Nos. 2023-1629, 2023-1631, 2023-1753, 2023-1745

In the
United States Court of Appeals
For the Federal Circuit

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,

Appellants,

v.

POWER2B, INC.,

Cross-Appellant.

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board Proceeding Nos. IPR2021-01239 and IPR2021-01266

COMBINED PETITION FOR PANEL REHEARING AND/OR REHEARING EN BANC

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UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

CERTIFICATE OF INTEREST

Case Number 23-1629

Short Case Caption Samsung Electronics Co., Ltd. v. Power2B, Inc.

Filing Party/Entity Power2B, Inc.

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Date: 04/04/2023

Signature: /s/ Jason A. Wietjes

Name: Jason A. Wietjes

1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	**2. Real Party in Interest.** Fed. Cir. R. 47.4(a)(2).	**3. Parent Corporations and Stockholders.** Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. ☑ None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. ☑ None/Not Applicable
Power2B, Inc.		

☐ Additional pages attached

4. Legal Representatives. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

☐ None/Not Applicable ☐ Additional pages attached

Stephen McBride, Carmichael IP, PLLC	James T. Carmichael, Carmichael IP, PLLC	James P. Murphy, Polsinelli PC

5. Related Cases. Other than the originating case(s) for this case, are there related or prior cases that meet the criteria under Fed. Cir. R. 47.5(a)?

☑ Yes (file separate notice; see below) ☐ No ☐ N/A (amicus/movant)

If yes, concurrently file a separate Notice of Related Case Information that complies with Fed. Cir. R. 47.5(b). **Please do not duplicate information.** This separate Notice must only be filed with the first Certificate of Interest or, subsequently, if information changes during the pendency of the appeal. Fed. Cir. R. 47.5(b).

6. Organizational Victims and Bankruptcy Cases. Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

☑ None/Not Applicable ☐ Additional pages attached

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STATEMENT OF COUNSEL

Based on my professional judgment, I believe the Panel's decision is contrary to this Court's precedent with respect to entering its own new construction that construed a term contrary to its undisputed plain and ordinary meaning without any finding that the patentee acted as its own lexicographer, including as set forth in:

- *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); and
- *Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362 (Fed. Cir. 2012).

Based on my professional judgment, I believe the Panel's decision is contrary to this Court's precedent with respect entering its own claim construction for a disputed term that renders claim terms meaningless, including as set forth in:

- *Intel Corp. v. Qualcomm Inc*., 21 F.4th 801 (Fed. Cir. 2021).

Based on my professional judgment, I believe the Panel's decision is contrary to this Court's precedent with respect to construing a disputed claim term that was used in every instance and embodiment (preferred or otherwise) throughout the entire patent specification in a manner consistent with only a single meaning, including as set forth in:

- *Homeland Housewares, LLC v. Whirlpool Corp*., 865 F.3d 1372 (Fed. Cir. 2017).

Based on my professional judgment, I believe the Panel's decision is contrary to this Court's precedent with respect to the Panel entering its own new

arguments into the record that were not contemplated by the petition to invalidate claims based on the Panel's own new construction, including as set forth in:

- *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348 (2018).

Based on my professional judgment, I believe this appeal provides clear facts and a good record to answer the following precedent-setting questions of exceptional importance:

1. Whether, absent a finding that the patentee acted as its own lexicographer, a disputed claim term should be construed contrary to its undisputed plain and ordinary meaning?

2. Whether the Court can invalidate patent claims on appeal based on its own new construction for a disputed term, when the new construction rendered all of Petitioner's arguments moot for that disputed term in the proceedings below because Petitioner relied on a fundamentally different construction?

Dated: April 30, 2025

/s/Adam P. Daniels
Adam P. Daniels

INTRODUCTION AND STATEMENT OF THE CASE

The undisputed plain meaning of an "assembly" requires a structure that assembles or combines together *two or more elements.*[1][2] Samsung's own statements confirm this: "[a]lso, referring to what the meaning of assembly is, this question of whether there are multiple detectors I think gets caught up in the meaning of assembly. And we agree that *an assembly includes two or more elements*."[3]

Indeed, the Panel further acknowledged the Board's fact findings that the patents describe the claimed "detector *assembly*" consistent with its plain

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[1] All emphasis added unless otherwise noted.

[2] *See* Oral Arg. at 02:47 (*available at* https://oralarguments.cafc.uscourts.gov/default.aspx?fl=23-1629_11042024.mp3) (Samsung explained, "we agree that an assembly includes two or more elements.").

[3] *See* Oral Arg. at 02:47; *see also* Samsung's Principal Br. (Doc. 25) at p. 15 ("[a]ll that is required is an 'assembly' of some sort that includes at least one "detector" element *and at least one additional component*") (emphasis added); Power2B's Principal Br. (Doc. 29) at p. 50 ("The plain language of the claims requires a 'detector assembly,' which is *necessarily more than one 'detector element' alone*.") (emphasis added); *see also* WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE (*available at* https://archive.org/details/ webstersthirdnew0000unse_p4z2) (last visited Apr. 10, 2025) (an "assembly" is "a collection of parts [*plural*] so assembled as to form a complete machine, structure, or unit of a machine.").

meaning—*e.g.*, the detector assembly comprises "*two or more detector elements*."[4] Despite this, the Panel entered its own new claim construction and concluded the claimed "detector *assembly*" could constitute a single one of its smallest unit building blocks by itself—*i.e.*, *one* detector *element*.[5] However, just as a single brick is not a wall, one "detector element" alone is not an "assembly."

Without finding that patentee acted as its own lexicographer (it did not), the Panel erred as a matter of law by construing the recited "assembly" contrary to its undisputed plain meaning. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-1313 (Fed. Cir. 2005) ("the words of a claim are generally given their ordinary and customary meaning"); *Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (to act as a lexicographer, the patentee must "clearly set forth a definition of the disputed claim term" and "clearly express an intent to redefine the term").

The Panel further erred by entering a new construction that renders the word "assembly" meaningless in the claims. Applying the Panel's new construction to

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[4] *See* Opinion at pp. 8-9 ("the Board . . . note[s] that the specification 'consistently' describes the detector assembly as comprising *two or more detector elements*").

[5] Opinion at p. 7 ("The claims only require an 'assembly' that includes at least one 'detector' element"); *see id.* at 9 (invalidating "detector assembly" claims based on Reime disclosing "one detector element").

the claims results in an untenable substitution of the word "*element*" for "*assembly*" that renders the "assembly" term meaningless:

wherein the at least one sensor includes a detector ~~assembly~~ element

See Appx420 (claim 15) (annotated by Power2B); Opinion at p. 7. "It is highly disfavored to construe terms in a way that renders them void, meaningless, or superfluous." *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 809-10 (Fed. Cir. 2021) (quoting *Wasica Finance GmbH v. Cont'l Automotive Systems, Inc.*, 853 F.3d 1272, 1288 n.10 (Fed. Cir. 2017)).

