United States Court of Appeals for the Federal Circuit

APPLE INC.,
Appellant

v.

COREPHOTONICS, LTD.,
Appellee

2022-1350, 2022-1351

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2020-00905, IPR2020-00906.

Decided: September 11, 2023

ELIZABETH MOULTON, Orrick, Herrington & Sutcliffe LLP, San Francisco, CA, argued for appellant. Also represented by ALYSSA BARNARD-YANNI, EMILY VILLANO, New York, NY; MARK S. DAVIES, Washington, DC.

MARC A. FENSTER, Russ August & Kabat, Los Angeles, CA, argued for appellee. Also represented by BRIAN DAVID LEDAHL, NEIL RUBIN, JAMES S. TSUEI.

Before STOLL, LINN, and STARK, *Circuit Judges*.

STOLL, *Circuit Judge*.

Apple Inc. appeals two final written decisions of the Patent Trial and Appeal Board determining that Apple had not shown the challenged claims of Corephotonics, Ltd.'s U.S. Patent No. 10,225,479 were unpatentable as obvious. Because the intrinsic evidence supports a different construction than that adopted by the Board in its first decision, and because the Board based its second decision on a ground not raised by any party in violation of the Administrative Procedure Act (APA), we vacate and remand both final written decisions.

BACKGROUND

Corephotonics owns the '479 patent, which is directed to creating "portrait photos." '479 patent col. 15 ll. 29–30. Specifically, the patent discloses "a thin (e.g., fitting in a cell phone) dual-aperture zoom digital camera" that combines images taken by a wide lens and a tele lens to create a fused still image. *Id.* at col. 3 ll. 18–23. The patent's specification explains that the resulting fused image shows the "objects behind the subject [as] . . . very blurry." *Id.* at col. 4 ll. 30–34. The patent describes that the fused image is created by incorporating "information from the out-of-focus blurred background in the Wide image" with "the original Tele image," ultimately providing "a blurrier background and even shallower" depth-of-field than the original tele image. *Id.* at col. 4 ll. 34–38, col. 9 ll. 58–60.

Representative claim 1 reads as follows:

> 1. A dual-aperture digital camera . . ., comprising:
>
> a) a Wide camera comprising a Wide lens and a Wide image sensor, the Wide camera having a respective field of view FOV_W and being operative to provide a Wide image of the object or scene;

> b) a Tele camera comprising a Tele lens and a Tele image sensor, the Tele camera having a respective field of view FOV_T narrower than FOV_W and being operative to provide a Tele image of the object or scene . . .;
>
> . . .
>
> e) a camera controller operatively coupled to the . . . Wide and Tele image sensors and configured to control the [autofocus] mechanisms and to process the Wide and Tele images to create a fused image,
>
> wherein areas in the Tele image that are not focused are not combined with the Wide image to create the fused image and
>
> *wherein the camera controller is further operative to output the fused image with a point of view (POV) of the Wide camera by mapping Tele image pixels to matching pixels within the Wide image.*

Id. at col. 13 ll. 22–50 (emphasis added to disputed portion).

Apple filed two petitions for *inter partes* review, each challenging various claims of the '479 patent as obvious in view of multiple prior art references, including (as relevant on appeal) Parulski.[1] Parulski discloses a "digital camera that uses multiple lenses and image sensors to provide an improved imaging capability." Parulski col. 1 ll. 8–10. The Board issued a final written decision in both proceedings finding that Apple had not met its burden to show that the challenged claims were unpatentable. *Apple, Inc. v. Corephotonics Ltd.*, No. IPR2020-00905, Paper 51, at 23

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[1] U.S. Patent No. 7,859,588.

(P.T.A.B. Nov. 8, 2021) (*'905 IPR Decision*); *Apple, Inc. v. Corephotonics Ltd.*, No. IPR2020-00906, Paper 54, at 14 (P.T.A.B. Nov. 8, 2021) (*'906 IPR Decision*).

I

In the first proceeding, the parties disputed the construction of the claim term requiring a "fused image with a point of view (POV) of the Wide camera." Specifically, the parties disputed what "a point of view (POV) of the Wide camera" requires. Both parties cited intrinsic evidence to support their arguments. Apple contended that, in view of the specification's disclosure, the disputed claim term required only that the fused image retain Wide perspective *or* Wide position POV, i.e., retain the shape of the Wide image (perspective POV) *or* the position of the Wide image (position POV). Corephotonics argued that the specification defined "point of view" such that the disputed limitation meant that the fused image must maintain *both* Wide perspective and Wide position POV.

