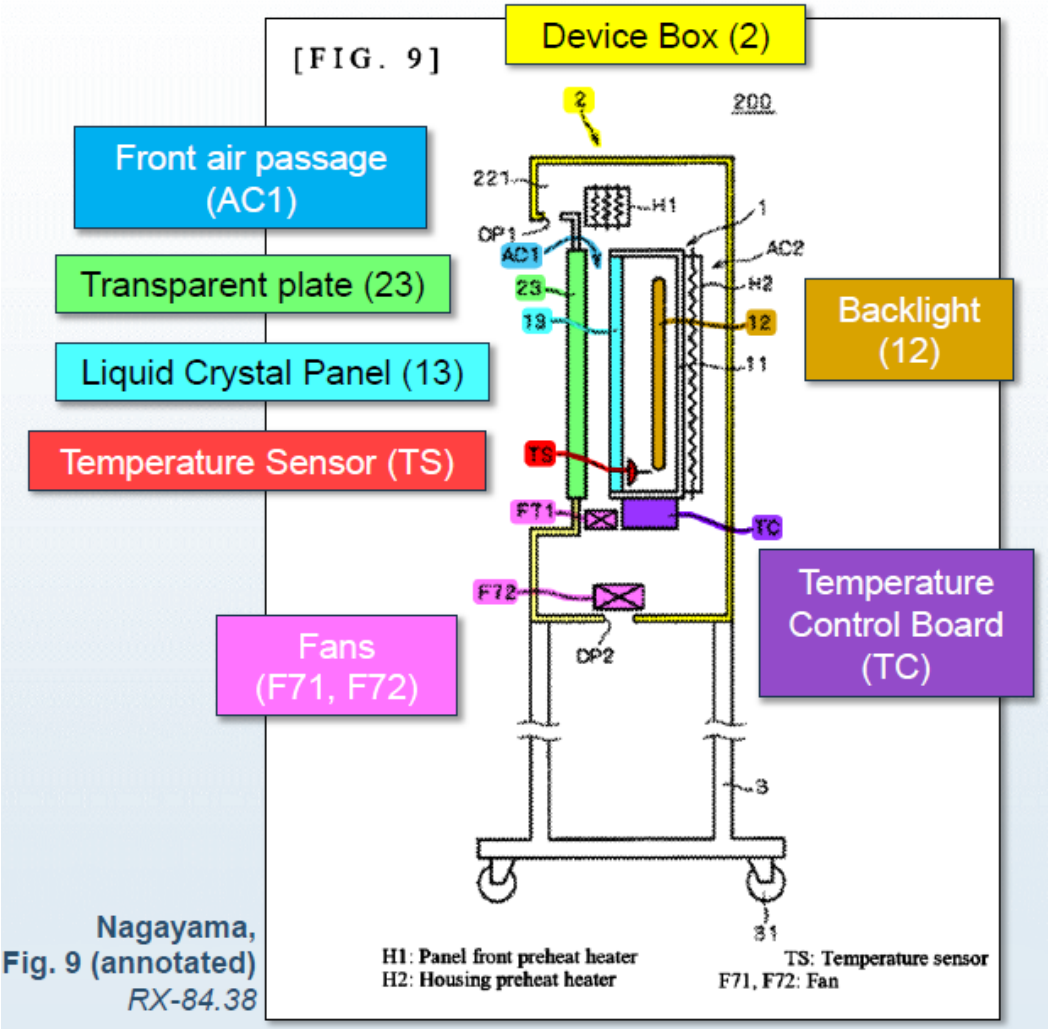
(i) 11[pre]: "A display device, comprising:"

(ii) 11[a]: "a housing"

(iii) 11[b]: "a display assembly enclosed inside the housing"

There is no dispute that Nagayama discloses claim elements 11[pre], 11[a], and 11[b] of the '253 patent. (RBr. at 74-75; CRBr. at 62-66.). As reflected in Mr. Flasck's demonstrative slide reproduced below as Figure 64, Figure 9 of Nagayama depicts an outdoor display device 200 (claim element 11[pre]) having device box 2 (claim element 11[a]) with a liquid crystal panel 13 and backlight 12 (together, claim element 11[b]).

Figure 64: Excerpt of Mr. Flasck's Demonstrative Illustrating Figure 9 of Nagayama



(RDX-0005.0153; Tr. (Flasck) at 1047:5-15; Nagayama (RX-0084) at Abstract, [0001], [0015], Figure 9.).

Therefore, it is a finding of this ID that Nagayama discloses the foregoing claim elements. (Tr. (Flasck) at 1047:5-15; Tr. (Smith) at 1259:18-1260:4.).

(iv) 11[c]: "a sensor to measure a temperature of air in the housing"

There is no dispute that Nagayma does not disclose a sensor to measure a temperature of air in the housing (device box 2) as recited in claim element 11[c] of the '253 patent. (RBr. at

75-78; CRBr. at 62-66.). However, as Mr. Flasck noted in his testimony, Figure 9 of Nagayama depicts a "temperature control board TC" and a "temperature sensor TS" that is used to measure "information about the temperature of the liquid crystal panel 13." (Tr. (Flasck) at 1047:16-1048:4; Nagayama (RX-0084) at [0073-75].). The temperature sensor TS in Nagayama is "attached to the back surface of the liquid crystal panel 13." (Nagayama (RX-0084) at [0074].). According to Mr. Flasck and MRI, the temperature sensor TS that is attached to the back surface of the liquid crystal panel 13 "could" measure the temperature of air in the device box 2, even though it is a component temperature sensor, not an air temperature sensor. (Tr. (Flasck) at 1048:2-10, 1155:24-1156:22.).

Samsung argued based upon Dr. Smith's testimony, that it would not be obvious to measure the temperature of air in the device box 2 of Nagayama because the temperature sensor TS of Nagayama measures the temperature of the liquid crystal panel 13, not the temperature of air. (Tr. (Smith) at 1265:13-1266:11, 1266:25-1267:7.). Nagayama teaches that "it is desirable to store electronic devices such as the backlight 12 and the drive circuit of the liquid crystal panel 13 in the housing 11, and seal the housing 11 with packings, filters, etc. so that there is no gap." (Nagayama (RX-0084) at [0037].). In other words, according to Nagayama's teaching with respect to components that would be desirable, the housing 11 is sealed from the device box 2 so there is "no gap," and so the temperature sensor would not be exposed to the air within the device box 2 as required by the claim language.

There is no dispute that the temperature sensor TS of Nagayama is a component temperature sensor that is attached to the liquid crystal panel, not an air temperature sensor. (Tr. (Flasck) at 1155:24-1156:22; Tr. (Smith) at 1265:13-1266:11.).

Figure 11 of Nagayama depicts the relationship structurally and functionally between

panel temperature and the on/off state of the fan, further reinforcing that the panel temperature is being controlled rather than any other temperature. (Nagayama (RX-0083) at Fig. 11, [0074-87].).

According to Samsung's expert Dr. Smith, modifying Nagayama to use the temperature inside the device box 2 would not provide an accurate measure of the panel temperature when the fan is "off." (Tr. (Smith) at 1267:8-20.). Further, Nagayama teaches that it is desirable to seal the housing 11 from the rest of the device box 2, such that a temperature sensor attached to the liquid crystal panel 13 would not even be exposed to air within the device box 2 (which corresponds to the claimed "housing").

Although MRI's expert Mr. Flasck opined that the temperature sensor of Nagayama "could" measure the temperature of air in the device box 2, (Tr. (Flasck) at 1048:2-10), he also conceded that Nagayama's temperature sensor is a component temperature sensor rather than an air temperature sensor, (Tr. (Flasck) at 1155:24-1156:22.).[56] Mr. Flasck's testimony is insufficient for MRI to carry its burden because the mere fact that a reference "could" be modified to arrive at the claimed invention does not render the claimed invention obvious "unless the prior art suggested the desirability of the modification." *Orexo AB v. Actavis Elizabeth LLC*, 903 F.3d 1265, 1272 (Fed. Cir. 2018).

Therefore, it is a finding of this ID that MRI has failed to prove, by clear and convincing evidence, that Nagayama alone renders obvious claim element 11[c] of the '253 patent.

Mr. Flasck also testified that it would be obvious to measure the temperature of air in the

[56] Mr. Flasck also testified that an air temperature sensor and a component temperature sensor are structurally distinct. (Tr. (Flasck) at 1309:13-1310:16.).

device box 2 of Nagayama based on Burstein's disclosure of a temperature sensor located in a "cooling zone." (Tr. (Flasck) at 1048:11-25.). However, the "cooling zone" of Burstein contains a computer processor, not a liquid crystal panel, and Burstein does not say that the temperature sensor within the cooling zone measures air temperature. (Burstein (RX-0085) at 2:37-3:18, Fig. 1A.). Mr. Flasck did not explain why a POSITA would modify Nagayama's display device to use an air temperature sensor based on a reference that is not directed to a display device and does not even say that it measures air temperature. Mr. Flasck's conclusory opinion is insufficient to carry MRI's burden of proving obviousness by clear and convincing evidence. *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1358 (Fed. Cir. 2019) ("Conclusory expert testimony does not qualify as substantial evidence.").

Therefore, it is a finding of this ID that Nagayama would not lead a POSITA to use a temperature sensor that measures the temperature of air within the housing as required by the claim.

(v) 11[d]: "a fan configured to blow the air around the display assembly; and"

There is no dispute that Nagayama discloses fans (F71, F72) for blowing air around the display assembly (liquid crystal panel 13 and backlight 12) of this limitation of the '253 patent. (RBr. at 78; CRBr. at 62-66.).

Therefore, it is a finding of this ID that Nagayama discloses claim element 11[d] of the '253 patent. (Tr. (Flasck) at 1047:5-15.).

(vi) 11[e]: "a control device to control the fan to maintain a temperature of the housing"

For the reasons explained in the Second *Markman* order, (Order No. 32), this claim term is subject to 35 U.S.C. § 112, paragraph 6. It is indefinite because the claims and specification

fail to recite sufficiently definite structure for performing the function to "maintain a temperature of the housing." (Order No. 32 at 26-33.). However, if that claim construction is not upheld, then for the following reasons a correct finding would be that MRI has not proven obviousness of this claim element by clear and convincing evidence.

Dr. Smith testified, and neither MRI nor Mr. Flasck rebutted Dr. Smith, that a POSITA would have understood "control device" to mean "the same thing as a controller and, in particular, a flow rate controller. An electronic circuit, a chip, something like that." (Tr. (Smith) at 533:14-22.). Therefore, if the adopted claim construction is not upheld, then it is a finding that Dr. Smith's understanding of the meaning of "control device" would be correct.

MRI argued that such a control device "to control the fan to maintain a temperature of the housing" is disclosed in, or at least rendered obvious by, Nagayama alone or in combination with Burstein. (RBr. at 78-79.). Samsung did not rebut MRI's argument. (CRBr. at 62-66.).

The fans F71 and F72 in Nagayama "are controlled by the liquid crystal panel temperature control board TC." (Nagayama (RX-0084) at [0073].). "When information about the temperature of the liquid crystal panel 13 is given to the liquid crystal panel temperature control board TC, the liquid crystal panel temperature control board TC controls the fans F71, F72, and heaters H1, H2 to achieve a preset temperature." (*Id.* at [0074].). Nagayama also teaches that "by controlling the rotational speed of the fan F71 by the inverter, changes in the panel temperature can be controlled gently, and it is possible to maintain a constant state of the panel temperature." (*Id.* at [0092].).

Mr. Flack testified that the control board TC of Nagayama corresponds to claim element 11[e], which recites maintaining a temperature of the "housing," i.e., claim element 11[a]. (Tr. (Flasck) at 1049:1-10.). According to MRI and Mr. Flasck, the "housing" recited in claim

element 11[a] corresponds to the "device box 2" of Nagayama. Therefore, according to MRI's and Mr. Flasck's claim mapping, Nagayama would have to teach maintaining the temperature of the device box 2 to disclose claim element 11[e]. But Nagayama does not teach maintaining the temperature of the device box 2. Nagayama teaches maintaining the temperature of the liquid crystal panel 13, which is part of the "display assembly" recited in claim element 11[b]). Neither MRI nor Mr. Flasck made a connection between Nagayama's method for maintaining the temperature of the LCD panel and the claimed method of maintaining a temperature of the housing. Therefore, it is a finding of this ID that Nagayama neither discloses nor renders obvious claim element 11[e] of the '253 patent.

Mr. Flasck also testified that a POSITA would have incorporated Burstein's fan control unit into Nagayama's temperature control operation because Burstein is directed to "the same basic technology, the same basic problem, the same basic approach, and Burstein discloses some refinements." (Tr. (Flasck) at 1049:14-1050:5.). However, neither MRI nor Mr. Flasck explained why Burstein would lead a POSITA to modify Nagayama's method of maintaining a temperature of the liquid crystal panel 13 to maintain a temperature of the device box 2. On this record, the evidence is insufficient to prove, clearly and convincingly, that claim element 11[e] would have been obvious over the prior art.

For the foregoing reasons, if the "control device" claim construction is not upheld, then it is a finding of this ID that claim element 11[e] of the '253 patent would not have been obvious and Nagayama does not disclose claim element 11[e] of the '253 patent.

(vii) 11[f]: "wherein the sensor transmits a resulting signal to the control device and the control device controls the fan based on the resulting signal."

There is no dispute that Nagayama discloses a temperature sensor (TS) that transmits a

signal to a control device (temperature control board TC) that controls fans F71 and F72 based on the signal. (RBr. at 79-80; CRBr. at 62-66.). However, the temperature sensor TS of Nagayama is not an air temperature sensor as required for claim element 11[c] and the control device does not maintain a temperature of the device box 2 as required for claim element 11[e]. Therefore, it is a finding of this ID that Nagayama does not disclose claim element 11[f] of the '253 patent.

If the construction of "control device in claim element 11[e] is not upheld and this ID's finding that claim elements 11[e] and 11[f] of the '253 patent would not be obvious are reversed, then a correct finding would be that Nagayama discloses claim element 11[f] of the '253 patent. (Tr. (Flasck) at 1049:1-1050:5; Tr. (Smith) at 1284:14-25.).

(viii) Claim 12 is Not Obvious Over Nagayama Alone or in View of Burstein: "The display device according to claim 11, wherein the display assembly is enclosed inside the housing to form a front channel between a display panel of the display assembly and a front side of the housing."

There is no dispute that in Nagayama the liquid crystal panel 13 and backlight 12 (together, the "display assembly" recited in claim 12 and claim element 11[b]) are enclosed inside the device box 2 (the "housing" recited in claim 12 and claim element 11[a]) to form a front channel (front air passage AC1 in Figure 9 of Nagayama) between a display panel (display panel 13 of Nagayama) and a front side of the housing (transparent plate 23 of Nagayama). (RBr. at 80; CRBr. at 62-66; Tr. (Flasck) at 1050:6-17; Tr. (Smith) at 1284:14-25.).

Therefore, it is a finding of this ID that Nagayama discloses the additional subject matter of claim 12. If the construction of "control device" in claim element 11[e] is not upheld, and if this ID's finding that claim 11 would not be obvious under Samsung's proposed meaning for

"control device" is reversed, then a finding that claim 12 would be obvious over Nagayama would be correct.

b) Karppanen '116 (RX-0083)

(i) 11[pre]: "A display device, comprising:"

(ii) 11[a]: "a housing"

(iii) 11[b]: "a display assembly enclosed inside the housing"

There is no dispute that Karppanen '116 discloses claim elements 11[pre], 11[a], and 11[b] of the '253 patent. (RBr. at 80-81; CRBr. at 66-68.). Karppanen '116 discloses the claimed display device (Karppanen '116's electronic information board) with a housing (Karppanen '116's display casing 10) and a display assembly enclosed inside the housing (Karppanen '116's flat display element 26). (Karppanen '116 (RX-0083) at Abstract; Tr. (Flasck) at 1051:8-1052:12; Tr. (Smith) at 1287:1-11.). Therefore, it is a finding of this ID that Karppanen '116 discloses claim elements 11[pre], 11[a], and 11[b] of the '253 patent.

(iv) 11[c]: "a sensor to measure a temperature of air in the housing"

There is no dispute that Karppanen '116 does not expressly disclose a sensor to measure a temperature of air in the housing (display casing 10). (RBr. at 81-82; CRBr. at 66-68.). Karppanen '116 says the temperature sensors measure the temperature of the display casing 10. (Karppanen '116 (RX-0083) at 9:30-36, 10:28-30.). The temperature of the display casing 10 is "transmitted to a control unit" which "regulates . . . the operation of the cooling fans 68 and the fans 64 in the display casing . . . for achieving a suitable operating temperature in the display casing." (*Id.*).

Karppanen '116 does not expressly preclude its temperature sensors (that measure the temperature of the display casing) from measuring the temperature of air in the housing. Mr.

Flasck testified that Karppanen '116 is "ambiguous" as to whether its temperature sensors measure temperature of air. (*Id.* at 1301:4-1302:13.). However, Mr. Flasck testified that a POSITA would have a reasonable expectation of success using air temperature sensors in Karppanen '116. (*Id.*). Mr. Flasck also testified that the temperature sensors in Karppanen '116 are capable of measuring, or being modified to measure, the temperature of air in the display casing 10. (Tr. (Flasck) at 1052:22-1053:20.). Mr. Flasck opined that a POSITA would be motivated to include a temperature sensor to measure the temperature of air in the display casing 10 because the air temperature provides information to "achieve a suitable operating temperature in the display casing." (*Id.*).

Samsung argued that a POSITA would not have modified Karppanen '116 to measure the temperature of air inside the display casing 10. According to Samsung, Karppanen '116 would lead a POSITA to "directly measure the temperature of those upper parts rather than air inside the housing." (CRBr. at 67; Tr. (Smith) at 1269:4-15.). This is because Karppanen '116 teaches that there is a "significant rise of temperature in the upper parts of the display especially on the visible side of the display," (Karppanen '116 (RX-0083) at 2:22-24). In other words, Karppanen '116 specifically calls out significant temperature rise in upper parts of the display, and so according to Samsung a POSITA would measure the temperature of the upper parts of the display and not the temperature of air inside the housing.

Samsung's argument is rejected for the following reasons. Unlike Nagayama, which focuses entirely on the panel temperature, Karppanen '116 teaches achieving "suitable operating temperatures in the display casing." (Karppanen '116 (RX-0083) at 9:32-36.). It stands to reason that measuring the temperature of the air in the display casing would be helpful to achieving suitable operating temperatures in the display casing. Mr. Flasck's testimony that a

POSITA would do so, and would have a reasonable expectation of success, is therefore credible and persuasive. (Tr. (Flasck) at 1052:22-1053:20.). On the other hand, Karppanen '116 does not teach that measuring the upper parts of the display is preferred or even desired. To the contrary, Karppanen '116 does not even depict the location of its temperature sensors in any figure, thus suggesting that the exact location of those sensors is unimportant. Dr. Smith's opinion that Karppanen '116's teaching that there is a problem with excessive temperatures in the upper parts of the display would lead a POSITA to only measure the temperature of those upper parts is therefore not persuasive.

In weighing the evidence, particularly the credibility of Dr. Flasck's testimony and opinions and the credibility of Dr. Smith's credibility and opinions, it is a finding of this ID that the weight of the evidence clearly and convincingly supports MRI's argument. Mr. Flasck's testimony that there would be a reasonable expectation of success modifying Karppanen '116 to measure temperature of air in the housing is supported by the evidence including the prior art MRI relied on and the expert testimony.

Karppanen '116 does not preclude air temperature sensors or control of the fans disclosed in Karppanen '116 based on the temperature of the air inside the housing. (Karppanen '116 (RX-0083) at 9:30-36, 10:28-30; Tr. (Flasck) at 1052:22-1053:20.). Mr. Flasck's testimony that the temperature inside the housing is a useful piece of information for controlling the fans to maintain a temperature of the housing as recited in claim element 11[e] is reasonable.

On the other hand, Samsung's and Dr. Smith's argument that a POSITA would only measure the temperature of a component where Karppanen '116 teaches there is "significant rise of temperature" is neither credible nor persuasive. This is because there is no evidence or scientific reasoning that Dr. Smith explained for why the temperature on a component where

there is a "significant rise in temperature" would be the only or even the most preferred information to use to control a fan to maintain a temperature of the housing. Notably, neither Dr. Smith nor Samsung rebutted Mr. Flasck's opinion that measuring the temperature of air inside the housing provides information to "achieve a suitable operating temperature in the display casing." (Tr. (Flasck) at 1052:22-1053:20.).

Therefore, it is a finding of this ID that MRI has proven, by clear and convincing evidence, that it would be obvious to modify Karppanen '116 to include a temperature sensor that measures the temperature of air inside the housing.

(v) 11[d]: "a fan configured to blow the air around the display assembly; and"

There is no dispute that Karppanen '116 discloses a fan (fans 68 and 64) for blowing air around the display assembly (flat display element 16). (RBr. at 83-84; CRBr. at 66-68.). Therefore, it is a finding of this ID that Karppanen '116 discloses claim element 11[d] of the '253 patent. (Tr. (Flasck) at 1051:8-1052:12; Tr. (Smith) at 1287:1-11.). The cited testimony supports such a conclusion.

(vi) 11[e]: "a control device to control the fan to maintain a temperature of the housing"

For the reasons provided in Order No. 32, the Second *Markman* Order, this claim term is subject to 35 U.S.C. § 112, paragraph 6. It is indefinite because the claims and specification fail to recite sufficiently definite structure for performing the function to "maintain a temperature of the housing." If that claim construction is not upheld, then for the following reasons a correct finding would be that Karppanen '116 discloses claim element 11[e] of the '253 patent.

Dr. Smith testified, and neither MRI nor Mr. Flasck rebutted Dr. Smith, that a POSITA would have understood "control device" to mean "the same thing as a controller and, in

particular, a flow rate controller. A electronic circuit, a chip, something like that." (Tr. (Smith) at 533:14-22.). Therefore, if the claim construction in Order No. 32 is not upheld, then it is a finding that Dr. Smith's understanding of the meaning of "control device" would be correct.

There is no dispute that Karppanen '116 discloses a control device to control the fan (fans 68 and 64) to maintain a temperature of the housing ("achieving a suitable operating temperature in the display casing"). (RBr. at 84; CRB. At 66-68.). Therefore, if the claim construction adopted in the Second *Markman* Order is not upheld, then a finding that Karppanen '116 discloses claim element 11[e] of the '253 patent would be correct. (Tr. (Smith) at 1287:1-11; Tr. (Flasck) at 1051:8-1052:12.).

(vii) 11[f]: "wherein the sensor transmits a resulting signal to the control device and the control device controls the fan based on the resulting signal."

There is no dispute that Karppanen '116 discloses claim element 11[f] of the '253 patent. (RBr. at 84; CRBr. at 66-68.). Therefore, it is a finding of this ID that Karppanen '116 discloses claim element 11[f] of the '253 patent. (Tr. (Smith) at 1287:1-11; Tr. (Flasck) at 1051:8-1052:12.).

2. Claim 12 is Obvious Over Karppanen '116 Alone: "The display device according to claim 11, wherein the display assembly is enclosed inside the housing to form a front channel between a display panel of the display assembly and a front side of the housing."

There is no dispute that Karppanen '116 discloses the additional subject matter of claim 12 of the '253 patent. (RBr. at 84-85; CRBr. at 66-68.). Therefore, it is a finding of this ID that Karppanen '116 discloses the additional limitations recited in claim 12 of the '253 patent. (Tr. (Smith) at 1287:1-11; Tr. (Flasck) at 1053:21-1054:7.).

If the claim construction adopted in the Second *Markman* Order, (Order No. 32), for

"control device" is not upheld, then it is a finding that claim 12 of the '253 patent is invalid as obvious over Karppanen '116 would be correct.[57]

X. UNENFORCEABILITY

A. Relevant Legal Standards

To hold a patent unenforceable due to inequitable conduct, there must be clear and convincing evidence that: 1) a person with a duty of candor to the USPTO; 2) failed to disclose material information, or submitted false material information; 3) with an intent to deceive the USPTO. *Monsanto Co. v. Bayer Bioscience N.V.*, 514 F.3d 1229, 1233 (Fed. Cir. 2008).

A person with a duty of candor to the USPTO is defined in the USPTO's Manual of Patent Examining Procedure ("MPEP"), Rule 1.56, 37 C.F.R. § 1.56 as:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee, or with anyone to whom there is an obligation to assign the application.