As discussed, the Panel respectfully overlooked underlying disclosures that explain detector *elements* can include commercially available off-the-shelf photodiodes, which themselves are the smallest building blocks of the detector *assembly*.[6] Power2B did not invent off-the-shelf photodiodes. Instead, Power2B invented novel ways to assemble detector elements (plural) together to create a "detector assembly," positioning such assembly relative to a display, and determining an object's relative position based on detector assembly output signals. However, as shown above, the Panel's new construction reduces the

[6] *See, e.g.*, Appx391 (10:41-45) (detector elements can include solderable silicon photodiodes "commercially available from Advanced Photonix Incorporated of Camarillo, Calif. USA under catalog designator PDB-C601-1.").

claimed "detector *assembly*" to a single "detector *element*," by itself, which renders the word "assembly" meaningless. Under any construction, the undisputed plain meaning of an "assembly" requires more than one single constituent component by itself. Indeed, the Panel's subsequent conclusion that Reime's disclosure of a single detector element (*e.g.*, one photodiode)—by itself—satisfies the entire "detector assembly" demonstrates the Panel's new construction renders the word "assembly" meaningless, contrary to this Court's precedent.[7] The only construction of the recited "detector assembly" that is consistent with its plain meaning and underlying disclosures and that gives proper meaning to all of the words in the claims is a construction that requires two or more elements or components, or, *two or more detector elements*.[8]

Finally, setting aside the merits of the new construction, the Panel unequivocally rejected Petitioner Samsung's foundational understanding that an "assembly" requires two or more components, which rendered all of the

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[7] *See* Opinion at p. 9 (the Panel found the "detector assembly" element satisfied by Reime's disclosure of a single "detector element").

[8] *See also* Appx515 ('093 patent, claims 26 ("detector assembly") and claim 41 ("lenses")) and Appx493 (25:18-21) (the Panel's new construction further renders the "lenses" (plural) meaningless in claim 41, because the "lenses" (plural) in claim 41 operably limit the fields-of-view between adjacent "detector elements" (plural) in the "detector assembly" in claim 26. Claim 41 does not recite "a lens" (singular) because the "detector assembly" in claim 26 does not have "a detector element" (singular) by itself).

Petitioner's "detector assembly" arguments moot before the Board. Thus, even assuming *arguendo* that the Panel's construction is correct, the Panel's new construction is dispositive of the issues on appeal and requires confirming the patentability of the "detector assembly" claims because Petitioner Samsung, who bore the burden to prove unpatentability throughout the entire process, never once presented any argument that the claimed "detector assembly" could be satisfied by a single detector element by itself.

Instead, at all times, Samsung consistently argued the claimed "detector assembly" must have a combination of *at least two elements*. To be very clear, before the Board, Samsung's sole argument regarding the "detector assembly" relied on the foundational understanding that an "assembly" requires two or more components.[9] Thus, the Panel erred as a matter of law by introducing its own invalidity arguments, which Samsung never presented, to satisfy the Panel's new construction of the "detector assembly."

Put simply, Samsung never contemplated nor addressed the Panel's new construction because it represents a fundamental shift in both parties'

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[9] *See*, *e.g.*, Appx555-556 (The Petition's sole evidence regarding the "detector assembly" was a conclusory sentence that identified the entire collection of Reime's "optical sensor components 10, 12, 20, 22, 30, and 32"); *see* Appx7572 (Samsung's Reply again identified all of Reime's "optical sensor components 10, 12, 20, 22, 30 and 32" as the "detector assembly.").

understanding regarding the plain meaning of the word "assembly." Thus, the Panel's new construction created dispositive deficiencies in the petition that could not be cured on appeal or remand. Under this Court's precedent, as a matter of law, Samsung and the Board are bound, even on remand, by the arguments presented in the petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1357 (2018) ("[T]he petitioner's contentions . . . define the scope of the litigation all the way from institution through to conclusion."); *see Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018) ("It would thus not be proper for the Board to deviate from the grounds in the petition and raise its own obviousness theory."); *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1335-36 (Fed. Cir. 2020) (the petition "defines the metes and bounds of an inter partes review.").

Without any argument in the petition to address the Panel's new construction, the Panel respectfully should have confirmed the patentability of the "detector assembly" claims and not introduced new invalidity arguments. In view of the foregoing, Power2B respectfully requests a Panel or *en banc* rehearing to reverse the Panel's new construction, adopt the Power2B's (and the Board's) construction, and/or affirm the patentability of the "detector assembly" claims without remand.

ARGUMENT

1. Absent any finding that the patentee acted as its own lexicographer (it did not), the Panel erred as a matter of law by redefining the claimed "assembly" contrary to its undisputed plain meaning.

Under this Court's precedent, "[t]he words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history." *Thorner*, 669 F.3d at 1365 (citing *Phillips*, 415 F.3d at 1313). One exception is "[w]hen a patentee acts as his own lexicographer in redefining the meaning of particular claim terms away from their ordinary meaning, he must clearly express that intent in the written description." *Merck & Co. v. Teva Pharm. USA, Inc*., 395 F.3d 1364, 1370 (Fed. Cir. 2005). "[T]he statement in the specification must have sufficient clarity to put one reasonably skilled in the art on notice that the inventor intended to redefine the claim term." *Id*.

As discussed, the Panel overlooked the record, which demonstrates the undisputed plain meaning of the word "assembly" refers to a structure that has two or more elements, including Samsung's own arguments and representations: "[a]lso, referring to what the meaning of assembly is, this question of whether

there are multiple detectors I think gets caught up in *the meaning of assembly—and we agree that an assembly includes two or more elements*."[10]

Power2B likewise understood the plain meaning of the word "assembly" refers to a structure that necessarily requires two or more elements.[11] Moreover, the Panel acknowledged the Board's fact findings that the patents consistently describe the claimed "detector assembly" in a manner consistent with its plain meaning—*e.g.*, a structure having *two or more detector elements.*[12] By definition, the undisputed plain meaning of the word "assembly" requires a minimum of two or more elements assembled together—hence, "assembly."

In addition, as discussed below, the Panel respectfully overlooked the fact that there is not a single instance anywhere in the 34-page specification, 120 figures, and 79 times where the words "detector assembly" appear to support the position that the "assembly" claim recital can constitute one constituent component by itself. Instead, consistent with its plain meaning, in *every* instance and *every*

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[10] *See* Oral Arg. at 02:47 (emphasis added); *see also* Samsung's Principal Br. at p. 15 ("[a]ll that is required is an 'assembly' of some sort that includes at least one "detector" element *and at least one additional component*.").

[11] *See* Power2B's Principal Br. at 50 ("The plain language of the claims requires a 'detector assembly,' which is *necessarily more than one 'detector element' alone*").

[12] *See* Opinion at p. 9-10.

embodiment, the patents explain the "detector assembly" has multiple elements and more specifically, at least two or more detector elements combined or assembled together.[13] Respectfully, one detector element by itself does not constitute an "assembly" because one detector element is not assembled with itself.

