MAY CONTAIN CONFIDENTIAL BUSINESS INFORMATION
SUBJECT TO PROTECTIVE ORDER

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of **CERTAIN OUTDOOR AND SEMI-OUTDOOR ELECTRONIC DISPLAYS, PRODUCTS CONTAINING SAME, AND COMPONENTS THEREOF**	**Inv. No. 337-TA-1331**

ORDER NO. 13: CONSTRUING CERTAIN TERMS OF THE ASSERTED CLAIMS OF THE PATENTS AT ISSUE

(May 15, 2023)

This order addresses the construction of certain disputed claim terms in U.S. Patent Nos. 8,854,595 ("the '595 patent"), 9,173,322 ("the '322 patent"), 9,629,287 ("the '287 patent"), 10,506,740 ("the '740 patent") and 11,013,142 ("the '142 patent").[1]

I. BACKGROUND

The Commission instituted this investigation to determine whether there is a violation of section 337 with respect to certain outdoor and semi-outdoor electronic displays, products containing same, and components thereof by reasons of infringement of certain claims of the '595 patent, the '322 patent, the '287 patent, the '740 patent, and the '142 patent. *See* 87 Fed. Reg. 58132-33 (Sept. 23, 2022) ("Notice of Investigation").

The complainant is Manufacturing Resources International, Inc. ("Complainant" or "MRI"), and the Respondents are Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, "Samsung Electronics"), Samsung SDS Co. Ltd. and Samsung SDS America, Inc. (collectively, "Samsung SDS"), Industrial Enclosures Corporation d/b/a Palmer

[1] This Order has been designated as potentially containing CBI because Complainant's opening *Markman* brief was so designated.

Digital Group ("Palmer"), and Coates SigncoPty Limited and Coates US Inc. (collectively, "Coates") (collectively, "Respondents").

Three of the asserted patents—the '595 patent, the '322 patent, and the '287 patent—were the subject of claim construction proceedings in a U.S. District Court case, *Manufacturing Resources International, Inc. v. Civiq Smartscapes, LLC*, No. 17-269 (D. Del.) (the "*MRI v. Civiq*" litigation), where certain terms were construed by the court. *See* CIB Exhibit 8 (Memorandum Opinion dated Sept. 27, 2018). The '740 and '142 patents were not asserted in those proceedings. *See id.*

Pursuant to the Procedural Schedule (Order No. 7), the parties filed a joint claim construction chart on January 25, 2023. The parties filed opening claim construction briefs on February 1 and February 2, 2023,[2] and the parties filed rebuttal claim construction briefs on February 15, 2023. A *Markman* hearing was held on March 1, 2023. The parties filed an updated joint proposed claim construction chart on March 8, 2023.

For ease of reference, certain materials submitted by the parties shall be referred to as follows:

CIB	Complainant's Initial Claim Construction Brief, EDIS Doc. ID 789327 (Feb. 2, 2023)
CRB	Complainant's Rebuttal Claim Construction Brief, EDIS Doc. ID 790447 (Feb. 15, 2023)
RIB	Respondents' Initial Claim Construction Brief, EDIS Doc. ID 789175 (Feb. 1, 2023)
RRB	Respondents' Rebuttal Claim Construction Brief, EDIS Doc. ID 790449 (Feb. 15, 2023)
Joint Chart	Joint Proposed Claim Construction Chart, EDIS Doc. ID 788612 (Jan. 25, 2023)
Updated Joint Chart	Updated Joint Proposed Claim Construction Chart, EDIS Doc. ID 792078 (Mar. 8, 2023)

[2] Pursuant to Order No. 8 (Feb. 3, 2023), Complainant was granted leave to file its opening claim construction brief out of time.

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Tr.	Transcript of claim construction hearing, EDIS Doc. ID 791574 (Mar. 1, 2023)
Comp. Slides	Complainant's *Markman* Presentation (EDIS Doc. ID 791673)
Resp. Slides	Respondents' *Markman* Presentation (EDIS Doc. ID 791718)
Credelle Decl.	Rebuttal Declaration of Thomas Credelle on Claim Construction (CIB Ex. 23)
Pokharna Decl.	Rebuttal Declaration of Dr. Himanshu Pokharna on Claim Construction (CIB Ex. 20)
Smith-Gillespie Decl.	Declaration of Robert Smith-Gillespie, dated January 17, 2023 (RXM-0009)

II. LEGAL STANDARDS

The scope of a patent claim is defined by the claim language. *Catalina Mktg. Int'l., Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 807 (Fed. Cir. 2002). In construing the claims, the court's task is to "ascertain[] the meaning of the claim terms to one of ordinary skill in the art at the time of invention." *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1361 (Fed. Cir. 2004). "[O]nly those [claim] terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy." *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (same).

To ascertain the meaning of claim terms at issue, courts rely on intrinsic evidence: the claims, specification, and prosecution history for the patent at issue. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313-14 (Fed. Cir. 2005); *Vitronics Corp. v. Conceptronic, Inc.,* 90 F.3d 1576, 1582 (Fed. Cir. 1996). The words of a claim "are generally given their ordinary and customary meaning." *Phillips*, 415 F.3d at 1312. This is the meaning "that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1313.

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Importantly, the person of ordinary skill in the art "is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id*. The Federal Circuit has repeatedly confirmed that the specification is "the single best guide to the meaning of a disputed term." *Id.* at 1315. The specification plays a primary role because it can function as "a concordance for the claims," explaining the invention and defining the terms used in the claims. *Id.* (citation omitted); *see also id.* ("[C]laims . . . do not stand alone. Rather, they are part of a 'fully integrated written instrument,' consisting principally of a specification that concludes with the claims.") (citation omitted). "Ultimately . . . the construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316 (internal quotation and citation omitted).

Claims should also be read in view of the prosecution history, which provides "evidence of how the PTO and the inventor understood the patent." *Id.* at 1317. "The prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

In addition to intrinsic evidence, extrinsic evidence may be considered if necessary to explain scientific principles, technical terms, and terms of art that appear in the patent and prosecution history. Extrinsic evidence consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises. *Vitronics*, 90 F.3d at 1584. Extrinsic evidence in the form of expert testimony "can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects

of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent . . . has a particular meaning in the pertinent field." *Phillips*, 415 F.3d at 1318. While not prohibited, extrinsic evidence is less reliable than the patent and its prosecution history. *Id.* Extrinsic evidence in the form of expert testimony that is at odds with the intrinsic evidence must be disregarded. *Network Com., Inc. v. Microsoft Corp.*, 422 F.3d 1353, 1361 (Fed. Cir. 2005).

III. THE ASSERTED PATENTS

A. '595 Patent and '322 Patent

The '595 and '322 patents are both entitled "Constricted Convection Cooling System for an Electronic Display," and share a common specification and naming inventor William Dunn. '595 patent, cover; '322 patent, cover.[3] The '595 patent issued from U.S. Application No. 12/411,925, filed on March 26, 2009, and the '322 patent issued from a continuation of that same application. *Id*. Both patents claim priority to several applications filed in September 2008, with the earliest non-provisional application filed on September 19, 2008. *Id*.

The parties have identified disputed terms in claims 1, 4, 7, 8, 9, and 16 of the '595 patent as part of the *Markman* process. *See* Updated Joint Chart. Each of these claims is recited below with the disputed claim terms highlighted:

> 1. A system for cooling an electronic display having a ***posterior display surface*** and contained within a housing, the system comprising:
>
> a constricted convection plate placed posterior to the ***posterior display surface***;
>
> two side panels placed adjacent to the constricted convection plate and the ***posterior display surface***, defining a ***constricted convection channel*** having an entrance and an exit; and

[3] The '595 patent is attached to the parties' claim construction briefs as JXM-001; and the '322 patent is attached to the parties' claim construction briefs as JXM-002.

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a fan placed to draw air from outside of the housing through the constricted convection channel.

* * *

4. A liquid crystal display (LCD) comprising:

a liquid crystal stack;

a backlight assembly behind the liquid crystal stack and comprising:

a metal core printed circuit board (PCB) having front and back sides;

a plurality of LEDs mounted on the front side of the PCB;

a posterior surface on the rear side of the PCB;

a constricted convection plate placed behind the posterior surface of the PCB, defining a ***constricted convection channel*** having an entrance and an exit; and

a fan positioned to draw air through the constricted convection channel.

* * *

7. The LCD from claim 4 wherein:

the fan is placed near the exit of the ***constricted convection channel***.

8. The LCD from claim 4 further comprising:

a plurality of access apertures through the ***constricted convection plate***.

9. A system for cooling an electronic display comprising:

an electronic display comprising a front display surface and a ***posterior surface***;

a ***constricted convection plate*** and a pair of sidewalls behind the ***posterior surface of the display***, defining a ***constricted convection channel*** having an entrance and exit;

a gaseous ***closed loop*** traveling across the front display surface, behind the ***constricted convection plate***, and returning to the front display surface;

a means for propelling gas around the ***closed loop***;

a means for cooling the gas in the ***closed loop***; and

a means for forcing air through the ***constricted convection channel***.

* * *

16. The cooling system from claim 9 wherein:

the means for forcing air through the ***constricted convection channel*** comprises a plurality of fans placed near the exit of the ***constricted convection channel***.

The parties have identified disputed terms in claims 1, 3, 4, 5, 7, 8, 9, 12, and 13 of the '322 patent as part of the *Markman* process. *See* Updated Joint Chart. Each of these claims is recited below with the disputed claim terms highlighted:

1. A system for cooling an electronic display having a ***posterior display surface*** and contained within a housing, the system comprising:

a ***constricted convection plate*** placed posterior to the ***posterior display surface*** covering the majority of the ***posterior display surface***;

at least one bracket which connects the ***posterior display surface*** with the ***constricted convection plate***; and

a fan placed to draw ambient air between the constricted convection plate and the rear posterior.

* * *

3. The cooling system from claim 1 wherein:

the ***constricted convection plate*** is substantially parallel to the ***posterior display surface***.

4. A liquid crystal display (LCD) comprising:

a liquid crystal stack;

a backlight assembly behind the liquid crystal stack and comprising:

a printed circuit board (PCB) having front and back sides;

a plurality of LEDs mounted on the front side of the PCB;

a posterior surface on the rear side of the PCB;

a ***constricted convection plate*** placed behind and substantially parallel with the posterior surface of the PCB; and

a fan positioned to draw air between the constricted convection plate and the posterior surface.

5. The LCD from claim 4 further comprising:

at least one bracket which connects the posterior surface with the constricted convection plate.

* * *

7. The LCD from claim 4 further comprising:

a housing which contains the liquid crystal stack, backlight assembly, ***constricted convection plate***, and fan; and

an entrance aperture within the housing which permits external ambient air to enter the housing and flow ***between*** the ***constricted convection plate*** and the posterior surface of the PCB.

8. The LCD from claim 4 further comprising:

a plurality of access apertures on the ***constricted convection plate***.

9. A system for cooling an electronic display comprising:

an electronic display comprising a front display surface and a posterior surface where no electronics are mounted to the ***posterior surface of the electronic display***;

a ***constricted convection plate*** behind the posterior surface of the display covering a majority of the ***posterior display surface***; and

a means for forcing air ***between*** the ***constricted convection plate*** and the ***posterior surface of the electronic display***.

* * *

12. The cooling system from claim 9 further comprising:

a housing which contains the electronic display, ***constricted convection plate***, and means for forcing air; and

an entrance aperture within the housing which permits external ambient air to enter the housing and flow ***between*** the ***constricted convection plate*** and the posterior surface.

13. The cooling system from claim 12 wherein:

the means for forcing air between the ***constricted convection plate*** and the ***posterior surface of the electronic display*** comprises a plurality of fans placed near the entrance aperture.