The Board described the specification's disclosure regarding this term as "not a model of clarity," *'905 IPR Decision* at 11, but ultimately agreed with Corephotonics that "the [s]pecification equates a camera's POV with how an object will appear in that camera's image plane," which includes both the position and perspective points of view of an object. *Id.* Based on this construction, the Board found that Parulski only disclosed maintaining Wide position POV and therefore did not maintain "a point of view (POV) of the Wide camera" as construed. *Id.* at 21. Accordingly, the Board concluded that Parulski did not disclose this claim limitation and thus that Apple had not shown that the challenged claims were unpatentable.

II

In the second proceeding, Apple challenged claims 19–22 of the '479 patent, which included many limitations relating to certain camera parameters, like track length,

focal length, and pixel size, among others. Independent claim 19 recites:

> 19. A dual-aperture digital camera for imaging an object or scene, comprising:
>
> a) a Wide camera comprising a Wide lens and a Wide image sensor, the Wide camera having a respective field of view FOV_W and being operative to provide a Wide image of the object or scene;
>
> b) a Tele camera comprising a Tele lens and a Tele image sensor, the Tele camera having a respective field of view FOV_T narrower than FOV_W and being operative to provide a Tele image of the object or scene, wherein the Tele lens has a respective effective focal length EFL_T and total track length TTL_T fulfilling the condition $EFL_T/TTL_T>1$;
>
> c) a first autofocus (AF) mechanism coupled mechanically to, and used to perform an AF action on the Wide lens;
>
> d) a second AF mechanism coupled mechanically to, and used to perform an AF action on the Tele lens, wherein the Wide and Tele lenses have different F numbers $F\#_{Wide}$ and $F\#_{Tele}$, wherein the Wide and Tele image sensors have pixels with respective pixel sizes $Pixel\ size_{Wide}$ and $Pixel\ size_{Tele}$ wherein $Pixel\ size_{Wide}$ is not equal to $Pixel\ size_{Tele}$, and wherein the Tele camera has a Tele camera depth of field (DOF_T) shallower than a DOF of the Wide camera (DOF_W); and
>
> e) a camera controller operatively coupled to the first and second AF mechanisms and

> to the Wide and Tele image sensors and configured to control the AF mechanisms, to process the Wide and Tele images to find translations between matching points in the images to calculate depth information and to create a fused image suited for portrait photos, the fused image having a DOF shallower than DOF_T and having a blurred background.

'479 patent col. 14 l. 66–col. 15 l. 33.

Apple contended that a combination of Parulski and Ogata[2] (and other references not relevant on appeal) would render these claims obvious. Ogata discloses a "wide-angle photographic lens system," and includes multiple charts listing specific data of the lens components of its preferred embodiments. Ogata col. 7 l. 29–col. 11 l. 59. Apple proposed in its petition that the skilled artisan would combine Parulski—which discloses a dual-aperture lens system without specifics about its lens parameters—with Ogata—which discloses specific data about lens parameters. Although Parulski and Ogata disclose differently sized lenses, Apple argued that the skilled artisan would have scaled the lens of Ogata down by a factor of about 6 to meet the size disclosed by Parulski. And if the artisan did so, the resulting scaled lens would purportedly have the characteristics required by claims 19–22.

Corephotonics' Patent Owner Response pointed out an alleged problem with Apple's theory. Apple relied on the declaration of its expert Dr. Sasián—and he made a typographical error in his declaration. Specifically, Dr. Sasián used a program called Zemax to calculate the resulting lens characteristics for Ogata's lens were it scaled down as Apple suggested in its petition. But when he entered the lens

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[2] U.S. Patent No. 5,546,236.

data into Zemax, Dr. Sasián inadvertently entered the wrong Abbe number[3] for the third lens element. *'906 IPR Decision* at 15 (identifying that Dr. Sasián entered the Abbe number as 26.5, instead of 42.72 as disclosed by Ogata); *also compare* J.A. 2733, Fig. 3C (Dr. Sasián's "Prescription Data" spreadsheet listing Abbe number for third lens element as 26.5), *with* Ogata col. 7 ll. 45 (listing same Abbe number (v_3) as 42.72).