Bruno Indep. Living Aids, Inc. v. Acorn Mobility Servs., Ltd., 394 F.3d 1348, 1351 (Fed. Cir. 2005) ("In the context of an inequitable conduct determination, the "applicant" includes anyone under a duty to disclose material information to the PTO pursuant to 37 C.F.R. § 1.56, namely: the inventor, the prosecuting attorney or agent, and anyone associated with the inventor or the assignee who is substantively involved in the preparation or prosecution of the application.").

[57] The PTAB determined that there was a "reasonable likelihood" that MRI would prevail in showing the subject matter of claim 12 would have been obvious over Karppanen '116. (IPR2013-1203, Paper No. 11 at 24.).

There are two (2) requirements to establish inequitable conduct under well-known Federal Circuit law: a heightened showing of both (1) intent; and (2) materiality. *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276, 1290, 1290-92 (Fed. Cir. 2011) (en banc) ("*Therasense*"). To prove inequitable conduct, the accused infringer must show by clear and convincing evidence that: (1) the patent owner withheld material information to, or provided false information to, the USPTO, and (2) did so with the intent to deceive the USPTO. *Id.*

"The materiality required to establish inequitable conduct is but-for materiality. When an applicant fails to disclose prior art to the PTO, that prior art is but-for material if the PTO would not have allowed a claim had it been aware of the undisclosed prior art." *Therasense*, 649 F.3d at 1291-92. In other words, withheld information is material if the USPTO would have denied a claim had it known of the undisclosed prior art. *California Inst. Of Tech. v. Broadcom Ltd.*, 25 F.4th 976, 991 (Fed. Cir. 2022), *cert. denied sub nom. Apple Inc. v. California Inst. Of Tech.*, 143 S. Ct. 2658, 216 L. Ed. 2d 1236 (2023); *Therasense*, 649 F.3d at 1291-92. There is an exception to the requirement for but-for materiality in cases of "affirmative acts of egregious misconduct, such as the filing of an unmistakably false affidavit." *Therasense*, 649 F.3d at 1293.

By extension, withheld information is not but-for material "if it is merely cumulative." *California Inst. Of Tech.*, 25 F.4th at 991. Therefore, when assessing but-for materiality, "the court must determine whether the PTO would have allowed the claim if it had been aware of the undisclosed reference. In making this patentability determination, the court should apply the preponderance of the evidence standard and give claims their broadest reasonable construction." *Id.*

With respect to the "intent" requirement, "a finding that the misrepresentation or omission amounts to gross negligence or negligence under a 'should have known' standard does

not satisfy this intent requirement." *Therasense*, 649 F.3d at 1290. The accused infringer must "prove by clear and convincing evidence that the applicant knew of the reference, knew that it was material, and made a deliberate decision to withhold it." *Id.* The *Therasense* court recognized that, because direct evidence of intent is rare, it may be inferred from circumstantial evidence. *Id.* However, to satisfy the clear and convincing evidence standard, specific intent to deceive must be the "single most reasonable inference" from the evidence. *Freshub, Inc. v. Amazon.com, Inc.*, 93 F.4th 1244, 1250 (Fed. Cir. 2024) (quoting *Therasense*, 649 F.3d at 1290).

B. Overview: MRI's Inequitable Conduct and Unclean Hands Affirmative Defenses

Broadly, and as will be described in greater factual detail below, MRI argued that the '311 and the '253 patents are unenforceable due to inequitable conduct based on the named inventors' failure to disclose material information, (Affirmative Defense No. 12, subsection A) and, based on the same set of facts, unclean hands, (Affirmative Defense No. 12, subsection B). (Manufacturing Resources International's Response to Complainants' Complaint and Notice of Investigation, Doc. ID No. 789058 at pp. 35-38); *see also* RBr. at 54-64, 86.).

MRI provided evidence that Samsung employee Dr. Nam-Heon Kim, Principal Engineer and allegedly head of Samsung's LCD Development Center, through a collaboration between Samsung and MRI, received information about an MRI product known as the "Outdoor Promotions Product." (RBr. at 54-64, 86.). [redacted] (Tr. (Dunn) at 708:20-709:3.). [redacted]

[redacted] (*Id.*).

MRI attempted to prove during the Hearing that Dr. Kim intentionally withheld the existence of the Outdoor Promotions Product from the USPTO during prosecution.[58] (*Id.*). MRI relied on the same arguments and evidence for the '311 patent as for the '253 patent. (*Id.* at 86.). MRI relied on the same facts for both its inequitable conduct and its unclean hands theories. (*Id.* at 64.).

An ultimate conclusion here is that based upon the facts described below, there is no direct evidence that Dr. Kim was involved in prosecuting the Samsung patent applications for the '311 patent and the '253 patent. Thus, there is no direct evidence that Dr. Kim had a specific intent to conceal the existence of the Outdoor Promotions Product from the USPTO. Instead, MRI attempted to prove circumstantially that Dr. Kim took measures to have individuals who allegedly worked under him, but for whom there is no evidence they were involved in the Outdoor Promotions project, named as inventors of the '253 patent and the '311 patent. (*See, e.g.*, RBr. at 61-62 (asserting that "Samsung intentionally selected only individuals below Dr. Kim that had not personally inspected MRI's facilities and the Outdoor Promotions Product (as

[58] This ID rejects Samsung's argument that MRI's inequitable conduct affirmative defense fails as a matter of law because MRI only accused Samsung generally, rather than any specific individual with a duty of candor, of intentionally withholding material information from the USPTO. (CRBr. at 48-51 (citing, *inter alia*, *Exergen Corp. v. Wal-Mart Stores, Inc.*, 575 F.3d 1312, 1329-30 (Fed. Cir. 2009)).). MRI identified Dr. Kim as an individual who allegedly obtained knowledge of MRI's work on the Outdoor Promotions Product, was allegedly the head of Samsung's LCD Development Center, had knowledge of MRI's developing products and components thereof, and therefore could have had a duty to disclose the existence of the Outdoor Promotions product if there were evidence that Dr. Kim was involved in prosecuting the applications leading to the '253 patent and the '311 patent. (RBr. at 56-58, 61.). The information about the Outdoor Promotions Product and Dr. Kim's interactions with MRI, and specifically with Mr. Dunn of MRI, was developed during discovery. However, MRI was unable to confirm that Dr. Kim was involved in filing or prosecuting the applications leading to the '253 patent or the '311 patents.

opposed to Dr. Kim himself) as the purported 'inventors' on patent applications copying the Outdoor Promotions product"). The named inventors on the '253 patent and the '311 patent are: Jin Sub Kim, Jin Hyun Cho, Sung Ki Kim, and Joon Kang.

Ultimately, MRI was unable to prove that the named inventors on the referenced patents worked for Dr. Nam-Heon Kim. Moreover, MRI was unable to prove that Dr. Kim was involved in the prosecution of the '311 and '253 patents. Therefore, MRI's failure to identify those Samsung employees who had direct knowledge of MRI's Outdoor Promotions Product, and to tie them to the claims of the '253 and '311 patents, means there was no direct evidence that Dr. Nam-Heon Kim or anyone else involved in the Outdoor Promotions project was also involved in prosecuting the '311 patent or the '253 patent. Moreover, MRI's circumstantial evidence about who Dr. Kim is and his involvement at Samsung is thin at best, and therefore undermines MRI's circumstantial case that Samsung copied technology that MRI developed. MRI's failure to assert an incorrect inventorship defense against the '253 patent and the '311 patent in this Investigation also undermines its circumstantial case.[59] It is a finding of this ID that MRI has not proven by clear and convincing evidence that anyone at Samsung had a specific intent to deceive the USPTO or that such a proposition is the "single most reasonable inference" from the evidence adduced at the Hearing. *Therasense*, 649 F.3d at 1290.

[59] A patent is invalid if one or more of the listed inventors is not an inventor, or if the list of inventors does not include someone who is an inventor, unless inventorship can be corrected. *Egenera, Inc. v. Cisco Sys., Inc.*, 972 F.3d 1367, 1376 (Fed. Cir. 2020). Since MRI argued for the purpose of its inequitable conduct defense that Samsung intentionally listed persons as inventors who were not, in fact, inventors, MRI could have attempted to prove the listed inventors were incorrect to support its inequitable conduct defense.

C. Interactions Between Mr. Dunn and Samsung Representatives Before Samsung's Applications for the '311 and '253 Patents

Mr. Dunn, MRI's main witness on its patent unenforceability theory, testified that MRI engaged with a company called Outdoor Promotions to develop a 70-inch to 82-inch LCD outdoor display unit ("the Outdoor Promotions Product") that became the subject of a contract with Clark County Nevada. (Tr. (Dunn) at 691:4-692:16.). Outdoor Promotions was looking for a company to supply it with 70-inch and 82-inch LCD units. (*Id.*). According to Mr. Dunn's testimony, "towards the end of 2007," Mr. Dunn showed Outdoor Promotions CEO Mr. Gary Young the outdoor LCD display unit MRI had developed, and Mr. Young "made a decision on the spot to contract us to provide the displays." (*Id.*). The agreement was that MRI would provide the displays, while another Canadian company called Vertigo would provide the mechanical structure, often called "street furniture." (*Id.* at 692:5-693:10.).

In November 2007, Mr. Dunn had a "face-to-face meeting" with Samsung representatives with respect to MRI's need for an LCD cell that would be suitable for MRI's Outdoor Promotions Product. (*Id.* at 702:7-703:6.). Mr. Dunn approached Samsung because Samsung was the only company that made a 70-inch LCD at the time. (*Id.* at 700:2-9.). In his testimony, Mr. Dunn neither named the Samsung representatives with whom he met initially in November 2007, nor described the subject matter that he discussed during the November 2007 meeting. (*Id.*).

As Mr. Dunn described, the next meeting he had with any Samsung representatives was in January 2008, and was face-to-face between Mr. Dunn and certain unnamed Samsung representatives at the Consumer Electronics show in Las Vegas, Nevada. Mr. Dunn did not disclose the exact date and did not say whether the meeting was preplanned or accidental. After

that January 2008 meeting, [redacted] (Tr. (Dunn) at 706:9-23.). [redacted] (*Id.* at 706:19-23.).[60]

A known, third meeting took place at MRI's headquarters in Georgia on February 1-2, 2008. (Tr. (Dunn) at 703:14-16; RX-0117C ([redacted]). Mr. Dunn, Dr. Kim, and colleagues of Dr. Kim were present. (*Id.*). According to Mr. Dunn's testimony, an unnamed person at Samsung requested that Dr. Nam-Heon Kim visit

[60] The reason that Mr. Dunn's discussion of whether to use an air between the cover glass and the LCD cell versus direct bonding is important is because, in claim 12 of the '311 patent that MRI argued is practiced by the Outdoor Promotions Product, there is a 5 mm to 25 mm gap between the cover glass and the LCD cell. (JX-0002 ('311 Patent) at 12:3-10.). Also, in claim 1 of the '253 patent that MRI argued is practiced by the Outdoor Promotions Product, there is a "front channel" between the display panel and a front side of the housing. (JX-0003 ('253 Patent) at 10:36-43.).

[61] American Panel Corporation is a company Mr. Dunn formed in 1998 that was a component supplier of, *inter alia*, backlight modules and LCD modules. (Tr. (Dunn) at 688:17-689:6.).

MRI's facility in Alpharetta, Georgia. (*Id.* (Dunn) at 703:7-16.). Mr. Dunn testified that [redacted] (*Id.* at 707:7-708:19.). According to Mr. Dunn, [redacted] (Tr. (Dunn) at 709:6-8). Mr. Dunn testified that [redacted] (*Id.* at 708:20-709:8; RX-0335 (photographs of the Outdoor Promotions 70-inch bus shelter product taken at MRI's Facility in February 2008); *see also* Tr. (Dunn) at 709:9-11, 709:23-711:6; RX-0262, RX-0335 (additional photos of Outdoor Promotions 70-inch bus shelter product displayed at MRI's facility).).

During his Hearing testimony, Mr. Dunn presented photographs that depicted the Outdoor Promotions 70-inch product that was being worked on at the time on the production floor of the Facility, which are shown in Figure 65 below.

Figure 65: Outdoor Promotions 70-inch Bus Shelter Product as Displayed at MRI's Facility in Alpharetta, Georgia on February 1-2, 2008



(Tr. (Dunn) at 709:9-11, 709:23-710:12; RDX-0003C.0011; RX-0262; RX-0335.).

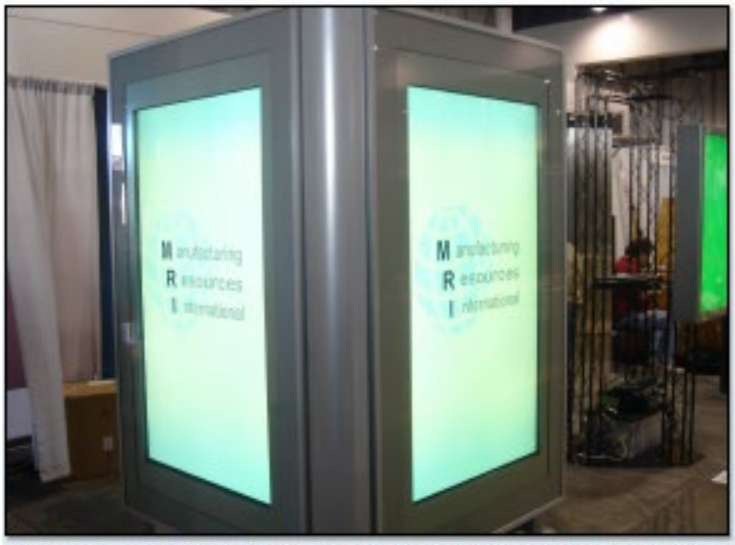
Mr. Dunn testified that during the February 1-2, 2008 meeting at MRI's Facility, [redacted] (Tr. (Dunn) at 709:9-20.). Mr. Dunn testified that [redacted] (*Id.* at 709:21-22.). Mr. Dunn testified that, [redacted] (*Id.* at 711:7-10.).

At a fourth meeting during the second week of February 2008, Mr. Dunn met with Samsung representatives in Seoul, Korea. (Tr. (Dunn) at 703:17-19.). Mr. Dunn did not describe the subject matter that was discussed during that meeting or with whom he met.

A fifth and, apparently, last meeting that Mr. Dunn had with any Samsung representatives was at the Digital Signage Expo in Las Vegas, Nevada on February 28-29, 2008. (*Id.* at 703:19-20, 711:11-715:5; RX-0093C, RX-0094, RX-0095, RX-0096, RX-0097 (photographs of the Outdoor Promotions 70-inch bus shelter product displayed at the Digital Signage Expo in Las

Vegas, Nevada; *see also* Figures 66-68 below.). MRI publicly displayed the Outdoor Promotions Product, i.e., a 70-inch LCD Display, at that Digital Signage Expo. Representatives of Samsung were present to see MRI's display, as depicted in the figures below. (Tr. (Dunn) at 713:5-715:5.).

Figure 66: Outdoor Promotions 70-inch Bus Shelter Product for Digital Signage Expo in Las Vegas, NV on February 28-29, 2008



Outdoor Promotions 70" Product at Las Vegas Expo, Feb. 2008 | *RX-0003C*

(Tr. (Dunn) at 691:24-692:4; RDX-0003C.0003.).

Figure 67: Outdoor Promotions 70-inch Bus Shelter Product as Displayed at the Digital Signage Expo in Las Vegas, NV on February 28th and 29th, 2008



(Tr. (Dunn) at 711:11-715:5; RDX-0003C.0012; RX-0094; RX-0095; RX-0096.)

Figure 68: Photographs of MRI's Display at Digital Signage Expo With Samsung Representatives in Attendance Including Scott Birnbaum



(Tr. (Dunn) at 713:5-715:5; RX-0097; RX-0098.).[62]

After the Digital Signage Expo in Las Vegas, Nevada, [redacted]

[62] In both photographs, Mr. Dunn is in the foreground wearing a blue shirt. In the right photograph, the man wearing a brown coat on the right is [redacted] (Tr. (Dunn) at 713:15-715:5.).

[redacted] (Tr. (Dunn) at 714:22-715:5.).

D. Comparison of the Outdoor Promotions Product to the ’311 and ’253 Patents

During the Hearing, Mr. Dunn presented a computer aided design (“CAD”) file, a technical manual, and a Bill of Materials that described the various components of the Outdoor Promotions 70-inch product. (Tr. (Dunn) at 693:25-702:2; RX-0107C (CAD file); RX-0101 (air conditioner unit manual); RX-0102C (bill of materials); RDX-0003C.0003C-7.). The CAD file shows the front glass, display (which had an MRI backlight and an LCD cell that was sourced from Samsung), the space between the front glass and the display that measures 20.78 mm, housing, and air conditioning unit. (RX-107C; RDX-0003C.004-6.). The bill of materials shows that the LCD display is 70 inch. (RX-0102C.). The technical manual shows that the air conditioner unit has a thermostat for setting the desired temperature of the display, fans, and controller for controlling the fans. (RX-0101; RDX-0003C.007.). In Mr. Dunn’s view, the ’311 patent and the ’253 patent are “nothing more than patents on our technology that we showed Samsung every component of and showed them the finished product.” (Tr. (Dunn) at 716:4-24.).

Moreover, Mr. Flasck, MRI’s expert technical witness on the ’311 patent and the ’253 patent, provided element-by-element testimony tying a feature of the Outdoor Promotions Product to each element of claim 12 of the ’311 patent and to each element claim 1 of the ’253 patent. (Tr. (Flasck) at 1065:7-1068:8.). Notably, Mr. Flasck testified that the CAD file for the Outdoor Promotions Product requires the channel between the front glass and the LCD to be 20.78 mm, which is within the 5 mm to 25 mm spacing required by claim 12 of the ’311 patent. (Tr. (Flasck) at 1066:9-12, 1066:25-1067:4; RDX-0005C.0190.). Also of note, Mr. Flasck mapped the “flow control device” recited in claim 1 of the ’253 patent to a combination of the fans and the air conditioner of the Outdoor Promotions Product. (Tr. (Flasck) at 1067:21-25;

RDX-0005C.0191.).

However, on cross-examination, Mr. Flasck admitted that he offered no opinion as to whether the Outdoor Promotions Product "had a controller or had a particular air velocity." (CRBr. at 54-55 (citing Tr. (Flasck) at 1157:12-17).). That testimony does not undermine Mr. Flasck's opinion because neither claim 12 of the '311 patent nor claim 1 of the '253 patent recites a controller or air velocity. (JX-0002 ('311 Patent) at 12:3-9; JX-0003 ('253 Patent) at 10:36-43.). Moreover, Mr. Flasck credibly and persuasively testified that the Outdoor Promotions Product embodies the elements of claim 1 of the '253 patent and the elements of claim 12 of the '311 patent.

None of Samsung's witnesses opined that any element of claim 1 of the '253 patent or of claim 12 of the '311 patent is missing from the Outdoor Promotions Product. In other words, there does not appear to be any dispute that the Outdoor Promotions Product is an embodiment of claim 1 of the '253 patent and of claim 12 of the '311 patent.

E. Analysis

The arguments and evidence presented in this Investigation reflect: 1) clear and convincing evidence that the Outdoor Promotions Product is material to claim 1 of the '253 patent and claim 12 of the '311 patent; but that 2) there is no clear and convincing evidence of any of Samsung's employees' specific intent to deceive the USPTO.

Consequently, because MRI cannot meet unequivocally, consistent with its burden, both elements of intent and materiality, MRI's unclean hands and inequitable conduct defenses fail.[63]

[63] In a footnote, Samsung questioned MRI's motivations for asserting its inequitable conduct defense. (CRBr. at 57 n.5.). Samsung accused Mr. Dunn of including specifications for Samsung's 70-inch display in an MRI patent application, despite that Samsung allegedly disclosed that information to MRI confidentially under an NDA. (*Id.* (citing CX-1963C (NDA executed between American Panel

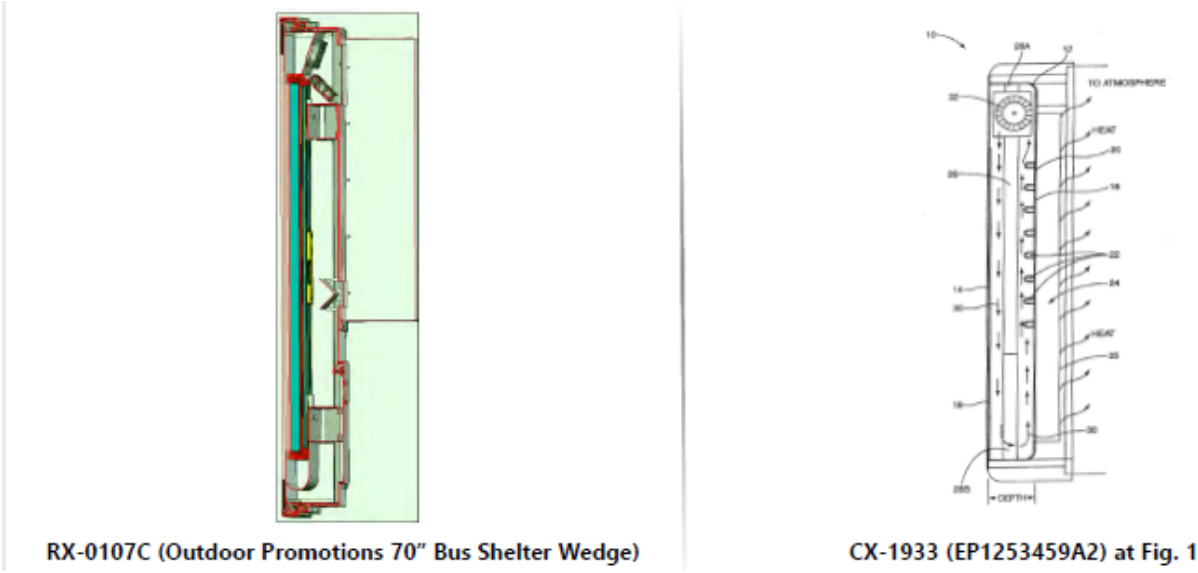
1. MRI Proved That the Outdoor Promotions Product is Material to the '253 Patent and the '311 Patent

To prevail on its inequitable conduct and unclean hands defenses for each patent, as noted previously, MRI had to produce clear and convincing evidence that its Outdoor Promotions Product is material to the patentability of at least one claim of each patent. *Therasense*, 649 F.3d at 1291-92. Samsung argued that the Outdoor Promotions Product is not material because it is merely cumulative of other prior art submitted to the USPTO. (CRBr. at 54.). If the Outdoor Promotions Product is merely cumulative of other prior art that was considered by the USPTO, then it cannot be material and thus cannot be used to argue that Samsung engaged in inequitable conduct or has unclean hands. *California Inst. Of Tech.*, 25 F.4th at 991.

According to Dr. Smith, Samsung's technical expert, the relevant features of the Outdoor Promotions Product are disclosed in the European Gromatzky Patent Application, EP 1253459A2 (CX-1933), which was disclosed to the Patent Examiner during patent prosecution of the '253 patent and the '311 patent. (Tr. (Smith) at 1270:4-25.). Dr. Smith showed the following slide, Figure 69 below, that compares Figure 1 of the European Gromatzky Patent Application to a CAD image of the Outdoor Promotions Product:

Corporation and Samsung Semiconductor, Inc. dated December 20, 2007); and CX-1941C (January 16, 2008 email from Bruce Elliott at Samsung to Bill Dunn at American Panel discussing panel specifications and attaching "technical notification" document marked as containing confidential business information in connection with Investigation No. 337-TA-1331).). Whether MRI, Mr. Dunn, or any other MRI employee violated a non-disclosure agreement with Samsung is not at issue in this Investigation nor is it relevant to the merits of MRI's inequitable conduct and unclean hands allegations against Samsung.

Figure 69: Dr. Smith's Comparison of the Outdoor Promotions Product and Figure 1 of the European Gromatzky Patent Application (CX-1933)



RX-0107C (Outdoor Promotions 70" Bus Shelter Wedge)

CX-1933 (EP1253459A2) at Fig. 1

(CDX-0009.0047; Tr. (Smith) at 1270:4-25.).

In rebuttal to and in a contradiction to Mr. Flasck's testimony, Dr. Smith testified: "everything that it appears the Outdoor Promotions bus shelter wedge product discloses that Mr. Flasck claims would be relevant to the prosecution of the '311 patent and the '253 patent, I believe is shown in the European Gromatzky Patent Application, which is EP 1253459A2." (Tr. (Smith at 1270:18-22.).