B. '287 Patent

The '287 patent is entitled "System for Using Constricted Convection with Closed Loop Cooling System as the Convection Plate," naming inventor William Dunn. '287 patent, cover.[4] The '287 patent issued an application filed on June 13, 2016, claiming priority to several earlier applications, with the earliest non-provisional application filed on September 19, 2008. *Id*. The '287 patent application is related to the '595 patent application based at least because they are both related through continuations in part to U.S. application 12/235,200 filed Sept. 22, 2008. *See* '595 patent, Cross-Reference to Related Applications; '287 patent, Cross-Reference to Related Applications; RIB at 2 ("the '287 patent . . . stems from an application filed as a continuation-in-part of the '595 patent").

The parties have identified disputed terms in claims 1, 2, 4-8, 11, 12, 17-19, 21, and 22 of the '287 patent as part of the *Markman* process. *See* Updated Joint Chart. Each of these claims is recited below with the disputed claim terms highlighted:

1. An electronic display assembly comprising:

an electronic display housing;

a gas-containing ***closed loop*** gas cooling chamber located within the electronic display housing;

an electronic display positioned within the electronic display housing but outside of the ***closed loop*** gas cooling chamber; and

an open loop ambient air pathway through the electronic display housing;

wherein the electronic display is coolable by a combination of gas circulation within the ***closed loop*** gas cooling chamber and ambient air

[4] The '287 patent is attached to the parties' claim construction briefs as JXM-003.

flow through the open loop ambient air pathway in the electronic display housing.

2. The electronic display assembly of claim 1 wherein:

the ***closed loop*** gas cooling chamber and the open loop ambient air pathway are positioned such that gas circulation within the ***closed loop*** gas cooling chamber will cool a front surface of the electronic display while the ambient air flow will cool a rear surface of the electronic display.

* * *

4. The electronic display assembly of claim 1 wherein:

the gas within the ***closed loop*** gas cooling chamber is isolated from the open loop of ambient air.

5. The electronic display assembly of claim 1 wherein:

the ***closed loop*** gas cooling chamber and the ambient air pathway are configured such that gas circulation within the gas cooling chamber will occur in a direction that is substantially perpendicular to the direction that ambient air will flow through the electronic display housing.

6. The electronic display assembly of claim 1 wherein:

the ***closed loop*** of gas cooling chamber forms a continuous loop and the open loop ambient air pathway passes through the loop.

7. The electronic display assembly of claim 1 wherein:

the ***closed loop*** gas cooling chamber is configured such that gas circulation therein will occur substantially horizontally, while the open loop ambient air pathway is configured such that ambient air flow through the electronic display housing will occur substantially vertically.

8. The electronic display assembly of claim 1 wherein:

the ***closed loop*** gas cooling chamber is partially defined by a sealed rear plenum that prevents ambient air from entering the plenum.

* * *

11. The electronic display assembly of claim 1 further comprising:

a gas-circulating fan for circulating the gas within the ***closed loop*** gas cooling chamber, and a fan for producing a flow of ambient air through the open loop ambient air pathway in the electronic display housing.

12. An electronic display assembly comprising:

a housing;

a liquid crystal display (LCD) positioned within the housing and having a backlight;

wherein the electronic display is coolable by a combination of a ***closed loop*** of isolated gas which circulates within the housing and an ***open loop of ambient air which passes through the housing and along the backlight***.

* * *

17. The electronic display assembly of claim 12 wherein:

the intended direction of ***closed loop*** isolated gas flow is substantially perpendicular to the intended direction of open loop of ambient air flow.

18. An electronic display assembly comprising:

a housing;

an electronic display positioned within the housing;

a rear cooling chamber positioned behind the electronic display and containing an electrical component which is electrically connected to the electronic display;

a front surface on the electronic display which faces an intended viewer and a rear surface on the electronic display which opposes the front surface;

wherein the front surface of the electronic display is coolable by a ***closed loop*** of isolated gas and the rear surface of the electronic display is coolable by an open loop of ambient air.

19. The electronic display assembly of claim 18 wherein:

the open loop of ambient air is prohibited from mixing with the ***closed loop*** of isolated gas when it passes through the housing.

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21. An electronic display assembly comprising:

an electronic display housing;

a ***closed loop*** of cooling gas adapted for circulation within the electronic display housing;

an open loop ambient air pathway through the electronic display housing; and

an electronic display positioned within the electronic display housing such that the electronic display is isolated from the ***closed loop*** of cooling gas but contactable by ambient air flowing through the open loop ambient air pathway;

wherein the electronic display is coolable by a combination of ***closed loop*** cooling gas circulation within the electronic display housing, and ambient air flow through the open loop ambient air pathway in the electronic display housing.

22. The electronic display assembly of claim 21 wherein:

the ***closed loop*** of cooling gas is isolated within a continuous loop gas cooling chamber, and the open loop ambient air pathway is configured to direct the ambient air over an exterior surface of the gas cooling chamber when it flows through the electronic display housing

C. ’740 Patent and ’142 Patent

The ’740 and ’142 patents are both entitled “Electronic Display with Cooling,” sharing a common specification and naming inventors William Dunn and Tim Hubbard. ’740 patent, cover; ’142 patent, cover.[5] The ’740 patent issued from U.S. Application No. 15/789,331, filed on October 20, 2017, and the ’142 patent issued from a continuation of that same application. *Id*. Both patents claim priority to several earlier applications, with the earliest non-provisional application filed on September 19, 2008. *Id*. The ‘740 and ‘142 patents stem from an application filed as a continuation-in-part of the ‘595 patent application. *See* ‘142 patent, Related U.S. Application Data; RIB at 1-2.

[5] The ’740 patent is attached to the parties’ claim construction briefs as JXM-004; and the ’142 patent is attached to the parties’ claim construction briefs as JXM-005.

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The parties have identified disputed terms in claims 1, 5, 6, 8, 15-17, and 20 of the '740 patent as part of the *Markman* process. *See* Updated Joint Chart. Each of these claims is recited below with the disputed claim terms highlighted:

> 1. An electronic display comprising:
>
> an electronic image assembly having a front portion and a rear portion;
>
> an open loop ambient air flow path behind the rear portion of the electronic image assembly;
>
> a ***closed loop*** gas circulation path about the electronic image assembly;
>
> a common heat exchanger located in the pathway of both the ***closed loop*** gas circulation path and the open loop ambient air flow path;
>
> a gas circulation device positioned to force circulating gas through the common heat exchanger; and
>
> an air circulation device positioned to force ambient air through the common heat exchanger.
>
> * * *
>
> 5. The electronic display of claim 1, further comprising:
>
> a front display surface spaced apart from the front portion of the electronic image assembly; and
>
> a front channel defined by the space between the front display surface and the front portion of the electronic image assembly, the front channel forming part of the ***closed loop*** gas circulation path.
>
> 6. The electronic display of claim 1, further comprising at least one electronic component located in the pathway of the ***closed loop*** gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices, wiring, wiring harnesses, lights, thermo-electric devices, and switches.
>
> * * *

8. An electronic display comprising:

an electronic image assembly having a front portion and a rear portion;

a ***closed loop*** gas circulation path encircling the electronic image assembly;

an open loop ambient air flow path behind the rear portion of the electronic image assembly;

a substantially planar surface located behind and spaced apart from the rear portion of the electronic image assembly, the space between the substantially planar surface and the rear portion of the electronic image assembly defining a rear channel;

a common heat exchanger in gaseous communication with both the closed loop gas circulation path and the open loop ambient air flow path;

at least one fan positioned to force circulating gas through the closed loop gas circulation path;

at least one fan positioned to force ambient air through the open loop ambient air flow path.

* * *

15. The electronic display of claim 8, further comprising:

a front display surface spaced apart from the front portion of the electronic image assembly; and

a front channel defined by a space between the front display surface and the front portion of the electronic image assembly, the front channel forming part of the ***closed loop*** gas circulation path.

16. The electronic display of claim 8, further comprising at least one electronic component located in the pathway of the ***closed loop*** gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices, wiring, wiring harnesses, lights, thermo-electric devices, and switches.

17. A cooling system for an electronic image assembly, comprising:

an open loop ambient air flow path at a rear portion of the electronic image assembly;

a ***closed loop*** gas circulation path encircling the electronic image assembly;

a common heat exchanger in gaseous communication with both the ***closed loop*** gas circulation path and the open loop ambient air flow path;

a front channel defined by a space between a front portion of the electronic image assembly and a front display surface located forward of and spaced apart from the front portion of the electronic image assembly, the front channel forming a part of the closed loop gas circulation path;

a rear channel defined by a space between the rear portion of the electronic image assembly and a substantially planar surface located behind and spaced apart from the rear portion of the electronic image assembly, the rear channel forming a part of the open loop ambient air flow path;

at least one fan positioned to force circulating gas through the ***closed loop*** gas circulation path and the common heat exchanger; and

at least one fan positioned to force ambient air through the open loop ambient air flow path and the common heat exchanger.

* * *

20. The cooling system of claim 17, further comprising at least one electronic component located in the pathway of the ***closed loop*** gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices, wiring, wiring harnesses, lights, thermo-electric devices, and switches.

The parties have identified disputed terms in claims 1, 3, 6, 12, and 15 of the '142 patent as part of the *Markman* process. *See* Updated Joint Chart. Each of these claims is recited below with the disputed claim terms highlighted:

1. A cooling system for an electronic image assembly, the cooling system comprising:

a housing for the electronic image assembly;

a cover panel forming a forward portion of the housing, wherein the cover panel is located forward of, and at least some distance from, the

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electronic image assembly and is configured to permit viewing of images displayed at the electronic image assembly through said cover panel;

a ***closed loop*** airflow pathway passing through the housing, wherein said ***closed loop*** airflow passes around said electronic image assembly and is configured to accommodate circulating gas, and wherein at least a portion of said closed loop airflow pathway extends between said electronic image assembly and said cover panel;

an open loop airflow pathway for ambient air passing through said housing and behind said electronic image assembly;

at least one air circulation device positioned to force the circulating gas through the ***closed loop*** airflow pathway when activated; and

at least one polarizer located at an inward facing surface of said cover panel and configured to prevent at least some sunlight striking said cover panel from traveling beyond said at least one polarizer.

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3. The cooling system of claim 1 further comprising:

a heat exchanger located rearward of the electronic image assembly, wherein a first portion of said heat exchanger forms part of said open loop airflow pathway, and wherein a second portion of said heat exchanger forms part of said ***closed loop*** airflow pathway.

***

6. A cooling system for an electronic image assembly, the cooling system comprising:

a housing for the electronic image assembly;

a transparent cover panel forming a front portion of the housing, the transparent cover panel located forward of, and at least some distance from, the electronic image assembly;

an open loop airflow pathway passing through the housing behind the electronic image assembly;

a ***closed loop*** gas circulation pathway contained within the housing, wherein a portion of said closed loop gas circulation pathway passes between said transparent cover panel and said electronic image assembly;

an inlet located at a first portion of said housing for ingesting ambient air into said open loop airflow pathway;

an exhaust located at a second portion of said housing for exhausting said ambient air from said open loop airflow pathway;

an air circulation device positioned along said open loop airflow pathway between said inlet and said exhaust, wherein said air circulation device is configured to force said ambient air through the open loop airflow pathway when activated;

a gas circulation device positioned along said ***closed loop*** gas circulation pathway to force circulating gas around the ***closed loop*** gas circulation pathway when activated;

a heat exchanger located rearward of the electronic image assembly, wherein a first portion of said heat exchanger forms part of said open loop airflow pathway, and wherein a second portion of said heat exchanger forms part of said closed loop gas circulation pathway; and

one or more solar energy reduction layers located at said transparent cover panel, wherein each of said one or more solar energy reduction layers is configured to prevent a portion of solar energy entering said transparent cover panel from thermally interacting with the circulating gas at said portion of said ***closed loop*** gas circulation pathway passing between said transparent cover panel and said electronic image assembly or thermally interacting with said electronic image assembly.

