

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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MAGIC LEAP, INC.  
Petitioner,

v.

PERCEPT TECHNOLOGIES INC.  
Patent Owner.

Patent No. 8,696,113

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*Inter Partes* Review No. IPR2023-00495

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**PETITIONER'S REPLY TO PATENT OWNER RESPONSE**

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**Petitioner’s Exhibit List for *Inter Partes* Review of U.S. Patent No. 8,696,113**

| <b>Exhibit Description</b>                                                                                                  | <b>Exhibit #</b> |
|-----------------------------------------------------------------------------------------------------------------------------|------------------|
| U.S. Patent No. 8,696,113 to Lewis (“the ’113 patent”)                                                                      | EX-1001          |
| Prosecution History of U.S. Patent No. 8,696,113                                                                            | EX-1002          |
| Declaration of Dr. Joseph J. LaViola Jr. in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,696,113 | EX-1003          |
| <i>Curriculum Vitae</i> and Litigation History for Dr. Joseph J. LaViola Jr.                                                | EX-1004          |
| U.S. Patent Appl. Pub. No. 2011/0213664A1 to Osterhout et al. (“Osterhout”)                                                 | EX-1005          |
| U.S. Patent No. 6,307,526 to Mann (“Mann ’526”)                                                                             | EX-1006          |
| U.S. Patent No. 6,433,760 to Vaissie et al. (“Vaissie”)                                                                     | EX-1007          |
| Patent Owner’s Opening Claim Construction brief in co-pending litigation No. 1:22-cv-0025-RGA                               | EX-1008          |
| Petitioner’s Answering Claim Construction brief in co-pending litigation No. 1:22-cv-0025-RGA                               | EX-1009          |
| Patent Owner’s Reply Claim Construction brief in co-pending litigation No. 1:22-cv-0025-RGA                                 | EX-1010          |
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| Return of Service in co-pending litigation No. 1:22-cv-0025-RGA                                                             | EX-1012          |
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| <b>Exhibit Description</b>                                                                                                               | <b>Exhibit #</b> |
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| Claim Construction Order from co-pending litigation 1:22-cv-0025-RGA; March 9, 2023                                                      | EX-1021          |
| Patent Owner's Initial Claim Chart in co-pending litigation No. 1:22-cv-0025-RGA                                                         | EX-1022          |
| Patent Owner's Supplemental Initial Claim Chart in co-pending litigation No. 1:22-cv-0025-RGA                                            | EX-1023          |
| Supplemental Declaration of Dr. Joseph J. LaViola Jr. in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,696,113 | EX-1024          |

*\*Petitioner's Exhibits 1001 - 1021 were previously filed and are listed again here based on 37 C.F.R. § 42.63.*

*\*\*Petitioner's Exhibits 1022 - 1024 are newly filed.*

Petitioner Magic Leap, Inc. (“Magic Leap” or “Petitioner”) provides this Reply under 37 C.F.R. § 42.23 to the Patent Owner Response filed on October 25, 2023 (Paper No. 12; “Response”). With this Reply and its Petition filed on January 20, 2023 (Paper No. 2, “Petition”), Petitioner requests cancellation of claims 1-3 and 12-14 of U.S. Patent No. 8,696,113 (“the ’113 patent”; Ex. 1001).

## **I. INTRODUCTION**

Magic Leap’s Petition, and the accompanying declaration (EX-1003) of its expert, Dr. LaViola, stand unrebutted by any documentary evidence, expert declaration, or cross-examination testimony.<sup>1</sup> Instead, Patent Owner responds to

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<sup>1</sup> The Response argues incorrectly that Dr. LaViola’s declaration is entitled to no weight from the Board. (*See, e.g.*, Response at 13.) The Board concluded correctly that Dr. LaViola’s review of the documentary evidence of record in his direct testimony, and his experience in the fields of virtual reality and augmented reality, including motion tracking, provide the basis for his opinion. (DI, 8; *see also Ex Parte Jud*, Appeal No. 2006-1061, at 5-6 (BPAI Jan. 30, 2007)(informative).) To the extent Patent Owner disagrees with Dr. LaViola, it had the opportunity to cross-examine Dr. LaViola in deposition about the basis for his opinion; or to provide an expert declaration of its own. Patent Owner did neither.

the Petition only with unsupported attorney argument, bereft of any record evidence. Under Federal Circuit law, such unsworn attorney argument is insufficient to rebut a petition where, as here, the Petition is supported by expert testimony. (*See Wasica Fin. GmbH v. Cont'l Auto. Sys.*, 853 F.3d 1272 (Fed. Cir. 2017) (holding that “a party’s ‘unsworn attorney argument . . . is not evidence’ and thus cannot rebut record evidence.”).) Moreover, Patent Owner’s arguments fail to discredit any grounds raised in the Petition, as explained herein and in the accompanying supplemental declaration of Dr. LaViola (EX-1024).