Indeed, the Panel misunderstood that the detector *elements* represent the smallest building blocks of a "detector *assembly*" and can include off-the-shelf solderable silicon photodiodes, such as those "commercially available from Advanced Photonix Incorporated of Camarillo, Calif. USA under catalog designator PDB-C601-1."[14] Power2B did not invent off-the-shelf, commercially available photodiodes. Instead, Power2B invented and described novel ways to assemble detector elements (*e.g.*, commercially available photodiodes) together to create a "detector assembly," positioning such assembly relative to a display, and using output signals from the detector assembly to determine an object's relative position.[15] Respectfully, there is no support in the intrinsic record for the Panel's

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[13] *See*, *e.g.*, Appx388 (3:1-8); Appx388 (3:7-17); Appx394 (15:16-19); (16:10-14); Appx395 (17:15-19); Appx395 (18:25-28); Appx396 (19:19-22); Appx397 (21:10-13); Appx398 (23:3-6); Appx400 (28:51-52); Appx401 (30:43-44); Appx403 (34:16-18); Appx404 (36:41-46); Appx404 (36:49-51); Appx402 (40:31-32).

[14] *See*, *e.g.*, Appx391 (10:41-45); Appx404 (36:41-46); Appx405 (37:30-33); Appx405 (38:51-54).

[15] *See*, *e.g.*, Appx419-420 ('850 patent, claim 15).

new construction, which redefines the claimed "assembly" as one detector element by itself, contrary to its plain undisputed meaning. At bottom, one detector element alone is one unit building block, which does not constitute an "assembly" because it is not assembled with anything.

Moreover, Power2B notes neither party addressed the Panel's new construction for an "assembly" because both parties understood that common definitions only confirm the undisputed plain meaning of an "assembly" requires a structure that has multiple parts or elements (plural) assembled together—*i.e.*, two or more elements.[16] Again, contrary to its plain, undisputed meaning, the Panel

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[16] *See, e.g.*, Opinion at p. 7 ("Samsung asks us to construe a "detector assembly" to include at least one detector element and at least one additional component"); Oral Arg. at 02:47 (Samsung explained "an assembly includes two or more elements"); *see also* WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE (*available at* https://archive.org/details/ webstersthirdnew0000unse_p4z2) (last visited Apr. 10, 2025) (an "assembly" is "a collection of parts [*plural*] so assembled as to form a complete machine, structure, or unit of a machine."); THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE, 3RD EDITION (*available at* https://archive.org/details/the-american-heritage-dictionary-of-the-english-language-third-edition-1st-august-1992/page/n505/mode/2up) (last visited Apr. 5, 2025) (an "assembly" is "[t]he putting together of manufactured parts [*plural*] to make a completed product, such as a machine or an electronic circuit."); THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE, 5TH EDITION (*available at* https://archive.org/details/americanheritage0000unse_s7t0/page/106/mode/2up) (last visited Apr. 10, 2025).

respectfully erred by entering its own new construction and redefined an "assembly" to constitute a single element by itself.

In view of the foregoing, the Panel's new construction of the "assembly" deviates from its plain, undisputed meaning, which the Panel acknowledged the patentee applied consistently throughout the patents.[17] Thus, without any finding that patentee acted as its own lexicographer, the Panel erred as a matter of law by entering its own new construction for the claimed "detector assembly" contrary to its undisputed plain meaning.

A. The Panel overlooked disclosures that demonstrate the "detector assembly" requires multiple detector elements.

As discussed, there was no dispute that the claimed "assembly" requires at least two elements. Instead, the only relevant dispute regarding the "detector assembly" related to identifying its second required component, where Power2B proposed the second component is a second "detector element" and Samsung proposed the second component is an unspecified "additional component" or

[17] *See* Opinion at pp. 8-9.

"something else."[18] In construing the "detector assembly" contrary to its plain meaning, the Panel overlooked and misapprehended numerous disclosures that confirm it requires a minimum of two or more detector elements.

For example, the Panel overlooked the fact that the only two common minimum components for the "detector assembly" that appear in *every* embodiment and in *every* instance are multiple *detector elements* (plural).[19] In contrast, the patents explain that other assembly components such as a "support substrate" and "cover layer" are optional.[20] Consistent with this Court's precedent, the patents describe the detector assembly "throughout the entire patent specification, in a manner consistent with only a single meaning," and that meaning requires a minimum of two or more detector elements. *See Homeland*

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[18] Samsung's Opening Br. at p. 15 ("All that is required is an 'assembly' of some sort that includes at least one "detector" element *and at least one additional component*.") (emphasis added); Oral Arg. at 24:51 (Samsung stated "[s]o it's just one detector element in addition to additional elements."); Oral Arg. at 23:50 (the Panel addressed Samsung and stated, "[l]et's assume we agree with you that detector assembly can only have just one detector and *something else*").

[19] *See*, *e.g.*, Appx388 (3:1-8) ("detector elements" (plural)); *see also* Appx388 (3:7-17); Appx394 (15:16-19), (16:10-14); Appx395 (17:15-19); Appx395 (18:25-28); Appx396 (19:19-22); Appx397 (21:10-13); Appx398 (23:3-6); Appx400 (28:51-52); Appx401 (30:43-44); Appx403 (34:16-18); Appx404 (36:41-46); Appx404 (36:49-51); Appx402 (40:31-32).

[20] *See*, *e.g.*, Appx398 (28:60-62) (no support substrate); Appx401 (30:43-44); Appx402 (32:32-35); Appx403 (34:26-28); *see also* Appx398 (28:52-54) (no cover layer); Appx401 (30:48-49); Appx403 (34:18-23).

Housewares, LLC v. Whirlpool Corp., 865 F.3d 1372, 1377 (Fed. Cir. 2017). The undisputed plain meaning of the "assembly" requires two or more elements, and the patent disclosures demonstrate the only two common elements required in *every* embodiment are "detector elements" (plural). Thus, consistent with its plain meaning and underlying disclosures, the claimed "detector assembly" requires two or more detector elements.

2. The Panel's new construction is contrary to this Courts' precedent because it improperly renders the word "assembly" meaningless in the claims.

Applying the Panel's new construction to the claims results in an untenable substitution of the word "element" for "assembly" that renders the word "assembly" meaningless:

wherein the at least one sensor includes a detector ~~assembly~~ element

See Appx420 (claim 15); Opinion at p. 7.

"It is highly disfavored to construe terms in a way that renders them void, meaningless, or superfluous." *Intel Corp.*, 21 F.4th at 809-10 (quoting *Wasica Finance GmbH*, 853 F.3d at 1288 n.10.

Contrary to this Court's precedent, the Panel's new construction replaces the word "assembly" with "element" and effectively reduces the claimed "detector assembly" to become a single one of its smallest unit building blocks by itself—

i.e., *one* detector element.[21] The Panel acknowledged the patentee knew how to claim an "assembly" and "detector elements" in different claims,[22] however, the Panel misunderstood that the plain meaning of the word "assembly" uses "plural language" and refers to multiple elements.[23] Moreover, the Panel's subsequent conclusion that Reime's disclosure of a single detector element (*e.g.*, a photodiode) by itself somehow satisfies the entire "detector assembly" claim element demonstrates the Panel's new construction improperly renders the word "assembly" meaningless, contrary to this Court's precedent.[24]

Finally, the Panel's new construction misapprehended and overlooked the *plural* language in dependent claims of the '093 patent, which includes the recited "lenses" (plural) in dependent claim 41.[25] In context, claim 1 of the '093 patent recites "one sensor," dependent claim 26 states the "one sensor" in claim 1

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[21] Opinion at p. 7 ("The claims only require an 'assembly' that includes at least *one* 'detector' element"); *see also* Appx391 (10:41-45) (detector elements are the smallest unit building block of the assembly and include commercially available photodiodes); Appx404 (36:41-46); Appx405 (37:30-33); Appx405 (38:51-54).