***

12. A method for cooling an electronic image assembly, said method comprising the steps of:

placing said the electronic image assembly within a housing;

forcing circulating air through a ***closed loop*** airflow pathway within said housing, wherein at least a portion of said ***closed loop*** airflow pathway extends between an electronic image assembly and a cover panel forming a front portion of said housing and spaced apart from said electronic image assembly, wherein said cover panel is configured to permit viewing of images displayed at the electronic image assembly through said cover panel;

forcing ambient air through a second airflow pathway within said housing, wherein said second airflow pathway extends behind said electronic image assembly; and

providing one or more solar energy reduction layers at an inward facing surface of said cover panel, wherein each of said one or more solar energy reduction layers is configured to reduce an amount of solar energy transferred to said circulating air in at least said portion of said ***closed loop*** airflow pathway.

***

15. The cooling method of claim 12 further comprising the steps of:

thermally transferring heat between said circulating air in said ***closed loop*** airflow pathway and said ambient air in said second airflow pathway at a heat exchanger common to said ***closed loop*** airflow pathway and said second airflow pathway.

IV. LEVEL OF ORDINARY SKILL IN THE ART

Complainant submits that no express definition for the level of ordinary skill in the art is necessary for the purpose of claim construction. CIB at 12. Complainant identifies the following qualifications for a person of ordinary skill in the art: "A bachelor's degree in a pertinent discipline, such as mechanical or electrical engineering, physics, applied physics, or a related field. Such a person would also have had 2-4 years of experience in working with electronic displays including thermal management associated with electronic displays. Alternatively, a POSITA would have had 4-6 years of experience in the field and would have developed a similar understanding of thermal management associated with electronic displays." *Id*. at 12-13, Exhibit 20 (Pokharna Decl.) at ¶¶ 20-24, Exhibit 23 (Credelle Decl.) at ¶¶ 31-33.[6]

Respondents' proposed qualifications for a person of ordinary skill in the art are: "a (1) Bachelor's degree in a pertinent discipline, such as mechanical engineering, physics, product design, or a related field and (2) have 2-4 years of experience in working with electronic displays and have an understanding of product design issues and failure modes associated with electronic displays." RIB at 4; *see* RXM-009 (Smith-Gillespie Decl.) at ¶¶ 26-28. Respondents propose,

[6] MRI proposed the same level of ordinary skill in the art in the *MRI v. Civiq* litigation. *See* RXM-011.014.

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alternatively, that "a POSITA would have had 5-7 years of experience in the field working with electronic displays and have a similar understanding of product design issues and failure modes associated with electronic displays," noting that "[t]o the extent necessary, a POSITA would have been able to collaborate with one or more other persons of skill in another art (e.g., one of skill in the art of electrical engineering) for one or more aspects with which the other person may have expertise, experience, and/or knowledge that was obtained through her own education, industrial or academic experience." RIB at 4; *see* RXM-009 (Smith-Gillespie Decl.) at ¶ 28.

The parties' proposals for the level of ordinary skill in the art are substantially similar,[7] and the parties have not identified any meaningful dispute regarding the level of ordinary skill in the art. Upon consideration of the parties' proposals, at this time the undersigned adopts Complainant's proposed level of ordinary skill in the art: A person of ordinary skill in the art would have had a bachelor's degree in a pertinent discipline, such as mechanical or electrical engineering, physics, applied physics, or a related field. Such a person would also have had 2-4 years of experience in working with electronic displays including thermal management associated with electronic displays. Alternatively, a POSITA would have had 4-6 years of experience in the field and would have developed a similar understanding of thermal management associated with electronic displays.

V. DISPUTED CONSTRUCTIONS

As reflected in the Updated Joint Chart, the parties dispute the construction of seven terms in the *Markman* process: "draw air," "between," "constricted convection plate," "constricted convection channel," "posterior display surface," "closed loop," and "along the backlight." Updated Joint Chart at 3-5.

[7] Respondents describe their proposal as "largely identical" to Complainant's. RIB at 4.

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A. The "draw air" terms ('595 patent and '322 patent)

Claim Language	Complainant	Respondents
'595 patent claim 1: "a fan positioned to draw air from outside of the housing through the constricted convection channel" '595 patent claim 4: "a fan placed to draw air through the constricted convection channel"	Plain and ordinary meaning	"a fan positioned to pull air [from outside the housing] through and out of the constricted convection channel"
'322 patent claim 1: "a fan placed to draw ambient air between the constricted convection plate and the rear posterior" '322 patent claim 4: "a fan positioned to draw air between the constricted convection plate and the posterior surface"	Plain and ordinary meaning	"a fan positioned to pull [ambient] air through and out of the space that separates the constricted convection plate and the [rear posterior/ posterior surface]"

In the '595 patent, Respondents propose to construe "a fan positioned to draw air [from outside of the housing] through the constricted convection channel" to mean a fan positioned to pull air [from outside the housing] through and out of the constricted convection channel; and in the '322 patent, Respondents propose to construe "a fan placed to draw [ambient] air between the constricted convection plate and the [rear posterior/posterior surface]" to mean a fan positioned to pull [ambient] air through and out of the space that separates the constricted convection plate and the [rear posterior/ posterior surface]. RIB at 5-13; RRB at 1-7. Respondents submit that the '595 and '322 patents describe "drawing" fans and "forcing" fans and that these refer to different embodiments of the alleged invention. *See* RIB at 6 ("the patentee understood 'drawing' fans to be distinct from 'forcing' fans and intentionally used those terms in different claims to refer to different embodiments of the alleged invention"); *see also* RIB at 6-11; RRB at

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2-3. Respondents identify examples of "drawing" fans in the specification that they state pull air from outside the housing and through and out of the constricted convection channel. RIB at 7-8; RRB at 3-4. Referencing Figure 5 of the specification, Respondents argue that a drawing fan cannot be located at the entrance of the constricted convection channel. RIB at 8-10. Respondents cite a recent Federal Circuit case addressing a claim construction argument regarding an airflow chamber and the placement of fans. *Id*. at 10-11. Respondents further cite extrinsic evidence, including a textbook, a dictionary, and expert testimony distinguishing between drawing fans and forcing fans. *Id*. at 11-13; RRB at 5-7. Respondents also dispute Complainant's interpretation of the prosecution history. RRB at 4-5. Respondents have submitted a declaration from their expert, Mr. Smith-Gillespie, who opines that usage in the art distinguishes between "drawing" fans and "blowing" fans, and states that fans "used to 'draw air' are typically referred to as 'drawing' or 'exhaust' fans" because they are "placed at the exit or exhaust." RXM-0009 at ¶ 39.

Complainant disputes Respondents' asserted distinction between "drawing" and "forcing" fans in the '595 and '322 patents. CIB at 13-20; CRB at 1-8. Complainant identifies several dependent claims in the '595 patent that use the terms "draw air" and "forcing air" in ways that it argues are not consistent with Respondents' arguments. CIB at 15-16; CRB at 4-5. Complainant argues that the specification of the '595 and '322 patents uses these terms broadly to describe many different fan placements. CIB at 16; CRB at 4. Complainant further cites the prosecution history of the '595 patent, arguing that the discussion of the "draw air" and "forcing air" claim limitations is consistent with a broad construction for these terms. CIB at 16-19. Complainant further cites prior art that it states shows a fan placed at the entrance of a housing and "draws air." CRB at 6-7. Complainant argues that there is no express disclaimer or

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independent lexicography to support Respondents' proposed constructions. *Id.* at 7-8. Complainant has submitted a declaration from its expert, Thomas Credelle. *See* CIB Ex. 23.

At the *Markman* hearing, Complainant argued that Respondents' constructions are inconsistent with the claims and specification of the '595 and '322 patents. Tr. at 9:8-22:12. Specifically, Complainant argued that Respondents' constructions would read certain disclosed embodiments out of the claim and that dependent claims of the '595 patent do not use the terms "drawing" and "forcing" in the restrictive way proposed by Respondents. *Id*. at 10:24-13:24, 18:21-20:2. Complainant further argued that the prosecution history supports a broad construction for these terms, with multiple embodiments in the specification identified as written description support for amendments invoking the "draw air" language. *Id*. at 13:25-17:17. Complainant identified prior art and dictionary definitions that use the term "draw" broadly. *Id*. at 17:18-18:4. Complainant further identified expert testimony that supports a broad reading of this term. *Id*. at 20:3-15. Complainant argued that the word "draw" is not synonymous with "pull" and that drawing is a type of forcing. *Id*. at 20:24-22:12. Complainant identified disclosures in the specification and argued that they are inconsistent with Respondents' proposed construction. *Id*. at 40:13-42:15.

Respondents argued that "draw" and "force" have different meanings in the specification. Tr. at 25:3-35:22. Respondents argued that the ordinary meaning of "draw" is consistent with pulling. *Id*. at 25:17-26:3. Respondents identified statements in the patent specification that they state use the term "draw" to mean "pull" and the term "force" to mean "push." *Id*. at 26:4-30:4. Respondents argued that Complainant's claim differentiation arguments do not preclude a construction of "draw" to mean "pull." *Id*. at 30:9-31:17. Respondents argued that there are no explicit arguments in the prosecution history regarding a distinction between drawing air and

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forcing air. *Id*. at 31:18-32:10. Respondents pointed to the extrinsic evidence, including the declaration of their expert, Mr. Smith-Gillespie, regarding the distinction between drawing fans and blowing fans. *Id*. at 32:11-34:12. Respondents explained their position that a drawing fan could not be positioned at the entrance of the constricted convection channel because it would only pull air from outside of the channel while the claims require drawing air through the channel. *Id*. at 35:23-37:12.

Upon consideration of the parties' arguments, the "draw air" terms shall be construed to have their plain and ordinary meaning, which is not limited to "pull[ing]" air "through and out of" the constricted convection channel or "through and out of" a "space that separates," as required in Respondents' proposed constructions.

First, a requirement that any "drawing" fan must "pull air through and out of" the convection channel appears inconsistent with Respondents' arguments. Respondents argue that a fan "draws" air when the fan pulls air towards it, and "forces" air when it pushes air away from it. *See* RIB at 6 (equating "draw" with "pull" and "force" with "push"). According to Respondents, a forcing fan cannot be located at the exit of the convection channel, and a drawing fan cannot be at the entrance. *See id.* at 8; RRB at 2. Respondents also argue that a fan inside a channel can be both a drawing and forcing fan. *See* RIB at 6-7. Such intermediate fans, according to Respondents, can pull air "through" the channel as well as push air out through a portion of the channel. *See id.* ("A fan placed inside a 'constricted convection channel' can both draw air (by pulling it from outside the entrance and pulling it through the channel) and force air (by pushing it through the remainder of the channel)."). Respondents' counsel similarly stated at the *Markman* hearing that a fan in the middle of a channel would draw air through the channel, but not "out of the channel." *See* Tr. (Resp. counsel) at 37:14-23 (a fan in the middle of a

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channel is "drawing air through the channel but not out of the channel"); *see also id.* at 30:21-24 (fan "spaced from the exit" could "push air from the fan toward the exit"). Thus, Respondents do not show that a drawing fan—which Respondents acknowledge need not be located at the exit—must "pull" air "through and out of" the channel. *See* RIB at 6-7 (fan can be both a drawing and a forcing fan); Tr. (Resp. counsel) at 37:8-12 (arguing that "through" means more than "through and into" the channel and requires "through and out").[8]

The record also fails to show that a fan at the entrance of the convection channel cannot "draw" air. For example, the specification uses the term "draw" in reference to bringing air into the channel, and indicates that drawing and forcing are not mutually exclusive. *See* '595 patent at 5:65-67 ("ambient air from the surroundings may be drawn in and forced within the constricted convection channel 50."). This is consistent with the prosecution history, where applicant characterized the "draw air from outside of the housing through the constricted convection channel" limitation as requiring "ingest[ion] into the channel. *See* CIB Ex. 14 ('595

[8] Respondents submitted an expert declaration which, contrary to Respondents' brief, suggested that "drawing" fans are necessarily located at an exit while "forcing" fans are located at the entrance. *See* RXM-009 at ¶ 39 ("Fans that are used to 'draw air' are typically referred to as 'drawing' or exhaust' fans. This is because the fan is placed at the exit or exhaust."); *id.* ("Fans that are used to 'blow air' are commonly referred to as 'forcing' fans. This is because the fan is placed at the entrance or inlet."); CRB at 6; Tr. (Compl. counsel) at 19:6-12. To the extent Respondents argue that a "drawing" fan requires a fan located at (or near) an exit, this would conflict with principles of claim differentiation. Claim 4 requires a fan positioned to "draw air through the constricted convection channel" while claim 7 states that the fan "is placed near the exit of the constricted convection channel." The addition of a "near the exit" limitation in claim 7 weighs against a construction of "draw air" that requires the fan to be at (and/or near) the exit. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) ("[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim."). Moreover, this implicates "the doctrine of claim differentiation . . . at its strongest," because "the limitation that is sought to be 'read into' an independent claim already appears in a dependent claim." *Liebel–Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004). To the extent Respondents argue that a fan "at" the exit is not also "near" the exit, this would render Claim 7 impossible to practice if drawing fans are necessarily at an exit, weighing against such an interpretation. Claim 16, which depends from claim 9 (and includes "forcing" air language), claims a plurality of fans "placed near the exit of the constricted convection channel," which also conflicts with Respondents' expert's position that forcing fans are located at the entrance.