Corephotonics briefly noted—in the Background section of its Patent Owner Response—that, "[b]ecause of this error, Dr. Sasián's field curvature, distortion and OPD fan plots . . . do not accurately reflect the performance of a scaled version of Ogata's" lens. *Apple, Inc. v. Corephotonics Ltd.*, No. IPR2020-00906, Paper 15, at 31 (P.T.A.B. Feb. 4, 2021). Corephotonics did not mention this error again. It did not, for example, mention this typographical error at any point in its argument regarding obviousness or allege that this error altered whether the prior art combination discloses any of the claimed lens parameters. *See generally id.* at 36–68. Instead, Corephotonics used the remainder of its Response to argue that the proposed scaling of Ogata would create a "miniature" lens that would "dramatically alter the practicality of manufacturing the design" and would also impact "performance characteristics." *Id.* at 41; *see also* J.A. 4803 (Corephotonics' expert Dr. Moore opining that the proposed combination would not work because "scaling a good conventional lens design to a smaller size will often produce a design that is substantially inferior"). In its Reply, Apple did not respond to Corephotonics' brief mention of Dr. Sasián's typographical error. Instead, Apple argued that scaling Ogata's lens down by the proposed factor would not cause issues with manufacturing or performance, distinguishing Corephotonics' arguments by

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[3] An Abbe number of a transparent material is an approximate measure of the material's dispersion.

noting that the proposed lens would not be "miniature" at all. *Apple, Inc. v. Corephotonics Ltd.*, No. IPR2020-00906, Paper 23, at 6–7 (P.T.A.B. May 7, 2021).

The Board then issued its final written decision, which focused not on the manufacturing and scalability arguments raised by the parties but instead on Dr. Sasián's typographical error. *'906 IPR Decision* at 13–17. Specifically, the Board found there were "[a] few inconsistencies between" Ogata and the data in Dr. Sasián's declaration. *Id.* at 15. Besides the error mentioned by Corephotonics, the Board also purported to identify additional errors in Dr. Sasián's declaration regarding "the data for the fourth and tenth aspherical surfaces." *Id.* Because of these errors—both the Abbe number error identified by Corephotonics and additional errors identified for the first time by the Board in its decision—the Board found that Apple had not met its burden to show that the challenged claims were unpatentable. *Id.* at 17 ("[T]he opinion of a person skilled in the art will be only as reliable as the lens design software analysis that person performed, which will be only as reliable as the data used to perform that analysis.").

Apple appeals from both final written decisions. We have jurisdiction under 35 U.S.C. § 1295(a)(4)(A).

DISCUSSION

On appeal, Apple argues that the Board improperly construed the claim term "fused image with a point of view of the Wide camera" in its final written decision in the first IPR and that the Board's conclusion regarding Dr. Sasián's declaration in the second IPR was a new argument raised without notice to Apple in violation of the APA. We address the issues in each proceeding in turn.

I

We turn first to Apple's claim construction argument regarding the first IPR. This case presents a close issue of

claim construction. The question is whether the contested claim term requiring the fused image to have "a point of view of the Wide camera" means that the fused image must maintain only Wide position POV *or* Wide perspective POV (as Apple contends) or whether it means that the fused image must maintain both (as Corephotonics contends and the Board found). The parties and the Board each cite only the patent's intrinsic evidence, making this a question of law that we review de novo. *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 808 (Fed. Cir. 2021).

We begin, as we often do, with the claim language. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) ("[T]he context in which a term is used in the asserted claim can be highly instructive."). Here, the claim term at issue reads in context: "wherein the camera controller is further operative to output the fused image with a point of view (POV) of the Wide camera by mapping Tele image pixels to matching pixels within the Wide image." '479 patent col. 13 ll. 46–50. The claim does not mention position or perspective; instead, the claim states only that the resulting fused image retains "a point of view (POV) of the Wide camera," without specifying what "point of view" it refers to. The claim does refer to "a" point of view instead of "the" point of view, which, as discussed below, we find informative. The language following the claim term clarifies that the fused image is accomplished by "mapping Tele image pixels to matching pixels within the Wide image." But this language does not clearly counsel as to the meaning of point of view. For example, it does not specify which or how many pixels of the Tele image are mapped, leaving it unclear whether the resulting image maintains the Wide image's perspective, position, or both.