[22] *See* Opinion at 7-8.

[23] *See* Opinion at p. 8.

[24] *See* Opinion at p. 9 (the Panel obviated the "detector assembly" recitals by a single "detector element," by itself, in the Reime reference).

[25] *See* Opinion at p. 8 (discussing "plural" claim language); *see also* Appx515 ('093 patent) (dependent claim 41).

comprises a "detector assembly," and dependent claim 41 depends from claim 26 and further recites "lenses."[26]

The patent explains that "lenses" (plural) correspond to respective detector elements (plural) in the "detector assembly"[27] and operably enhance position detection by limiting overlapping fields-of-view between adjacent detector elements (plural).[28] Thus, the recited "lenses" (plural) in claim 41 require the claimed "detector assembly" in claim 26 to have a corresponding number of adjacent detector elements (plural)—*i.e.*, *at least two or more detector elements*. In contrast, under the Panel's construction, if the "detector assembly" in claim 26 only required a single detector element, then claim 41 would have only recited "a lens" (*singular*), not "lenses" (*plural*). Further still, under the Panel's construction, if the "detector assembly" in claim 26 comprises a single detector element by itself, then the entire purpose of having "lenses" in claim 41 would be obviated

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[26] Appx514 ('093 patent) (claim 1); Appx515 (claims 26 and 41); *see also* Opinion at p. 7 (discussing claim 1 and 26 of the '093 patent).

[27] *See*, *e.g.*, Appx515 ('093 patent) (dependent claim 41 recites "lenses" (plural) that correspond to respective detector elements (plural) in the "detector assembly" recited by claim 26).

[28] *See*, *e.g.*, Appx493 (25:18-21) ("lenses" limit the field-of-view for respective "detector elements"); Appx496 (31:4-10) (lenses (plural) limit overlapping fields-of-view for "adjacent detector elements" (plural)).

altogether because there would no adjacent detector elements and no overlapping fields-of-view.

Thus, the only construction of the "detector assembly" that aligns with the overlooked plural language "lenses" in claim 41 requires the "detector assembly" in claim 26 to have a minimum of two or more detector elements (*plural*). The proper construction is consistent with the Board's construction but contrary to the Panel's new construction.[29] In view of the foregoing, the Panel erred as a matter of law by construing the "detector assembly" to be a single "detector element," which renders the words "assembly" and "lenses" meaningless.

3. The Panel's new construction rejected Samsung's foundational understanding of the word "assembly" and rendered the relevant arguments in the Petition moot.

Setting aside the merits of the Panel's new construction, the construction unequivocally rejects Samsung's foundational understanding that an "assembly" requires two or more elements, which renders all of the petition's "detector assembly" arguments moot. The petition's sole argument regarding the "detector assembly" relies on the foundational understanding that it requires two or more

[29] The parties agreed the claimed "detector assembly" should be construed consistently between the parent '850 patent and the child continuation '093 patent.

components.[30] The petition never contemplated or addressed the Panel's new construction because it represents a fundamental shift in both parties' understanding regarding the plain meaning of the word "assembly." Thus, even if the Panel's new construction is correct, the new construction is dispositive of the issues on appeal because it creates dispositive deficiencies in the petition that were never addressed and that cannot be cured on appeal or remand. *See Sirona Dental Sys. GmbH*, 892 F.3d at 1356 ("It would thus not be proper for the Board to deviate from the grounds in the petition and raise its own obviousness theory."); *Koninklijke Philips N.V.*, 948 F.3d at 1335-36 (the petition "defines the metes and bounds of an inter partes review").

Under this Court's precedent, as a matter of law, Samsung and the Board are bound by the arguments presented in the petition. *See SAS Inst., Inc.*, 138 S. Ct. at 1357 ("[T]he petitioner's contentions . . . define the scope of the litigation all the way from institution through to conclusion."). Consistent with this Court's precedent, the Panel erred as a matter of law by introducing new arguments to invalidate the "detector assembly" claims based on its own new construction.

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[30] *See*, *e.g.*, Appx555-556 (the Petition's sole evidence regarding the "detector assembly" is a conclusory sentence that identifies the entire collection of Reime's "optical sensor components 10, 12, 20, 22, 30, and 32"); *see also* Appx7572 (Samsung's Reply again identified all of Reime's "optical sensor components 10, 12, 20, 22, 30 and 32" as the "detector assembly").

CONCLUSION

For the foregoing reasons, Power2B respectfully requests the Court grant this petition for rehearing to reverse the Panel's new construction and affirm the Board's proper construction of the claimed "detector assembly," which requires "two or more detector elements," and/or to affirm the Board's decision regarding the patentability of the "detector assembly" claims based on dispositive deficiencies in the petition that resulted from the Court's rejection of Samsung's proposed construction and entry of its own new construction. The balance of the remaining issues relate to the substantial evidence that supports the Board's factual findings regarding additional deficiencies in the references and should be affirmed without remand.

April 30, 2025

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ADDENDUM

NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC.,
Appellants

v.

POWER2B, INC.,
Cross-Appellant

2023-1629, 2023-1631, 2023-1753, 2023-1745

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2021-01239, IPR2021-01266.

Decided: March 31, 2025

COKE MORGAN STEWART, O'Melveny & Myers LLP, Washington, DC, argued for appellants. Also represented by WILLIAM FINK; BENJAMIN HABER, ABIGAIL GRACE MCFEE, NICHOLAS WHILT, RYAN KEN YAGURA, Los Angeles, CA; THOMAS MCCLINTON HARRIS, Newport Beach, CA.

MARK THOMAS DEMING, Polsinelli PC, Chicago, IL, argued for cross-appellant. Also represented by ADAM PETER DANIELS, Los Angeles, CA; JASON WIETJES, Dallas, TX.

Before HUGHES, MAYER, and STARK, *Circuit Judges*.

HUGHES, *Circuit Judge*.

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. appeal a final written decision of the Patent Trial and Appeal Board holding claims 15–18, 21, 22, and 30 of U.S. Patent No. 8,624,850 and claims 26, 29, 36–38, 44–46, 48, 49, and 56–58 of U.S. Patent No. 9,569,093 were not shown to be unpatentable. Power2B, Inc. cross-appeals the Board's holding that claims 31 and 41 of the '850 patent and claims 1, 5, 8, and 12–13 of the '093 patent are unpatentable. For the following reasons, we affirm-in-part, reverse-in-part, vacate-in-part, and remand.

I

Power2B owns the '850 and '093 patents, which share a specification and claim priority to an application dated April 3, 2006. Both relate to interactive displays that can determine the relative position of objects in front of them and execute corresponding functions. *See, e.g.*, J.A. 360–61 (Fig. 23A–23E), 411–12 (50:7–51:25). The displays include a pixel array, a sensor configured to sense the position of an object using light reflected by the object, circuitry configured to provide an input representative of the position of the object, and a detector assembly arranged on at least one edge of the display. *See e.g.*, J.A. 419–20 (65:50–67:15).