MRI counterargued that the Outdoor Promotions Product is not cumulative of the European Gromatzky Patent Application because the European Gromatzky Patent Application lacks an air conditioner. (RBr. at 63.). MRI also counterargued that Dr. Smith's testimony is nonsensical because "it is undisputed that the Outdoor Promotions Product discloses each limitation of at least claim 12 of the '311 Patent and claim 1 of the '253 Patent, and thus ***anticipates*** those claims. As such, it necessarily is not 'cumulative' of prior art considered by the Examiner, which was evidently found not to anticipate the claims." (*Id.*).

If the European Gromatzky Patent Application is compared to claim 1 of the ’253 patent, it is clear that the European Gromatzky Patent Application discloses a thermal management system for a thin depth LCD display enclosure. (CX-1933.0001 at (57).). There is a housing (environmentally sealed enclosure 12) with a front side (lens 18), a display assembly (LCD module 26) enclosed inside the housing, and a flow control device (fan 32) to generate an air flow in the front channel (air flow path 30). (CX-1933.0003 at [0016-17], Figure 1.).

However, the European Gromatzky Patent Application does not disclose that the flow control device is to “control a velocity of the air flow according to a state of the display assembly.” As noted above, Mr. Flasck testified that the air conditioner of the Outdoor Promotions Product is part of the claimed “flow control device.” (Tr. (Flasck) at 1067:21-25; RDX-0005C.0191.). The European Gromatzky Patent Application does not disclose the use of an air conditioner.

In other words, the Outdoor Promotions Product has the claimed “flow control device” but the European Gromatzky Patent Application does not. Therefore, it is a finding of this ID that the Outdoor Promotions Product is not cumulative of the European Gromatzky Patent Application with respect to claim 1 of the ’253 patent.

If the European Gromatzky Patent Application is compared to claim 12 of the ’311 patent, it is clear that the European Gromatzky Patent Application discloses a display device (LCD display 10) with a liquid crystal panel to display an image (LCD module 26), a protection panel (lens 18), and a channel formed between the liquid crystal panel and the protection panel to pass air therebetween to remove heat from a front side of the liquid crystal panel (air flow path 30). (CX-1933.0003 at [0016-17], Figure 1.). However, the European Gromatzky Patent Application does not disclose that the distance between the liquid crystal panel and the protection

panel is "in a range of 5 mm to 25 mm" as claim 12 requires. (JX-0002 ('311 Patent) at 11:25-28.). As noted above, Mr. Flasck testified that the CAD file for the Outdoor Promotions Product requires the distance between the front glass and the LCD to be 20.78 mm, which satisfies the language of claim 12 of the '253 patent. (Tr. (Flasck) at 1066:9-12, 1066:25-1067:4; RDX-0005C.0190.). In other words, the Outdoor Promotions Product has the claimed channel spacing, but the European Gromatzky Patent Application does not. Therefore, it is a finding of this ID that the Outdoor Promotions Product is not cumulative of the European Gromatzky Patent Application with respect to the '311 patent.

It is a finding of this ID that MRI has proven by clear and convincing evidence that the Outdoor Promotions Product is material to the patentability of claim 12 of the '311 patent and claim 1 of the '253 patent.

2. There is no Specific Intent to Deceive the USPTO

MRI had to prove by clear and convincing evidence that a person with a duty of candor to the USPTO withheld the existence of the Outdoor Promotions Product from the USPTO with specific intent to deceive the USPTO. *Therasense*, 649 F.3d at 1290. The person alleged to have withheld a prior art reference must have known that it was material. *Id.*

a) MRI Has Not Proven by Clear and Convincing Evidence That a Person with Knowledge of the Outdoor Promotions Product Was Involved in Prosecution

A critical problem with MRI's inequitable conduct affirmative defense is that there is no evidence that Dr. Kim, or any other Samsung employee that Mr. Dunn identified in his testimony, was involved in prosecuting the patent application that led to the '311 patent or the patent application that led to the '253 patent. There is not a scintilla of evidence that Dr. Kim had a working relationship with any named inventor or prosecuting attorney. To the contrary,

Dr. Kim is an engineer in the LCD Development Center whereas the named inventors are part of the Visual Display Division. (RX-0117C.0003; Tr. (Lim) at 315:19-316:6, 317:15-21.). The other individual Mr. Dunn named, [redacted] (RX-0134C.0017.).

MRI attempted to prove a connection between Dr. Kim and individuals involved in prosecution of the '253 and '311 patents based on its argument that Samsung intentionally omitted Dr. Kim and other Samsung individuals involved in the Outdoor Promotions project from the list of inventors of the '253 and '311 patents. (RBr. at 61-62). However, there is a presumption that the named inventors in an issued patent are correct. *James v. J2 Cloud Servs., LLC*, 823 F. App'x 945, 949 (Fed. Cir. 2020). MRI neither asserted an incorrect inventorship defense nor adduced any evidence that Samsung's listed inventors are incorrect.[64] It is a finding of this ID that MRI has not overcome the presumption that the named inventors for the '311 patent and the '253 patent are correct. Therefore, MRI's argument that Samsung intentionally omitted Dr. Kim and other individuals involved in the Outdoor Promotions project from its list of inventors is rejected.

As described above with respect to the interactions between the Parties, there is some evidence that Dr. Kim obtained confidential, proprietary, and detailed information about MRI's Outdoor Promotions Product at the third meeting between the Parties. Moreover, the Outdoor Promotions Product is clearly material to patentability. However, the law imposes a duty of

[64] Samsung represented that MRI did not issue a trial subpoena to one of the named inventors, Sung Ki Kim, even though MRI deposed Sung Ki Kim in connection with Investigation No. 337-TA-1331. (CRBr. at 53.). MRI's inequitable conduct defense is premised on the theory that the listed inventors are intentionally incorrect. Therefore, MRI's failure to show even an attempt to obtain evidence of improper inventorship undercuts its inequitable conduct defense.

candor on "persons," not entities. *Exergen Corp. v. Wal-Mart Stores, Inc.*, 575 F.3d 1312, 1329-30 (Fed. Cir. 2009); *Monsanto Co.*, 514 F.3d at 1233; *Bruno Indep. Living Aids, Inc.*, 394 F.3d at 1351; 37 C.F.R. § 1.56.

MRI did not provide direct evidence, and certainly not clear and convincing evidence, that Dr. Kim or anyone else involved in the Outdoor Promotions Product, was involved in prosecuting the '253 and '311 patents. Under these circumstances, this ID declines to impose the "atomic bomb" remedy of unenforceability due to inequitable conduct. *Therasense*, 649 F.3d at 1288; *see also Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1365-66 ("[t]he need to strictly enforce the burden of proof and elevated standard of proof in the inequitable conduct context is paramount because the penalty for inequitable conduct is so severe, the loss of the entire patent even where every claim clearly meets every requirement of patentability. . . . inference [of intent] must be the single most reasonable inference able to be drawn from the evidence to mee the clear and convincing standard").

b) MRI Has Not Proven by Clear and Convincing Evidence That Anyone Knew the Outdoor Promotions Product Was Material to Patentability of Claim 12 of the '311 Patent

MRI has not proven by clear and convincing evidence that any person knew that the Outdoor Promotions Product was material to patentability of the '311 patent. As explained above, Mr. Dunn's testimony during the Hearing proves that [redacted] Mr. Dunn testified that [redacted] (Tr. (Dunn) at 709:9-22.). However, there is no evidence that Mr. Dunn, MRI, or any of MRI's employees

communicated the 20.78 mm spacing required by the CAD drawing of the Outdoor Promotions Product to Dr. Kim or any other Samsung employee. Without knowing whether the spacing was 5-25 mm as required by claim 12 of the '311 patent, neither Dr. Kim nor any other Samsung employee could have known the Outdoor Promotions Product was material to patentability of claim 12 of the '311 patent.

3. MRI's Unclean Hands Affirmative Defense Fails With its Inequitable Conduct Defense

The equitable doctrine of unclean hands applies in the patent context to "close the doors of a court of equity to one tainted with inequitableness or bad faith relative to the matter in which he seeks relief, however improper may have been the behavior of the defendant." *Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co.*, 324 U.S. 806, 814, 65 S. Ct. 993, 997 (1945). The unclean hands doctrine covers a broader range of conduct than the doctrine of inequitable conduct because the doctrine of unclean hands encompasses "[a]ny willful act concerning the cause of action which rightfully can be said to transgress equitable standards of conduct." *Id.* at 997-98. On the other hand, the remedy for unclean hands is narrower because the patent at issue is rendered unenforceable only against the accused infringer. *Aptix Corp. v. Quickturn Design Sys., Inc.*, 269 F.3d 1369, 1375 (Fed. Cir. 2001).

Here, the alleged conduct underlying MRI's unclean hands defense is the same as the alleged conduct underlying MRI's inequitable conduct defense. (RBr. at 64.). Therefore, it is a finding of law that MRI's inequitable conduct defense and MRI's unclean hands defense rise and fall together. MRI has neither argued otherwise nor provided sufficient reason to reach a different conclusion.

For the reasons already stated, it is a finding of this ID that the evidence is insufficient to

establish that Samsung intentionally deceived the USPTO by withholding information about the Outdoor Promotions Product. Therefore, it is a finding of fact and of law that the '311 patent and the '253 patent are not unenforceable against MRI under the doctrine of unclean hands.

XI. ECONOMIC PRONG OF THE DOMESTIC INDUSTRY REQUIREMENT

A. Legal Standard

The Commission may only find a violation of Section 337 "if an industry in the United States relating to the articles protected by the patent . . . exists or is in the process of being established." 19 U.S.C. § 1337(a)(2) (emphases added). Typically, a complainant must show that a domestic industry existed at the time the complaint was filed. *See Motiva LLC v. Int'l Trade Comm'n*, 716 F.3d 596, 601 n.6 (Fed. Cir. 2013).

The domestic industry requirement consists of a "technical prong" and an "economic prong." *See, e.g.*, *Certain Elec. Devices, Including Wireless Commc'n Devices, Portable Music & Data Processing Devices, & Tablet Computs.*, Inv. No. 337-TA-794, Order No. 88, 2012 WL 2484219, at *3 (June 6, 2012); *Certain Unified Commc'ns Sys., Prods. Used with Such Sys., and Components Thereof*, Inv. No. 337-TA-598, Order No. 9 at 2 (Sept. 5, 2007) ("*Communications Systems*"). A complainant satisfies the "technical prong" of the domestic industry requirement when it proves that its activities relate to an article "protected by the patent." *See Communications Systems*, Order No. 9 at 2. A complainant satisfies the "economic prong" of the domestic industry requirement when it demonstrates that the economic activities set forth in subsections (A), (B), and/or (C) of Section 337(a)(3) have taken place or are taking place with respect to the protected articles. *See id.*

Subsection 337(a)(3) states that:

For purposes of paragraph (2), and 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.

19 U.S.C. § 1337(a)(3).

Because the criteria are listed in the disjunctive, satisfaction of any one of them will be sufficient to meet the economic prong of the domestic industry requirement. *Certain Integrated Circuits, Chipsets and Prods. Containing Same*, Inv. No. 337-TA-428, Order No. 10, Initial Determination (May 4, 2000) ("*Integrated Circuits*") (unreviewed). Establishment of the "economic prong" is not dependent on any "minimum monetary expenditure" and there is no need for a complainant "to define the industry itself in absolute mathematical terms." *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 25-26 (May 16, 2008) ("*Stringed Instruments*"). However, a complainant must substantiate the nature and the significance of its activities with respect to the articles protected by the patent at issue. *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 30 (Feb. 17, 2011) ("*Imaging Devices*").

The Commission has interpreted Sections 337(a)(3)(A) and (B) to concern "investments in plant and equipment and labor and capital with respect to the ***articles*** protected by the patent." *Certain Ground Fault Circuit Interrupters and Prods. Containing Same,* Inv. No. 337-TA-739, 2012 WL 2394435, at *50, Comm'n Op. at 78 (June 8, 2012) ("*Circuit Interrupters*") (emphasis in original) (quoting 19 U.S.C. §§ 1337(a)(3)(A), (B)).

In addition, the Commission has definitively stated that investments in plant and equipment or labor and capital that relate to engineering and research and development ("R&D")

(that are expressly identified under subsection I), are properly considered under subsections (A) and (B):

> The statutory text of section 337 does not limit sections 337(a)(3)(A) and (B) to investments related to manufacturing or any other type of industry. It only requires that the domestic investments in plant and equipment, and employment of labor or capital be "with respect to the articles protected by the patent." 19 U.S.C. § 1337(a)(3). Moreover, even though subsection (C) expressly identifies "engineering" and "research and development" as exemplary investments in the "exploitation" of the patent, that language does not unambiguously narrow subsections (A) and (B) to exclude those same types of investments.

Certain Solid State Storage Drives, Stacked Elecs. Components, and Prods. Containing Same, Inv. No. 337-TA-1097, Comm'n Op. at 8 (June 29, 2018) ("*Storage Drives*"); *see also, e.g.*, *Certain Marine Sonar Imaging Devices, Including Downscan and Sidescan Devices, Prods. Containing the Same, and Components Thereof*, Inv. No. 337-TA-921, Comm'n Op. at 57-64 (Jan. 6, 2016) ("*Sonar Imaging Devices*").

There is no mathematical threshold test or a "rigid formula" for determining whether a domestic industry exists. *Certain Male Prophylactic Devices, Inc*., Inv. No. 337-TA-292, Comm'n Op. at 39, USITC Pub. 2390 (June 1991) ("*Male Prophylactic Devices*"). However, to determine whether investments are "significant" or "substantial," the actual amounts of a complainant's investments or a quantitative analysis must be performed. *Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879, 883-84 (Fed. Cir. 2015). Even after *Lelo*, which requires some quantification of a complainant's investments, there is still no bright line as to a threshold amount that might satisfy an economic industry requirement.

It is the complainant's burden to prove by a preponderance of evidence that each prong of the domestic industry requirement is satisfied. *Certain Prods. Containing Interactive Program Guide and Parental Control Tech.*, Inv. No. 337-TA-845, Final Initial Determination, 2013 WL

3463385, at *14 (June 7, 2013.). Moreover, the Commission makes its determination by "an examination of the facts in each investigation, the article of commerce, and the realities of the marketplace." *Male Prophylactic Devices*, Comm'n Op. at 39 (quoting *Certain Double Sided-Floppy Disk Drives and Components Thereof*, Inv. No. 337-TA-215, Comm'n Op. at 17, USITC Pub. 1859 (May 1986)). "Commission precedent permits complainants to present evidence of their U.S. investments using methods and approaches that are appropriate to the facts of a particular investigation; such methods and approaches may include a comparison between complainant's domestic investments to the complainant's foreign investments to inform the contextual analysis for determining whether the claimed domestic investments are significant or substantial." *Certain Movable Barrier Operator Sys. And Components Thereof*, Inv. No. 337-TA-1118, Comm'n Op. at 23 (Jan. 12, 2021) (internal citations omitted).

In addition, as the Commission explained, it has looked to several different "contextual indicators" to determine if a complainant's investments and expenditures are sufficient to constitute a domestic industry. *See Certain Bone Cements, Components Thereof and Prods. Containing the Same*, Inv. No. 337-TA-1153, Comm'n Op. at 26 (Jan. 25, 2021). The Commission stated:

> For instance, one methodological approach the Commission has used in both pre- and post-1988 investigations is "comparing complainant's domestic expenditures to its foreign expenditures." Another approach, among others, is to consider "the value added to the article in the United States by the domestic activities." Indeed, Commission decisions have accepted a "value-added" analysis to assess whether an industry in the United States exists. Moreover, the Federal Circuit in *Schaper* compared the investments in the United States with "the total production process of [the domestic industry products]," and found that there was not "significant value added" to the products in the United States. In sum, as discussed above, the Commission's determination as to the existence of a domestic industry must be assessed according to a highly fact-specific assessment of the "nature and significance" of the complainant's domestic activities.

Id. at 26-27 (internal citations omitted).

B. Economic Prong Overview

1. MRI's Motion for Summary Determination

On August 4, 2023, MRI filed a motion for summary determination ("MSD") that Samsung did not satisfy the economic prong of domestic industry, with a memorandum ("Mem.") in support. (Motion Docket No. 1349-011 (Aug. 4, 2023).). MRI argued that, even if Samsung's qualifying investments for the 253 DI Products and the 311 DI Products of [redacted] which was [redacted] of U.S. revenue and [redacted] of COGS,[65] and Samsung's qualifying investments for the 117 DI Products of [redacted], which was [redacted] of U.S. revenue and [redacted] of COGS, are true, they are not quantitatively significant. (Mem. at 15-17.).

MRI relied on the Federal Circuit's decision in *Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879 (Fed. Cir. 2015). (Mem. at 16.). MRI argued that, in *Lelo*, the reason the Federal Circuit reversed the Commission is because the alleged investments, which were less than 5% of COGS, were not quantitatively significant. (Mem. at 17.). MRI also cited post-*Lelo* Commission decisions in which investments amounting to less than 5% of sales, (*Certain Carburetors & Prods. Containing Such Carburetors*, Inv. No. 337-TA-1123, Order No. 77, Initial Determination at 4-6 (Aug. 12, 2019)), or only 2%, 3.5%, and 6% of COGS, (*Certain Electronic Candle Prods.*, Comm'n Op. at 18 (Sept. 13, 2021)), were determined not to be significant. (Mem. at 17-18.).

Samsung counterargued, in its Opposition, (Doc. ID 803073), that its qualifying

[65] "COGS" stands for "Cost of Goods Sold."

investments are significant when considered in context because "the market for outdoor displays is comparatively dwarfed by consumer TVs and other displays, as evidenced by the fact that MRI and LG-MRI, which hold themselves out as a serious competitor in the market, [redacted]). (MSD Opposition at 6.). Samsung correctly pointed out that MRI did not address the relevant market or its size in its MSD. (*Id.* at 7.).

On September 25, 2023, MRI's MSD was denied. (Order No. 24 (Sept. 25, 2023).). MRI's failure to address the relevant market for outdoor display devices of the type at issue in this Investigation, among other deficiencies in its MSD, raised genuine issues of material fact with respect to the size of the relevant market and its effect on the quantitative significance analysis and context.

2. The Domestic Industry Products

The 117 DI Products are the OH46B and OH55A-S ("the Mid-Sized DI Products" or "the 117 DI Products"). The 253 DI Products and the 311 DI Products are the OH75A and OH85N-S ("the Large-Sized DI Products"). The Mid-Sized DI Products and the Large-Sized DI Products are collectively the DI Products. (*See* Section V.B.).

The DI Products are part of Samsung's OH Series line of outdoor digital displays. In December 2022 when the Complaint was filed, the DI Products were the only OH Series products being sold in the U.S., with most of them being first sold between February and April 2022. (Tr. (Julia Rowe)[66] at 224:5-15, 248:21-249:5; CDX-0004C.0008; Tr. (Shim) at 78:2-

[66] At the time of the Hearing, Ms. Rowe was a managing director at a financial services and consulting firm called Kroll, where she serves in the intellectual property advisor services practice, a Certified Public Accountant (CPA) registered in Illinois, and she holds a Bachelor of Business Administration from the University of Michigan and a Master of Accountancy from DePaul University. (*Id.* at 213:14-214:18.). She is a globally recognized intellectual asset management professional and has testified about the economic prong of domestic industry dozens of times. (*Id.* at 214:19-215:17; CX-0018C; CX-0019C.).

79:24, 80:14-18, 120:12-14; Tr. (Robert Davis)[67] at 203:24-205:4.).

However, substantial numbers of older, discontinued OH Series Products were, at that time and at the time of the Hearing, still operational in the field. Before the Complaint was filed, more than [redacted] of the OH products installed in the U.S. were products other than the DI Products, while the [redacted] are the DI Products. (CX-0034C.0001 ("Installed Base by Domestic Industry Product" listing OH46B as [redacted], OH55A-S as [redacted], OH85N-S as [redacted], and OH75A as [redacted], in 2022.). For 2023 (after the Complaint was filed), the installed base of non-DI OH Series Products was still almost [redacted], while the remaining [redacted] the DI Products. (*Id.*).

3. Samsung's Asserted Domestic Industry Under Section 337(a)(3)(B)

Samsung relied exclusively on labor and capital investments under Section 337(a)(3)(B). (CBr. at 104-129.). 19 U.S.C. § 1337(a)(3). Samsung presented evidence of labor and capital expenditures for two of its divisions to quantify its investments under Section 337(a)(3)(B). One of the two divisions is SEA's North America Display Office ("NADO"). (CBr. at 107-109.). NADO's U.S. employees provide technical pre-sales support in connection with Samsung's OH Series products, a series of products that includes the four specific DI Products at issue in this Investigation. (Tr. (Shim) at 64:16-27, 66:19-68:13, 69:17-70:8; CDX-0002C.0002.). The nature of NADO's technical support includes writing software that enables Samsung's customers to update dynamically their displays by, for example, offering limited time promotions. (Tr.

She was accepted as an expert in financial and accounting issues, including with respect to the economic prong of domestic industry. (Tr. (Rowe) at 215:18-216:4.).

[67] At the time of the Hearing, Mr. Robert Davis was the executive director of B2B Care and led a team that supports post-purchase activities for B2B Care's customers. (Tr. (Davis) at 153:17-160:3.).

(Shim) at 100:2-106:22; CX-0179.0004.).

The second of the two (2) divisions is SEA's Business-to-Business Care Group ("B2B Care"). (CBr. at 109-113.). B2B Care provides post-purchase technical support for the OH Series Products, including the DI Products. (Tr. (Davis) at 153:17-21, 153:22-154:16, 156:5-160:3; CDX-0003C.002.). The nature of B2B Care's post-purchase technical support includes onsite installation, product quality inspections, and onsite repair. (*Id.*). B2B Care uses a [redacted]. (Tr. (Davis) at 164:4-166:11; JX-1526C ([redacted] CX-0286C [redacted]

Ms. Julia Rowe, Samsung's economics expert, testified that, when a new outdoor display product is launched, NADO's work "sort of switches over right away" whereas "B2B Care services products sold this year in addition to products sold over the last few years," and so "it will take some time for B2B Care's work to relate primarily to the domestic industry products, but it's clear that that's where this is going." (Tr. (Rowe) at 242:22-243:13.).

The foregoing testimony reflects Ms. Rowe's use of a sales-based allocation for NADO versus an installed-base allocation for B2B Care. For Ms. Rowe's sales-based allocation for NADO, [redacted] of NADO's [redacted] of pre-Complaint labor expenses for the OH Series Products were allocated to the DI Products because about [redacted] of sales of the OH Products have been for the DI Products. (Tr. (Rowe) at 234:10-235:5.).[68]

Ms. Rowe testified that, from 2020 through the Complaint, Samsung invested $407,186

[68] Such a sales-based allocation has been endorsed numerous times by the Commission. *See, e.g.*, *Certain Mobile Device Holders and Components Thereof*, Inv. No. 337-TA-1028, Comm'n Op. at 18-19 (Mar. 22, 2018); *Certain Robotic Vacuum Cleaning Devices and Components Thereof Such as Spare Parts*, Inv. No. 337-TA-1057, Order No. 39 at 17 (Feb. 13, 2018), *aff'd by* Comm'n Op. (Aug. 1, 2018).

in NADO labor attributable to the DI Products, most of which is attributable to the 117 DI Products. (*Id.*; CDX-0004C.0013.). For Ms. Rowe's installed-base allocation for B2B Care, [redacted] of B2B Care's [redacted], of pre-Complaint labor and capital expenses for the OH Series Products were allocated to the DI Products because about [redacted] of installed OH Series Products are DI Products. (Tr. (Rowe) at 223:12-17, 241:13-242:11; CDX-0004C.005, 18-19.). From 2020 through the Complaint filing, Samsung proved that it had invested [redacted] in B2B Care labor and capital attributable to the DI Products, again most of which is attributable to the 117 DI Products. (Tr. (Rowe) at 224:16-225:1; CDX-0004C.0006.).

Ms. Rowe testified that the amount of Samsung's total pre-Complaint investments in labor and capital for the 117 DI Products totaled [redacted] (Tr. (Rowe) at 255:16-20.). Ms. Rowe testified that this amount constitutes [redacted] of Samsung's U.S. revenue and [redacted] of Samsung's COGS. (*Id.* at 255:16-256:16.).

However, Ms. Rowe testified that the total amount of Samsung's pre-Complaint investments in labor and capital for the 253 DI Products and 311 DI Products totaled: [redacted] (*Id.* at 256:3-9; CDX-0004C.0021.). Ms. Rowe testified that the dollar investment amount constitutes [redacted] of Samsung's U.S. revenue and [redacted] of Samsung's COGS for the pre-Complaint filing time period. (*Id.*).