As we have observed, however, "[t]he claims . . . do not stand alone." *Phillips*, 415 F.3d at 1315. We thus turn to the patent's specification for help. As the Board observed, the specification is "not a model of clarity." *'905 IPR Decision* at 11. Nevertheless, it provides some useful insight

into the claim term's meaning. Before us, as they did before the Board, both parties cite to a portion of the specification describing point of view:

> In a dual-aperture camera image plane, as seen by each sub-camera (and respective image sensor), a given object will be shifted and have different perspective (shape). This is referred to as point-of-view (POV). The system output image can have the shape and position of either sub-camera image or the shape or position of a combination thereof. If the output image retains the Wide image shape then it has the Wide perspective POV. If it retains the Wide camera position then it has the Wide position POV. The same applies to Tele images position and perspective. As used in this description, the perspective POV may be of the Wide or Tele sub-cameras, while the position POV may shift continuously between the Wide and Tele sub-cameras. In fused images, it is possible to register Tele image pixels to a matching pixel set within the Wide image pixels, in which case the output image will retain the Wide POV.

'479 patent col. 5 ll. 10–26. This passage begins by explaining the general concept of "point-of-view (POV)," then explains the concepts of "Wide perspective POV" and "Wide position POV," as well as their Tele counterparts.

The first few sentences of this disclosure appear to contemplate what the patent means by "point of view." After describing that a given object "will be shifted [(position)] and have different perspective (shape)," the patent explains that "[t]his is referred to as point-of-view." *Id.* at col. 5 ll. 10–13. Accordingly, this portion of the disclosure is suggestive of an effort by the patentee to be its own lexicographer and describe "point of view" as something that includes both an object's position and perspective. *Phillips*, 415 F.3d at 1316 ("[T]he specification may reveal

a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. . . . [T]he inventor's lexicography governs.") (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)). On its own, this passage would seem to support Corephotonics' and the Board's interpretation of the challenged claim term.

That said, the claim does not require that the fused image maintain "the Wide camera's point of view." Instead, it specifically states that that fused image must maintain "*a* point of view of the Wide camera." '479 patent col. 13 l. 48 (emphasis added). A reasonable reading of the full passage from the specification reproduced above is that Wide perspective and Wide position are two different types of Wide point of view. The claim term requires only that the fused image maintain "a point of view of the Wide camera," i.e., only one of the disclosed types of Wide point of view. *See Salazar v. AT&T Mobility LLC*, 64 F.4th 1311, 1315 (Fed. Cir. 2023) ("We have explained that the indefinite article 'a' means 'one or more.'"). In this case, the inventor took pains in the specification to describe different types of point of view—Wide position, Wide perspective, Tele position, and Tele perspective—but intentionally chose to claim only "*a* point of view of the Wide camera." And there is no indication in the claims, specification, or otherwise that the patentee meant to claim their invention more narrowly. *See, e.g.*, *Convolve, Inc. v. Compaq Comput. Corp.*, 812 F.3d 1313, 1321 (Fed. Cir. 2016) ("[A]bsent a clear intent in the claims themselves, the specification, or the prosecution history, we interpret 'a processor' to mean 'one or more processors.'").

Indeed, the specification discloses embodiments where the fused image has a mixed point of view. The above passage explains that in certain embodiments, the resulting fused image's "perspective POV may be of the Wide or Tele sub-cameras, while the position POV may shift continuously between the Wide and Tele sub-cameras." '479

patent col. 5 ll. 20–23. In other words, the specification discloses embodiments where the fused image has any combination of a Wide or Tele perspective POV and a Wide or Tele position POV. For example, the fused image may have a Tele perspective POV and a Wide position POV, or perhaps a Wide perspective POV and a Tele position POV. Our caselaw counsels against interpreting the claims in a way that would omit a disclosed embodiment absent clear evidence to the contrary. *Sequoia Tech., LLC v. Dell, Inc.*, 66 F.4th 1317, 1327 (Fed. Cir. 2023) ("[W]e also recognize that 'a claim construction excluding a preferred embodiment is rarely, if ever correct.'") (quoting *Kaufman v. Microsoft Corp.*, 34 F.4th 1360, 1372 (Fed. Cir. 2022)) (cleaned up). Here, Corephotonics' proposed construction—requiring the fused image to have Wide perspective and Wide position POV—would exclude various embodiments disclosed by the specification.