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, Samsung) filed for *inter partes* review of the '850 and '093 patents, challenging as obvious the claims relating to a detector assembly and the claims relating to object position sensing. Although Samsung contended that these claims did not need explicit construction, the Board construed a "detector assembly" as requiring "two or more detector elements that detect

electromagnetic radiation" arranged along "one edge." J.A. 20, 29–30. Applying this construction, the Board found that Samsung's asserted prior art did not disclose the detector assembly claims. Samsung timely appealed, challenging the Board's construction and patentability determination.

The Board further construed the claims directed to object position sensing as including responsiveness to an object's touch and held that these claims were disclosed by Samsung's asserted prior art. Power2B cross-appealed, arguing that these claims should be construed to exclude touching and that the Board's findings of obviousness were not supported by substantial evidence. We address each argument in turn.

II

Claim construction is a question of law we review de novo. *Arendi S.A.R.L. v. Google LLC*, 882 F.3d 1132, 1133 (Fed. Cir. 2018); *Trustees of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1362 (Fed. Cir. 2016).

Obviousness is a "mixed question of law and fact." *Hologic, Inc. v. Smith & Nephew, Inc.*, 884 F.3d 1357, 1361 (Fed. Cir. 2018). The Board's ultimate obviousness determination is reviewed de novo, *id.*, but what a prior art reference discloses is a question of fact, *Adasa Inc. v. Avery Dennison Corp.*, 55 F.4th 900, 910 (Fed. Cir. 2022), reviewed for substantial evidence, *Hologic,* 884 F.3d at 1361. Substantial evidence "means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000) (citations omitted).

III

Samsung's appeal concerns those claims directed to a detector assembly: claims 15–18, 21–22, and 30 of the '850 patent and claims 26, 29, 36–38, 44–46, 48–49, and 56–58 of the '093 patent. Opening Br. at 5. Claim 15 of the '850 patent is representative and reads:

> An integrated display and input device, comprising:
>
> > a pixel array configured to provide a visually sensible output;
> >
> > at least one sensor configured to sense at least a position of at least one object with respect to the pixel array when the at least one object has at least a predetermined degree of propinquity to the pixel array;
> >
> > circuitry configured to receive an output from the at least one sensor and to provide a non-imagewise input that is representative of the position of the at least one object relative to the pixel array;
> >
> > and wherein the at least one sensor includes *a detector assembly arranged at least one edge of a viewing plane defining plate*.

J.A. 419–20 (emphasis added).

Claim 16 of the '850 patent depends from claim 15 and requires that the detector assembly be arranged "along the at least one edge of the viewing plane defining plate." J.A. 420 (67:14–15). The remaining dependent claims, claims 17–18, 21–22, and 30 of the '850 patent, either require or depend from claims that require "an arrangement of detector elements" or a "plurality of . . . detectors." J.A. 420 (67:16–67:25; 67:34–67:47; 68:47–68:50).

Claims 1 and 26 of the '093 patent combined are substantially similar to claim 15 of the '850 patent and recite:

> 1. An integrated display and input device, comprising:
>
> > a pixel array operative to provide a visually sensible output;

> at least one sensor operative to sense a position of an object with respect to the pixel array when the object is within a predetermined degree of propinquity to the pixel array;
>
> at least one illuminator that provides backlighting and illuminates the object within the predetermined degree of propinquity;
>
> and circuitry that receives an output from the at least one sensor and provides a non-imagewise input representing the position of the object relative to the pixel array to utilization circuitry.

J.A. 514.

> 26. The integrated display and input device according to claim 1, wherein the at least one sensor comprises *a detector assembly arranged at an edge of a viewing plane defining plate.*

J.A. 515 (emphasis added).

Claims 29, 36, 37, and 38 of the '093 patent, which depend directly and indirectly from claim 26, require a detector assembly to include an "arrangement of detector elements," and in claims 36 and 38, a "plurality of . . . detectors." J.A. 515 (69:11–69:13, 69:32–69:40). Independent claim 44 requires a detector assembly to include "a support substrate" and "at least one sensor [that] detects electromagnetic radiation." J.A. 515 (69:67–70:20). The remaining detector assembly claims, claims 45–46, 48–49, and 56–58, depend directly or indirectly from claim 44. J.A. 515 (70:21–70:27; 70:32–70:40; 71:16–71:27).

Samsung petitioned for *inter partes* review of the '850 and '093 patents, challenging all detector assembly claims as obvious in view of U.S. Patent App. Pub. No. 2003/0034439 (Reime), which is directed to a method and

system for "detecting the presence of an object at a touch pad." J.A. 1891 ([0007]). During the IPR proceedings, the parties contested the construction of the term "detector assembly." Samsung argued that it should be given its plain and ordinary meaning while Power2B argued that it required at least two detector elements. In both its Final Written Decisions, the Board agreed with Power2B that "detector assembly" should be construed to mean "two or more detector elements that detect electromagnetic radiation." J.A. 20, 73; *see* J.A. 19, 71 ("We find that this language is consistent with the plain and ordinary meaning for detector assembly in light of the ['850/'093] patent Specification.").

The detector assembly claims also all require the detector assembly to be "arranged [at an edge / at least one edge / along the at least one edge / about at least one edge] of a viewing plane defining plate." J.A. 419–20, 515–16. Although the parties did not present the Board with any proposed constructions of these "edge" terms, the Board's analysis of whether the prior art disclosed the "edge" claim elements appeared to construe them as requiring that a detector assembly be arranged at "one edge." J.A. 29–30, 100.

Applying this implied construction, the Board held that the detector assembly claims were not shown to be unpatentable. The Board found that al-though two of Reime's light receivers are detector elements that comprise a detector assembly, Samsung could not show that Reime discloses a detector assembly that satisfies the "edge" terms because Reime's receivers "are centered on opposite edges of the plate" and not arranged along "one edge." J.A. 29–31, 100–01.

IV

Samsung argues that the Board was incorrect to construe the term "detector assembly" to require "two or more detector elements" when "nothing in the language of claim 15 from the '850 patent or claim 26 from the '093 patent

requires the "detector assembly" to include more than one detector element—or any other specific element(s)." Opening Br. at 14–15.[1] We agree with Samsung.

A

The claimed "detector assembly" is properly construed as requiring at least *one* detector element. The broad claim language in claim 15 of the '850 patent and claim 26 from the '093 patent requires only a "sensor" that "includes" or "comprises" a "detector assembly arranged" on "at least one edge" or "at an edge" of "a viewing plane defining plate." J.A. 420, 515. There is no requirement for two or more detector elements in the claim language. Samsung asks us to construe a "detector assembly" to include at least one detector element *and* at least one additional component, but there is no support in the claim language for an additional component either. The claims only require an "assembly" that includes at least one "detector" element.

In reaching its conclusion to the contrary, the Board reasoned that the specification and dependent claims were consistent with a requirement that a detector assembly include "two or more detector elements." *See, e.g.*, J.A. 19

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[1] Power2B argues that Samsung forfeited the argument that a "detector assembly" could be construed to include only a single detector element. Cross-Appellant Response Br. at 45–48. We disagree. In its petitions, Samsung argued that the term "detector assembly" should be afforded its plain and ordinary meaning, and in response to Power2B's proposal that the term should be narrowed to require "two or more detector elements," Samsung clarified its position that "the claims are indifferent to . . . whether the detector assembly includes a single detector element or multiple detector elements." J.A. 7562. Because this argument was made before the Board, it was sufficiently preserved for appeal.