Ms. Rowe testified that the total of Samsung's 2023 labor investments for the OH Series Products was: [redacted]. (Tr. (Rowe) at 246:6-18; CDX-0004C.0024.). Ms. Rowe testified that the total of Samsung's 2023 labor expenses for foreign employees who work on the OH Series Products was: [redacted]. (Tr. (Rowe) at 246:17-247:2; CDX-0004C.0024.). Ms. Rowe testified that she considered investments after the filing of the Complaint because "this is very much an ongoing in nature type of domestic industry." (Tr. (Rowe) at 228:10-20.). However,

Samsung expressly disavowed reliance on the "in the process of being established" language of Section 337(a)(2). (CBr. at 119 ("Samsung has not asserted and is not asserting that a domestic industry is in the process of being established").).[69]

Samsung relied heavily on its investments in, and commitment to, the entire OH Series line of products as relevant context for evaluating its domestic industry. (CBr. at 103 ("Samsung's overall commitment to the OH Series as measured by its objective commitment to the product line (including as to the discontinued models) provides the best economic barometer of Samsung's investment into and commitment to the DI products"). Samsung argued that the OH Series as a whole should be considered because, as Samsung's attorneys argued, "over the eight-plus year life span of the OH Series, Samsung has created a product life cycle infrastructure in the U.S. with domestic workers who support the products completely from the time that they leave the manufacturing line." (*Id.* at 118-121.). In other words, even though Samsung's investments in the DI Products are [redacted], Samsung argued that its investments in the OH Series as a whole should be considered because the DI Products are presently the only OH Series Products being sold. (*Id.*).

4. Summary Findings

[69] Samsung failed to present evidence of an industry in the process of being established. Proving the "in the process of being established" prong of Section 337(a)(2) requires proving: 1) a patent owner takes "the necessary tangible steps to establish such an industry in the United States;" and 2) "there is a significant likelihood that the industry requirement will be satisfied in the future." *Certain Non-Volatile Memory Devices & Prods. Containing the Same*, Comm'n Opinion, USITC Inv. No. 337-TA-1046, 2018 WL 6012622, at *18-19 (U.S.I.T.C. Oct. 26, 2018) (internal quotations and citations omitted); *see also Certain Digital Cameras, Software, and Components Thereof*, Inv. No. 337-TA-1059, Initial Determination at 73-85 (U.S.I.T.C. Aug. 17, 2018). Samsung did not present evidence of any "necessary tangible steps" being taken to establish an industry in the United States with respect to the DI Products.

Samsung's argument that it satisfies the economic prong for labor and capital under Section 337(a)(3)(B) and that it has made a significant investment in a U.S. domestic industry is lacking sufficiency on the merits. Samsung did not prove by a preponderance of evidence that its investments in the DI Products are significant in context. MRI's economics expert, Mr. Ryan Herrington,[70] testified that the U.S. outdoor display market is "a [redacted]." (Tr. (Herrington) at 1175:14-20.). Mr. Herrington also testified that Samsung has generated "over [redacted]" in U.S. revenue in 2022 on sales of the OH Series Products, which is only one of Samsung's outdoor display product lines. (*Id.*). Mr. Herrington testified that, in this context, Samsung's alleged investments are not significant. (*Id.* at 1175:22-1176:1.).[71]

In 2021, outdoor displays of the type that Samsung and MRI sell comprised about o[redacted] of the almost [redacted] global market for large format outdoor displays. (Tr. (Rowe) at 307:24-308:4, 310:1-3; CDX-0004C.0007; CX-0129C.0011, 14; *see also* CX-0130C.0010 (2020 global digital signage market valued at over [redacted]).). The U.S. market for outdoor displays is valued at approximately [redacted]. (Tr. (Herrington) at 1175:14-20.). Samsung is a major player in the outdoor display market. (Tr. (Shim) at 83:3-12 (Samsung has [redacted] market share); Tr. (Rowe) at 218:10-14 [redacted] in revenue for Samsung's OH Series in 2022), 308:5-16 ("Samsung holds the majority market share for display products used outdoors

[70] MRI called Mr. Ryan Herrington as an expert to testify about issues related to the economic prong of domestic industry. (Tr. (Herrington) at 1167:1-9.). At the time of the evidentiary hearing, Mr. Herrington was a senior managing director at FTI Consulting, a certified licensing professional, a certified valuation analysis, and a certified fraud examiner. (*Id.* at 1168:12-24.). He was accepted without objection as an expert in the field of economic analysis pertaining to domestic industry. (*Id.* at 1169:18-25.).

[71] Mr. Herrington also presented his own "corrected" investment calculations and allocations that account for the alleged inaccuracies in the data Ms. Rowe relied upon. (Tr. (Herrington) at 1189:24-1194:3.). However, it is a finding of fact that Ms. Rowe's calculated investments are reasonably accurate.

in applications such as quick service restaurants"); *see also* CDX-0004C.0023 (Rowe demonstrative showing [redacted] in U.S. revenue and COGS in 2022 for the DI Products)[72].).

a) The 311 DI Products and the 253 DI Products

It is a finding of this ID that Samsung has failed to satisfy the technical prong of the domestic industry requirement for the '311 patent and the '253 patent. *See* Sections VIII.C and VIII.D.

Because the 311 DI Products and the 253 DI Products (which are the same set of products) are not articles protected by the '311 patent and the '253 patent respectively then, by operation of law, Samsung cannot satisfy the economic prong of the domestic industry requirement, which can only be met by economic activities "with respect to the articles protected by the [asserted] patent." 19 U.S.C. § 1337(a)(3).

However, if this ID's finding that the technical prong of the domestic industry requirement is not satisfied for the '311 patent and the '253 patent is not upheld, then an alternative analysis with respect to Samsung's domestic activities is provided below.

In the context of a [redacted] U.S. market for outdoor display products, Samsung's investment of [redacted] for the 253 DI Products and the 311 DI Products is miniscule. Likewise, in the context of Samsung's U.S. revenue and U.S. COGS, Samsung's U.S. investment in the 311 and 253 DI Products ([redacted] of U.S. revenue and [redacted] of COGS) is also miniscule.

[72] Neither Ms. Rowe nor Samsung explained why a comparison to gross profits is a comparison for determining significance. The Commission has declined to consider comparisons to gross profits where the complainant failed to explain how or why that metric is meaningful. *In the Matter of Certain Wearable Elec. Devices with Ecg Functionality & Components Thereof*, Comm'n Opinion, USITC Inv. No. 337-TA-1266, 2023 WL 372372 at n.22 (Jan. 20, 2023) (citing *Certain Electronic Candle Prods. and Components Thereof*, Inv. No. 337-TA-1195, Comm'n Op. at 38 (July 14, 2022)).

(Tr. (Rowe) at 255:16-256:16.). Notably, Samsung did not identify Commission precedent in which the Commission has upheld that such a relatively small dollar investment, in context, comprises a domestic industry for comparably miniscule investments. Even considering Samsung's miniscule dollar investments in the context of the OH Series as a whole, they are not significant because the 253 DI Products and the 311 DI Products are a minor component of Samsung's overall OH Series business. (*See, e.g.*, CDX-0004C.0009 (large-size products are only [redacted] of OH Series revenue and only [redacted] of DI Products revenue).).

b) The 117 DI Products

For the '117 patent, Samsung's alleged [redacted] in qualifying investments are dwarfed by Samsung's U.S. revenue (qualifying investments equal to [redacted] of Samsung's U.S. revenue) and Samsung's COGS (qualifying investments equal [redacted] of COGS). (Tr. (Rowe) at 255:16-256:16.). Moreover, Samsung's [redacted] in qualifying investments is only [redacted] of the [redacted] U.S. market for outdoor displays. While it is a closer question for the 117 DI Products than for the 253 and 311 DI Products, it is a finding of this ID that Samsung's asserted qualifying investments are too small to qualify as "significant" under Section 337(a)(3)(B). Samsung did not identify Commission precedent where there was a finding of significance under these circumstances.

c) The OH Series Products

With respect to Samsung's arguments about the OH Series as a whole, Samsung represents that it chose not to assert that the discontinued OH Series Products should be considered as part of its cognizable domestic industry investments only because they were discontinued, not because they did not practice the Asserted Patents. (CBr. at 103.). However, it is Samsung's burden to prove investments in "articles protected by the patent." 19 U.S.C. §

1337(a)(2). Samsung did not present evidence that its discontinued products practice any of the Asserted Patents.

With respect to Samsung's argument that its expenditures committed to the DI Products are "growing," Samsung expressly disavowed any theory based on a domestic industry "in the process of" being established." (CBr. at 120.). Samsung presented little evidence about how quickly or to what extent the DI Products would replace the existing OH Series Products. For example, Samsung did not present financial projects or business plans of the timing for replacement of discontinued products with DI Products. *Certain Non-Volatile Memory Devices & Prods. Containing the Same*, Comm'n Opinion, USITC Inv. No. 337-TA-1046, 2018 WL 6012622, at *18-19 (U.S.I.T.C. Oct. 26, 2018) (internal quotations and citations omitted); *see also Certain Digital Cameras, Software, and Components Thereof*, Inv. No. 337-TA-1059, Initial Determination at 73-85 (U.S.I.T.C. Aug. 17, 2018).

The evidence that Samsung presented supports Samsung's argument that DI Products are replacing existing OH Series Products, but they appear to be doing so slowly. Before the Complaint was filed, more than [redacted] of the OH products installed in the U.S. were products other than the DI Products. (CX-0034C.0001 ("Installed Base by Domestic Industry Product" listing OH46B [redacted] OH55A-S as [redacted], OH85N-S as [redacted], and OH75A as [redacted], in 2022.). However, even for 2023 (after the Complaint was filed), the installed base of non-DI Products was still [redacted] (*Id.)*. Samsung presented no evidence for years beyond 2023 for its plans for expanding and growing its investments or sales in its DI Products. The fact that the proportion of DI Products installed [redacted], when the DI Products were first sold in 2022, is not persuasive evidence that Samsung's expenditures committed to the DI Products is

"growing" relative to the OH Series Products to such an extent that expenditures in the OH Series Products proves that Samsung's expenditures in the DI Products is significant.

If Samsung had produced analyses or plans, or estimated projections, that future products would practice the Asserted Patents, or evidence proving a rapid rate at which the DI Products are replacing the OH Series Products, Samsung could have presented that evidence and asserted an "in the process of being established" theory, if only as an alternative theory. But Samsung did not. Samsung's attempted reliance on the OH Series Products for context is unpersuasive because of Samsung's failure to present sufficient evidence that would connect current investments in the OH Series to current investments in the DI Products.

C. Samsung's Quantification of its Domestic Industry Investments Under Section 337(a)(2)(B)

1. Samsung's NADO Investments: Capital or Labor

Samsung relied on the expenditures of the North America Display Office of Complainant SEA ("NADO") to prove its domestic industry. (CBr. at 107-109.). NADO's U.S. employees provide technical pre-sales support in connection with Samsung's OH Series products, a series of products that includes the four (4) specific domestic industry products at issue in this Investigation. (Tr. (Shim) at 64:16-27, 66:19-68:13, 69:17-70:8; CDX-0002C.0002; *see also* Section V.B.). The nature of NADO's technical support includes writing software that enables Samsung's customers to dynamically update their displays by, for example, offering limited time promotions. (Tr. (Shim) at 100:2-106:22; CX-0179.0004.).

a) NADO's Labor Expenses

Mr. John Shim presented a document containing a listing of NADO employees and their title, employment type, salary, [redacted], total compensation [redacted]

and their location. (Tr. (Shim) at 109:3-17; JX-1551C.). Mr. Shim testified as to which employees work on the OH Series Products and their compensation, which is reproduced in the table below for reference. (Tr. (Shim) at 110:5-12; CDX-0002C.0005.).

Table 2: [redacted] Compensation of NADO Employees Working on the OH Series Products

[redacted]

(Tr. (Shim) at 110:5-12; CDX-0002C.0005.).

Samsung's economics expert, Ms. Rowe, relied on Mr. Shim's testimony and the compensation figures presented to calculate the following amount of NADO's labor expenses on employees who worked on the OH Series Products: [redacted]. (Tr. (Rowe) at 231:5-232:1.).

MRI argued that Ms. Rowe's calculated investments in NADO labor are inflated because the compensation figures Ms. Rowe used for her calculations include [redacted] (RRBr. at 94-95; Tr (Herrington) at 1180:8-15; Tr. (Rowe) at

233:6-20.). MRI's economics expert Mr. Ryan Herrington presented documentation showing [redacted] of an employee's salary. (Tr. (Herrington) at 1179:8-24; JX-1551C.). Mr. Shim testified that those target bonuses are not guaranteed. (Tr. (Shim) 145:2-8, 145:17-24.). On cross-examination, Ms. Rowe admitted that [redacted] (Tr. (Rowe) at 271:17-272:22.).

Samsung counterargued that its alleged investments in NADO labor are not inflated because the compensation figures Ms. Rowe relied on do not include any [redacted] (CBr. at 109; Tr. (Rowe) at 269:23-270:6.). As an example, Samsung proved that [redacted] (CBr. at 109; Tr. (Rowe) at 271:5-16.). Samsung did not cite any other examples of individuals who received [redacted]

It is a finding of this ID that Ms. Rowe's calculated investments in NADO labor may be larger than the actual investments in NADO labor. There is no dispute that Ms. Rowe's calculated labor investments include [redacted] Samsung's own witness Mr. Shim testified that [redacted] (Tr. (Shim) at 145:17-20.). [redacted] (Tr. (Herrington) at 1179:8-24; JX-1551C.). On the other hand, Ms. Rowe also testified that her calculations excluded employee compensation for [redacted] (Tr. (Rowe) at 231:19-23, 269:20-270:6.). There are no facts in the record to support a finding regarding how many employees [redacted] or the value of any employee's benefit package.

However, Ms. Rowe's calculated investments are acceptable because the Commission has long held that there is no need for "mathematical precision" when assessing how much a complainant has invested in a given patent. *Certain Liquid Crystal Display Devices, Including Monitors, Televisions, and Modules, and Components Thereof*, Inv. No. 337-TA-749, Comm'n Op. at 115-16 (July 6, 2012); *see also Stringed Instruments*, Comm'n Op. at 25-26. Ms. Rowe's calculated labor expenses for NADO employees who work on the OH Series Products is based on documentary and testimonial evidence, the authenticity and accuracy of which is not seriously in dispute. It is a finding that Ms. Rowe's calculated amount of NADO labor expenses for the OH Series Products is the best available evidence and is reasonably reliable.

b) Samsung Allocated [redacted] of Labor Expenses in NADO Employees to the OH Series Products

NADO director, Mr. Shim, estimated that NADO's U.S. engineers spent [redacted] of their time on the OH Series Products from 2020 through 2023, and that most of that time was spent on the midsize products (i.e., the 46-inch OH46B and the 55-inch OH55A-S, which allegedly practice the '117 patent). (Tr. (Shim) at 108:15-111:25.). Samsung's economics expert, Ms. Rowe, relied on documents reflecting total target compensation for NADO employees who work on the OH Series Products. (Tr. (Rowe) at 230:20-235:17.). Ms. Rowe also relied on Mr. Shim's statement about the number of NADO employees who work on the OH Series Products and how much of those employees' time is spent on the OH Series Products and thus allocate those employees' total compensation specifically to the OH Series Products. (*Id.*). Ms. Rowe concluded that, through the filing of the Complaint, Samsung invested [redacted] in labor for NADO employees attributable to the OH Series Products, as reflected in her demonstrative slide reproduced below. (Tr. (Rowe) at 222:22-224:4.).

Table 3: Ms. Rowe's Calculated Domestic Investments in OH Products From CDX-0004C.005

OH Products: Domestic Investments

	2020	2021	Jan.-Dec. 5, 2022	Total Through Complaint	2023
NADO *Pre-Sale Technical Support*	[redacted]				
B2B Care *Post-Sale Technical Support*					
Total*					

** Excludes Samsung's investments in the domestic industry products through Samsung Research America and Samsung International, Inc. ("SII").*

(CDX-0004C.005; Tr. (Rowe) at 222:22-224:4.).

MRI argued that Mr. Shim's [redacted] allocation of NADO labor to the OH Series Products is "overstated and inflated." (RRBr. at 95-96.). This is because MRI attempted to establish, on cross-examination, that Mr. Shim testified that his [redacted] number was somehow mistaken because it applied to employees who work on other outdoor displays besides the OH Series displays. (*Id.* at 125:10-127:15.). MRI's economic prong expert, Mr. Herrington, testified that Mr. Shim's alleged failure to account for other outdoor products other than the OH series renders Ms. Rowe's calculated allocation of NADO labor investments to the OH Series Products "artificially inflate[d]." (Tr. (Herrington) at 1177:14-1179:4.).

MRI also argued that Ms. Rowe did not allocate Samsung's investments in labor for the domestic industry products only to investments that are cognizable. (RRBr. at 96.). MRI's economics expert, Mr. Herrington, testified that he reviewed the LinkedIn profiles for NADO employees and determined that they are involved in sales and marketing activities. (Tr.

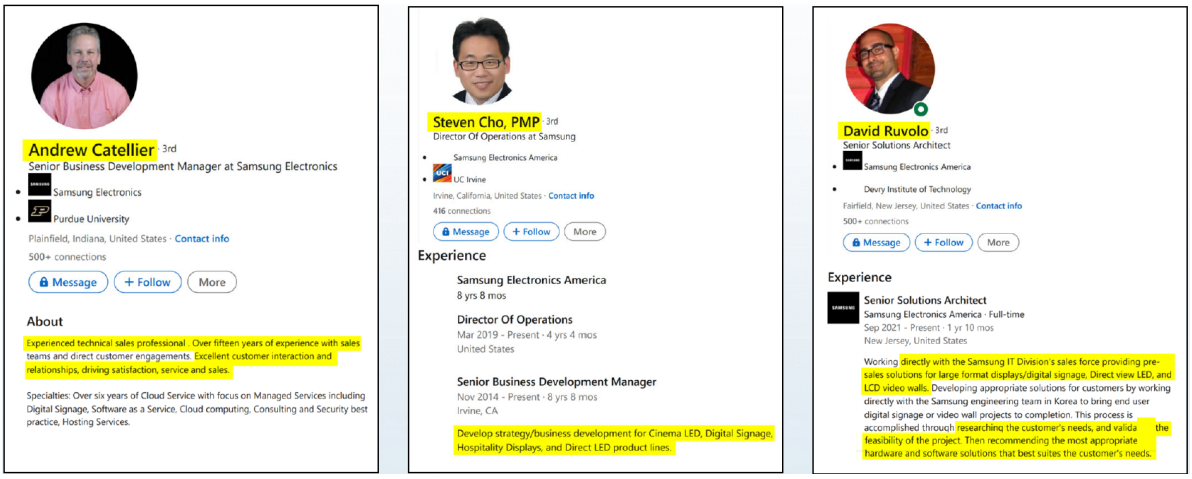
(Herrington) at 1181:20-1183:13; RDX-0008C.0010.).

Samsung counterargued that Mr. Shim testified "unequivocally" that [redacted] NADO employees he identified as working on the OH Series spend [redacted] of their combined time on the OH Series. (CBr. at 109 (citing Tr. (Shim) at 110:13-17).). Samsung also counterargued that, because Samsung does not track employee hours on a project-by-project basis, the [redacted] figure is reliable. (*Id.*). That is acceptable under Commission precedent. *Certain Raised Garden Beds and Components Thereof*, Inv. No. 337-TA-1334, Comm'n Op. at 45 (U.S.I.T.C. Apr. 1, 2024) (affirming ID finding that sworn witness testimony on domestic industry should be credited, even though the amount of time employees spent was not specifically tracked).

During the Hearing, Mr. Shim testified on behalf of Samsung that [redacted] of NADO's employees spent [redacted] of their time working on the OH Series Products. (Tr. (Shim) at 110:13-17.). Although he testified at his deposition and under cross-examination that the [redacted] figure was based on work on outdoor projects in general, (Tr. (Shim) at 126:16-127:15), which includes products other than the OH Series Products, Mr. Shim maintained under oath that the [redacted] figure is an accurate representation of the amount of time NADO's employees spend on the OH Series Products. (Tr. (Shim) at 108:15-111:25, 124:13-125:22.). Therefore, Mr. Shim's [redacted] figure cannot be wholly disregarded.

MRI's argument that Samsung's NADO labor investments are inflated because they include labor expenses for non-cognizable activities such as sales and marketing is unpersuasive. MRI's argument is unpersuasive because it is based on the opinion of its economics expert, Mr. Herrington, which in turn is based on weak evidence. The evidence Mr. Herrington relied on consists of the following excerpts of the LinkedIn profiles of three NADO employees, which are reproduced in Figure 70 below.

Figure 70: LinkedIn Profiles of Three NADO Employees From Mr. Herrington's Demonstrative RDX-0008C.0010



(Tr. (Herrington) at 1181:20-1183:13; RDX-0008C.0010.).

As an initial matter, MRI's presentation of selected portions of selected Samsung employee LinkedIn profiles, divorced from any testimony by the persons who own the profiles, and without the context of the full profiles, entitles them to little, if any, evidentiary weight. Mr. Herrington did not authenticate the LinkedIn profiles; they are hearsay. (*See, e.g.*, Fed. R. Evid. 901, Authenticating or Identifying Evidence; *see also*. Fed. R. Evid. 802, The Rule Against Hearsay.).

Moreover, although some of the highlighted text mentions sales, Mr. Shim's unrebutted testimony reflects that the sales process for the DI Products involves devising technical solutions and customizations to a particular customer's needs, testing pilot stage installations, troubleshooting, and technical training for the customer. (Tr. (Shim) at 89:15-99:4.).

Because of Federal evidentiary rules that expose the weakness of Mr. Herrington's LinkedIn profile excerpts, the information including the highlighted portions, do not prove that Samsung has relied on non-cognizable activities to prove its domestic industry.

Similarly, the highlighted text of Andrew Catellier's LinkedIn profile describes him as a "technical" sales professional. (RDX-0008C.0010.). The highlighted text of David Ruvolo's LinkedIn Profile mentions his work in "pre-sales solutions" and in "recommending the most appropriate hardware and software solutions that best suites [sic] the customer's needs." *Id.* The non-highlighted text in Mr. Ruvulo's LinkedIn Profile mentions that he is "working directly with the Samsung engineering team." *Id.* There is no basis for ascribing any weight to any of the employee LinkedIn profiles, for the reasons explained above.

Therefore, it is a finding of fact that the foregoing LinkedIn profile descriptions do not primarily describe Samsung's non-cognizable "sales and marketing" activities. That evidence is not given any weight.

Based on the foregoing arguments and evidence, it is a finding of this ID that the 10% allocation of NADO labor to the OH Series Products does not result in an inflated allocation of NADO labor investments to the DI Products relative to actual NADO labor investments to the domestic industry products.

c) Samsung Allocated [redacted] of NADO Labor Investments in the OH Series Products to the Domestic Industry Products

Ms. Rowe relied on a sales-based allocation in which [redacted] of OH Series Products sales are the domestic industry products. (Tr. (Rowe) at 234:10-235:5.). A sales-based allocation method has been accepted as a reasonable methodology by the Commission. *See, e.g.*, *Certain Mobile Device Holders and Components Thereof*, Inv. No. 337-TA-1028, Comm'n Op. at 18-19 (Mar. 22, 2018); *Certain Robotic Vacuum Cleaning Devices and Components Thereof Such as Spare Parts*, Inv. No. 337-TA-1057, Order No. 39 at 17 (Feb. 13, 2018), *aff'd by* Comm'n Op. (Aug. 1, 2018).

Ms. Rowe concluded that, from 2020 through the filing of the Complaint, Samsung invested [redacted] in labor for NADO employees attributable to the DI Products. (Tr. (Rowe) at 234:17-23; CDX-0004C.0013.). MRI did not dispute Ms. Rowe's sales-based allocation. (RRBr. at 78-108.).

It is a finding of fact and law that Samsung's allocation of NADO Investments to the DI Products is reliable and accurate.