We acknowledge that neither the claim language nor the specification presents a cut-and-dry case of claim construction regarding this claim term. Taken together and in context, however, the intrinsic evidence supports that the claim term requiring a fused image maintaining "a point of view of the Wide camera" requires only that the fused image maintain Wide perspective point of view or Wide position point of view, but does not require both. Because we ultimately conclude that Apple's proposed construction is more in line with the intrinsic evidence, we do not adopt the Board's construction of "fused image with a point of view of the Wide camera." Accordingly, we vacate and remand the Board's final written decision in the first IPR for further proceedings in view of this claim construction. *See, e.g.*, *Kaken Pharm. Co., Ltd. v. Iancu*, 952 F.3d 1346, 1355 (Fed. Cir. 2020) ("[T]he appropriate course in this case, as in so many other involving a reversal of a Board claim construction, is to vacate the Board's decision and remand the matter.").

II

We now turn to the second final written decision. In the '906 IPR, the Board based its decision almost entirely on its determination that the declaration submitted by Apple's expert, Dr. Sasián, was unreliable because of a typographical error he made regarding the lens data. Apple challenges this decision as violative of the APA.

The APA imposes important limits on the Board's authority during *inter partes* reviews. Under the APA, "[p]ersons entitled to notice of an agency hearing shall be timely informed of . . . the matters of fact and law asserted," 5 U.S.C. § 554(b)(3), and the Board "shall give all interested parties opportunity for . . . the submission and consideration of facts [and] arguments," *id.* § 554(c)(1). In other words, "the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016).

In *Magnum Oil*, we reversed the Board's final written decision that held all challenged claims were unpatentable as obvious. *Id.* The Board had determined that the challenged claims would have been obvious in view of a combination of prior art that differed from that asserted in the petition, *id.* at 1377, a combination that the petitioner had made only conclusory statements to support, *id.* at 1380. We held that, under the APA, the Board erred in adopting an argument that the petitioner had not sufficiently made. *Id.* at 1381; *see also, e.g.*, *Nike, Inc. v. Adidas AG*, 955 F.3d 45, 53 (Fed. Cir. 2020) (if raising an issue *sua sponte*, the Board must "give[] the parties notice and an opportunity to respond").

Our decision in *Power Integrations, Inc. v. Lee* is similarly instructive. 797 F.3d 1318 (Fed. Cir. 2015). There, the Board spent a "significant portion of [its] decision" assessing the proper construction of a claim term that the

parties did not dispute. *Id.* at 1325. We determined that because so much of the "[B]oard's analysis is focused on a red herring," it "failed to straightforwardly and thoroughly assess the critical issue" outlined by the parties and deprived the parties of an opportunity to respond to the Board's claim construction. *Id.* This, we explained, was a violation of the APA.

In this case, the Board focused almost entirely on the typographical error in Dr. Sasián's expert declaration, determining that the Abbe number error (among others that the Board identified *sua sponte* in its final written decision) meant that Apple had not met its burden to show the challenged claims were unpatentable. *'906 IPR Decision* at 15–17. Certainly, the Board is entitled to set aside technical expert testimony that it finds not scientifically reliable on the record. *See, e.g.*, *Granite Constr. Co. v. United States*, 962 F.2d 998, 1006 (Fed. Cir. 1992) (recognizing the Board "may reject even uncontroverted expert testimony when it is intrinsically unpersuasive"); *see also TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) ("[C]onclusory expert testimony is inadequate to support an obviousness determination."). The Board is also of course free to make credibility determinations, weigh the evidence, and decide for itself what persuades it. *See Regents of the Univ. of Minn. v. Gilead Scis., Inc.*, 61 F.4th 1350, 1359 (Fed. Cir. 2023) ("It is within the discretion of the Board to weigh the evidence of record."); *Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) ("We defer to the Board's findings concerning the credibility of expert witnesses."). But its explanations must be supported by substantial evidence, and its decisions must be reached only after the parties have been provided fair notice and an opportunity to be heard. *TQ Delta*, 942 F.3d at 1358 ("[T]he Board is obligated to 'provide an administrative record showing the evidence on which the findings are based, accompanied by the agency's reasoning in reaching its

conclusions.'") (quoting *In re Lee*, 277 F.3d 1338, 1342 (Fed. Cir. 2002)).