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file history) at MRI-ITC-1331_0000002229-33 (Sept. 19, 2013 Response After Non-Final Office Action) (arguing that prior art failed to meet requirement "draw air from outside of the housing through the constricted convection channel" because in the prior art reference, "[a]ir which is outside of the housing 12 is never ingested into the constricted convection channel as required by the claim"); CIB at 17-18; CRB at 2 n.1. Complainant's expert similarly opined that a fan at the entrance of the channel could bring ambient air into the channel. *See* CIB Ex. 23 at ¶ 39.

Respondents point to portions of the specification that describe "drawing" and "forcing" and argue that this language precludes a drawing fan at the entrance. In particular, Respondents have identified embodiments in the specification that they argue associate the term "force" with pushing air from the entrance of the constricted convection channel and the term "draw" with pulling air from the exit of the constricted convection channel. RIB at 7-10; Tr. at 26:12-30:8. For example, when describing Figures 5B and 5C, the specification states: "In FIG. 5B, one or more fans 52 are used to draw ambient air between the posterior display surface 22 and the constricted convection plate 30. In Fig. 5C, one or more fans 52 are used to force ambient air between the posterior display surface 22 and the constricted convection plate 30." '595 patent at 6:2-7.[9]

[9] The '322 patent specification is identical to the '595 patent specification.

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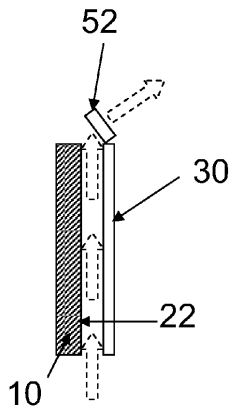


Fig. 5B

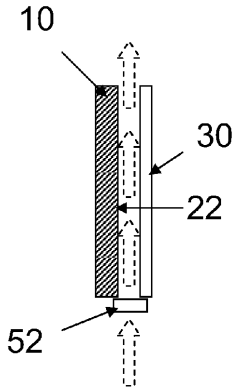


Fig. 5C

Id. at Fig. 5B, Fig. 5C; *see also id*. at 5:45-58 ("The fans 52 may either force the air through the constricted convection channel 50 or pull the air through the constricted convection channel 50."), 7:38:50 ("The fan 52 may be associated with the exit opening 64 and may draw air from the constricted convection channel 50. In other embodiments, the fan 52 may be associated with the entrance opening 62 and may force air into the constricted convection channel 50."); RIB at 7-10.

Considered in view of the intrinsic evidence as a whole, however, these embodiments do not support Respondents' strict location-based distinction between "forcing" and "drawing" fans. In addition to the evidence already discussed above, both claim 7 and claim 16 describe fans "placed near the exit of the constricted convection channel," but claim 7 depends from claim 4, describing *inter alia* "a fan positioned to ***draw*** air through the constricted convection channel," and claim 16 depends from claim 9, describing *inter alia* "means for ***forcing air*** through the constricted convection channel." *See* '595 patent at claims 4, 7, 9, 16. Accordingly, the claims of the '595 patent suggest that a fan near the exit of the constricted convection channel could be a "drawing fan" and/or a "forcing" fan. The specification also describes "a means for forcing air

and increasing the speed at which the air travels" that it suggests "may be in association with either the entrance opening 62 or the exit opening 64." '595 patent at 6:60-65.[10]

Other portions of the prosecution history for the '595 patent are also inconsistent with Respondents' approach. *See* CIB at 16-19; Tr. at 12:23-13:10, 16:4-17:8. In a Request for Pre-Appeal Brief Conference submitted on June 5, 2012, the applicant provided no hard distinction between "draw" and "force." CIB Exhibit 14 at MRI-ITC-1331_0000002161 (Request for Pre-Appeal Brief Conference (Jun. 5, 2012)). When referring to "[e]ach independent claim" (including both "draw air" and "means for forcing air" claims), the patentee stated: "Air is forced between the posterior display surface or backlight and the constricted convection plate in order to cool the display." *Id*. When describing claim 9, which recites "a means for forcing air," the patentee stated: "Claim 9 is directed to the constricted convection system where air is drawn through the convection channel." *Id*. at MRI-ITC-1331_0000002162 (Request for Pre-Appeal Brief Conference at 2); *id.* at 2145 (claim 9). When amending claim 1 to add the limitation "from outside of the housing" to the "fan placed to draw air" limitation, the applicant cited support in Figures 5D-5F, including Figure 5E, which depicts an air conditioning unit at the entrance to the constricted convection channel "to force the cooled air between the posterior display surface 22 and the constricted convection plate 30." *Id*. at MRI-ITC-1331_0000002233 (Response after Non-Final Office Action at 6 (Sept. 19, 2013)); '595 patent at 6:9-12, Fig. 5E;

[10] Moreover, Respondents rely on certain passages whose language clearly differs from that in the claims. For example, col. 5:45-58 of the patent describes "forc[ing] the air through" and "***pull[ing]*** the air through," and does not use the word "draw." Col. 7:38-50 describes "draw[ing] air ***from the constricted convection channel***" not the '595 patent disputed claimed terms "draw air ***from outside the housing through the constricted convection channel***" or "draw air ***through the constricted convection channel***."

see Tr. (Compl. counsel) at 16:11-19. The prosecution history is thus inconsistent with Respondents' hard distinction between "drawing" and "forcing."[11]

Finally, the record does not show that the contextual language of the disputed terms requires Respondents' proposed construction. Claims 1 and 4 of the '595 patent require that a fan "draw air from outside of the housing through the constricted convection channel" ('595 patent claim 1) or "draw air through the constricted convection channel" ('595 patent, claim 4). Even to the extent a "drawing" fan requires some element of "pulling" movement towards the fan, Respondents do not appear to dispute that a fan at the entrance of the channel could pull air from outside the channel (*e.g.*, from outside the housing). *See* Tr. at 36:2-19; *see also* CIB Ex. 23 at ¶ 39. Claims 1 and 4 of the '322 patent require a fan to "draw ambient air between the constricted convection plate and the rear posterior" ('322 patent, claim 1) and "draw air between the constricted convection plate and the posterior surface" ('322 patent, claim 4). The plain and ordinary meaning of "between" does not correspond to a "through and out of the space that separates" requirement.[12]

[11] Respondents' hard distinction between "drawing" and "forcing" is similarly inconsistent with the specification of the '142 patent, which is related as a continuation-in-part of the '595 patent application. *See* '142 patent, "Related U.S. Application Data"; RIB at 1-2 ("The '740 and '142 patents stem from an application filed as a continuation-in-part of the '595 patent."). The '142 patent states that "[b]ecause the various fan assemblies described herein can be placed in multiple orientations, when referring to the placement of the various fan assemblies, the terms 'push,' 'pull,' 'force,' and 'draw' will be used interchangeably." '142 patent at 3:44-49. Respondents support construing terms consistently across the '595 and '142 patents. *See* RIB at 34-35 (arguing that "closed loop" terms in the '595 and '142 patents should be construed consistently).

[12] This is true regardless of whether Respondents' proposed construction of "between" as "in the space that separates" is adopted. *See* Part V.B. *infra*. Substituting Respondents' proposed construction into the claim language produces "draw ambient air in the space that separates the constricted convection plate and the rear posterior" for claim 1 of the '322 patent, not Respondents' proposed "draw ambient air through and out of the space that separates the constricted convection plate and the rear posterior."

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Thus, while the specification in several locations contrasts the terms "draw" and "force," the intrinsic evidence read as a whole does not support the hard distinction between drawing and forcing fans advocated by Respondents, nor establish that a fan placed at the entrance of the channel cannot be a "drawing" fan.[13]

The extrinsic evidence cited by Respondents does not overcome the intrinsic evidence discussed above. Although Respondents rely on dictionary definitions of "draw" to mean "pull," these definitions encompass broader meanings and do not require Respondents' "through and out of" construction. *See, e.g*., RXM-005 (Webster's Collegiate Dictionary (2007) at RESPONDENTS004541 ("to cause to go in a certain direction (as by leading)," "to bring in or gather from a specified group or area"); CRB at 2-3.[14] Mr. Smith-Gillespie's discussion of Steinberg is evidence for a distinction between exhaust fans and blowing fans, but the "drawing" and "blowing" terminology discussed is not compelling evidence supporting Respondents' proposed constructions, particularly in view of the intrinsic record. *See* RXM-009.013-014; RXM-001.179-180, RESPONDENTS001642-43.[15]

Accordingly, the "draw air" terms shall be construed to have their plain and ordinary meaning, which does not require a fan positioned to pull air through and out of the constricted convection channel or through and out of the space that separates the constricted convection plate and the [rear posterior/ posterior surface].

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[13] Surrounding claim language could potentially limit the scope of a "drawing" fan, however. For example, a fan required to draw air "from the constricted convection channel" may indicate that the fan is not at the entrance. *See* Tr. (Compl. counsel) at 41:20-24.

[14] Respondents cite the Federal Circuit's decision in *Tippman Engineering, LLC v. Innovative Refrigeration Systems, Inc.*, but the specification of the patent at issue in that case included consistent disclosures regarding negative-pressure systems that the Federal Circuit found to support a disavowal of positive-pressure systems. 2023 WL 18559, at *4 (Fed. Cir. Jan. 3, 2023). Respondents have not identified such consistent disclosures in the '595 and '322 patents.

[15] As discussed above, Mr. Smith-Gillespie's statements about the locations of drawing and forcing fans conflict with claim differentiation principles. *See* n.8 *supra*.

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B. "between" ('322 patent)

Claim Language	Complainant	Respondents
'322 patent claim 1: "draw ambient air ***between*** the constricted convection plate and the rear posterior" '322 patent claim 4: "draw air ***between*** the constricted convection plate and the posterior surface" '322 patent claim 9: "forcing air ***between*** the constricted convection plate and the posterior surface"	Plain and ordinary meaning	"in the space that separates"

Complainant proposes to construe the term "between" to have its plain and ordinary meaning, because this is a non-technical and commonly understood preposition that needs no special construction. CIB at 20-23; CRB at 9-10. Respondents propose to construe "between" to mean "in the space that separates," which was the claim construction proposed by Complainant and adopted in the *MRI v. Civiq* litigation. RIB at 13. Respondents argue that this meaning is consistent with the claims, which "all require air flow 'between' the constricted convection plate and another surface." *Id.* Respondents submit that this construction is consistent with the plain and ordinary meaning of the word "between" and the use of this term in the '322 patent. *Id*. at 13-15; RRB at 7-9.