2. Samsung's B2B Care Investments

Samsung also relied on the expenditures of the Business-to-Business Care Group of SEA ("B2B Care") to prove its domestic industry. (CBr. at 109-113.). B2B Care provides post-purchase technical support for the OH Series Products to its customers, including for the DI Products. (Tr. (Davis) at 153:17-21, 153:22-154:16, 156:5-160:3; CDX-0003C.002.).[73] The nature of B2B Care's post-purchase technical support includes onsite installation, product quality inspections, and onsite repair. (*Id.*). B2B Care uses a [redacted]

a) B2B Care's Labor Expenses

Mr. Davis presented a document showing target compensation for B2B Care's employees in 2023. (Tr. (Davis) at 172:6-12; JX-1559C.). Mr. Davis testified as to which B2B Care employees perform work related to the OH Series Products. (*Id.* at 167:8-169:4.). Ms. Rowe relied on the target compensation figures presented by Mr. Davis and his testimony about which

[73] At the time of the Hearing, Mr. Robert Davis was the executive director of B2B Care and led a team that supports post-purchase activities for B2B Care's customers. (Tr. (Davis) at 153:17-160:3.).

employees worked on the OH Series Products to calculate the following amount of B2B Care's labor expenses on employees who worked on the OH Series Products in 2022: [redacted]. (Tr. (Rowe) at 237:2-23, 238:18-22; CDX-0004C.0015-16.).

MRI argued, as it did for NADO, that Ms. Rowe's calculated labor investments for B2B Care are inflated because she relied on compensation amounts, some of which may have included estimates and may not have been paid. (RRBr. at 96-97.). Specifically, the data from Mr. Davis that Ms. Rowe relied on is target compensation for 2023, not actual compensation for 2022. MRI's expert Mr. Herrington testified that relying on future 2023 compensation, including "target compensation" that is not guaranteed, is not a reliable method of determining actual 2022 compensation. For the reasons explained, Mr. Herrington argued that Ms. Rowe's calculated investments are inflated. (Tr. (Herrington) at 1185:8-1186:17.).

Samsung counterargued that Mr. Davis testified during the Hearing that in 2022, the B2B Care Group employees received their full target compensation. (CBr. at 111 (citing Tr. (Davis) at 172:16-20).). Therefore, Samsung argued that because actual compensation numbers were used for calculating the base with an expected increase year over year, Samsung's 2023 employee compensation estimates were not inflated. (*Id.*). To that end, Ms. Rowe testified that she used Mr. Davis's 2023 target compensation figures because at the time the actual amounts paid to B2B Care employees in 2022 was unavailable due to a reorganization. (Tr. (Rowe) at 279:23-280:3.). When Ms. Rowe was confronted on cross-examination with a portion of her expert report that says 2022 salary expenses for B2B Care were only [redacted] based on data from Samsung, she testified that the number is unreliable because it does not reflect reorganizations at Samsung and excludes some employees that should not be excluded. (*Id.* at 278:3-279:12.).

Mr. Davis testified that B2B Care's employees in 2022 received their full target compensation. (Tr. (Davis) at 172:16-20.). There is no contradictory evidence. Therefore, it is a finding that the B2B Care compensation numbers Ms. Rowe relied on are generally reliable. Although Samsung employee compensation figures used for Section 337(a)(2)(B) support were for 2023 rather than 2022, Ms. Rowe nonetheless prudently discounted Mr. Davis's figures by [redacted] to reflect increased compensation in 2023 as compared to 2022. (Tr. (Rowe) at 237:12-18.). Samsung's cognizable investments in labor or capital for B2B Care appear more accurately supported than not.

b) Samsung's Allocation of B2B Labor Expenses to the OH Series Products

Ms. Rowe relied on representations from Mr. Davis about how much time certain employees spent on the OH Series Products in 2023 to calculate Samsung's B2B Care labor investments for the OH Series Products in 2022. (Tr. (Rowe) at 237:2-238:14.). Ms. Rowe concluded that expected 2023 total compensation for B2B Care employees that work on the OH Series Products (which includes the DI Products and also other products) is: [redacted] (*Id.* at 238:15-17.). As depicted in Ms. Rowe's demonstrative slide, which is reproduced below in Table 4, Ms. Rowe used Mr. Davis's representations about the amount of time those employees spend on the OH Series Products to calculate the following total amount of Samsung's B2B Care labor investments for the OH Series Products through 2022: [redacted] (Tr. (Rowe) at 238:18-22; CDX-0004C.0005, 16.).

Table 4: Ms. Rowe's Calculated Domestic Investments in B2B Care Labor for OH Products From CDX-0004C.0016

B2B Care: Post-Sale Technical Support

Allocated to OH Products

	2022	2023	Total
B2B Care Labor Investments (Select Employees)	[redacted]		
Allocation to OH Products			
B2B OH Product Labor Investments			

(CDX-0004C.0016; Tr. (Rowe) at 238:18-22.).

MRI argued that Ms. Rowe's calculation of Samsung's B2B Care labor investments for the OH Series Products through 2022 is inflated because she relied on compensation for certain employees who allegedly "did not work on any OH products (which are a subset of 'QSR LED' products within B2B Care Group) 'at least for a certain period of time' in 2022 and 2023." (RRBr. at 97-98.).

One basis for MRI's argument is an apparent discrepancy between which employees work on the OH Series Products according to a spreadsheet Ms. Rowe relied on for her expert report on the one hand, (JX-1533C), and on the other hand which employees' compensation Ms. Rowe included in her calculation of B2B Care labor investments attributable to the OH Series Products that she gave during her testimony. (Tr. (Rowe) at 274:11-277:9; CX-0042C.).

In the spreadsheet that was part of Ms. Rowe's expert report, there is a column labeled "QSR LED," which according to Mr. Davis reflects whether the employee works on a category of products that includes the OH Series Products. (Tr. (Davis) at 189:16-191:3.). The spreadsheet, (JX-1533C), indicates that, [redacted] employees marked as not working on "QSR LED" and thus not working on the OH Series Products at all (whether DI Products or non-DI

Products), Ms. Rowe nevertheless allocated a portion of the Samsung employee's compensation to the OH Series Products. (CX-0042C.).

MRI's economics expert Mr. Herrington identified those employees who were marked "no" (i.e., not working on the OH Series Products) but for whom Ms. Rowe nevertheless allocated a portion of their compensation to the OH Series Products, as depicted in Mr. Herrington's demonstrative slide, reproduced below in Table 5.

Table 5: Mr. Herrington's Identification of B2B Care Employees Who May Not Work on the OH Series Products but Were Included in Ms. Rowe's Allocation From RDX-0008C.0011



(Tr. (Herrington) at 1183:14-1185:5; RDX-0008C.0011.).

Samsung attempted to reconcile the discrepancy on redirect examination. (CBr. at 111 n.19.). On redirect examination, Mr. Davis testified that the spreadsheet at issue, (JX-1533C),[74]

[74] Mr. Davis was presented with two versions of the spreadsheet, one stamped JX-1533C and the other stamped JX-1559C, and testified that they were created at different times to reflect changes in which employees work with QSR customers and which employees conduct site visits. (Tr. (Davis) at 206:4-18.). The "QSR LED" column and the "site visit" column of JX-1533C are identical to the "QSR LED" column and the "site visit" column of JX-1559C. (JX-1533C; JX-1559C.).

was not up to date with respect to the responsibilities of B2B Care's employees. (Tr. (Davis) at 205:24-206:18; JX-1533C; JX-1559C.). Mr. Davis testified that, after the spreadsheet was created, some of the listed individuals were promoted into roles that involve working on the OH Series Products. (Tr. Davis) at 207:24-208:11.).

Whether Ms. Rowe's calculation of Samsung's B2B Care labor investments for the OH Series Products through 2022 is inflated because she relied on compensation for certain employees who allegedly "did not work on any OH products (which are a subset of 'QSR LED' products within B2B Care Group) 'at least for a certain period of time' in 2022 and 2023" is a close question.

As discussed above, MRI is correct that the spreadsheet on which Ms. Rowe relied appears to conflict with her calculated investment allocations to the OH Series Products because she allocated compensation for employees who, according to the spreadsheet, did not work on the OH Series Products. However, B2B Care's executive director, Mr. Davis, testified that the spreadsheet information is not up to date because some of the employees listed on the spreadsheet as not working on "QSR LED" were later promoted into roles in which they work on the OH Series Products. Neither Mr. Davis nor any other witness presented documentary evidence that the individuals who were listed as not working on "QSR LED" were promoted into roles that involve working on the OH Series Products. Mr. Davis may not have supported his testimony with documentation, but his testimony is credible and unrebutted.

MRI also argued that Ms. Rowe's calculated labor investments are inflated for the 311 DI products and the 253 DI Products because [redacted]

[redacted] are from 2023, i.e., after the Complaint was filed. (JX-1526C; CX-0286C.0001; Tr. (Davis) at 199:21-202:22 (testifying that the [redacted] appearing in the list on CX-0286C.0001 do not appear in the list on JX-1526C).).

However, Mr. Davis also testified [redacted] (Tr. (Davis) at 164:18-21.).

Upon review of the entirety of the record, and weighing all the evidence, it is a finding of fact that the calculated total amount of Samsung's B2B Care labor investments for the OH Series Products through 2022 by Ms. Rowe is more likely than not reasonably accurate. Although MRI correctly identified an apparent discrepancy between the spreadsheet at issue, (JX-1533C), and Ms. Rowe's allocations, Mr. Davis credibly and persuasively testified that the spreadsheet did not reflect the most current information as of the date of the Hearing. (Tr. (Davis) at 205:24-208:11.). Therefore, it is a finding that Mr. Davis credibly resolved the apparent discrepancy between the Samsung employees Ms. Rowe relied on as having worked on the OH Series Products and the Samsung employees that Samsung's documentation suggests worked on the OH Series Products.

c) Samsung Included B2B Care's Payments to [redacted] in Its Investments for the OH Series Products

Mr. Davis testified that B2B Care works with a third-party company [redacted] to support logistics warehousing, repair, and transportation. (*Id.* at 173:6-25.). Mr. Davis estimated that 25 B2B Care employees work with [redacted] employees are dedicated to [redacted] (*Id.* at 174:1-9.). Mr. Davis discussed SEA's and B2B Care's payments [redacted] related to the OH Series Products. (*Id.* at 174:10-178:2.). Mr. Davis testified that B2B Care makes payments

[redacted] (Tr. (Davis) at 175:1-176:4.). Ms. Rowe relied on Mr. Davis's representation that about [redacted] are attributable to the OH Series Products to calculate the amount of Samsung's [redacted] labor investments attributable to the OH Series Products. (Tr. (Rowe) at 238:20.). Ms. Rowe calculated that Samsung's [redacted] labor investments attributable to the OH Series Products in 2022 was: [redacted] (Tr. (Rowe) at 240:10-12; CDX-0004C.0015.). Ms. Rowe calculated the total amount of Samsung's investments in B2B Care and [redacted] attributable to the OH Series Products (not just the DI Products) in 2022 was: [redacted] (*Id.* at 240:22-24.).

MRI argued that including payments from B2B Care [redacted] is improper because they include [redacted]. (RRBr. at 98.). MRI cited precedent that the Commission does not recognize investments under subsection (A) (investments in plant and equipment) for parts and materials that were manufactured abroad. (*Id.* (citing *Certain Power Semiconductors, and Mobile Devices and Computers Containing Same*, Inv. No. 337-TA-1308, Final ID at 125 (May 18, 2023) ("*Certain Power Semiconductors*").). In *Certain Power Semiconductors*, the administrative law judge ("ALJ") determined that the complainant had failed to show "that the purchased materials were manufactured in the United States and thus qualify as a domestic industry." *Id.* One of the witnesses testified that at least some of the wafers at issue originated from a non-U.S.-based factory. *Id.*

Here, Mr. Davis testified on cross-examination that [redacted] (Tr. (Davis) at 195:8-10, 239:12-18.). Footnote 2 of Exhibit 5.4 to Ms. Rowe's expert report, (CX-0043C), states that

Mr. Davis informed Ms. Rowe that [redacted] (CX-0043C.0001.). MRI's economics expert Mr. Herrington testified that including foreign-sourced capital as part of Ms. Rowe's calculation of labor investments results in an inflated measure of Samsung's labor investments. (Tr. (Herrington) at 1187:10-24.).

Samsung's counterargument is that B2B Care's payments to [redacted] on parts needed to repair products that practice the asserted patents in the U.S. are cognizable. (CBr. at 112.). Samsung cited precedent that the Commission credits domestic purchases of foreign-made parts under subpart (C). (*Id.* (citing *Certain Elec. Devices, Including Wireless Comm'n Devices, Portable Music & Data Processing Devices, & Tablet Computers*, Inv. No. 337-TA-794, ID, 2012 WL 4752221, at *320 (Sept. 14, 2012) ("*Elec. Devices*").). In *Elec Devices*, the ALJ determined that domestic purchases are creditable domestic investments under subsection (C) even if the domestic purchases are for foreign-made parts. 2012 WL at *320. The ALJ said "the ITC does not inquire into whether the drywall credited as part of a facility included among plant and equipment domestic expenditures (subsection (A)) was originally made abroad, or whether domestically purchased computers used by engineers in the same inquiry were at one time imported." *Id.*

The issue here is whether payments to a U.S. entity for foreign-made parts that are used to repair products that practice a U.S. patent are cognizable capital investments under Section 337(a)(3)(B). There does not appear to be controlling precedent that answers this question. On the one hand, according to the holding in *Certain Power Semiconductors*, foreign-sourced parts and materials are not cognizable as investments in plant and equipment under Section 337(a)(3)(A). On the other hand, according to the holding in *Elec. Devices*, domestic purchases of foreign-sourced parts used in the U.S. to repair products that practice the patents are

cognizable investments under subsection (C).

Here, a reasonable case can be made for taking either approach. B2B Care and [redacted] are both domestic entities, and thus the payments at issue are domestic payments and arguably domestic investments. The parts are purchased from a plant in Mexico, and so some of the payments inevitably are sent to support an entity in Mexico. Considering the precedent cited by the Parties, it is a finding of this ID that the portion of B2B Care's [redacted] for spare parts made in Mexico are cognizable under Section 337(a)(3)(B). B2B Care and [redacted] are both U.S. entities operating in the U.S., and therefore B2B Care's payments to [redacted] spare parts are domestic purchases of spare parts under the holding of *Certain Elec Devices*.

Even if [redacted] purchases those spare parts from a plant in Mexico, it is not relevant that "some portion of [money that was spent in the United States] wends its way abroad." (CBr. at 112 (quoting *Elec. Devices*, 2012 WL at *320).).

d) Samsung's Allocation of B2B Care Investments to the Domestic Industry Products

Because B2B Care's work involves products that have already been sold and installed, Ms. Rowe allocated B2B Care's labor expenses based on the proportion of Domestic Industry Products that have been installed, what she called an "installed base" allocation. (Tr. (Rowe) at 241:13-243:3; CDX-0004C.0018.). Although Samsung did not cite precedent for such an "installed base" allocation, MRI did not dispute the reasonableness of this approach. (RRBr. at 87.). It is a finding that Ms. Rowe's "installed base" allocation methodology is reasonable because Samsung's B2B Care employees perform technical support on installed units. Therefore, B2B Care's labor is properly allocated among presently installed units.

According to Ms. Rowe, the amount of Samsung's investment in B2B Care labor and

[redacted] parts and labor attributable specifically to the DI Products through filing of the Complaint is: [redacted] as depicted in Ms. Rowe's demonstrative slide, which is reproduced below in Table 6. (Tr. (Rowe) at 224:16-225:1.).

Table 6: Ms. Rowe's Domestic Investments in DI Products From CDX-0004C.0006

Domestic Industry Products Investments

	2020	2021	Jan.-Dec. 5, 2022	Total Through Complaint	2023
NADO *Pre-Sale Technical Support*	[redacted]				
B2B Care *Post-Sale Technical Support*					
Total*					

** Excludes Samsung's investments in the domestic industry products through the Samsung Research America and Samsung International, Inc. ("SII").*

(CDX-0004C.0006; Tr. (Rowe) at 224:16-225:1; *see also* CDX-0004C.0019; CX-0039C.).

MRI did not dispute Ms. Rowe's allocation of B2B Care investments in the OH Series Products to the Domestic Industry Products. (RRBr. at 96-99.). It is a finding that Samsung's allocation of B2B Care Investments to the Domestic Industry Products is credible and reasonably reliable.

3. Samsung's Allocation of Labor Investments in the OH Series Products to the Domestic Industry Products

Samsung asserted that its investments in the OH Series Products in the year 2022 totaled: [redacted]. (CBr. at 123.). Ms. Rowe's testimony does not contain that number. That total figure is only obtained by adding the amount of 2022 NADO labor investments in the OH Series Products on slide 12 of Ms. Rowe's demonstratives, (CDX-0004C.0012), i.e., [redacted], to the

amount of 2022 B2B Care labor investments in the OH Series Products, [redacted], on slide 16 of Ms. Rowe's demonstratives, (CDX-0004C.0016).

According to Ms. Rowe's sworn testimony, the amount of Samsung's 2022 investments in the OH Series Products is only [redacted]:

> Q. And what is the total amount that you came to of OH investments for NADO and B2B from January 1, 2022 to December 5th?
>
> A. [redacted].

(Tr. (Rowe) at 223:4-23; *see also* CDX-0004C.0020, 25.).

Nevertheless, Samsung argued that [redacted] of its alleged [redacted] of investments in the OH Series Products in 2022 should be allocated to the '117 Patent [redacted] and the remainder to the '311 and '253 patents [redacted] (CBr. at 123.). For the reasons and evidence below, Samsung's argument is lacking sufficiency on the merits.

a) Samsung Waived Any Contention Based on a [redacted] Sales-Based Allocation

As the alleged basis for its attempted [redacted] allocation of investments in the OH Series Products to the DI Products, Samsung relied on Ms. Rowe's testimony. (*Id.* (citing Tr. (Rowe) at 234:4-9, 241:8-12).). Ms. Rowe testified as follows:

> Q. How much time or how much labor investment did NADO make into the OH Series in 2022?
>
> A. [redacted]
>
> Q. How much of NADO's OH Series work would be allocated to the midsize versus large size products?
>
> A. As I mentioned earlier, about [redacted] of the products that are sold are the midsize products. So it would be fair to assume that [redacted] of that amount is allocable to midsize products.

(Tr. (Rowe) at 234:1-9.).

Q. In 2022 what was the total investment from B2B Care that could be allocated to the OH?

A. [redacted]

Q. And you don't show the years 2021 and 2020 here. How come?

A. That's because there was not reliable information that I could use to allocate to the OH products. [redacted]

Q. How much of the B2B Care and [redacted] work is devoted to the midsize OH products versus large size?

A. Given that about [redacted] of the installed basis is the midsize products, about [redacted] of this is allocable to midsize products.

(Tr. (Rowe) at 240:22-241:12.).

Samsung's attempt to introduce a [redacted] allocation of investments in the OH Series Products to the DI Products is lacking sufficiency on the merits. MRI established in its responsive Post-Hearing Brief, (RRBr. at 101-102), that neither this allocation methodology nor the allocation amounts resulting therefrom were asserted in Samsung's Pre-Hearing Brief. (CPBr. at 123-127.). Samsung therefore waived for appeal purposes any argument under Ground Rule 7.2 that the amount of its domestic industry economic prong investments for the '117 patent is [redacted]. Similarly, Samsung has waived for appeal purpose, also under Ground Rule 7.2, any argument that the amount of its domestic industry economic prong investments for the '253 or '311 patents is [redacted] *See* G.R. 7.2.

[75] The Commission has held that an ALJ is not required to "recalculate" a complainant's alleged expenditures. *Certain Artificial Eyelash Extension Sys., Prods and Components Thereof*, Inv. No. 337-TA-1226, Comm'n Op. at 46-47 (U.S.I.T.C. Oct. 6, 2022).

b) Samsung's [redacted] Sales-Based Allocation is Inconsistent with the Evidence

Even if Samsung had not waived its new allocation argument, that argument would lack sufficiency on the merits. This is because there Samsung did not produce evidence during the Hearing that revenue from its sales of the 117 DI Products is [redacted] of revenue from sales of the OH Series Products. Samsung's argument is not supported by the testimony that Samsung relied on and that is reproduced in the immediately preceding section.

Ms. Rowe testified generally about Samsung's sales of its midsize outdoor display products and its sales of its large-size outdoor display products, (Section XI.C.3.a)), but not about the sales allocations specifically to the 117 DI Products, the 253 DI Products, or the 311 DI Products. (Tr. (Rowe) at 240:22-241:12.). As MRI correctly pointed out, Samsung has other midsize LCD display products in addition to the 117 DI Products. Similarly, Samsung has other large-size products besides the 253 DI Products and the 311 DI Products. (RRBr. at 103-04.).

Moreover, Samsung's new argument that [redacted] of its OH Series Product investments should be allocated to the DI Products using a sales-based allocation is not merely lacking in support. As MRI established in its Reply Post-Hearing Brief, Samsung's new post-Hearing argument is contrary to the evidence. (RRBr. at 102-105). For example, the sworn testimony of Samsung's own expert, elicited on direct examination by Samsung's counsel, contradicts Samsung's new argument. Ms. Rowe testified that revenue from Samsung's sales of the Domestic Industry Products was only [redacted] of revenue from sales of the OH Series Products in 2022:

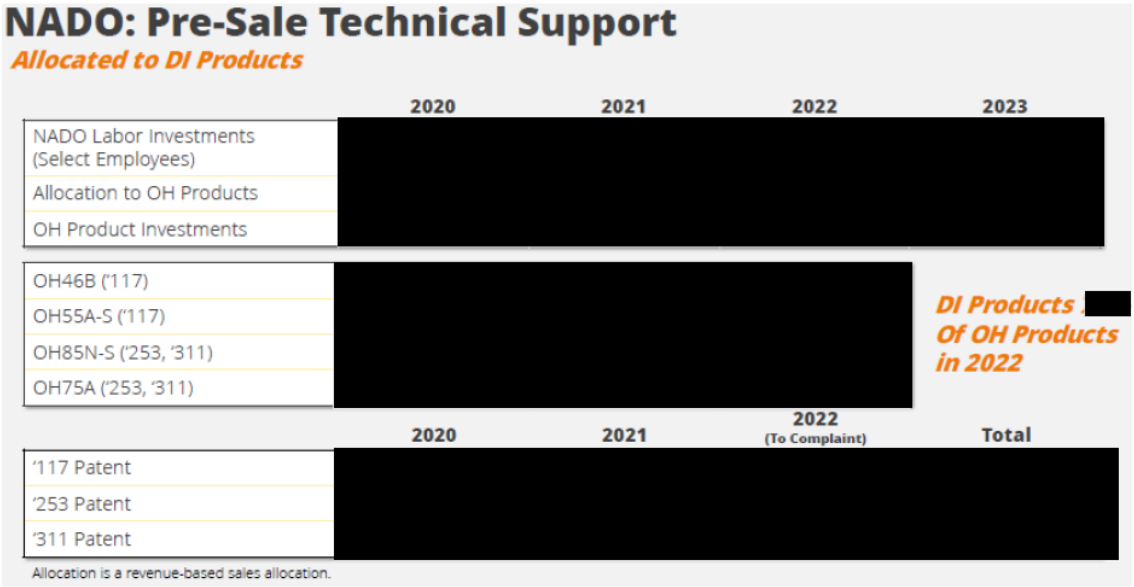
> Q. Now on the right-hand side of the slide you say "DI products [redacted]." What does that mean?
>
> A. So in this slide I'm using a sales-based allocation in order to allocate down from

[redacted]

(Tr. (Rowe) at 234:24-235:5; CDX-0004C.0013.).

The slide referenced in the foregoing testimony is slide 13 of Ms. Rowe's demonstratives, which is reproduced in Table 7 below for reference. That slide also says that revenue from sales of the OH46B is [redacted] of revenue from sales of the OH Series Products and that revenue from sales of the OH55A-S is [redacted] of revenue from sales of the OH Series Products. Those figures, reflected below in Table 7, also contradict Samsung's new, and different figures.

Table 7: Ms. Rowe's Actual Sales-Based Allocation of NADO Labor Investments From CDX-0004C.0013



(Tr. (Rowe) at 234:24-235:5; CDX-0004C.0013.).

Even if Ms. Rowe had testified that revenue from sales of the 117 DI Products is [redacted] of revenue from sales of the OH Series Products (she did not), her testimony would not have been

credible because she lacked the proper foundation. Fed. R. Evid. 602. The amount of sales revenue from the 117 DI Products as compared to the amount of sales revenue for the OH Series Products is not a matter of expert opinion without factual evidence that supports the opinion. Ms. Rowe did not provide the basis for her use of [redacted] *See, e.g.*, *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1358 (Fed. Cir. 2019) ("Conclusory expert testimony does not qualify as substantial evidence."). Neither Mr. Davis nor Mr. Shim testified factually to support Ms. Rowe's ultimate opinion.

c) Samsung May Not Rely on Non-DI Products for Its Economic Domestic Industry

To the extent Samsung's new argument based on an alleged [redacted] allocation relies on the theory that investments in all of Samsung's OH Series Products should be considered, not only the Domestic Industry Products, it is lacking sufficiency on the merits because the existence of a domestic industry is determined "with respect to the articles protected by the patent." 19 U.S.C. § 1337(a)(3); *see also Televisions*, 2022 WL 2827567, at *93-97 (rejecting alleged investments in products that did not practice the patent).