Here, the Board found that Apple failed to show there would have been a reasonable expectation of success in making its proposed prior art combination because of errors in Dr. Sasián's expert declaration that neither party asserted were material to the claimed invention—and only one of which Corephotonics even identified as an error. *'906 IPR Decision* at 19 ("For the reasons discussed above, we find Petitioner has failed to muster sufficient evidence to demonstrate . . . that Ogata's lens could have been scaled to work in Parulski's camera with a reasonable expectation of success."). The main error relied on by the Board in its final written decision is the Abbe number error, an error Corephotonics mentioned in passing only once in the Background section of its Response. Patent Owner's Resp. at 31, *Apple, Inc. v. Corephotonics Ltd.*, No. IPR2020-00905, Paper 15 (P.T.A.B. Feb. 4, 2021). Corephotonics did not mention the error again. *See generally id.* at 36–68. It did not rely on this error in any of its arguments on the merits. And it did not contend that this error demonstrated that there would have been no reasonable expectation of success or that it alone was a sufficient basis to find all of Dr. Sasián's analysis unreliable. Nor could it—the Abbe number is neither recited in the challenged claims nor does the record contain any evidence that it impacts any lens parameter that is recited in the challenged claims. *See* '479 patent col. 14 l. 66–col. 15 l. 48 (claims 19–22). Corephotonics' expert explained that the error would only impact the calculations for "field curvature, distortion, and OPD fan plots," items that are similarly neither claimed nor impact parameters that are. J.A. 4798 ¶ 62. In fact, data regarding "field curvature, distortion, and OPD fan plots" appears nowhere in Dr. Sasián's declaration, illustrating its lack of relevance to the issues argued by the parties.

The Board failed to provide a reasoned explanation for why it found the Abbe number error meaningful. All it said

was that "the opinion of a person skilled in the art will be only as reliable as the lens design software analysis that person performed, which will be only as reliable as the data used to perform that analysis." *'906 IPR Decision* at 13–17. But we are not able to discern from the Board's decision why Dr. Sasián's typographical error may have rendered unreliable the portions of Dr. Sasián's analysis relevant to the obviousness grounds at issue.

The parties' arguments regarding obviousness, and specifically whether there would have been a reasonable expectation of success in combining Parulski and Ogata, focused entirely on questions of manufacturability and scalability. The single typographical error made by Dr. Sasián, on the other hand, was never identified by the parties as a dispositive issue, the resolution of which renders it unnecessary also to resolve the parties' disputes regarding manufacturing and scalability. Further, the additional "inconsistencies" identified by the Board—purported mistakes regarding "aspherical surface" data, *'906 IPR Decision* at 15—were never mentioned by the parties. Indeed, both parties appear to agree these "inconsistencies" were not even errors in the first place. Appellant's Br. 65–67; Appellee's Br. 45–46.

On this record, the Board's determination that the typographical error in Dr. Sasián's declaration was essentially dispositive of the issues in the case does not comport with the notice requirements of the APA. Apple (and Corephotonics, for that matter) had no reason to anticipate that the typographical error would be the basis for the Board's decision, given that the parties did not brief, argue, or even suggest this error was dispositive or would impact the claimed lens parameters. *See Magnum Oil*, 829 F.3d at 1381 ("[T]he Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond."). Said otherwise, as in *Power Integrations*, the Board spent a "significant portion of [its] opinion" assessing an issue that no party

meaningfully raised or asserted was relevant. 797 F.3d at 1325. And because the Board's analysis was focused on this issue, it failed to "thoroughly assess the critical issue" outlined by the parties, i.e., whether there would have been a reasonable expectation of success in combining Parulski and Ogata, considering manufacturing and scalability concerns. Because the Board based its decision on a typographical error without sufficiently explaining its significance, made *sua sponte* findings that lacked substantial evidence, and did not resolve the issue the parties presented, we vacate the Board's final written decision and remand for further proceedings that meet the APA's requirements for notice and the opportunity to respond.

CONCLUSION

We have considered the parties' remaining arguments but do not find them persuasive. For the foregoing reasons, we vacate the Board's final written decisions and remand for further proceedings consistent with this opinion.

VACATED AND REMANDED

COSTS

Costs to Apple.