The Response’s arguments are limited. For all grounds, Patent Owner disputes the application of only two limitations that appear in all challenged claims: (1) a “dynamic eye tracking mechanism in communication with the lens” (the “communication” limitation); and (2) “wherein the dynamic eye tracking mechanism utilizes optical parameter measurements” (the “measurements” limitation). (*See, e.g.*, Response, 11-36.) With respect to the Osterhout ground only, Patent Owner also disputes a third limitation, which only appears in challenged claims 12-14: “wherein the lens includes a plurality of layers” (the “layers” limitation). (*See, e.g.*, Response, 23-25.) Patent Owner does not dispute that each of the two prior art grounds (Osterhout; and Mann ’526 in view of Vaissie (“Mann/Vaissie”)) meets the remaining limitations.

For example, with respect to the communication limitation and the measurements limitation, Patent Owner does not dispute that the prior art grounds meet the claimed dynamic eye tracking mechanism—only whether the dynamic eye tracking mechanism is *in communication with* the lens, and whether it utilizes optical parameter *measurements*, when these italicized terms are given narrow, new and incorrect interpretations put forth by Patent Owner. Specifically, Patent Owner contends that “in communication with” is limited to an “active exchange of information”<sup>2</sup>; and that “measurements” is limited to a measurement of a “size, length, or amount of something.” (Response, 8-9.)

In the Decision on Institution, the Board previously rejected Patent Owner’s attempt to insert unwarranted new limitations into the claims. (Paper No. 10, at 11-12, 16, 26 (“DI”).) The new limitations provided here by Patent Owner are arguably *even narrower* than the ones previously rejected by the Board. Patent Owner’s renewed attempt should be rejected again: first, it improperly sidesteps the claim construction process under the guise of clarifying the plain and ordinary

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<sup>2</sup> In its Preliminary Response, Patent Owner provided a different construction: “the phrase is introducing a receiver of communications—the lens—from a sender—the dynamic tracking mechanism—thereof. (Preliminary Response (Paper No. 9), 5.)

meaning of the claim terms; and, second, Patent Owner offers no evidence whatsoever to support its self-serving version of the claims. But even if the Board were to adopt Patent Owner's new definitions, the challenged claims are still rendered unpatentable by Osterhout, and additionally by Mann/Vaissie, as explained in the Petition and further herein.

## **II. CLAIM CONSTRUCTION**

### **A. The Board Should Again Apply the Plain And Ordinary Meaning To The Communication Limitation And The Measurements Limitation**

In this proceeding, Patent Owner states, and Petitioner does not dispute, that “the claims should be construed consistent with their plain and ordinary meaning as understood by a person of ordinary skill in the art.” (Response, 3 (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-17 (Fed Cir. 2005).) With respect to the communication limitation, the plain and ordinary meaning applies because, as Patent Owner acknowledges, the phrase is “readily understandable and does not require further interpretation.” (Response, 6 (citing *Phillips* at 1314).) Moreover, as Patent Owner admits, the patentee did not provide any meaning beyond the plain and ordinary meaning, such that “there is no clear reason to depart from the plain and ordinary meaning of this term.” (Response, 6 (citing *Ancora Technologies Inc. v. Apple Inc.*, 744 F.3d 732, 734 (Fed. Cir. 2014) (“A claim term should be given its ordinary meaning in the pertinent context, unless the patentee

has made clear its adoption of a different definition or otherwise disclaimed that meaning.”)); *see also CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (identifying a “heavy presumption” that a claim term should be given its plain and ordinary meaning).) Likewise, Patent Owner agrees that the measurements limitation should also be “construed with its plain and ordinary meaning.” (Response, 8-9.) Further, the Board need not construe terms that are not in controversy. (*Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *VividTechs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).)