Samsung's argument that its investments in its entire OH Series Product line should be considered, rather than only the products practiced by the Asserted Patents, is therefore inconsistent with the statute. Although Samsung correctly notes that there is flexibility in analyzing the significance of a domestic industry and that a complainant's investments must be considered in full context, (CBr. at 118 (citing *Elec. Devices*, 2010 WL 5621540, at *4)), Samsung has not identified any Investigation in which the Commission issued an opinion finding that complainant could include the amount of investments in non-practicing products to prove the quantitative significance of its investments in a domestic industry.

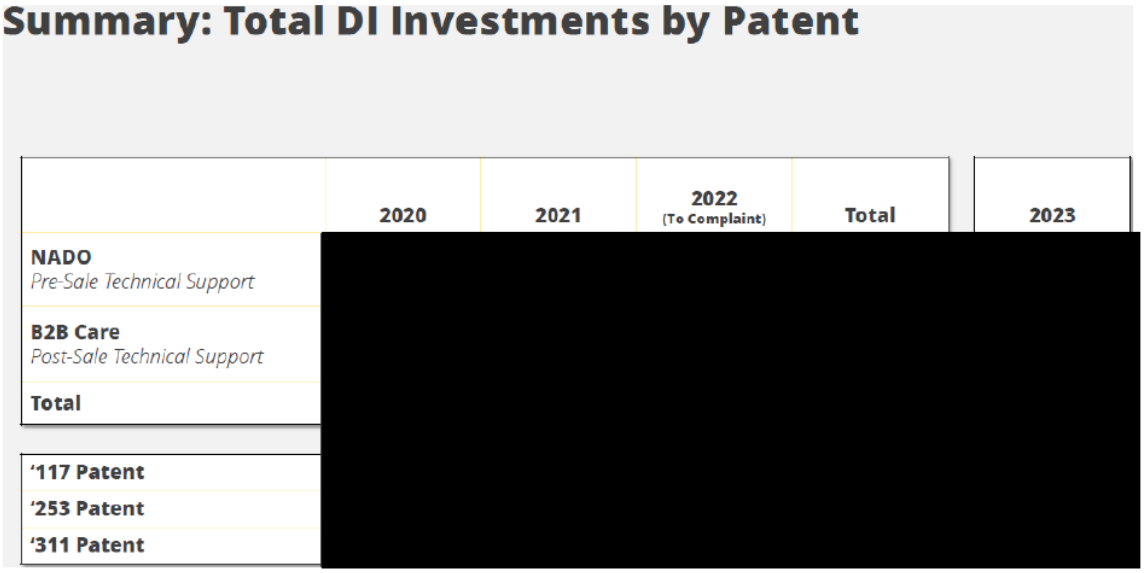
Samsung also argued that it should be allowed to rely on its older OH Series Products because it could have claimed them as Domestic Industry Products. (CBr. at 117-119.). According to Samsung, it chose not to claim the older OH Series Products as DI Products because, when the Complaint was filed because those products had been discontinued. (CBr. at 117-119.). Samsung's claim that it could have asserted additional products as Domestic Industry Products, but chose not to, does not help its case. To the contrary, Samsung admitted that it made a fully informed and knowing strategic decision to assert the Domestic Industry Products and no other products. Samsung chose which products to rely on as practicing the Asserted Patents.

4. Quantitative Significance

Ms. Rowe testified that Samsung's investments under Section 337(a)(3)(B) for products that practice the '117 patent totals [redacted]. (Tr. (Rowe) at 255:16-20.). Ms. Rowe testified that the amount of Samsung's pre-Complaint investments under subsection (a)(3)(B) for products that practice the '253 patent and the '311 patent is: [redacted] is the sum total that Samsung invested in the year 2022. (*Id.* at 256:3-9; CDX-0004C.0021.).

It is a finding that the methods Ms. Rowe used to calculate the foregoing amounts, and the data on which those calculations are based, are reasonably reliable and accurate. Ms. Rowe's calculations of Samsung's total DI investments by patent are summarized in Ms. Rowe's demonstrative slide, which is reproduced below in Table 8.

Table 8: Ms. Rowe's Allocation of Domestic Investments to the Patents (excerpt of CDX-0004C.0021)



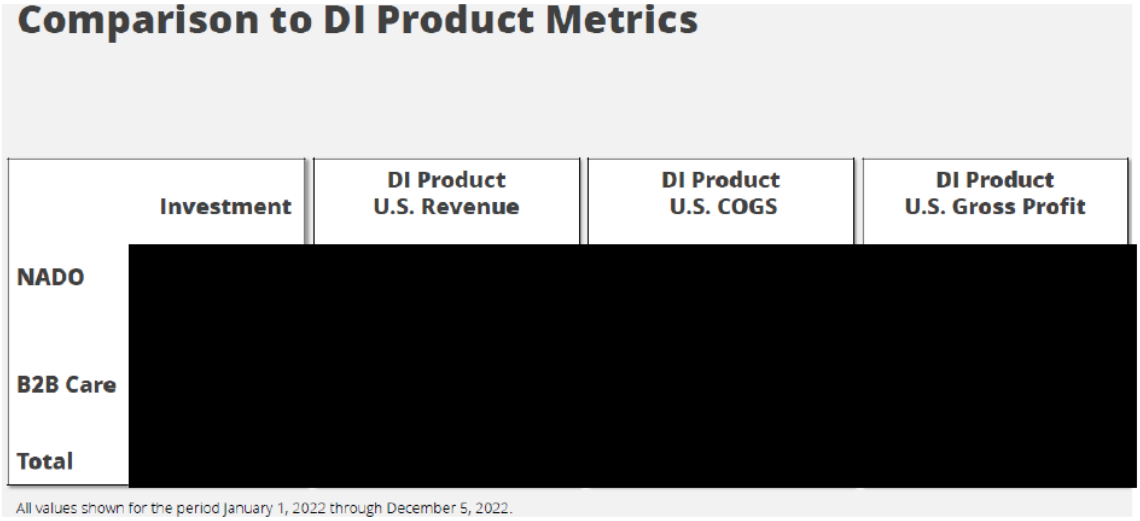
(CDX-0004C.0021; Tr. (Rowe) at 244:19-22.).

Ms. Rowe testified that her allocations of Samsung's investments in the '117 patent, for the years specified in Table 8, constitute [redacted] of Samsung's U.S. revenue and [redacted] of Samsung's COGS, respectively. (*Id.* at 255:16-256:16.). With respect to the '311 patent and the '253 patent, Ms. Rowe testified that her calculated allocations of Samsung's investments in those patents constitute [redacted] of Samsung's U.S. revenue and [redacted] of Samsung's COGS, respectively. (*Id.*). Ms. Rowe also compared her allocations of Samsung's DI Products as a whole to Samsung's U.S. revenues, U.S. COGS, and U.S. gross profits for the DI Products. Ms. Rowe determined that Samsung's U.S. investments in the DI Products are [redacted] of Samsung's U.S. revenue for the DI Products, [redacted] of Samsung's U.S. COGS for the DI Products, and [redacted] of Samsung's U.S. gross profit for the DI Products for the year 2022. (Tr. (Rowe) at 244:23-245:16.).

It is a finding that Ms. Rowe's calculations were reliable, reasonable, and used accurate

methods and information that Samsung kept in the general course of business. Samsung's investments relative to its revenue, COGs, and U.S. gross profits are summarized in Ms. Rowe's demonstrative slide, which is reproduced below in Table 9.

Table 9: Ms. Rowe's Comparison Between Domestic Investments in DI Products and Samsung's Gross Revenue, COGS, and Gross Profit From CDX-0004C.0022



(CDX-0004C.0022; Tr. (Rowe) at 244:23-245:16.).

MRI argued that Samsung's alleged investments as a percentage of revenue and COGS are "exceedingly low" and "insignificant." MRI cited to several investigations in which investments under 5% of revenue or COGS were not considered significant. (RRBr. at 89-90 (citing *Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879, 882, 885 (Fed. Cir. 2015); *Certain Carburetors & Prods. Containing Such Carburetors*, Inv. No. 337-TA-1123, Order No. 77, Initial Determination at 4-6 (Aug. 12, 2019); *Certain Electronic Candle Products and Components Thereof*, Inv. No. 337-TA-1195, Comm'n. Op. at 12, 18 (Sept. 13, 2021). MRI conceded that there is no "bright-line" numerical threshold for satisfying the domestic industry requirement. (*Id.* at 91.). However, MRI's economic prong expert Mr. Herrington testified that

the U.S. outdoor display market is [redacted] (Tr. (Herrington) at 1175:14-20.). Mr. Herrington also testified that Samsung has generated [redacted] in U.S. revenue in 2022 on sales of the OH Series Products, which is only one of Samsung's outdoor display product lines. (*Id.*). In this context, it was Mr. Herrington's opinion that Samsung's alleged investments in Samsung's identified DI Products are not significant. (*Id.* at 1175:22-1176:1.).[76]

It is a finding of law that Samsung has failed to prove by a preponderance of evidence that its domestic industry investments for the '311 patent and the '253 patent are quantitatively significant. In 2021, outdoor displays comprised about [redacted] of the almost [redacted] global market for large format displays. (Tr. (Rowe) at 307:24-308:4, 310:1-3; CDX-0004C.0007; CX-0129C.0011, 14; *see also* CX-0130C.0010 (2020 global digital signage market valued at over [redacted]).). The U.S. market for outdoor displays is valued at about $1 billion. (Tr. (Herrington) at 1175:14-20.).

According to Samsung's own witness, Mr. Shim, Samsung is a major player in the outdoor display market. Samsung alone commands some [redacted] of the market for outdoor display products of which the LCD outdoor displays at issue in this Investigation are a part. (Tr. (Shim) at 83:3-12); *see also* Tr. (Rowe) at 218:10-14 [redacted] in revenue for Samsung's OH Series in 2022), 308:5-16 ("Samsung holds the majority market share for display products used outdoors in applications such as quick service restaurants;" *see also* CDX-0004C.0023 (Rowe demonstrative slide citing to exhibits showing over [redacted] in U.S. revenue and COGS in

[76] Mr. Herrington also presented his own "corrected" investment calculations and allocations that account for the alleged inaccuracies in the data Ms. Rowe relied on. (Tr. (Herrington) at 1189:24-1194:3.). However, it is a finding of fact that Ms. Rowe's calculated investments are accurate.

2022 for the DI Products)[77].).

In the context of a [redacted] U.S. outdoor display market, Samsung's investment of less than [redacted] in the 253 DI Products and the 311 DI Products is miniscule. Likewise, in the context of Samsung's U.S. revenue and U.S. COGS, Samsung's U.S. investment in the 311 and 253 DI Products ([redacted] of U.S. revenue and [redacted] of COGS) is miniscule. (*Id.* at 255:16-256:16.).

Notably, Samsung did not identify comparable Commission opinions in which the Commission has found that a domestic industry existed, given the context, for comparably miniscule investments. Even if Samsung's investments in the OH Series Products as a whole are considered as relevant context, the 253 DI Products and the 311 DI Products are a minor component of Samsung's OH Series business. (*See, e.g.*, CDX-0004C.009 (large-size products are [redacted] of OH Series revenue and [redacted] of DI Products revenue).).

For the '117 patent, Samsung alleged that it has more than [redacted] in qualifying investments whereas Mr. Herrington calculated that Samsung had made only [redacted] in qualifying investments. (Tr. (Rowe) at 255:16-20; Tr. (Herrington) at 1191:10-1192:4, RDX-0008C.0015.). Samsung's alleged qualifying investments are dwarfed by Samsung's approximately [redacted] in U.S. revenue (qualifying investments equal to [redacted] of U.S. revenue) and Samsung's COGS (qualifying investments equal [redacted] of COGS). (Tr. (Rowe) at 255:16-256:16.). Moreover, Samsung's alleged [redacted] in qualifying investments is

[77] Neither Ms. Rowe nor Samsung explained why a comparison to gross profits is a relevant comparison for determining significance. The Commission has declined to consider comparisons to gross profits where the complainant failed to explain how or why that metric is meaningful. *In the Matter of Certain Wearable Elec. Devices with Ecg Functionality & Components Thereof*, Comm'n Opinion, USITC Inv. No. 337-TA-1266, 2023 WL 372372 at n.22 (Jan. 20, 2023) (citing *Certain Electronic Candle Prods. and Components Thereof*, Inv. No. 337-TA-1195, Comm'n Op. at 38 (July 14, 2022)).

dwarfed by the [redacted] U.S. market for outdoor displays. In other words, Samsung's industry in the U.S. with respect to the 117 DI Products is only [redacted] of the U.S. industry for outdoor display products. While it is a closer question for the 117 DI Products than for the 253 and 311 DI Products, it is a finding of law that Samsung has failed to prove by a preponderance of evidence that its domestic industry investments in the 117 DI Products are quantitatively significant. Samsung's asserted qualifying investments are too small to qualify as "significant" under Section 337(a)(3)(B).

D. Qualitative Significance of Samsung's DI Investments

Samsung's argument that its DI investments meet the qualitative significance factors of *Lelo* and more recent Commission decisions relies partly on the activities of Samsung's California company SII, which manages and controls manufacturing for Samsung's Mexican manufacturing plant, SAMEX. (CBr. at 113-114.). SAMEX's [redacted] manufacturing management employees are in the United States, legally paid in the United States, and are responsible for component sourcing, quality assurance, technical support, supply chain management, and distribution. (RX-0207C (Shim Dep. Tr.) at 15:22-16:9, 19:4-12, 32:12-21, 36:18-22, 38:12-18, 46:1-15, 47:8-15; RX-0211C; RX-0212C.). Samsung, and its expert Ms. Rowe, argued that not including SII expenses in Samsung's DI investments means that its calculations of its total DI investments are conservative. (Tr. (Rowe) at 220:5-21.). However, because SII's activities support the DI Products, Samsung argued in its Initial Post-Hearing Brief that SII's U.S. activities should be considered in the evaluation of the significance of Samsung's domestic industry. (CBr. at 113-114.).

Samsung also relied on Visual Solutions Lab ("VSL"), a business unit of SRA located in Irvine, CA. (CBr. at 114-116.). VSL's [redacted] engineers develop software for Samsung's displays,

including at least some DI Products. (RX-0221C (Mandel Dep. Tr.) at 16:23-17:10, 17:14-18:11, 20:12-17, 28:6-24, 29:5-31:19, 174:3-21.). VSL invested [redacted] in 2020-2022 on this work. (RX-0224C.). Samsung argued that, although it had not allocated VSL's investments in this Investigation to the DI Products because the work applies generally to all its displays including consumer TVs, these investments should be considered because "Samsung is clearly doing cognizable software R&D in the United States that impacts the DI Products." (CBr. at 115.).

MRI argued that qualitative factors are irrelevant because Samsung has proven that Samsung's investments in its DI Products are quantitatively significant. (RRBr. at 100.). MRI also argued that Samsung's failure to allocate a single dollar to the activities of SII and VSL undercuts, rather than supports, Samsung's domestic industry. (*Id.* at 100-101.). MRI's argument is meritorious and the better of the two.

It is a finding of this ID that, in this case, Samsung's labor expenses that it identifies it invested in overseeing manufacturing and sourcing for a foreign manufacturing plant are not sufficiently explained or supported as evidence of a domestic industry that practices the Asserted Patents. Samsung did not attempt to quantify how much of SII's [redacted] employees' time is spent on managing manufacturing at SAMEX or how much of SAMEX's manufacturing output is for the DI Products. Samsung might have conducted a value-added analysis to explain the value or how much value SII adds to the DI Products. Samsung might have conducted a value SII adds to the DI Products manufactured at SAMEX. Samsung did not produce supporting evidence of the same.

It is also a finding of this ID that VSL's investments in a technology that applies to all of Samsung's displays that encompass more than the patents at issue are not, in this instance,

persuasive evidence of Samsung's domestic industry. Samsung did not offer sufficient proof that VSL's U.S. activities are important to the DI Products. Samsung did not present sufficient evidence that the technology that VSL developed was developed at least in part for the DI Products, rather than being developed primarily or even entirely for Samsung's U.S. consumer TV market.

XII. RECOMMENDATION ON REMEDY AND BOND

In the event of a finding of violation of Section 337, Samsung has requested that the Commission issue a limited exclusion order ("LEO") and cease and desist order ("CDO"). (CPBr. at 146-48; CBr. at 129-31.). Samsung has also requested that the Commission impose a bond of at least 100% during the Presidential Review Period ("PRP"). (CPBr. at 148-49; CBr. at 131-32.).

This decision recommends: (1) an LEO with a certification provision; and (2) that a 100% bond of the entered value be imposed during the PRP. This decision does not recommend a CDO for the reasons explained below.

A. Legal Standard

Pursuant to Commission Rule 210.42, an administrative law judge ("ALJ") must issue a recommended determination on: (i) an appropriate remedy if the Commission finds a violation of Section 337, and (ii) an amount, if any, of the bond to be posted. 19 C.F.R. § 210.42(a)(1)(ii). When a Section 337 violation has been found, as here, "the Commission has the authority to enter an exclusion order, a cease and desist order, or both." *Certain Flash Memory Circuits and Prods. Containing the Same*, Inv. No. 337-TA-382, Comm'n Opinion on the Issues Under Review and on Remedy, the Public Interest and Bonding, at 26 (June 9, 1997). The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337

proceeding. *Viscofan, S.A. v. U.S. Int 'I Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986).

When a violation of Section 337 is found, the Commission may issue either a limited exclusion order ("LEO"), directed against products manufactured by or on behalf of named parties found in violation, or a GEO, directed against all infringing products. *See* 19 U.S.C. § 1337(d).

B. A Limited Exclusion Order Is Warranted

Upon a finding of infringement, the Commission's enabling statute, 19 U.S.C. § 1337(d) provides for an LEO that can be directed to any articles that infringe one or more claims of the asserted patent(s) of any of the named respondents. 19 U.S.C. § 1337(d). A limited exclusion order instructs the U.S. Customs and Border Protection ("CBP") to exclude from entry all articles that are covered by the patent at issue that originate from a named respondent in the investigation. *Fuji Photo Film Co. Ltd. v. 1nt'l Trade Comm'n*, 474 F.3d 1281, 1286 (Fed. Cir. 2007).

Samsung has requested that the Commission issue an LEO "against MRI barring from entry into the United States certain components for environmentally-protected LCD digital displays and products containing the same by or on behalf of MRI that are infringing . . . ." (CBr. at 129.). Because this decision finds that there has been a violation of Section 337, an LEO is warranted.

This decision also recommends including a certification provision. The Commission now generally includes a certification provision in every exclusion order because it is something that "CBP typically requests." *Certain High-Performance Gravity-Fed Water Filters & Prods. Containing the Same*, Inv. No. 337-TA-1294, Initial Det. At 288 (Feb. 28, 2023); *Certain Composite Aerogel Insulation Materials and Methods for Manufacturing the Same*, Inv. No.

337-1003, Comm'n Op., at 62 (Feb. 22, 2018) (explaining that "the Commission's standard practice for the past several years [is] to include certification provisions in exclusion orders to aid CBP"). The Commission's typical certification provision gives CBP discretion to require "persons seeking to import covered articles that are potentially subject to [the] Order" to "certify that they are familiar with the terms of [the] Order, that they have made appropriate inquiry, and thereupon state that, to the best of their knowledge and belief, the products being imported are not excluded from entry" under the order. *See e.g.*, *Certain High-Density Fiber Optic Equipment and Components Thereof*, Inv. No. 337-TA-1194, General Exclusion Order, at 3-4 (Aug. 3, 2021). "[C]ertification provisions are necessary to minimize the possibility that non-infringing products will be excluded from entry into the United States when CBP is unable to determine readily by inspection whether an imported product violates a particular exclusion order." *Certain Digital Televisions & Certain Prods. Containing Same & Methods of Using Same*, Inv. No. 337-TA-617, Comm'n Op. at 11 (April 23, 2009)

MRI requested that a LEO include a warranty/service provision to "so that third parties who have already purchased MRI's products are not negatively impacted by the outcome of this Investigation." (RRBr. at 109.). Such a provision for the warranty and repair of existing products MRI has already sold to customers for which MRI is obligated to provide warranty, repair or replacement services, is appropriate, provided that MRI can provide evidence of such warranties. *See Certain Network Devices, Related Software and Components Thereof (I)*, Inv. No. 337-TA-944, Comm'n Op. at 53 (Apr. 19, 2017).

For the reasons discussed above, an LEO with a certification provision against the Accused Products found to infringe the '117 patent is warranted. The Accused Products are MRI's 55-, 75-, 86-, and 88-inch BoldVu semi-outdoor, outdoor, and extreme outdoor electronic

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displays, including Universal Mount Displays ("UMD"), UMD for bus shelters, and Free Standing Displays ("FSD"), in both single and double-sided versions where applicable.[78] A list of Accused Products is below:

Display Size	Generation	Configuration
55 inch	14	Single-Sided
		Single-Sided (Landscape)
		Double-Sided
	14.5	Double-Sided (EV)
	15	Single-Sided
		Single-Sided (Slim)
		Double-Sided
75 inch	11	Single-Sided
		Double-Sided
	14	Single-Sided
		Single-Sided (Landscape)
	14	Double-Sided
	14.5	Single-Sided
	15	Single-Sided
	16	Single-Sided
		Double-Sided
86 inch	11	Single-Sided
		Single-Sided (Hybrid)
		Double-Sided
		Double-Sided (Hybrid)
	15	Single-Sided
	16	Single-Sided
88 inch	16	Stretch

(CDX-0008C.0011; Tr. (Smith) at 451:25-452:17; *see also* CBr. at 7-8.).

C. A Cease and Desist Order Is Not Warranted

Section 337 provides that in addition to, or in lieu of, the issuance of an exclusion order, the Commission may issue a CDO as a remedy for violation of Section 337. *See* 19 U.S.C. § 1337(f)(1). The Commission generally issues a CDO 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, Comm'n Op. on the Issue Under

[78] Samsung asserted that all Accused Products infringe all the asserted claims. (*See, e.g.*, CBr. at 8.).

Review, and on Remedy, the Public Interest and Bonding at 37-42, Pub. No. 2391 (U.S.I.T.C., June 1991). CDOs have been declined when there is no evidence in the record with respect to infringing inventories in the United States. *See, e.g.*, *Certain Vacuum Insulated Flasks and Components Thereof*, Inv. No. 337-TA-1216, Comm'n Op., 2022 WL 375176, at *8 (U.S.I.T.C. Feb. 3, 2022).

Samsung has requested that the Commission issue a CDO in this Investigation because MRI: (1) maintains commercially significant inventory; and (2) has significant domestic operations that could undercut an exclusion order's effectiveness. (CBr. at 130.).

With respect to significant inventory, Samsung contended that as of May 11, 2023, MRI maintained a domestic inventory of [redacted], valued at nearly [redacted] (JX-0032C (Accused Component Inventory).). Samsung also stated the following:

> Considering MRI sells about [redacted], its corporate testimony confirms that it has materials in inventory [redacted] Given that MRI sold [redacted] (Tr. (Brand) 666:1-3), its confirmed May 2023 inventory amounted to more than [redacted] for building BoldVu products.

(CBr. at 131.).

However, as MRI's CFO, Mr. Alan Brand,[79] explained during the Hearing, the Accused Products are [redacted]. (Tr. (Brand) at 657:12-658:16.). He confirmed that as a result, MRI [redacted]. (*Id.* at 662:23-663:2 ("Q. And does [redacted] A. [redacted]

[79] When he testified during the Hearing on October 6, 2023, Mr. Alan Brand was the Chief Financial Officer of MRI. (Tr. (Brand) at 650:19-22.). MRI identified Mr. Brand as a fact witness to testify about "MRI's facilities and operations, sales of the Accused Products, and other issues related to remedy." (RPSt. at 1.).

[redacted]

Although the evidence reflects that MRI [redacted] Mr. Brand testified that [redacted] (Tr. (Brand) at 672:10-676:7; *see also* RX-0146C.0148-50; JX-0031C; JX-0032C (inventory as of May 11, 2023); Tr. (Dunn) at 732:20-733:8.). This is consistent with the [redacted] of MRI's business with respect to the Accused Products and the evidence justifying a 100% bond, as discussed below.