At the *Markman* hearing, Respondents argued that an explicit construction of "between" is necessary to avoid "ambiguity" in the meaning of this term. Tr. at 45:15-50:8. Complainant argued that the prior construction in District Court is not binding and that both parties agree that "between" is used in the '322 patent in accordance with its plain and ordinary meaning. Tr. at 50:10-53:23. Neither Complainant's counsel nor Respondents' counsel could clearly identify

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any substantive difference between Respondents' proposed construction and the plain and ordinary meaning of "between." *Id*. at 49:16-50:8, 53:25-54:15.

The parties have identified no clear substantive dispute regarding the meaning of this term, and "between" is a commonly understood word that appears to be used in the claims in accordance with its plain and ordinary meaning. Accordingly, at this time no construction is necessary for the term "between."[16]

C. "constricted convection plate"/"constricted convection channel" ('595 patent and '322 patent)

Claim Language	Complainant	Respondents
'595 patent claims 1, 4, 8, 9; '322 patent claims 1, 3, 4, 5, 7, 8, 9, 12, 13: "constricted convection plate"	"a flat structure, distinct from [the/any] housing, located to form a narrowed air flow path, thereby directing airflow to remove heat from the [posterior display surface/posterior surface]"	No construction necessary, or in the alternative, plain and ordinary meaning, which is "a plate that is configured to constrict airflow to remove heat from the [posterior display surface/posterior surface]"
'595 patent claims 1, 4, 7, 9, 16: "constricted convection channel"	"a narrowed air flow path formed by a flat structure, distinct from [the/any] housing, through which air may flow to remove heat from the [posterior display surface/posterior surface]"	"constricted channel through which air may flow to remove heat from the [posterior display surface/posterior surface]"

[16] In the District Court, the defendants had proposed to construe "between" to mean "into contact with," based on an argument that the patentee had acted as its own lexicographer. *See* CIB, Exhibit 8 at 9-10. The court rejected this argument and adopted plaintiff's proposed construction of "in the space that separates," which plaintiff offered as an alternative in addition to its "no construction needed" position. *Id*. There is no such dispute between the parties in the present investigation, who appear to agree that the term should have its plain and ordinary meaning.

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Complainant proposes to construe "constricted convection plate" to mean a flat structure, distinct from [the/any] housing, located to form a narrowed air flow path, thereby directing airflow to remove heat from the posterior [display] surface. CIB at 24-28; CRB at 10-15.[17] Complainant proposes to construe "constricted convection channel" to mean a narrowed air flow path formed by a flat structure, distinct from the housing, through which air may flow to remove heat from the posterior [display] surface. CIB at 28-31; CRB at 15-18. Complainant argues that this term has no ordinary and customary meaning and should be construed in accordance with the specification of the '595 and '322 patents. CIB at 24-26. Complainant argues that the preambles of claim 1 of the '595 patent and claim 1 of the '322 patent refer to a "housing," and the "constricted convection plate" is a separate claim element that should be construed to be a distinct structure. *Id*. at 25-26; CRB at 12. Complainant states the claims at issue in the '595 and '322 patents, "recite a 'constricted convection plate' which is placed behind the posterior surface of the display." CIB at 24. Complainant cites a provisional application that first described the "constricted convection plate" forming a "constricted convection channel." CIB at 26-27 (citing Exhibit 7 ('454 provisional application) at [0032]). Complainant specifically identifies a statement in the provisional application where "constrictive convection channel 50 directs the air into contact with the display posterior 22 increasing heat transfer from the display," and "the narrowing of the air flow path by the constrictive convection channel." *Id*. (quoting Exhibit 7 ('454 provisional application) at [0032]). Complainant cites a dictionary definition of "constricted" meaning "drawn together, "narrowed," or "contracted." *Id*., Exhibit 25. Complainant contends that the statements in the provisional application explain the meaning of "constricted convection" in the context of the asserted patents. CRB at 13-14. Complainant

[17] With respect to claims that do not recite a housing, Complainant's proposed construction refers to a structure distinct from "any housing." CRB at 13 n.4; Updated Joint Chart at 4 n.2.

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argues that the same provisional application statements describe a "constricted convection channel," and that term should be construed similarly. CIB at 30-31; CRB at 17.

Respondents argue that no construction is necessary for "constricted convection plate" because this term is used consistent with its plain and ordinary meaning. RIB at 15-20. Respondents submit that in the claims of the '595 and '322 patents, the term "constricted convection plate" describes "a surface placed behind the posterior display surface and used to facilitate an airflow pathway therebetween or to form a 'constricted convection channel.'" *Id*. at 16-17. Respondents argue that Complainant's proposed construction imports limitations into the claims that are superfluous and unsupported by the specification. *Id*. at 19-20. Respondents argue that several claims of the '595 and '322 patents do not require a housing. *Id*. at 19; RRB at 12. Respondents cite a statement from the specification of the '595 patent describing an external housing as optional. *Id*. at 12-13 (citing '595 patent at 2:45-46). Respondents further argue that there is no requirement that the "constricted convection plate" be physically distinct from any housing. *Id*. at 13; RIB at 19. Respondents argue that a limitation requiring "proximity to the posterior display surface" is superfluous, because this is already a limitation of the claims. *Id.* at 19-20. Respondents argue that a construction that requires directing airflow improperly imports a method limitation into the claim and would render it indefinite. *Id*. at 20; RRB at 14. With respect to the "narrowed air flow path" described in a provisional application, Respondents argue that the statements in the provisional patent do not describe the "constricted convection plate," and these statements were not included in the specification of the '595 and '322 patents. RRB at 13-14. Respondents also argue that this language introduces functional language, a method step, and ambiguity into the claims, and that the court in *MRI v. Civiq* rejected the term "narrow" as imprecise. RIB at 20.

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Respondents propose to construe "constricted convection channel" to mean a constricted channel through which air may flow to remove heat from the posterior [display] surface, consistent with the District Court's construction in *MRI v. Lyriq*. RIB at 20-25; RRB at 14-15. Respondents argue that it is improper to import additional limitations into this term for the same reasons as "constricted convection plate," and further argue that Complainant's proposed constructions for these two terms are duplicative. RIB at 17-19; RRB at 11, 15-16.

At the *Markman* hearing, Complainant addressed the construction of "constriction convection plate" together with "constricted convection channel." Tr. at 54:22-66:21. Complainant emphasized that these "constricted convection" terms were coined by the patentee to describe the claimed invention. Tr. at 55:8-56:5. Complainant identified examples of the "constricted convection plate" in the patent specification. *Id*. at 58:13-59:6. Complainant argues that because the preambles of claim 1 of the '595 patent and the '322 patent are limiting and recite a "housing," the "constricted convection plate" must be distinct from the housing. *Id*. at 59:7-60:15. Complainant argues that the term should have the same meaning in other claims for consistency. *Id*. at 60:20-24. Complainant argues that the '454 provisional application was incorporated by reference in the '595 patent and '322 patent and should thus be considered part of the specification. *Id*. at 60:25-61:22. Complainant argues that the meaning of "constricted" as "narrowed" is consistent with the provisional application and with a dictionary definition. *Id*. at 61:23-62:7. Complainant argues that the *Markman* order *MRI v. Civiq* failed to construe the term "constricted." *Id*. at 62:16-63:10. Complainant acknowledged that the constructions for "constricted convection plate" and "constricted convection channel" include overlapping limitations and explained that these were proposed for consistency, not to add requirements into the claims. *Id*. at 63:11-66:20. Complainant further argued that the claimed invention, as

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described in the specification, relies on a constricted or narrowed channel, in contrast to the conventional approach of circulating as much air as possible. *Id*. at 80:4-16.

Respondents argued that only the term "convection" requires construction, because the constricted channel is defined by the claim language in the '595 patent. Tr. at 67:9-68:12. Respondents argued that there is no dispute that the specification explains the cooling function of the convection channel, and this was reflected in the construction of "constricted convection channel" in the *MRI v. Civiq* litigation. *Id*. at 68:13-69:12. Respondents proposed an alternative construction for "constricted convection plate," again relying on the construction of "convection" from the *MRI v. Civiq* litigation that is not disputed by the parties. *Id*. at 69:13-70:13. Respondents argued that the structure of the "constricted convection plate" is defined by the claim language and the specification. *Id*. at 70:14-71:8. Respondents argued that the "constricted convection plate" should not be construed to be distinct from a housing when some asserted claims do not recite a housing. *Id*. at 71:22-73:3. Respondents further argue that the claims and specification do not require physical distinctness and do not preclude the "constricted convection plate" from being part of or connected to a housing. *Id*. at 73:4-75:5. Respondents argue that the "narrowed" language from the '454 provisional application must be considered in the context of the '595 and '322 patent specifications, which removed the relevant language. *Id*. at 75:6-77:4. Respondents argue that Complainant's proposed constructions for "constricted convection channel" and "constricted convection plate" are duplicative. *Id*. at 77:5-78:3.

Upon consideration of the parties' arguments, "constricted convection channel" shall be construed to mean a constricted channel through which air may flow to remove heat from the [posterior display surface/posterior surface]. The term "constricted convection plate" shall be construed to mean a plate configured to form part of a constricted convection channel.

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The parties have not set forth any clear substantive disagreement regarding the meaning of the term "constricted." Complainant states that its concern is to make sure that the term "constricted" is not read out of the claim and proposes to use the word "narrowed" that Complainant states is consistent with the plain and ordinary meaning. *See* Tr. (Compl.) at 63:3-7, 79:3-7; CIB at 31. Under the construction adopted here (which retains the word "constricted"), the word "constricted" is not read out of the claim. Any disputes about the meaning of "constricted," and the extent or manner in which it requires a narrowed air flow path, will be addressed if a clear substantive dispute arises.[18]

There also does not appear to be any substantive dispute between the parties regarding the meaning of the word "channel," although Complainant's proposed construction omits the word "channel" and refers to an "air flow path." At least at this time, this rewording appears to be unnecessary, as the term "channel" appears to be used in the claims in accordance with its plain and ordinary meaning. With respect to the term "convection, the parties have agreed that this refers to removing heat from the posterior display surface, as construed by the District Court in the *MRI v. Civiq* litigation. *See* Tr. (Resp. counsel) at 69:6-70:3. Accordingly, a "constricted convection channel" is a constricted channel through which air may flow to remove heat from the [posterior display surface/posterior surface].[19] [20]

[18] While Respondents oppose construing "constricted" to require a narrowed channel, it is unclear what Respondents contend is an alternative to this meaning.

[19] MRI's added language indicating that a constricted convection channel is "formed by a flat structure, distinct from the housing"—*i.e.*, specifying that a constricted convection channel is formed by a constricted convection plate (as the term is understood by MRI)—is unnecessary. As discussed below, the adopted construction of "constricted convection plate" indicates that it is used to form a constricted convection channel, and all claims at issue including the term "constricted convection channel" also include the term "constricted convection plate" as well as claim language providing a structural relationship between the constricted convectional channel and constricted convection plate. *See* '595 patent, claims 1, 4, 9; Tr. (Resp. counsel) at 67:24-68:9.

[20] MRI agreed to this construction in the *MRI v. Civiq* litigation. *See* Tr. (Resp. counsel) at 69:6-11; RXM-0015.003, 33:1-5, 34:4-5; CIB Ex. 8 at 10-11.