With respect to the communication limitation, Patent Owner previously proposed construing this limitation to require directional communication from eye tracking device to the lens. (Preliminary Response, 5.) The Board rejected Patent Owner’s proposal, observing that the proposed construction would improperly “import[] limitations in to the claims as to the specific directionality of the communication.” (DI, 11-12.) The Board instead accorded “in communication with” its ordinary and customary meaning. (DI, 12.) With respect to the measurements limitation, the Board determined that “it is not necessary to expressly construe any other claim terms or phrases,” because those claim terms were not in controversy. (DI, 12 (citing *VividTechs* at 803).)

Because it is not in controversy that the communication limitation and the measurements limitation should be given their plain and ordinary meanings, the Board should again decline to provide an explicit construction for these limitations. (*See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (citing *VividTechs., Inc.* at 803).) The Board was able to resolve the decision on institution without an explicit construction and, given that Patent Owner has not provided any rebuttal evidence, the Board can reach the same conclusion in its Final Written Decision without an explicit construction. Moreover, as explained in the Petition and below, the claims are unpatentable under any reasonable interpretation.

**B. The Board Should Reject Patent Owner's Attempts To Redefine The Plain And Ordinary Meanings Of The Communication Limitation And The Measurements Limitation**

Patent Owner urges the Board to “clarify its construction” of the communication limitation to require that “the dynamic eye tracking mechanism and the lens of the wearable optics engage in an active exchange of information.” (Response, 8.) Patent Owner further urges the Board to construe the measurements limitation to require that “a measurement is a size, length, or amount of something.” (Response, 8-9.) But Patent Owner concedes that “the claims should be construed consistent with their plain and ordinary meaning.” (Response, 3.) As best understood by Petitioner, Patent Owner asks the Board to nominally construe

the communication limitation and the measurements limitation according to their plain and ordinary meanings; but to then revise those plain and ordinary meanings according to new definitions supplied by Patent Owner. (*See* Response, 8, 9.) The Board should decline Patent Owner’s invitation.

***First***, Patent Owner cannot (and makes no attempt to) show that its redefinitions would pass muster under the controlling *Phillips v. AWH* standard. (83 FR 51340.) For example, Patent Owner urges that the communication limitation is “***readily understandable and does not require further interpretation***”; the patentee “***did not provide any meaning beyond the plain and ordinary meaning***” in the specification; and “***there is no clear reason to depart from the plain and ordinary meaning of this term.***” (Response, 6; Preliminary Response, 4 (citing *Phillips* at 1314; *Ancora Techs.* At 734).)<sup>3</sup> Given Patent Owner’s statements in this proceeding, any construction other than plain and ordinary meaning is inappropriate. (*Phillips* at 1312-14.)

***Second***, Patent Owner offers no evidentiary support for its position on what constitutes the plain and ordinary meaning. The Federal Circuit has stated that “the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan after reading the entire patent.” (*Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1358 (Fed. Cir. 2017).) Patent Owner offers no documentary evidence, expert

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<sup>3</sup> Any emphasis is added, unless otherwise stated.

testimony, or any other evidentiary support for its speculation as to what the plain and ordinary meaning is. Nor does Patent Owner attempt to establish what that meaning would be to the *ordinary artisan* after reading the entire patent.

(Response, 8.) The Board should afford no weight to unsourced attorney argument that does not track the correct legal standard.

With the proper construction of the communication limitation and the measurements limitation beyond dispute through Patent Owner's own actions, Patent Owner instead floats glosses on their plain and ordinary meanings. The Board should again reject Patent Owner's attempt to seek a de facto claim construction outside of the claim construction process and should again reject Patent Owner's unsupported suggestions of what the plain and ordinary meanings are.

**C. “In communication with” Has No Specialized Meaning**

Patent Owner proposes that, by its plain and ordinary meaning, “a dynamic eye tracking mechanism in communication with the lens of the wearable optics” requires that the lens and the dynamic eye tracking mechanism engage in an “active exchange of information.” (Response, 7-8.) The Board already rejected Patent Owner's attempt to “improperly import limitations into the claim”. (DI, 11.) Patent Owner's renewed attempt is similarly improper.