Moreover, it is not enough to state that MRI maintains [redacted] that can be used to manufacture the Accused Products and state in conclusory fashion that such [redacted] is allegedly "commercially significant." (*See* RX-0131C.0115.). Samsung must provide context for proving commercial significance. *See, e.g.*, *Certain Variable Speed Wind Turbine Generators & Components Thereof*, Inv. No. 337-TA-1218, Initial Det. at 151-52 (Sept. 10, 2021). Samsung did not so do here. Nor did its economic expert, Ms. Julia Rowe, offer any testimony regarding any alleged commercial significance of MRI's inventory of LCD cells. (*See* Tr. (Rowe) at 212:18-247:6.). Samsung's attorney argument that MRI's inventory of LCD cells as of May 11, 2023 is "commercially significant" simply because it is [redacted] (CBr. at 130-31) lacks any commercial context, let alone sufficient proof of significance.

With respect to a belated claim that MRI has significant domestic operations, Samsung did not raise this argument in its Pre-Hearing Brief. (CPBr. at 147-48.). Samsung argued only that "[a] CDO is needed because MRI maintains commercially significant U.S. ***inventories*** of the

Accused Products and components thereof." (*Id.* at 147 (emphasis added).). Thus, any argument on this issue is deemed abandoned or withdrawn under Ground Rule 7.2. Additionally, this argument does not appear anywhere in Samsung's final contentions. (*See* RX-0131C.0114-21.).

For the foregoing reasons, a CDO against MRI is not warranted.

D. Bond During the Presidential Review Period Is Warranted

During the Presidential Review Period, imported articles otherwise subject to a remedial order are entitled to conditional entry under bond. *See Certain Beverage Dispensing Sys. & Components Thereof*, Comm'n Op., Inv. No. 337-TA-1130 at 26 (Mar. 26, 2020) (citing 19 U.S.C. § 1337(j)(3)). The amount of bond is determined by the Commission and must be enough to protect the complainant from injury. *See id.* "The Commission typically sets the bond based on the price differential between the imported infringing product and the domestic industry article or based on a reasonable royalty. However, where the available pricing or royalty information is inadequate, the bond may be set at one hundred (100) percent of the entered value of the infringing product." *Certain Loom Kits for Creating Linked Articles*, Inv. No. 337-TA-923, Comm'n Op., 2015 WL 5000874, at *11 (citations omitted).

Complainant bears the burden of establishing the need for a bond, including the amount of bond. *See, e.g.*, *Certain Rubber Antidegradants, Components Thereof & Prods. Containing Same*, USITC Pub. No. 3975, Inv. No. 337-TA-533, Comm'n Op. at 40 (April 2008); *Certain Coenzyme Q10 Prods. and Methods of Making Same*, Inv. No. 337-TA-790, Initial and Recommended Determination (Sept. 27, 2012) (recommending Commission not impose a bond because complainant failed in its burden to demonstrate the appropriate bond amount); *Certain Mobile Telephones and Wireless Commc'n Devices Featuring Digital Cameras, and Components Thereof*, Inv. No. 337-TA-703, Recommended Determination (Jan. 24, 2011)

(recommending no bond because complainant did not meet its burden in providing evidence on the necessity of a bond); *Certain Liquid Crystal Display Devices and Prods. Containing the Same*, Inv. No. 337-TA-631, Comm'n Op. at 27-28 (July 14, 2009) (setting zero bond because complainant "simply claimed that it was impossible to conduct a price differential analysis" and "should not benefit from a lack of any effort to identify" relevant pricing information, particularly that which is in its possession).

The Commission frequently sets the bond based on the difference in sales prices between the patented domestic product and the infringing product. *See, e.g.*, *Microsphere Adhesives*, Inv. No. 337-TA-366, Comm'n Op. at 24. In other instances, when a direct comparison between a patentee's product and the accused product is not possible, the Commission has set the bond at a reasonable royalty rate. *See, e.g., Certain Integrated Circuit Telecomm. Chips and Prods. Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm'n Op. at 41-43 (Aug. 3, 1993). Commission precedent allows for a 100 percent bond when it is not practical or possible to set the bond based on price differential. *Certain Microfluidic Devices*, Inv. No. 337-TA-1068, Comm'n Op. at 49 (Public Version Jan. 10, 2020). The purpose of the bond is to protect the complainant from any injury. 19 U.S.C. § 1337(j)(3); 19 C.F.R. §§ 210.42(a)(1)(ii), 210.50(a)(3).

Here, Samsung has requested a bond during the Presidential review period and argued that it should be set at 100% of the entered value of the Accused Products. (CBr. at 131.). MRI's VP of Business Development and LG-MRI's President and CEO, Mr. Kaszycki, confirmed that MRI and LG-MRI consider Samsung to be a significant competitor for the Accused Products. (CX-0503C (Kaszycki Dep. Tr.) at 139:15-140:17, 148:17-21, 151:12-154:8; *see also* Doc. ID No. 801755 (MRI's Post-Hearing Br., Inv. No. 337-TA-1331) at 199.).

Samsung also considers LG-MRI to be a competitor. (CBr. at 132.).

Samsung contended that "[a] reliable price differential analysis is not feasible at least because (1) there are many Accused Products, (2) the Accused Products [redacted], (3) the pricing referenced replaced list prices, and (4) MRI's sales are not direct to consumer, but include payments to the joint venture LG-MRI," which is supported by Mr. Kaszycki's deposition testimony. (CBr. at 132 (citing CX-0503C (Kaszycki Dep. Tr.) at 21:18-22:3, 22:17-22, 36:5-38:9, 46:3-14, 52:13-53:5, 70:15-71:13, 92:15-94:12, 96:10-97:3).). Samsung also noted that in Investigation 337-TA-1331, where MRI is the complainant and Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., *inter alia*, are the respondents, MRI argued that a [redacted]"[80] (Doc. ID No. 801755 (MRI's Post-Hearing Br., Inv. No. 337-TA-1331) at 199.).

Moreover, during the Hearing, MRI's CFO, Mr. Alan Brand,[81] provided an average [redacted]

> Q. . . . So earlier, you testified that there was [redacted]; is that correct?
>
> A. That's right.
>
> Q. These BoldVu* products, though, [redacted] right?

[80] *See, e.g.*, Doc. ID No. 780930 (F.R. Notice of Institution of Investigation) (Sept. 23, 2022).

[81] When he testified during the Hearing on October 6, 2023, Mr. Alan Brand was the Chief Financial Officer of MRI. (Tr. (Brand) at 650:19-22.). MRI identified Mr. Brand as a fact witness to testify about "MRI's facilities and operations, sales of the Accused Products, and other issues related to remedy." (RPSt. at 1.).

A. They are.

Q. And the price of BoldVu* products [redacted] right?

A. That's right.

Q. And also the volume that customer's purchase of BoldVu* products [redacted] that right?

A. It could.

Q. Mr. Smith, can you please bring up Mr. Brand's deposition transcript, page 116, lines 2 through 6? And, Mr. Brand, do you remember you were deposed in this case on May 24th, 2023?

A. I do.

Q. And you testified under oath?

A. Yes.

Q. And looking at lines 2 through 6, do you see that it says, [redacted]

A. That's right.

(Tr. (Brand) at 667:20-668:19.).

Here, "[i]n circumstances where pricing information is unclear, or where variations in pricing make price comparisons complicated and difficult, the Commission typically has set a 100 percent bond." *See Certain Network Devices, Related Software and Components Thereof (II)*, Inv. No. 337-TA-945, Comm'n Op., 2017 WL 3614521, at *74 (June 1, 2017) (citing *Certain Digital Multimeters and Prods. with Multimeter Functionality*, Inv. No. 337-TA-588, Comm'n Op., 2008 WL 2336518, at *6 (June 3, 2008)) (finding 100 percent bond where each respondent set its price differently, preventing clear differentials between complainant's products and the infringing imports)).

Accordingly, a bond of 100% of the entered value of the Accused Products is appropriate. The bond extends to the same products and components covered by the LEO described above.

XIII. WAIVER OR WITHDRAWAL OF RESPONDENT'S DEFENSES

MRI did not raise in its Pre-Hearing Brief or offer any evidence during the Hearing to support its following Affirmative Defenses: (1) Third Affirmative Defense of Lack of Written Description; (2) Fourth Affirmative Defense of Lack of Enablement; (3) Fifth Affirmative Defense of Indefiniteness; (4) Eighth Affirmative Defense of Improper Inventorship; (5) Ninth Affirmative Defense of Prior Invention by Another; and (6) Eleventh Affirmative Defense of Failure to State a Claim. (Resp. at 28, 31-34, 35.).

Consequently, it is a finding of this decision that MRI has withdrawn, waived and/or abandoned its Third, Fourth, Fifth, Eighth, Ninth, and Eleventh Affirmative Defenses consistent with Ground Rules 7.2 and 10.1. *Kinik Co. v. Int'l Trade Comm'n*, 362 F.3d 1359, 1367 (Fed. Cir. 2004).

XIV. CONCLUSIONS OF FACT OR LAW: THIS INITIAL DETERMINATION FINDS NO SECTION 337 VIOLATION

1. Samsung has satisfied jurisdiction and standing requirements.

2. Importation has been satisfied.

3. Claims 1 and 2 of U.S. Patent No. RE45,117 are valid and have been found to be practiced by the Accused Products.

4. At least one of Samsung's 117 DI Products practices one or more claims of U.S. Patent No. RE45,117.

5. Samsung's domestic labor and capital expenses with respect to its 117 DI Products have been found to not satisfy the economic prong of the domestic industry requirement under 19 U.S.C. § 337(a)(3)(B).

6. Claims 4, 6, and 13 of U.S. Patent No. 8,223,311 are invalid and have been found not to be practiced by the Accused Products.

7. None of Samsung's 311 DI Products practices one or more claims of U.S. Patent No. 8,223,311

8. Samsung's domestic labor and capital expenses with respect to its 311 DI Products have been found to not satisfy the economic prong of the domestic industry requirement under 19 U.S.C. § 337(a)(3)(B).

9. Claim 12 of U.S. Patent No. 8,842,253 is invalid and has been found not to be practiced by the Accused Products.

10. None of Samsung's 253 DI Products practices one or more claims of U.S. Patent No. 8,842,253.

11. Samsung's domestic labor and capital expenses with respect to its 253 DI Products have been found to not satisfy the economic prong of the domestic industry requirement under 19 U.S.C. § 337(a)(3)(B).

12. MRI has not violated Section 337 of the Tariff Act of 1930, as amended.

13. If the Commission finds that there has been a violation of Section 337 of the Tariff Act of 1930, as amended, then a Limited Exclusion Order against MRI and a 100% Bond during the Presidential Review Period are recommended.

The lack of discussion of 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 briefs, which were otherwise unsupported by record evidence or legal precedent, have been accorded no weight.

XV. CONCLUSION AND ORDER

This Initial Determination on Violation of Section 337 of the Tariff Act of 1930 is certified to the Commission. All orders and documents, filed with the Secretary, including the exhibit lists enumerating the exhibits received into evidence in this Investigation, that are part of the record, as defined in 19 C.F.R. § 210.38(a), are not certified, since they are already in the Commission's possession in accordance with Commission Rules. *See* 19 C.F.R. § 210.38(a). In accordance with 19 C.F.R. § 210.39(c), all material found to be confidential under 19 C.F.R.

§ 210.5 is to be given *in camera* treatment.

After the Parties have provided proposed redactions of confidential business information ("CBI") that have been evaluated and accepted, the Secretary shall serve a public version of this ID upon all parties of record. The Secretary shall serve a confidential version upon counsel who are signatories to the Protective Order (Order No. 1) issued in this Investigation.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless a party files a petition for review pursuant to 19 C.F.R. § 210.43(a) or the Commission, pursuant to 19 C.F.R. § 210.44, orders on its own motion a review of the Initial Determination or certain issues therein.

Within fourteen (14) business days of the date of this document, the Parties shall jointly submit to the Office of the Administrative Law Judges through McNamara337@usitc.gov a statement whether they seek to have any confidential portion of this document. That is the courtesy copy pursuant to Ground Rule 1.3.2. Any party seeking redactions to the public version must submit to this office through McNamara337@usitc.gov a copy of a proposed public version of this document pursuant to Ground Rule 1.10 with colored highlighting clearly indicating any portion asserted to contain confidential business information. The Parties' submission shall also 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.

MaryJoan McNamara
Administrative Law Judge

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Public Version

ATTACHMENT A

Attachment A to Complainants' Initial Post-Hearing Brief

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ATTACHMENT A: Evidence Citations Showing Representativeness

'117 Patent	**Evidence**
"A panel device comprising" **(1[pre])**	**Technical Manuals:** JX-0869C.0002 (Gen. 15 55" SS); JX-0843C.0003 (Gen. 14 55" SS); JX-0849C.0002 (Gen. 14.5 55" DS); JX-0861C.0027 (Gen. 15 55" DS); JX-0866C.0003 (Gen. 15 55" SS (Slim)); JX-0870C.0002 (Gen. 11 75" SS/DS); JX-0878C.0003 (Gen. 14 75" SS); JX-0873C.0003 (Gen. 14 75" DS); JX-0879C.0003 (Gen. 14.5 75" SS); JX-0881C.0003 (Gen. 15 75" SS); JX-0894C.0003 (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C.0004 (Gen. 16 75" SS); JX-0901C.0003 (Gen. 16 75" DS;, JX-0891C.0003 (Gen. 11 86" DS); JX-0897C (Gen. 15 86" SS); JX-0899.0003 (Gen. 16 86" SS)
"a case" **(1[a])**	**Technical Manuals:** JX-0869C.0034 (Gen. 15 55" SS); JX-0878C.0038 (Gen. 14 75" SS); JX-0897C.0038 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **MRI's DI Chart:** CX-1488C.0007 (MRI's 1331 DI Chart 55/88" Products); CX-1499C.0010 (MRI's 1331 DI Chart 75/86" Products)
"a display panel mounted in an	**Technical Manuals:** JX-0869C.0002 (Gen. 15 55" SS); JX-0878C.0003 (Gen. 14 75" SS); JX-0897C.0002 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11

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interior of the case" **(1[b])**	75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **Bills of Materials:** JX-0277C (Gen. 14 55" SS); JX-0303C (Gen. 14 55" SS); JX-0348C (Gen. 11 75" SS); JX-0411C (Gen. 11 86" SS); *see generally* JX-0277C – JX-0433C. **MRI's DI Chart:** CX-1488C.0007 (MRI's 1331 DI Chart 55/88" Products); CX-1499C.0010 (MRI's 1331 DI Chart 75/86" Products)
"at least one circuit board which controls the display panel" **(1[c])**	**Technical Manuals:** JX-0869C.0036 (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS)
"a first cooling fluid path which cools the display panel; and" **(1[d])**	**Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS)

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	MRI's DI Chart: CX-1487.0009 (MRI's 1331 DI Chart 55/88" Double-Sided Products); CX-1488C.0007 (MRI's 1331 DI Chart 55/88" Products); CX-1499C.0010 (MRI's 1331 DI Chart 75/86" Products); CX-1498.0011 (MRI's 1331 DI Chart 75/86" Double-Sided Products)
"a second cooling fluid path which cools the circuit board" **(1[e])**	**Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **MRI's DI Chart:** CX-1487.0009 (MRI's 1331 DI Chart 55/88" Double-Sided Products); CX-1488C.0007 (MRI's 1331 DI Chart 55/88" Products); CX-1499C.0010 (MRI's 1331 DI Chart 75/86" Products); CX-1498.0011 (MRI's 1331 DI Chart 75/86" Double-Sided Products)
"wherein the first and second cooling fluid paths are separated from each other" **(1[f])**	**Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **MRI's DI Chart:** CX-1487.0009 (MRI's 1331 DI Chart 55/88" Double-Sided Products); CX-1488C.0007 (MRI's 1331 DI Chart 55/88" Products); CX-1499C.0010 (MRI's 1331 DI Chart 75/86" Products); CX-1498.0011 (MRI's 1331 DI Chart 75/86" Double-Sided Products)
"wherein the case includes a circuit board mounting part provided on a rear surface of the case and partitioned from	**Technical Manuals:** JX-0869C.0036 (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS)

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a space in which the display panel is mounted such that the circuit board is received in the circuit board mounting part, the first cooling fluid path includes a space between a rear surface of the display panel and an inner surface of the case, and the second cooling fluid path includes an internal space of the circuit board mounting part." **(1[g])**	**Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **MRI's DI Chart:** CX-1487.0009 (MRI's 1331 DI Chart 55/88" Double-Sided Products); CX-1488C.0007 (MRI's 1331 DI Chart 55/88" Products); CX-1499C.0010 (MRI's 1331 DI Chart 75/86" Products); CX-1498.0011 (MRI's 1331 DI Chart 75/86" Double-Sided Products)
"The panel display device as claimed in claim 1, wherein the case includes front and rear case coupled to each other, and the rear case includes a circuit board mounting part provided on an outer surface of the rear case such that the circuit board is mounted in the circuit board mounting part." **(Claim 2)**	**Technical Manuals:** JX-0869C.0036 (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **MRI's DI Chart:** CX-1487.0009 (MRI's 1331 DI Chart 55/88" Double-Sided Products); CX-1488C.0007 (MRI's 1331 DI Chart 55/88" Products); CX-1499C.0010 (MRI's 1331 DI Chart 75/86" Products); CX-1498.0011 (MRI's 1331 DI Chart 75/86" Double-Sided Products)

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'311 Patent	**Evidence**
"A liquid crystal display device, comprising" **(1[pre], 13[pre])**	**Technical Manuals:** JX-0869C.0002 (Gen. 15 55" SS); JX-0878C.0003 (Gen. 14 75" SS); JX-0897C.0002 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **Bills of Materials:** JX-0277C (Gen. 14 55" SS); JX-0303C (Gen. 14 55" SS); JX-0348C (Gen. 11 75" SS); JX-0411C (Gen. 11 86" SS); *see generally* JX-0277C – JX-0433C.
"a liquid crystal panel" **(1[a], 13[a])**	**CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **Bills of Materials:** JX-0277C (Gen. 14 55" SS); JX-0303C (Gen. 14 55" SS); JX-0348C (Gen. 11 75" SS); JX-0411C (Gen. 11 86" SS); *see generally* JX-0277C – JX-0433C.
"a protection panel separated from the liquid crystal panel by a channel" **(1[b], 13[b], 13[c])**	**Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS)

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	MRI's DI Chart: CX-1487.0009 (MRI's 1331 DI Chart 55/88" Double-Sided Products); CX-1488C.0007 (MRI's 1331 DI Chart 55/88" Products); CX-1499C.0010 (MRI's 1331 DI Chart 75/86" Products); CX-1498.0011 (MRI's 1331 DI Chart 75/86" Double-Sided Products)
"a flow control device to impart turbulence to an air flow in the channel, the flow control device comprising: a temperature sensor to measure the temperature of air discharged from the channel; and a flow rate controller to control air flow through the channel according to the measured temperature" **(1[c], 13[d])**	**Technical Manuals:** JX-0869C.0036, 0052, 0053; (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **CFD Simulations:** JX-0903C (Gen. 14 55" DS), JX-0905C (Gen. 14 55" SS), JX-0907C (Gen. 15 55" DS), JX-0911C (Gen. 15 55" SS (Slim)), JX-0917C (Gen. 14 75" DS), JX-0919C (Gen. 14 75" SS), JX-0921C (Gen. 15 75" SS); JX-0616C (Gen. 14 55" DS); JX-0618C (Gen. 14 55" SS); JX-0620C (Gen. 14.5 55" DS); JX-0622C (Gen. 15 55" DS); JX-0624C (Gen. 15 55" SS slim); JX-0626C (Gen. 15 55" SS); JX-0628C (Gen. 11 75" SS); JX-0630C (Gen. 14 75" DS); JX-0633C (Gen. 14 75" SS); JX-0634C (Gen. 14 75" SS); JX-0636C (Gen. 14.5 75" SS); JX-0638C (Gen. 15 75" SS); JX-0640C (Gen. 16 75" DS); JX-0642C (Gen. 16 75" SS); JX-0644C (Gen. 11 86" DS); JX-0646C (Gen. 11 86" SS); JX-0648C (Gen. 15 86" SS); JX-0650C (Gen. 16 86" SS); JX-0653C (Gen. 16 88" SS). **CFD Simulations Results Spreadsheet Data:** JX-0693C (Gen. 14 55" SS); JX-0670C (Gen. 14 55" DS); JX-0683C (Gen. 15 55" DS); JX-0797C (Gen. 16 75" DS); JX-0805C (Gen. 11 86" SS); JX-0827C (Gen. 15 86" SS); JX-0829C (Gen. 16 86" SS); JX-0834C (Gen. 16 88" SS) **Source Code Files:** CX-0415C; CX-0416C; CX-0417C; CX-0419C; CX-0420C; CX-0421C; CX-0424C **Fan Specification:** CX-0265
"The liquid crystal display device according to claim 2, wherein the flow control device further	**Technical Manuals:** JX-0869C.0036, 0052, 0053; (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen.

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comprises a fan to force air through the channel, wherein the flow rate controller controls the fan according to the detected temperature." **(Claim 3)**	11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **Annotated Screenshots of CFD Simulations:** JX-0903C (Gen. 14 55" DS), JX-0905C (Gen. 14 55" SS), JX-0907C (Gen. 15 55" DS), JX-0911C (Gen. 15 55" SS (Slim)), JX-0917C (Gen. 14 75" DS), JX-0919C (Gen. 14 75" SS), JX-0921C (Gen. 15 75" SS)
"The liquid crystal display device according to claim 3, wherein: the flow rate controller controls the fan such that the air in the channel has a velocity in a range of 4 to 14 m/s" **(Claim 4)**	**CFD Simulations:** JX-0616C (Gen. 14 55" DS); JX-0618C (Gen. 14 55" SS); JX-0620C (Gen. 14.5 55" DS); JX-0622C (Gen. 15 55" DS); JX-0624C (Gen. 15 55" SS slim); JX-0626C (Gen. 15 55" SS); JX-0628C (Gen. 11 75" SS); JX-0630C (Gen. 14 75" DS); JX-0633C (Gen. 14 75" SS); JX-0634C (Gen. 14 75" SS); JX-0636C (Gen. 14.5 75" SS); JX-0638C (Gen. 15 75" SS); JX-0640C (Gen. 16 75" DS); JX-0642C (Gen. 16 75" SS); JX-0644C (Gen. 11 86" DS); JX-0646C (Gen. 11 86" SS); JX-0648C (Gen. 15 86" SS); JX-0650C (Gen. 16 86" SS); JX-0653C (Gen. 16 88" SS). **CFD Simulations Results Spreadsheet Data:** JX-0693C (Gen. 14 55" SS); JX-0670C (Gen. 14 55" DS); JX-0683C (Gen. 15 55" DS); JX-0797C (Gen. 16 75" DS); JX-0805C (Gen. 11 86" SS); JX-0827C (Gen. 15 86" SS); JX-0829C (Gen. 16 86" SS); JX-0834C (Gen. 16 88" SS)
"The liquid crystal display device according to claim 1, wherein: the width of the channel is in a range of 5 to 25 mm." **(Claim 6)**	**CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS)

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'253 Patent	**Evidence**
"A display device comprising" **(11[pre])**	**Technical Manuals:** JX-0869C.0002 (Gen. 15 55" SS); JX-0878C.0003 (Gen. 14 75" SS); JX-0897C.0002 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **Bills of Materials:** JX-0277C (Gen. 14 55" SS); JX-0303C (Gen. 14 55" SS); JX-0348C (Gen. 11 75" SS); JX-0411C (Gen. 11 86" SS); *see generally* JX-0277C – JX-0433C.
"a housing" **(11[a])**	**Technical Manuals:** JX-0869C.0002 (Gen. 15 55" SS); JX-0878C.0003 (Gen. 14 75" SS); JX-0897C.0002 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **Bills of Materials:** JX-0277C (Gen. 14 55" SS); JX-0303C (Gen. 14 55" SS); JX-0348C (Gen. 11 75" SS); JX-0411C (Gen. 11 86" SS); *see generally* JX-0277C – JX-0433C.
"a display assembly enclosed inside the housing;" **(11[b])**	**Technical Manuals:** JX-0869C.0002 (Gen. 15 55" SS); JX-0878C.0003 (Gen. 14 75" SS); JX-0897C.0002 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen.