("[D]ependent claims 17 and 18 recite having a plurality of detector elements."). However, as Samsung argues, dependent claims, such as claims 17 and 18 of the '850 patent, support our broader construction. Where Power2B wanted to specify that more than one detector element was required, it did so expressly using plural language. Dependent claims 17–18, 21–22, and 30 of the '850 patent and dependent claims 29 and 36–38 of the '093 patent require or depend from claims that require an "arrangement of detector elements," plural, and/or a "plurality" of detector elements. The doctrine of claim differentiation teaches that a limitation in the dependent claims can give rise to a presumption that the limitation is not present in the independent claims. *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (citing cases discussing "the presumption that an independent claim does not have a limitation that is introduced for the first time in a dependent claim"). Although Power2B argues that the "dependent claims are consistent with" a requirement of two or more detector elements, *see* Cross-Appellant Response Br. at 50, the intrinsic evidence provides no basis to read such a limitation into the independent claims.

The fact that the specification repeatedly refers to preferred embodiments in which a detector assembly includes multiple detector elements similarly does not justify importing such a limitation into the independent claims. *See, e.g.*, *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1314 (Fed. Cir. 2008) ("Th[e] description of a preferred embodiment, in the absence of a clear intention to limit claim scope, is an insufficient basis on which to narrow the claims."); *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 992 (Fed. Cir. 1999) ("[J]ust as the preferred embodiment itself does not limit claim terms . . . inferences drawn from the description of an embodiment of the invention cannot serve to limit claim terms . . . as they are insufficient to require a narrower definition of a disputed term."). Though the Board and Power2B both note

that the specification "consistently" describes the detector assembly as comprising two or more detector elements, *see* Cross-Appellant Response Br. at 51–52; J.A. 19, 71, the preferred embodiments cannot limit otherwise broad claims in the absence of an unmistakable disavowal of claim scope.

The prosecution history does not alter our conclusion. Power2B made no attempt during prosecution to limit the term "detector assembly" to require "two or more detector elements." *See* J.A. 1712–13.

B

We reverse the Board's decisions as to claims 15 and 16 of the '850 patent and claim 26 of the '093 patent. In its Final Written Decisions, the Board found that Reime teaches every limitation of claim 15 of the '850 patent and claim 26 of the '093 patent *except* for a detector assembly, comprising of at least two detector elements, arranged at one edge. J.A. 26–31, 96–101.

It is not disputed that Reime teaches one detector element on one edge. In Figure 6A, for example, Reime teaches that one group of optical sensor components can be placed on each side of a four-sided touch pad, resulting in one light receiver on each side. J.A. 1880 (Fig. 6A), 1895 ([0082]); *see also* J.A. 1876–84 (Figs. 2A–2D,4A–4B, 5A–5H, 6A–6B, and 9C–9F, all depicting one receiver, either receiver 30 or 32, on one edge of the touch pad). The Board also acknowledged that Reime teaches receivers "centered on opposite edges of the plate." J.A. 30–31, 101. Because the Board found Reime discloses at least one detector element on one edge of a touch screen, we conclude that claim 15 of the '850 patent and claim 26 of the '093 patent are unpatentable as obvious in view of Reime. Because claim 16 has the same claim limitations as claim 15, we find that claim 16 of the '850 patent is also obvious.

C

Our construction of "detector assembly" does not resolve the patentability of the dependent claims that explicitly require multiple detectors arranged at an edge of a touch screen—specifically, claims 17–18, 21–22, and 30 of the '850 patent and claims 29 and 36–38 of the '093 patent—or claims that explicitly require a detector assembly to comprise of at least one detector and a support substrate—specifically, claims 44–46, 48–49, and 56–58 of the '093 patent. Because these claims all either incorporated the limitations of claim 15 of the '850 patent or claim 26 of the '093 patent, or otherwise relied on a showing that claim 26 of the '093 patent was disclosed by the prior art, the Board did not analyze whether Reime taught the additional limitations in these claims. It instead relied on its analysis of claim 15 of the '850 patent and claim 26 of the '093 patent to find that Samsung had not shown these claims to be unpatentable. J.A. 31, 101–02.

We vacate the Board's decisions as to these remaining claims and remand for the Board to evaluate Samsung's obviousness contentions under the correct construction of "detector assembly." The Board will need to evaluate, in the first instance, whether the additional limitations in these challenged claims are disclosed by Reime.

D

To guide the Board's analysis on remand, Samsung asks us to clarify the proper reading of the "edge" terms in the detector assembly claims. Oral Arg. at 25:15–28:05.[2] To the degree the Board imposed an additional limitation by construing the terms "at an edge" and "at least one edge" to require that an entire detector assembly be located on

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[2] *Available at* https://oralarguments.cafc.uscourts.gov/default.aspx?fl=23-1629_11042024.mp3.

"one edge," we agree with Samsung that this construction was incorrect.[3]

Properly construed, the terms "at an edge" and "at least one edge" require a detector assembly to be arranged along one or more edges of a viewing plane defining plate. As a general rule, we construe terms such as "an" and "at least one" to mean one or more. *See Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008) ("That 'a' or 'an' can mean 'one or more' is best described as a rule . . . . The exceptions to this rule are extremely limited: a patentee must 'evince a clear intent' to limit 'a' or 'an' to 'one.' The subsequent use of definite articles 'the' or 'said' in a claim to refer back to the same claim term does not change the general plural rule, but simply reinvokes that non-singular meaning.") (internal citations omitted); *Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999) ("Use of the phrase 'at least one' means that there could be only one or more than one."). There is nothing in the claim language, specification, or prosecution history that compels a departure from this convention, as the record does not demonstrate that Power2B ever intended to limit the detector assembly claims to a "one edge" requirement. Power2B does not contend that such limiting language exists. And without such limiting language, "one edge" cannot be the

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[3] Power2B argues that Samsung forfeited the argument that the "edge" terms need not be arranged on only "one edge." Cross-Appellant Response Br. at 48–50. We disagree. To the degree the Board implied a new construction of the "edge" terms for the first time in its Final Written Decisions, Samsung properly responded on appeal. See *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1383 (Fed. Cir. 2023) ("[P]arties in an IPR must be permitted to respond to a new claim construction adopted by the Board sua sponte after the institution decision.") (citing *Qualcomm Inc. v. Intel Corp.*, 6 F.4th 1256, 1263 (Fed. Cir. 2021)).

proper reading of "at an edge" or "at least one edge" in accordance with our caselaw.

In summary, we (1) construe the term "detector assembly" to require at least one detector element; (2) reverse the Board's holding that claims 15 and 16 of the '850 patent and claim 26 of the '093 patent are nonobvious in view of Reime; (3) vacate the Board's findings that claims 17–18, 21–22, and 30 of the '850 patent and claims 29, 36–38, 44–46, 48, 49, and 56–58 of the '093 patent are not unpatentable and remand for the Board to evaluate whether Reime renders these claims obvious; and (4) clarify that arranging a detector assembly "at," "along," or "about" "at least one edge" or "an edge" does not limit the detector assembly to being arranged entirely on "one edge" as the Board apparently determined.