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With respect to "constricted convection plate," the undersigned agrees with Complainant that construction is appropriate, because there is no evidence that this phrase is a term of art, *see* CIB at 24-25. The undersigned agrees with Respondents, however, that Complainant's proposed construction for "constricted convection plate" is unnecessarily duplicative of the construction for "constricted convection channel." *See* RIB at 17-19; *see also* Tr. (Compl. counsel) at 64:23-66:19. It appears undisputed that the "constricted convection plate" is used to form a constricted convection channel that removes heat from the posterior display surface/posterior surface, and this is reflected in the specification. *See* '595 patent at 5:37-39 ("The constricted convection plate 30 and the display posterior 22 define a constricted convection cooling channel 50 immediately behind the display posterior."); RIB at 17 ("the 'constricted convection plate' is described in the shared specification of the '595 and '322 patents as defining a part of the 'constricted convection channel.'"); Tr. (Resp. counsel) at 69:20-70:3 (constructions for "constricted convection channel" and "constricted convection plate" are parallel); Tr. (Compl. counsel) at 58:9-10 ("[t]he plate serves to form the constricted convection channel"); *id.* at 64:5-7 ("the plate defines the channel, the channel is defined by the plate"); *id.* at 66:15-19 (constructions were provided "to reflect the consistency in which those terms are used"). Accordingly, rather than repeating the construction of "constricted convection channel" in the construction of "constricted convection plate," the term "constricted convection plate" is construed in reference to "constricted convection channel"—*i.e.*, the "constricted convection plate" is a plate configured to form part of a constricted convection channel.[21]

[21] The claims themselves include additional positional requirements for the constricted convection plate, *e.g.*, that it is "posterior to the posterior display surface," or is "placed behind the posterior surface of the [printed circuit board]." *See* '595 patent, claims 1, 4, 9; '322 patent, claims 1, 4, 9.

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The intrinsic record does not support Complainant's proposal to construe the "constricted convection plate" to be a flat structure distinct from the housing. In the briefing and at the *Markman* hearing, Complainant did not persuasively explain why term "plate" should be construed to mean a "flat structure." The preferred embodiment of the constricted convection plate in the specification appears to be depicted as a flat structure, *see, e.g.,* '595 patent at Fig. 3, but Complainant has pointed to no statements in the patent explicitly describing the plate as flat, and no party has argued that the claims should exclude plates that may be curved or slanted or textured—it is unclear from the present record why the word "plate" should be replaced with "flat structure."

With respect to Complainant's argument that the constricted convection plate be distinct from any housing, the undersigned agrees with Respondents that the claim language does not require these features to be physically separate and distinct. *See* Tr. (Resp. counsel) at 74:8-75:5.[22] A "housing" is recited in the preambles of claim 1 of the '595 patent and claim 1 of the '322 patent. '595 patent claim 1, '322 patent claim 1. Complainant relies on the distinct recitation of these elements in the claims to argue that the "housing" must be distinct from the "constricted convection plate," citing *Becton, Dickinson and Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (*"Becton*"). CIB at 25-26. The Federal Circuit has rejected Complainant's strict reading of this precedent, however. In *Powell v. Home Depot U.S.A., Inc.*, the Federal Circuit distinguished *Becton*, finding that the rear portion of a structure meeting a "cutting box" limitation could meet a separate "dust collection structure" limitation where the patent specification "does not suggest that the claim terms require separate structures." 663 F.3d 1221, 1232 (Fed. Cir. 2011). In the *MRI v. Civiq* litigation, the District Court also

[22] Complainants argue, for example, that the claimed constricted convection plate cannot correspond to a part of the housing. Tr. (Compl. counsel) at 80:1-3, 80:23-24.

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distinguished *Becton* in a summary judgment order, recognizing that the Federal Circuit in *Becton* relied on claim language describing "a spring means connected to said hinged arm," which "clearly indicat[ed] that a 'spring means' and 'hinged arm' are separate elements in the invention from one another." 397 F.Supp.3d 560, 570 (D. Del. Aug. 28, 2019). When construing terms in the '325 patent asserted in that litigation, the District Court found that two claimed elements did not need to be distinct in the accused product where "the claim language does not define the relationship between the open loop fan and the circulating fan assembly limitations." *Id*.[23]

Here, the claims of the '595 and '322 patents do not define a particular relationship between any "housing" and the "constricted convection plate." *See* '595 patent, claim 1; '322 patent, claim 1. The specification shows an embodiment of a "constricted convection plate" that is separate from the "housing, but MRI has identified no explicit statements describing these elements as physically distinct. *See* '595 patent at 6:14-19, Fig. 6. Where the claim language and specification do not indicate that claim limitations must be separate and distinct structures, the Federal Circuit has upheld claim constructions allowing overlap between claimed structures. *See Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221, 1232 (Fed. Cir. 2011) (rejecting argument that "cutting box" and "dust collection structure" be wholly separate structures); *see also Linear Tech. Corp. v. Int'l Trade Comm'n*, 566 F.3d 1049, 1055 (Fed. Cir. 2009) (agreeing with Commission's construction of "second circuit" and "third circuit" to not require entirely separate and distinct circuits); *Applied Med. Resources Corp. v. U.S. Surgical Corp*., 448 F.3d 1324, 1333 n.3 (Fed. Cir. 2006) ("the use of two terms in a claim requires that they connote

[23] Complainant also cites *Engel Industries, Inc. v. Lockformer Co.*, but that case is also similar to *Becton*. 96 F.3d 1398, 1404-05 (Fed.Cir.1996). In that case, the Federal Circuit construed "return portion" and "second portion" to be separate structures where the specification indicated that the return portion is "also provided" (in addition to the "second portion"), and the specification described the second portion as "bent rearwardly" whereas the return portion "is clearly bent forwardly." *Id*.

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different *meanings*, not that they necessarily refer to two different *structures*") (emphasis in original).

Accordingly, "constricted convection channel" shall be construed to mean a constricted channel through which air may flow to remove heat from the [posterior display surface/posterior surface]. The term "constricted convection plate" shall be construed to mean a plate configured to form part of a constricted convection channel.

D. "posterior display surface" ('595 patent and '322 patent)

Claim Language	Complainant	Respondents
'595 patent claim 1; '322 patent claim 1-3: "posterior display surface" '322 patent claim 9: "posterior surface of the electronic display"	Plain and ordinary meaning	"rear-facing surface of the display assembly"

Complainant proposes to construe the terms "posterior display surface" and "posterior surface of the electronic display" to have their plain and ordinary meanings, because the meaning of these terms is "readily apparent" from the claim language. CIB at 32-33. Complainants argue that the construction proposed by Respondents provides "no additional clarity" to these terms. CRB at 19. Respondents propose to construe these terms to mean "rear-facing surface of the display assembly," which was the construction adopted for these terms in the *MRI v. Civiq* litigation. RIB at 25. Respondents argue that this construction is consistent with the "posterior display surface" described in the specification. *Id*. at 25-27. Respondents identify other claims describing a "posterior surface on the rear side of the PCB" that is distinct from the "posterior display surface" and "posterior surface of the electronic display." *Id*. at 27-28. Respondents submit that their proposed construction is similar to the construction originally proposed by

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Complainant in the *MRI v. Civiq* litigation and that Complainant agreed to the construction adopted by the District Court. *Id*. at 28; RRB at 16.

At the *Markman* hearing, Respondents argued that these terms need to be construed to clarify the scope of the "display" referenced in the claims by referencing the "display assembly." Tr. at 81:18-83:3, 87:5-20. Respondents identified a sentence in the specification describing the "posterior display surface" as "the posterior surface of the backlight assembly or the posterior surface of any other thin panel display assembly (OLED, plasma, etc.)." '595 patent at 2:49-54. Respondents argued that the District Court in *MRI v. Civiq* also considered this portion of the specification when adopting its construction for this term, finding that the specification described examples of a "display assembly." Tr. at 84:5-15; CIB Ex. 8 at 7-8. Complainant argued that the construction adopted by the District Court was a rejection of the defendants' narrower construction for this term that quoted directly from the specification, and argues that there is no such dispute in the present investigation. Tr. at 85:7-21. Complainant argued that no construction of this term is necessary and it would be preferable for the parties to directly address the claim language in the context of infringement and invalidity. *Id*. at 85:22-86:23.

Upon consideration of the parties' arguments, the terms "posterior display surface" and "posterior surface of the electronic display" shall be construed to mean "rear-facing surface of the display assembly." Although it is unclear whether there is any substantive dispute between the parties, the ordinary meaning of the claim term is not readily apparent. For example, the specification refers to the claimed posterior surface in a specific way, which does not appear to be a mere application of commonly understood words. *See* '595 patent at 2:49-54. Accordingly, the undersigned finds that construction of this term is appropriate.

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The parties apparently agree that the scope of this term should be broader than the examples in the specification, *see* Tr. at 85:16-23 (Compl. counsel) (recognizing that the District Court found that "this is a broad term," and stating that Complainant does not have an issue with confirming that in a construction), and this is consistent with the specification's description of the "posterior display surface" using non-limiting examples: "the posterior surface of the backlight assembly or the posterior surface of any other thin panel display assembly (OLED, plasma, etc.)." '595 patent at 2:49-54.[24] The District Court in *MRI v. Civiq* adopted the construction of "posterior display surface" as "rear-facing surface of the display assembly" to reflect the examples given in the specification while recognizing that they are not definitional, and MRI accepted the construction in that case. *See* CIB Exhibit 8 at 6-8.

On this record, the undersigned finds that the District Court's construction is consistent with the intrinsic evidence and the positions of the parties with respect to this term in the present investigation. Accordingly, the terms "posterior display surface" and "posterior surface of the electronic display" shall be construed to mean "rear-facing surface of the display assembly."

E. "closed loop" ('595 patent, '287 patent, '740 patent, and '142 patent)

Claim Language	Complainant	Respondents
'595 patent claim 9: "closed loop" '287 patent claims 1, 2, 4-8, 11: "closed loop gas cooling chamber" '287 patent claims 12, 17-19: "closed loop of isolated gas" '287 patent claims 21, 22: "closed loop of cooling gas" '142 patent claims 1, 3, 12,	Plain and ordinary meaning	"gas pathway within a display housing containing gas that is essentially isolated from external air"

[24] Dependent claim 18 of the '595 patent and dependent claim 2 of the '322 patent further support a construction that encompasses the rear surface of a backlight assembly. *See* '595 patent at claim 18; '322 patent at claim 2.

15: "closed loop airflow pathway" '142 patent claim 6: "closed loop gas circulation pathway" '740 patent claims 1, 5, 6, 8, 15, 16, 17, 20: "closed loop gas circulation path"		

Complainant proposes to construe "closed loop" to have its plain and ordinary meaning, arguing that there is no definition or disclaimer in the patent specification or prosecution history. CIB at 34-40. Complainant argues that the term is comprised of non-technical, commonly understood words. *Id*. at 36. Complainant contends that the term "closed loop" is used in the claims in accordance with this plain meaning to refer to an airflow pathway that is distinct from the "open loop." *Id*. at 36-38. Complainant argues that it would be improper to import a limitation into the construction of "closed loop" that requires isolation from external air, because this isolation is found in dependent claim 4 of the '287 patent. *Id*. at 38. Complainant further argues that there is nothing in the specification or prosecution history to support Respondents' proposed construction. *Id*. at 38-39.

Respondents propose to construe "closed loop" to mean "gas pathway within a display housing containing gas that is essentially isolated from external air." RIB at 28-36. Respondents argue that there is definitional language in the '287 patent specification describing an "isolated gas cooling chamber" which "comprises a closed loop . . . ." *Id*. at 33 (citing '287 patent at 4:4-7, Fig. 2). Respondents cite the '287 patent specification, which states: "The term 'isolated gas' refers to the fact that the gas within the isolated gas cooling chamber 20 is essentially isolated from external air in the housing of the display." '287 patent at 4:9-11; *see also id*. at 4:19-23 ("the isolated gas cooling chamber need not necessarily be hermetically sealed from the external air"). Respondents identify similar language in the '595 patent specification. RIB at 33-34

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(citing '595 patent at 8:35-50, Fig. 9). Respondents submit that their proposed construction is the construction that was adopted by the District Court in the *MRI v. Civiq* litigation. RIB at 35-36, RXM-010.008. Respondents cite MRI's argument in that case that "closed loop" required a construction because "this term is not a commonplace technical term for a lay juror," RXM-011.037-.038, and MRI's representation that it was "prepared to accept" the court's construction in the District Court. *See* RXM-010.007-.008; *see* RRB at 17. In rebuttal to Complainant's claim differentiation argument, Respondents argue that dependent claim 4 of the '287 patent is distinct in scope from claim 1 because claim 4 requires gas that "is isolated," while Respondents' proposed construction only requires that the closed loop is "essentially isolated from ambient air." RRB at 20. Respondents argue that the prosecution history of the '142 and '740 patents is consistent with their proposed construction, because the applicant distinguished prior art that failed to disclose a "closed loop" distinct from an open loop. *Id*. at 20-21.