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	16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **Bills of Materials:** JX-0277C (Gen. 14 55" SS); JX-0303C (Gen. 14 55" SS); JX-0348C (Gen. 11 75" SS); JX-0411C (Gen. 11 86" SS); *see generally* JX-0277C – JX-0433C.
"a sensor to measure a temperature of air in the housing" **(11[c])**	**Technical Manuals:** JX-0869C.0036, 0052, 0053; (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **Annotated CAD Drawings:** JX-0903C (Gen. 14 55" DS), JX-0905C (Gen. 14 55" SS), JX-0907C (Gen. 15 55" DS), JX-0911C (Gen. 15 55" SS (Slim)), JX-0917C (Gen. 14 75" DS), JX-0919C (Gen. 14 75" SS), JX-0921C (Gen. 15 75" SS).
"a fan configured to blow the air around the display assembly; and" **(11[d])**	**Technical Manuals:** JX-0869C.0036, 0052, 0053; (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS) **Annotated Screenshots of CFD Simulations:** JX-0903C (Gen. 14 55" DS), JX-0905C (Gen. 14 55" SS), JX-0907C (Gen. 15 55" DS), JX-0911C (Gen. 15 55" SS (Slim)), JX-0917C (Gen. 14 75" DS), JX-0919C (Gen. 14 75" SS), JX-0921C (Gen. 15 75" SS) **CFD Simulations:** JX-0616C (Gen. 14 55" DS); JX-0618C (Gen. 14 55" SS); JX-0620C (Gen. 14.5 55" DS); JX-0622C (Gen. 15 55" DS); JX-0624C (Gen. 15 55" SS slim); JX-0626C (Gen. 15 55" SS); JX-0628C (Gen. 11 75" SS); JX-0630C (Gen. 14 75" DS); JX-0633C (Gen. 14 75" SS); JX-0634C (Gen. 14 75" SS); JX-0636C (Gen. 14.5 75" SS); JX-0638C (Gen. 15 75" SS); JX-0640C (Gen. 16 75" DS); JX-0642C (Gen. 16 75" SS); JX-0644C (Gen. 11 86" DS); JX-0646C (Gen. 11 86" SS); JX-0648C (Gen. 15 86" SS); JX-0650C (Gen. 16 86" SS); JX-0653C (Gen. 16 88" SS).

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"a control device to control the fan to maintain a temperature of the housing" **(11[e])**	**Technical Manuals:** JX-0869C.0036, 0052, 0053; (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **Source Code Files:** CX-0415C; CX-0416C; CX-0417C; CX-0419C; CX-0420C; CX-0421C; CX-0424C
"wherein the sensor transmits a resulting signal to the control device and the control device controls the fan based on the resulting signal." **(11[f])**	**Technical Manuals:** JX-0869C.0036, 0052, 0053; (Gen. 15 55" SS); JX-0878C.0015 (Gen. 14 75" SS); JX-0897C.0051 (Gen. 15 86" SS); JX-0843C (Gen. 14 55" SS); JX-0849C (Gen. 14.5 55" DS); JX-0861C (Gen. 15 55" DS); JX-0866C (Gen. 15 55" SS (Slim)); JX-0870C (Gen. 11 75" SS/DS); JX-0873C (Gen. 14 75" DS); JX-0879C (Gen. 14.5 75" SS); JX-0881C (Gen. 15 75" SS); JX-0894C (Gen. 11 86" SS); JX-0900C (Gen. 16. 88"); JX-0887C (Gen. 16 75" SS); JX-0901C (Gen. 16 75" DS;, JX-0891C (Gen. 11 86" DS); JX-0899 (Gen. 16 86" SS) **Product Requirement Documents:** JX-0173.0003 (Gen. 15 55" SS); JX-0237C.0004 (Gen.15 75" SS); JX-0257C.0003 (Gen. 11 86" SS); JX-0276C.0004 (Gen. 16 88" SS); JX-0177C (Gen. 14 55" SS); JX-0194C (Gen. 15 55" DS); JX-0207C (Gen. 11 75" SS/DS); JX-0233C (Gen. 14 75" SS); JX-0222C (Gen. 14/14.5 75" DS); JX-0245C (Gen. 16 75" SS); JX-0245C (Gen. 16 75" DS); JX-0269C (Gen. 11 86" DS); JX-0272C (Gen. 15 86" SS); JX-0274C (Gen. 16 86" SS) **Source Code Files:** CX-0415C; CX-0416C; CX-0417C; CX-0419C; CX-0420C; CX-0421C; CX-0424C **Fan Specification:** CX-0265
"The display device according to claim 11, wherein the display assembly is enclosed inside the	**CAD Drawings:** JX-0594C (Gen. 14 55" SS); JX-0595C (Gen. 14.5 55" DS); JX-0596C (Gen. 15 55" DS); JX-0598C (Gen. 15 55" SS); JX-0603C (Gen. 14 75" SS); JX-0601C (Gen. 14 75" DS); JX-0604C (Gen. 14.5 75" SS); JX-0605C (Gen. 15 75" SS); JX-0607C (Gen. 16 75" SS); JX-0606C (Gen. 16 75" DS); JX-0611 (Gen. 11 86" SS); JX-0608C (Gen. 11 86" DS); JX-0615C (Gen. 16 86" SS); JX-0615C (Gen. 16 88" SS)

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housing to form a front channel between a display panel of the display assembly and a front side of the housing." **(Claim 12)**	

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ATTACHMENT B

Public Version

Attachment B to
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Attachment B: Exemplary Figures and Diagrams of the Accused Products



JX-0277C (Bill of Materials for Gen. 14 55" SS showing the inclusion)



JX-1004.0001 (Inspection Photo); CX-1488.0007 (MRI's 1331 DI Chart)(annotated); JX-0598C (Gen. 15 55" SS CAD Drawing) (annotations illustrating the Accused Products' case,

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CX-1488C.0010 (annotated); CX-1487C.0009 (annotated) (comparing CAD Cross Section of Gen. 15 55” SS to Gen. 15 55” DS showing the same features present in both products)

Public Version



CX-1498C.0008 (annotated); CX-1499C.0012 (annotated) (comparing CAD Cross Section of Gen. 11 86” SS to Gen. 11 86” DS showing the same features present in both products)

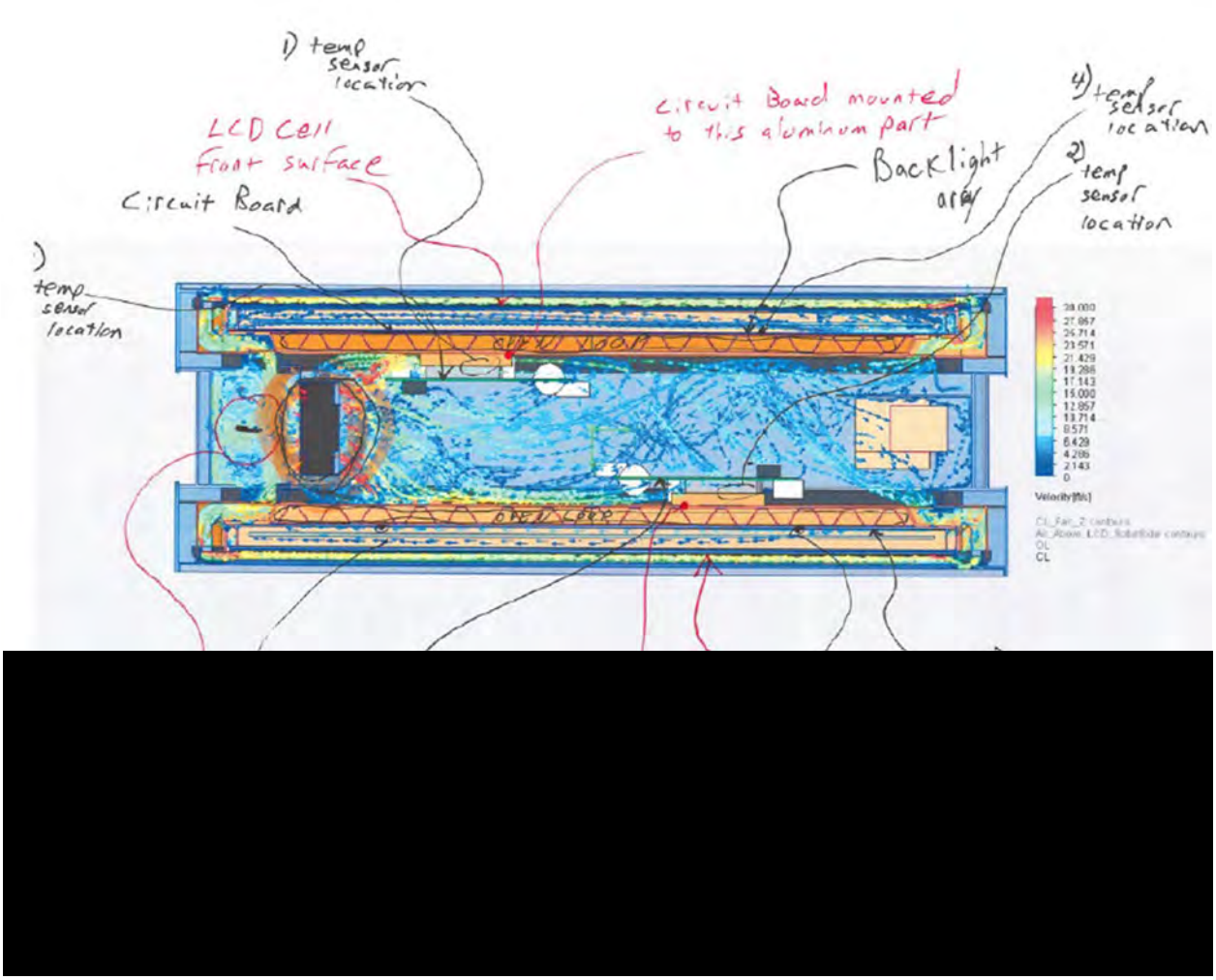
[redacted]



CX-1488.0013 (MRI's DI Chart showing the open loop airflow); JX-0598C (Gen. 15 55" SS CAD drawing) (annotations showing the comparison between [redacted] in MRI's DI Chart image and the location of the [redacted] in the CAD drawing)



JX-0598C (Gen. 15 55” SS CAD Drawing) (annotations showing the location of the



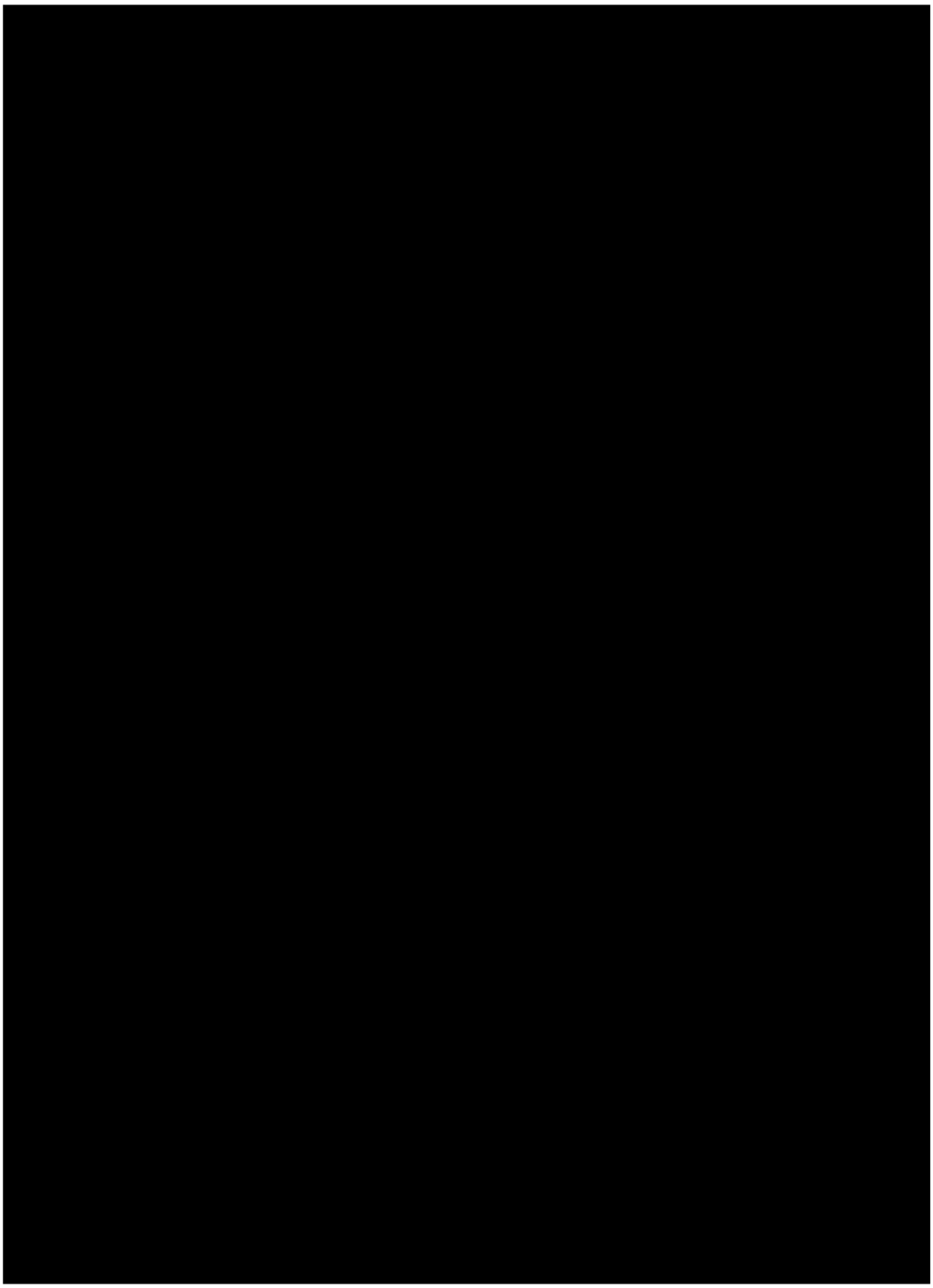
[redacted]

JX-0903 (Screenshot of a flow simulation for the [redacted] of a Gen. 14 55" DS Product annotated by Mike Brown during his deposition showing the different components)

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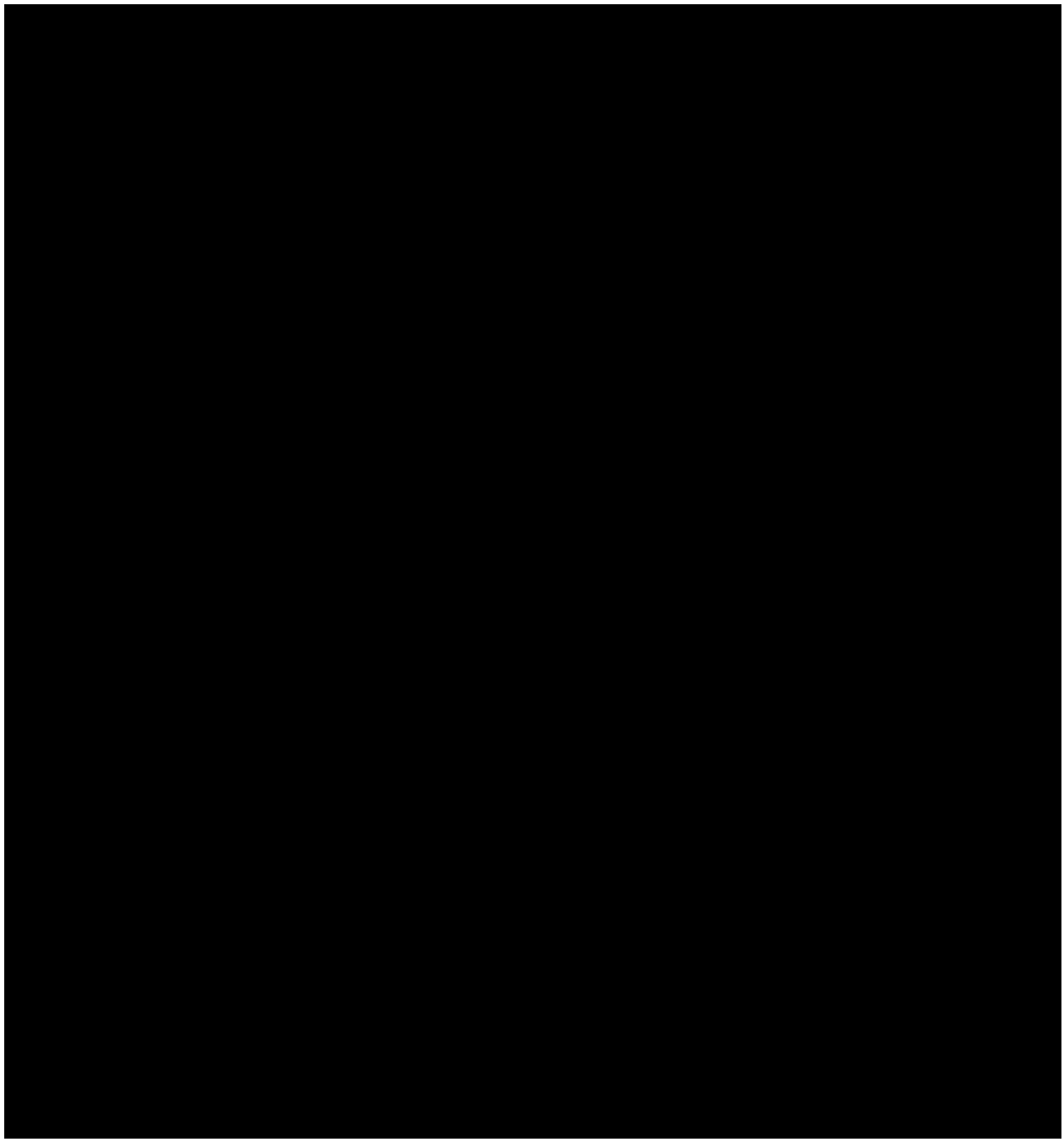


JX-0869.0038 (Gen. 15 55” SS Tech. Manual showing the [redacted] which corresponds to the flow rate controller in the ’311 Patent and the control device in the ’253 Patent)



JX-0869.0038-0039 (Gen. 15 55" SS Tech. Manual) (annotated) (highlighting

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JX-0693 (Spreadsheet of CFD Simulation Results for Gen. 14 55” SS) (annotated) (highlighting [redacted] from test results)

Public Version



JX-0598C (Gen. 15 55” SS CAD Drawing) (annotations showing the [redacted])

Public Version



JX-0598C (Gen. 15 55” SS CAD Drawing) (annotations showing the [redacted] corresponding to Claim 11 of the ’253 Patent)

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ATTACHMENT C

Attachment C to
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Attachment C: Exemplary Figures and Diagrams of the Domestic Industry Products



JX-1498C.0001 (OH46B Exploded Views) (annotated) (showing [redacted] of the OH46B Domestic Industry Product)

5. Wiring Diagram

5-1. Wiring Diagram



JX-1503C.0001 (OH46B Service Manual, § 5, Wiring Diagram) (showing connection

5-2. Block Diagram



JX-1503C.0002 (OH46B Service Manual, § 5, Wiring Diagram) (showing connection



JX-1500C.0001 (OH46B Service Manual, § 3, Disassembly and Reassemble) (annotated) (showing [redacted] the OH46B Domestic Industry products)



CX-0784C.0001 (OH75A Exploded Views) (annotated) (showing the [redacted] the OH75A Domestic Industry Products)

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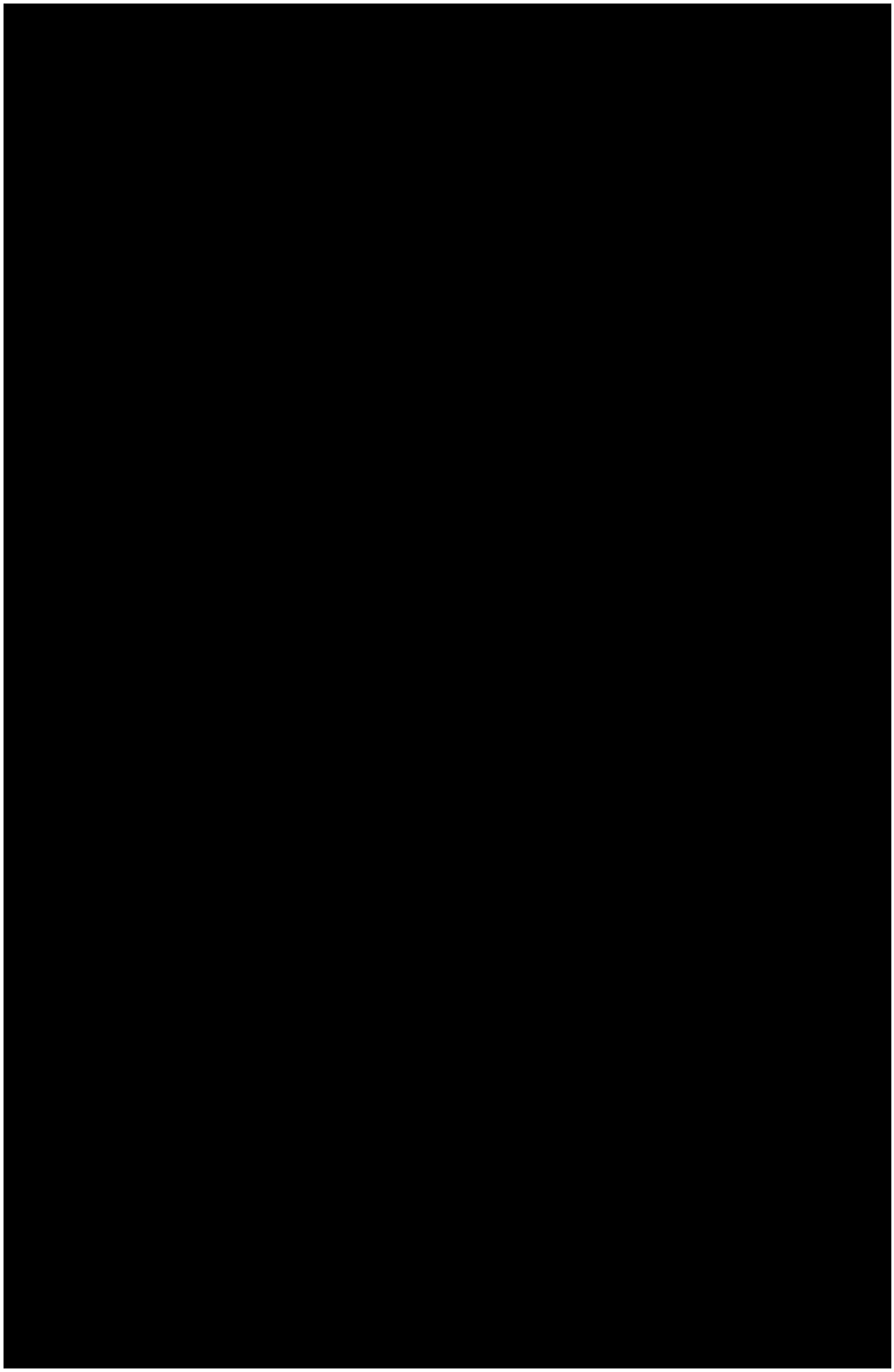


JX-1481C.0093 (OH75A Design Specification) (annotated); JX-0802C (OH75A CAD file) (annotated);

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CX-0802 (OH75A CAD File) (annotated) (annotations showing the components of the OH75A product)



CX-0773C.0001, 0002 (OH75A/OH85N-S Cross-Sectional Engineering Drawing) (annotated)



CX-0755C (Screenshot of Dr. Gale's simulation for the OH75A showing [redacted]

Public Version

ATTACHMENT D

Public Version

Attachment D to
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Attachment D: Exemplary List of MRI Sales Constituting Direct Infringement

- BoldVu Generation 14 55" Free Standing Display Single/Double Sided to [redacted] (Technical Manual JX-0843)
- BoldVu Generation 15 55" Double Sided [redacted] (Technical Manual JX-0849)
- BoldVu XT 75-inch Single UMD to [redacted] (Product Requirement Document JX-0233);
- BoldVu 75" Double-Sided Free-Standing Display to [redacted] (Technical Manual JX-0873)
- BoldVu Generation 15 75" Single Sided UMD to [redacted] (Technical Manual JX-0881)
- BoldVu XT Generation 16 75" Double Sided Free Standing Display to [redacted] (Technical Manual JX-0901)
- BoldVu Generation 15 86" Single Sided UMD to [redacted] (Technical Manual JX-0897)
- BoldVu 88" Single Sided UMD to [redacted] (Technical Manual JX-0900).