V

Power2B's cross-appeal concerns those claims directed to position sensing, which we will call the "propinquity" claims: claims 31 and 41 of the '850 patent and claims 1, 5, 8, and 11–13 of the '093 patent. Cross-Appellant Response Br. at 11, 29–31. These claims all require a sensor or pixel array which can sense the relative position of an object when it "[has at least / is within] a predetermined degree of propinquity." J.A. 420–21, 514. Claim 31 of the propinquity claims at issue in the'850 patent is representative and recites:

> A position sensing assembly comprising:
>
> > a plate defining a surface;
> >
> > at least one pixel array including a plurality of detector elements configured to detect electromagnetic radiation at a baseline level, the at least one pixel array being configured to sense a position of an object with respect to the surface according to locations of ones of the plurality of detector elements

> at which at least one of the amount of radiation detected and the change in the amount of radiation detected exceed a predetermined threshold, the at least one pixel array being configured to sense at least a position of at least one object with respect to the at least one pixel array *when the at least one object has at least a predetermined degree of propinquity to the at least one pixel array*;
>
> circuitry configured to receive an output from the at least one pixel array and to provide a non-imagewise input that is representative of the position of the at least one object relative to the at least one pixel array; and
>
> wherein the change in the amount of radiation detected results from ones of the plurality of detector elements detecting reflected light from the object in addition to detecting the radiation at the baseline level.

J.A. 420–21 (68:51–69:6) (emphasis added).

Claim 1 of the '093 patent, recited in Section III, is representative of the propinquity claims at issue in the '093 patent. *See* J.A. 514 (67:45–67:58). Also on cross-appeal is claim 11 of the '093 patent. Claim 11 depends indirectly from claim 1 and requires utilization circuitry to "distinguish at least between directions of motion of the object towards and away from the device." J.A. 514 (68:17–68:20).

Samsung challenged claims 31 and 41 of the '850 patent as obvious in view of U.S. Patent Application Publication No. 2005/0219229 (Yamaguchi), and claims 1, 5, 8, and 11–13 of the '093 patent as obvious in view of Reime, alone or in combination with U.S. Patent Application Publication

No. 2002/0021278 (Hinckley). During the proceedings, Power2B advocated for "a predetermined degree of propinquity" to be construed as "a specified proximity distance established in advance and does not include touching." *E.g.* J.A. 6912. The Board rejected this position and instead agreed with Samsung that the plain and ordinary meaning of "at least" or "within" "a predetermined degree of propinquity" encompasses "touching" or zero distance. J.A. 11, 63–64 ("[W]hether propinquity and touching are mutually exclusive . . . is inapposite. The claims do not recite having a particular propinquity. Rather, they recite '[having *at least* /] is *within* a predetermined degree of propinquity,' without reciting a lower bound. The plain meaning thus includes a degree of propinquity, and being closer.") (internal citations omitted) (emphasis in original). The Board further determined that "propinquity" means "proximity," and that "a predetermined degree of propinquity" is not a specified distance established in advance. J.A. 16, 69. Turning to obviousness, the Board held that Samsung had shown all propinquity claims to be unpatentable.

VI

Power2B argues that the Board incorrectly construed the phrase "predetermined degree of propinquity" to include touching. Cross-Appellant Response Br. at 64. Even if we disagree, Power2B asserts that "the Board's ultimate obviousness findings were not supported by substantial evidence." *Id.* Accordingly, Power2B asks us to reverse the Board's determination that the propinquity claims were disclosed by the prior art. We decline to do so, as we disagree with Power2B's proposed claim construction and assessment of the Board's obviousness analysis.

A

As an initial matter, Samsung contends that Power2B's cross-appeal concerning the "propinquity" claims is collaterally estopped by a related IPR. Samsung's Reply Br. at 43–50. In a prior IPR of Power2B's U.S. Patent

No. 8,610,675, the Board issued a Final Written Decision rejecting Power2B's argument that the phrase at least "a predetermined degree of propinquity" should be construed to exclude touching. J.A. 14905. Claim 1 of the '675 patent had a "propinquity" term nearly identical to that in claim 31 of the '850 patent and claim 1 of the '093 patent, and the Board agreed with Samsung that, properly construed to include touching, the term was disclosed by Reime and Yamaguchi. J.A. 14986–87, 14934–35. Power2B did not appeal that decision. Because we agree on the merits with Samsung that the Board had substantial evidence for its finding that the "propinquity" claims of the '850 and '093 patents are obvious, we need not determine if collateral estoppel also precludes Power 2B from prevailing in its cross-appeal.

B

The propinquity claims require a pixel array or sensor configured to sense the "position" of an object "with respect to" the pixel array when the object "is within" or "has at least" "a predetermined degree of propinquity" to the pixel array. J.A. 420, 514. We agree with the Board that the plain and ordinary meaning of "at least" or "within" "a predetermined degree of propinquity" includes touching the display, or zero distance.

The Board and the parties agree that "propinquity" means "proximity." Power2B urges that this proximity-based limitation means "determining an object is at a specific distance away from the surface," which only covers objects that are near, but not touching, the device. Cross-Appellant Response Br. at 64–65. However, there is a difference between a claim that is indifferent to touch and one that excludes touch. The language of the "propinquity" claims falls into the former category. Power2B's proposed construction replaces a "predetermined degree" of proximity with a "specific distance" and requires "proximity" to exclude touching. The claims do not recite a specific

propinquity or proximity, and Power2B's cross-appeal does not point to any authority which defines proximity to exclude touch.

Neither the specification nor the dependent claims provide a basis for reading in Power2B's proposed construction. Even if Power2B's position were correct, and the specification's exemplary figures and dependent claims always used "propinquity" to refer to a set distance away from the pixel array, *see* Cross-Appellant Response Br. at 67–70, this does not provide a basis to import such a distinction into the broad claim language. *See, e.g.*, *Decisioning.com, Inc.*, 527 F.3d at 1314; *Johnson Worldwide Assocs., Inc.*, 175 F.3d at 992.

Moreover, the specification and the dependent claims support our construction. In Figures 20A and B of the '850 patent, for example, the specification discloses detecting an object's position regardless of whether it is touching or near, but not touching, the surface. J.A. 410 (48:26–29) ("When the user's fingers' touch, as in FIG. 20B, or is located in propinquity to, as in FIG. 20A, plate 1508, the light reflected from the fingers is detected by one or more of detector elements 1504[.]"). Claims that depend on claim 31 of the '850 patent, such as claim 34, add a separate requirement for a "utilization circuitry . . . configured to distinguish at least between positions of the at least one object when touching and not touching the device." J.A. 421 (69:16–19). As Samsung argues, "in order for claim 34's circuitry to be able to distinguish between positions of touching and not touching, independent claim 31 must encompass touching . . . in the range of proximity the system can sense, otherwise the utilization circuitry would not be able to make its determination." Samsung Reply Br. at 52. The Board found this argument convincing, reasoning that if the propinquity claims excluded touching, there would be no touching position for claim 34's circuitry to distinguish. J.A. 13. We agree.