Complainant argues in rebuttal that the specification does not define a "closed loop." CRB at 20-21. Complainant further notes that the specification states with respect to the isolated gas cooling chamber: "It is sufficient that the gas in the chamber is isolated to the extent that dust and contaminates may not substantially enter the first gas chamber." '287 patent at 8:41-50. Complainant submits that the claim language and specification provide sufficient guidance to distinguish the "closed loop" from an "open loop," and no construction is necessary. CRB at 21. Complainant argues that the District Court's construction of this term is not binding in this investigation. *Id*. at 21-22.

At the *Markman* hearing, Complainant argued that "closed loop" merely refers to one of two airflow pathways in the asserted claims. Tr. at 88:2-92:9. Complainant argued that Respondents' proposed construction imports additional limitations into the term "closed loop"

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that are described in different surrounding claim language, such as "isolated gas." *Id*. at 92:10-94:2. Complainant argued that under the doctrine of claim differentiation, "closed loop" should not be construed to require isolated gas, because dependent claim 4 of the '287 patent adds this limitation—and there is no reason to read claim 4 to require complete isolation, as argued by Respondents. *Id*. at 94:3-95:21.

At the *Markman* hearing Respondents identified the term "closed loop" as part of many different claim phrases, e.g., "closed loop of cooling gas," "closed loop gas cooling chamber," and "closed loop of isolated gas," and argued these phrases each refer to the same "closed loop." Tr. at 96:11-97:19. Respondents argued that this term requires a construction to clarify the difference between a "closed loop" and an "open loop." *Id*. at 97:23-101:7. Respondents argue that any ambiguity in the meaning of "closed loop" can be resolved by reference to the specification, which describes a closed loop that prevents dust and contaminants from interfering with the display, moves refrigerated air through the system, and ensure constricted airflow. *Id*. at 101:8-103:13. Respondents argue that claim 4 of the '287 patent requires complete isolation of gas in the closed loop, which is differentiated from the "closed loop" of claim 1, which is essentially isolated. *Id*. at 103:14-104:1, 108:6-109:4. Respondents argue that the definition of "isolated gas" in the patent specifications should be incorporated into the construction for "closed loop," because these terms are linked in the specifications. *Id*. at 104:2-107:16.

Upon consideration of the parties' arguments and the intrinsic record, "closed loop" shall tentatively be construed to mean a gas pathway, forming a complete loop, within a display housing.[25] Although Complainant argues that no construction is necessary for this term, there is

[25] *See Pfizer, Inc. v. Teva Pharms., USA, Inc.,*429 F.3d 1364, 1377 (Fed. Cir. 2005) (courts "may engage in rolling claim construction, in which the court revisits and alters its interpretation of the claim terms as its understanding of the technology evolves"); *see also Ballard Med. Prods. v. Allegiance Healthcare*

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a dispute between the parties regarding the distinction between a "closed loop" and an "open loop," and Complainant's position that these terms merely identify two different gas pathways fails to give meaning to the words "closed" and "open." *See Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) ("A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.").

The parties appear to agree that the "closed loop" is a gas pathway contained "within a display housing," in accordance with the first part of Respondents' proposed construction. *See* Tr. at 92:12-14 (Compl. counsel) ("If you look at the beginning part of their construction, there appears to be an agreement here that it is describing a gas pathway within the display housing."). Further, the words "closed" and "loop" should not be read out of the claim. In the specifications of each of the asserted patents, the "closed loop" is described and depicted as a complete loop within a display housing. *See, e.g.,* '595 patent at 8:31-34 (describing closed loop "which includes a gas chamber 104 and return air passage 106"), Fig. 9 (depicting closed loop path); '287 patent at 4:4-7 (describing a closed loop "which includes a first gas chamber 30 and a rear cooling chamber 40"), Fig. 2 (depicting closed loop path); '740 patent at 3:17-67 (describing "circulating gas" within closed loop), *id.* at 2:37-47 (describing "closed loop path" that "travels across the front surface of the image assembly, continues to the rear of the display . . . finally returning to the front surface"); *id.* at 6:31-48 (describing circulating gas 210 moving "around the closed loop"), Fig. 2B (depicting path of circulating gas 210).

Construing the "closed loop" to be a complete loop is consistent with the plain and ordinary meaning of the words and distinguishes a "closed loop" from an "open loop," which is not described as a complete loop within the housing but only a portion of a loop that may pass

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Corp., 268 F.3d 1352, 1358 (Fed. Cir. 2001). The parties are not precluded from presenting evidence and argument under their alternative constructions at the hearing and in post-hearing briefs.

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through the housing. *See*, *e.g.*, '287 patent at claim 1 (describing "closed loop" that is "located within the electronic display housing" and "an open loop ambient air pathway through the electronic display housing"), *id.* at Abstract (describing "open loop of ambient air which passes through the housing"); '740 patent at 4:1-14 (describing open loop with ambient air "ingested into the display" by fan assembly 104 and/or 105 and "expelled out of the display housing"), *id.* at 6:31-48 (describing open loop fan assembly 203 used to "draw ambient gas 211 through the heat exchanger 201"), Fig. 2B (depicting path of ambient gas 211); Tr. (Compl. counsel) at 90:7-91:4 and Compl. Slides at 58-60 (illustrating examples of open and closed loops).[26]

This distinction is also supported by the file history for the '595 patent, in which applicant argued that a channel configured with an "entrance" and an "exit" could not, by definition, be a "closed loop." *See* '595 patent file history, 9/19/2013 Response to Non-Final Office Action, at 9 (MRI-ITC-1331-0000002236) (CIB Ex. 14) ("Claim 9 requires a constricted convection channel having an entrance and an exit as well as a gaseous closed loop. It seems clear that by definition (since the channel contains an entrance/exit and a closed loop has no entrance/exit) these are two separate flow paths for gas/air.").

The parties' arguments with respect to this term focus on the second part of Respondents' proposed construction, which requires the closed loop to contain gas that is essentially isolated from external air. Respondents' proposed limitation is based on statements in the specification of the '595 patent and the '287 patent defining the term "isolated gas." *See* RIB at 33-34; '287 patent at 4:9-11 ("The term 'isolated gas' refers to the fact that the gas within the isolated gas cooling chamber 20 is essentially isolated from external air in the housing of the display."); *see also* '595 patent at 8:35-38 (same). This, however, is a definition of "isolated gas," not "closed

[26] Thus, a "closed loop" and "open loop" are distinguished by whether a pathway configuration forms a complete "loop" (*e.g.*, path that circles back upon itself) within the housing.

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loop," and in the specification, the "isolated gas cooling chamber" does not appear synonymous with a "closed loop"—it "comprises a closed loop." The specifications suggest that an "isolated gas cooling chamber" may provide just one embodiment of a "closed loop." *See* '287 patent at 4:4-7 ("in at least one embodiment the isolated gas cooling chamber 20 comprises a closed loop"); *see also* '595 patent at 8:31-34.

The claims of the '287 patent contain language that also weigh against Respondents' proposed construction. For example, independent claims 12 and18 uses the term "closed loop" within the larger phrase "closed loop of isolated gas." Construing "closed loop" to import the specification's definition of "isolated gas" (including for all asserted claims that lack "isolated gas" language) would render the words "isolated gas" in claims 12 and 18 superfluous, which is disfavored. *See Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005). Accordingly, the claims of the '287 patent fails to support Respondents' proposed construction.

The common specification of the '740 and '142 patent also supports a construction of "closed loop" that does not require isolation from external air.[27] After describing circulating gas in a "closed loop" and ambient air in an "open loop," the specification states that isolation is preferable but not required: "Although not required, it is preferable that the circulating gas and ambient gas do not mix. This may prevent any contaminates and/or particulate that is present within the ambient gas from harming the interior of the display." '740 patent at 3:47-48, 4:1-5, 4:15-18; '142 patent at 4:18-21. In a particular embodiment, the specification again states this

[27] The '740 and '142 patents stem from an application filed as a continuation-in-part of the '595 patent. *See* RIB at 1-2; '142 patent, Related U.S. Application Data. Respondents argue that "closed loop" should be construed consistently across the '740, '142, '595, and '287 patents. *See* Tr. (Resp. counsel) at 97:8-10; RIB at 34-35 ("[t]he fact . . . that the '740 and '142 patents are related to the '595 patent as continuations-in-part is further evidence why the term 'closed loop' should be construed consistently across the patents"); *see Omega Eng'g, Inc. v. Raytek Corp*., 334 F.3d 1314, 1334 ("we presume, unless otherwise compelled, that the same claim term in the same patent or related patents carries the same meaning").

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preference: "Since gas for the open loop may contain various contaminates, a preferable embodiment should be adequately sealed to prevent the gas from the two loops from mixing." '740 patent at 6:53-56; '142 patent at 6:56-59. The specification makes it clear, however, that isolation of the "closed loop" is not required: "This is not necessary, however, as filters (either removable or permanent) may be used to minimize the effect of particulate for both the open and closed loops." '740 patent at 6:56-59, '142 patent at 6:59-62. These statements in the specification make it clear that "closed loop" has not been defined to be isolated from external air—this is a preferred embodiment but not a requirement of the term.

The "closed loop" limitation was also addressed during prosecution of the '142 patent, where the pending claims were amended to recite a "closed loop" to distinguish the invention from a prior art reference identified as Sato: "Claim 1 is amended to require that the portion of the airflow pathway extending between the electronic image assembly and the cover panel be part of a closed loop. Sato, on the other hand, teaches that the arrowed line 416 represents ambient air which enters and exits the unit." CIB Exhibit 18 ('142 patent file history) at MRI-ITC-1331_000016318 (Applicant's Response at 18 (Dec. 18, 2020)).[28] Following this amendment, the examiner rejected pending claim 1 again based on the disclosure of a "closed loop" in a different prior art reference identified as Heady *et al.*, wherein "air is circulated selectively through chambers defined by circuit boards and the display housing." *Id*. at MRI-ITC-1331_0000016332 (Office Action at 3 (Dec. 31, 2020) (quoting U.S. Patent No. 5,991,153 at 3:37-44)). In the same office action, the examiner allowed dependent claims that included both a "closed loop" and an "open loop," however, and the '142 patent issued with these

[28] In Sato, an arrowed line 416 depicts ambient air that cools a display after passing through a filter: "air is drawn into the apparatus by means of the fan 417 and cleaned to get rid of dirt by means of the filter 418. The cleaned air is then made to flow along the arrowed line 416 to cool the substrate 201 of the display panel 100." RXM-0023 at 9:3-8, Fig. 4.

dependent claims rewritten in independent form. *Id*. at MRI-ITC-1331_0000016333-34 (Office Action at 4-5 (Dec. 31, 2020)), MRI-ITC-1331_0000016443 (Response to Office Action at 8 (Feb. 9, 2021)), MRI-ITC-1331_0000016457 (Notice of Allowability at 2 (Mar. 3, 2021)).

Respondents argue that the prosecution history of the '142 patent supports their proposed construction, but Respondents do not show (or even appear to argue) clear and unmistakable disclaimer. *See* RRB at 20-21.[29] The applicant distinguished the claimed "closed loop" from Sato's disclosure of ambient air which enters and exits the unit, but there is no clear indication that this statement relates to any particular degree of isolation from ambient air—there is no statement requiring the "closed loop" to be completely isolated from external air or essentially isolated from external air. The applicant's statement could be read to merely distinguish Sato because ambient air "enters and exits the unit" and is therefore not a complete loop within the housing. *See* RXM-0023 (Sato) at Fig. 4 (showing arrowed line 416 entering and exiting the housing); discussion *supra*. The prosecution history of the '142 patent does not support adoption of Respondents' proposed construction for "closed loop."

Although the *MRI v. Civiq* district court adopted Respondents' proposed construction requiring gas that is essentially isolated from external air, this construction is not binding in the present investigation.[30] Moreover, the claims at issue in the present investigation do not appear

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[29] At the *Markman* hearing, Respondents noted that the District Court's *Markman* order in *MRI v. Civiq* was submitted as part of the prosecution history of the '740 patent and the '142 patent. Tr. at 107:13-19; *see* CIB Exhibit 18 ('142 patent file history) at MRI-ITC-1331_000006613 (Information Disclosure Statement by Applicant (Aug. 26, 2020)). Respondents identified no explicit discussion of the District Court's construction of "closed loop" in the prosecution history of these patents, however. *See* Tr. at 107:20-23.

[30] *See IGT v. Bally Gaming Int'l, Inc.*, 659 F.3d 1109, 1117 n.1 (Fed. Cir. 2011) (recognizing another District Court's claim construction as "persuasive authority and did not bind the district court in this case"); *see also Rambus Inc. v. Hynix Semiconductor Inc.*, 569 F. Supp. 2d 946, 966 (N.D. Cal. 2008); *Certain LED Lighting Devices, LED Power Supplies and Components Thereof*, Inv. No. 337-TA-1081, Order No. 49 at 27, EDIS Doc. ID 646986 (Jun. 6, 2018) (noting that District Court claim *Markman* orders are not binding in a 337 investigation).

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to be the same that were asserted in District Court—the only "closed loop" claim at issue in both cases is claim 18 of the '287 patent, where "closed loop" appears as part of the larger phrase "closed loop of isolated gas." *See* RXM-010 at 5 (identifying claim 18 of the '287 patent); *id.* at 8 (construing "closed loop"). "Isolated gas" was defined in the specification to be essentially isolated from external air, *see* '287 patent at 4:9-11, and thus, the "closed loop of isolated gas" in claim 18 must be essentially isolated from external air by virtue of the surrounding claim language. Accordingly, with respect to overlapping claim 18 of the '287 patent, there is no substantive conflict between the claim construction adopted herein and the claim construction adopted in the District Court.[31]

Accordingly, "closed loop" is tentatively construed to mean a gas pathway forming a complete loop within a display housing. For the reasons discussed above, this construction is consistent with the claim language, specification, and prosecution history of the '595 patent, '287 patent, '740 patent, and '142 patent.

F. "open loop of ambient air which passes through the housing and along the backlight" ('287 patent)

Claim Language	Complainant	Respondents
'287 patent claim 12: "open loop of ambient air which passes through the housing and along the backlight"	Plain and ordinary meaning	"open loop of ambient air which passes through the housing and is in thermal communication with the backlight"

[31] The other asserted patents containing "closed loop" language in *MRI v. Civiq*, as set forth in RXM-010 (the '572 and '325 patents), are not asserted in this investigation. *See* RXM-010 at 8. Moreover, in the *MRI v. Civiq* litigation, MRI acquiesced to a specific construction which was proposed by defendants and was the court's tentative construction. *See id.* Judicial estoppel is an "equitable doctrine invoked by a court at its discretion." *New Hampshire v. Maine*, 532 U.S. 742, 750 (2001) (internal quotation omitted). The undersigned does not find judicial estoppel appropriate under the particular circumstances here. *Cf. Conversant Intellectual Property Mngmt Inc. v. Xilinx, Inc*., CA 6:12-cv-847, 2015 WL 138157, at *7 (E.D. Tex. Jan. 9, 2015) (declining to apply judicial estoppel where former construction was "agreed upon"). *Key Pharms. v. Hercon Lab'ys Corp*., 161 F.3d 709 (Fed. Cir. 1998) and *Solomon Techs., Inc. v. Toyota Motor Corp*., 2010 WL 715243 (M.D. Fla. Jan. 26, 2010)—cited by Respondents—involved very different factual contexts. *See* CRB at 22.

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Respondents propose to construe the phrase "open loop of ambient air which passes through the housing and along the blacklight" to mean "open loop of ambient air which passes through the housing and is in thermal communication with the backlight." RIB at 36-42. Respondents argue that this term should not be read broadly to cover backlighting that is mounted on the edges of a display where the airflow is not in thermal communication with the backlight. *Id*. at 36-38. Respondents cite the specification of the '287 patent, which describes airflow in proximity to the backlight for the purpose of cooling. *Id*. at 38-40. Respondents further cite the prosecution history of a parent application to the '287 patent, where the examiner identified a prior art reference that provided cooling with airflow that did not directly contact the backlight. *Id*. at 40-42. The examiner identified this airflow as "along" the backlight, and the patentee overcame this rejection by amending the claim to require "contacting the . . . backlight." *Id*. Respondents argue that the prior art reference disclosed airflow that was in thermal communication with the backlight. *Id*. Respondents further argue that the term "along" requires construction, citing constructions of this term in other cases. *Id*. at 42. Respondents argue that extrinsic evidence, including the declaration of their expert Robert Smith-Gillespie, supports Respondents' proposed construction. *Id.* at 42; RXM-0009.029.

Complainant argues that "along the backlight" should have its ordinary and customary meaning because these are non-technical, commonly understood words, and the patentee did not disclaim the scope of this term in the specification or prosecution history. CIB at 40-42; CRB at 23. Complainant argues that Respondents improperly replace the positional language of the claim to import a "thermal communication" limitation. CIB at 42-43; CRB at 23-24. Complainant argues that Respondents improperly rely on extrinsic evidence to support their construction and improperly seek a construction based on the structure of accused products. CIB

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at 43-44; CRB at 24. Complainant has submitted a declaration from Dr. Pokharna in support of its position. *See* CIB Ex. 20.

In rebuttal, Respondents argue that Complainant has not taken any clear position with respect to the scope of the plain and ordinary meaning of "along the backlight." RRB at 21-24. Respondents argue that the position of Complainant's expert, Dr. Pokharna, is inconsistent, including with the parent prosecution history. *Id*. at 23-24; RXM-024. Respondents submit that their construction is consistent with the purpose of the ambient airflow as described in the patent specification. *Id*. at 24-25.

At the *Markman* hearing, Respondents argued that the position of Complainant's expert creates ambiguity in the meaning of "along the backlight" that requires a construction of this term. Tr. at 113:25-115:5. Respondents submit that Complainant's expert disagreed with the examiner's interpretation of "along the backlight" in the parent prosecution history. *Id*. at 115:4-117:25. Respondents argued that the purpose of the ambient airflow described in the specification is to cool the display, and this cooling is achieved by being in thermal communication with the backlight. *Id.* at 118:1-120:16. Respondents' counsel acknowledged that the term "thermal communication" is not used in the patent specification but argued that thermal communication is implied by the parent prosecution history. *Id*. at 120:17-122:1. Respondents argue that incorporating a "thermal communication" limitation is the only way to resolve the ambiguity in the meaning of this term. *Id*. at 122:2-123:3.

Complainant argued that the "thermal communication" limitation is not in the specification or file history or the parent file history cited by Respondents. *Id*. at 123:8-16, 127:22-128:16. Complainant argued that the parent file history does not support the adoption of a "thermal communication" limitation. *Id*. at 125:10-126:2. Complainant argued that its expert's

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interpretation of the file history is consistent with the patent specification. *Id*. at 126:4-21. Complainant argues that it is improper to import a purpose or function into simple claim language. *Id*. at 126:22-127:18.

Upon consideration of the parties' arguments, the words "along the backlight" shall be construed to have their plain and ordinary meaning.[32] The intrinsic record does not support Respondents' proposal to define "along" to mean "is in thermal communication with." Respondents rely on an interpretation of a parent prosecution history by its expert to support a "thermal communication" limitation, *see* RXM-009 (Smith-Gillespie Decl. at ¶¶ 73-77), but there is no reference to "thermal communication" in the cited portions of the parent prosecution history. *See* RXM-008.200-207, .220-227. Moreover, when addressing a claim limitation describing "cooling air travelling along the rear surface of the LED backlight," the examiner used the term "along" to describe the position of the airflow in relation to the rear surface: "Although the cooling air is separate from the rear surface, it travels 'along' the rear surface of the backlight." RXM-008.204. In response to this Office Action, the claim language "travelling along" was amended to require "cooling air contacting the rear surface of the LED backlight." RXM-008.223; *see also* RXM-008.226 ("Applicant respectfully asserts that the Examiner has acknowledged that the open loop of cooling air does not contact the rear surface of the LED backlight."). The parent prosecution history is thus consistent with using "along the backlight" to describe the positioning of the air.[33]

[32] As shown by the proposed constructions, the parties' only disagreement regarding the term at issue concerns the meaning of "along the backlight."

[33] To the extent the purpose of the claimed invention involves heat removal, the claim includes "coolable" language not addressed by the parties during the *Markman* proceedings.

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Accordingly, the "along the backlight" limitation shall be construed to have its plain and ordinary meaning. To the extent that the parties disagree regarding any ambiguity in the plain and ordinary meaning, these disputes will be addressed if and when they become more clear.[34]

***

To the extent any party believes that any limited supplemental expert disclosures or other procedures are necessary to address any holdings in this Order that the parties were not reasonably able to address previously (including in connection with pending summary determination motions), the parties should meet and confer. If necessary, the parties should jointly submit a proposed schedule for any such disclosures or procedures consistent with the hearing schedule (including any disputes related thereto), as well as justification therefor and a specific description of any proposed supplemental disclosures, by May 23, 2023.

SO ORDERED.

Monica Bhattacharyya
Administrative Law Judge

[34] Complainant's expert, Dr. Pokharna, described the meaning of "along the backlight" in the context of the '287 patent to mean "flowing essentially parallel to the backlight, meaning it's positional and a directional feature of airflow . . . through the housing and it's right next to the backlight." RXM-024 at 42:18-43:15. Respondents' initial brief also identifies several District Court orders construing the word "along." *See* RIB at 42 (citing *Gentex Corp. v. Revision Mil. Ltd.*, No. CV 19-921 (MN), 2020 WL 1875529, at *1 (D. Del. Apr. 15, 2020) (construing "along a bend in a bottom edge" to mean "running on or adjacent to a bend in the bottom edge"); *Wonderland Switzerland AG v. Evenflo Co., Inc.*, No. CV 18-1990-RGA, 2020 WL 374750, at *4-5 (D. Del. Jan. 23, 2020) (construing "along" to mean "next to"); *Wright's Well Control Servs., LLC v. Oceaneering Int'l, Inc.*, No. CV 15-1720, 2017 WL 9287494, at *6 (E.D. La. Nov. 6, 2017) (construing "located along the housing" to mean "located at a point on the housing")).

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CERTAIN OUTDOOR AND SEMI-OUTDOOR ELECTRONIC DISPLAYS, PRODUCTS CONTAINING SAME, AND COMPONENTS THEREOF

Inv. No. 337-TA-1331

CONFIDENTIAL CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **ORDER** has been served via EDIS upon the following parties as indicated, on **May 15, 2023**.

Lisa R. Barton, Secretary
U.S. International Trade Commission
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Washington, DC 20436

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On Behalf of Respondents Samsung Electronics, Co. Ltd., Samsung Electronics America, Inc., Samsung SDS Co. Ltd., Samsung SDS America, Inc., Coates Signco Pty Limited, and Industrial Enclosure Corporation d/b/a Palmer Digital Group

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