We have considered Power2B's remaining claim construction arguments regarding the propinquity claims and find them unconvincing. The fact that the "specification repeatedly uses the term 'propinquity' to describe and depict an object positioned at a pre-established distance," Cross-Appellant Response Br. at 67, for instance, says nothing of the full scope of "propinquity"—only that objects hovering nearby are included. Because the specification and dependent claims distinguish between touch-based operations and propinquity-based operations, Power2B also asks us to infer that these two kinds of operations cannot both respond to touching. *Id.* at 68–69. Power2B misunderstands that the question here is the scope of propinquity-based functionality (*i.e.*, whether such functionality can be triggered by the touching of a display in addition to hovering adjacent to the display), not the difference between touch-based and propinquity-based operations. While it is true that the '850 patent and the '093 patent incorporate hardware that can respond to touch input "akin to the click of a conventional mouse," *e.g.*, J.A. 412 (51:9–14), this does not clarify which object interactions fall within the claimed propinquity-based operations.

In summary, Power2B's proposed construction is overly narrow and unsupported by the intrinsic record. The Board properly concluded that the plain meaning of "at least" or "within" "a predetermined degree of propinquity" includes "a degree of propinquity, and being closer," which includes touching. J.A. 11, 64.

C

Substantial evidence supports the Board's factual findings that Samsung's asserted prior art references taught the "predetermined degree of propinquity" claim limitations. Accordingly, we affirm the Board's holding that claims 31 and 41 of the '850 patent and claims 1, 5, 8, 11–13 of the '093 patent are unpatentable as obvious in view of the prior art.

Regarding the '850 patent claims, the Board determined that Yamaguchi teaches detecting an object's position when it has at least a predetermined degree of propinquity. J.A. 41–42. This determination is supported by substantial evidence. Yamaguchi is directed to "an image display device including the capability of detecting an object position." J.A. 32 (citing J.A. 1836 ([0003])). The image display incorporates a matrix of light-emitting and photo-detection cells. Light-emitting cells in the display emit light in accordance with image data, while photo-detection cells detect light reflected by an object. J.A. 33–34; *see also* J.A. 1836–37 ([0016]–[0019]). The Board recognized that Yamaguchi Figure 5 explicitly teaches sensing an object's position when it is "brought into contact or close proximity with the display" by comparing the photo-detection signal produced by the object against a predetermined threshold. J.A. 41 (citing J.A. 1842 ([0118])), J.A. 42 (citing J.A. 1848 ([0169])). The Board also afforded "significant weight" to testimony from Samsung's expert that Yamaguchi's threshold to respond and sense an object in close proximity is established "at some predetermined degree of propinquity, *i.e.*, a level of nearness to the device [that] has been set." J.A. 42. We give deference to "the Board's findings concerning the credibility of expert witnesses." *Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010).

The Board's finding that Reime teaches detecting the position of an object when it is "within a predetermined degree of propinquity" as claimed by the '093 patent is also supported by substantial evidence. J.A. 83–86. Reime detects an object's location using one or more groups of "optical sensor components" including two light emitters and one light receiver "at different locations" around a touch pad. J.A. 1891 ([0008]). Reime depicts objects interacting with the touchpad and explains:

> When a user uses an object such as a pencil **100** or a finger **100' (FIG. 2A)** to touch the touch pad **5,** some light **110** emitted from the emitter **10**

> encounters the surface of the object **100**. Part of the light **110** reflects off the object **100** and is received by the receiver **30**. . . . The amount of light received by the receiver **30** can be measured from the output signal **130**. . . . [T]he presence of the object **100** near the emitters **10, 20** and the receiver **30** would cause a change in the output signal **130**. . . . With a series of such measurements, it is possible to track the positions of the object **100** and thus its movement.

J.A. 1894 ([0073]). The Board cited to this portion of Reime's specification to find that Reime teaches detecting of an object's position via a change in output signal. J.A. 83–84. In view of Power2B's arguments that a "predetermined degree of propinquity" should exclude touching, the Board also clarified that Reime discloses that "it is not necessary for the object [] to physically touch" the display in order for the object to be interpreted as "touching the surface" because the touch pad will determine an object's position whenever there is a sufficient change in output signal. J.A. 84 (citing J.A. 1894 ([0074])). Thus, Reime discloses a touch pad that is responsive to objects that are near, but not necessarily touching, the touch pad. *Id.*

On cross-appeal, Power2B repeats its argument before the Board that Reime and Yamaguchi are not responsive to an object's "predetermined degree" of proximity because they only teach operations to determine an object's position in two-dimensional space, i.e., its x-y coordinate, and neither teaches how to measure an object's position in three dimensions, i.e., by also determining the object's position along the z-axis. Cross-Appellant Response Br. at 70–71, 73. The Board correctly responded that nothing in the plain language of the propinquity claims requires calculating an object's distance on a z-axis. J.A. 43, 84. The limitation only requires sensing an object's "position" when it is "within" or "has at least" "a predetermined degree of propinquity" to the pixel array. Therefore, the Board reasoned that "the

plain and ordinary meaning of 'position' is broad enough to cover both two-dimensional and three-dimensional positions." J.A. 85. We agree and affirm that both Yamaguchi's and Reime's teachings cover the "propinquity" limitation.

Finally, Power2B challenges the Board's determination that claim 11 of the '093 patent was obvious in view of a combination of Reime and Hinckley. Cross-Appellant Response Br. at 31. The Board properly credited testimony from Samsung's expert that "one of ordinary skill in the art would have been motivated to modify Reime to include Hinckley's features and benefits." J.A. 107. Hinckley relates to "devices with displays" which can be activated "based on whether [they are] being handled, [their] orientation, and/or whether [they are] being gestured toward." J.A. 1908 ([0002], [0009]). Hinckley teaches touch sensors, tilt sensors, and proximity sensors which can be used separately or in combination to control activation of a device. *E.g.*, J.A. 1909 ([0029]), 1911–12 ([0062]–[0066]). As the Board recognized, Hinckley's disclosure of a "proximity sensor" which can determine when the user is "close" to the device, when "the user takes the device *away* from their mouth," and in other embodiments, when the user is "gesturing toward the device," is sufficient to demonstrate that Hinckley "teaches distinguishing between an object moving towards or away from a device" as required by the additional limitation in claim 11. J.A. 106–07.

VII

We hold that the Board's construction of the "detector assembly" limitation was erroneous. We therefore reverse the Board's construction, reverse the Board's conclusion that claims 15 and 16 of the '850 patent and claim 26 of the '093 patent are not unpatentable as nonobvious in view of the prior art, and vacate and remand the Board's conclusion that claims 17–18, 21–22, and 30 of the '850 patent and claims 29, 36–38, 44–46, 48–49, and 56–58 of the '093

patent are not unpatentable for further proceedings in view of our claim construction.

We hold that the Board's factual findings regarding claims 31 and 41 of the '850 patent and claims 1, 5, 8, 11–13 of the '093 patent are supported by substantial evidence, and we affirm the Board's conclusion that these claims are unpatentable as obvious in view of the prior art.

AFFIRMED-IN-PART, REVERSED-IN-PART, VACATED AND REMANDED

COSTS

Costs awarded to Appellant Samsung.

CERTIFICATE OF COMPLIANCE

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April 30, 2025

/s/Adam P. Daniels
Adam P. Daniels