As Dr. LaViola explains in his supplemental declaration (EX-1024), the artisan would not have applied any specialized meaning to “in communication with” and instead would recognize the term as having a widely understood meaning: sending communication to or receiving communication from.<sup>4</sup> (EX-1024, ¶21.) There is no need to redefine the term here.

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<sup>4</sup> Under the Board’s rules, and as the Supreme Court and Federal Circuit have clarified, a petitioner in an IPR proceeding is entitled to respond to new arguments made in the patent owner’s response, including by introducing new evidence such as supplemental expert declarations. (37 C.F.R. § 42.23(b); *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1356 (2018); *Apple Inc. v. Andrea Electronics Corp.*, 949 F.3d 697, 706-07 (Fed. Cir. 2020); *Axonics, Inc. v. Medtronic, Inc.*, Nos. 2022-1532, 2022-1533 (Fed. Cir. August 7, 2023).) Patent Owner’s proposed redefinitions of the communication limitation and the measurements limitation—whether they are characterized as proposed claim constructions, or as proposed plain and ordinary meanings—were raised for the first time in the Response.

**1. Communication With The Lens Does Not Require “Active” Communication**

The claim language does not require that communication with the lens be *active*. The claims, for example, do not recite “in *active* communication with.” They merely recite “in communication with.”

Apart from the claim language, the specification does not support Patent Owner’s importation of “active” communication in the claims. While the specification discloses some embodiments in which a lens communicates actively, it also discloses embodiments in which the lens communicates passively. (EX-1024, ¶23.) For example, as shown in Fig. 5C, a display projector 620 projects images on the lens display 601. (EX-1001, 7:44-45, Fig. 5C; EX-1024, ¶23.) In this embodiment, the lens passively receives and displays—communicates—the images that are projected by the display projector. (EX-1001, 7:44-45, Fig. 5C; EX-1024, ¶23.) Similarly, in another passage, the ’113 patent discloses that the lens can include “*passive or active* display or projection based implementations.” (EX-1001, 6:59-67, Fig. 5C.)

In the co-pending litigation, Patent Owner specifically highlighted that same passage at 6:59-67 in support of its argument to the Court that the “lens” in communication with the eye tracking mechanism should be given its plain and ordinary meaning. (EX-1008, 8.) Patent Owner characterized the passage, including its description of lenses with “passive or active” displays, as “broadly

defin[ing] the non-limiting types of lenses contemplated by the patentee.” (EX-1008, 8.) That is, according to Patent Owner, the lens is “define[d]” by the ’113 patent to include embodiments with active displays or with passive displays. Further, in the same briefing, Patent Owner attacked Magic Leap’s proposed construction of lens for “not includ[ing] the broader scope contemplated by the patents.” (EX-1008, 9.)

These descriptions from the co-pending litigation, and from the patent itself, are consistent with the patentee’s choice of claim language, which is silent with respect to whether communications with the lens are “active” as discussed above. It would be improper to limit the claims to only active communications: as the Board recognized, “a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.” (DI, 12 (citing *SuperGuide Corp. v. DirecTV Enters., Inc.* 358 F.3d 870, 875 (Fed. Cir. 2004)).)

## **2. Communication With The Lens Does Not Require An “Exchange”**

The claims also do not require an “exchange” of information. As Dr. LaViola explains, an exchange is not part of the plain and ordinary meaning of “in communication with” to the ordinary artisan. (EX-1024, ¶24.) In a hypothetical example, Alice can send an email to Bob, who receives the email but exchanges nothing in response. (EX-1024, ¶24.) The ordinary artisan would understand that

Alice is in communication with Bob, and Bob is in communication with Alice, by the plain meaning of the term, even though there has been no exchange. (EX-1024, ¶24.)

“Exchange” is also not supported by the ’113 patent specification. Patent Owner cites, at 8:40-60, that “materials that can electrically control any or any combination of chromatic, refractive, diffractive, transparent, reflective properties of the wearable optics device are utilized with the dynamic eye tracking.”

(Response, 7; EX-1001, 8:40-60.) The passage also provides that “shading control” of the lens can be provided and can be controlled using optical parameters. (EX-1001, 8:42-51.) But none of these features involves an

“exchange” between the lens and the dynamic eye tracking. (EX-1024, ¶25.)

Instead, the dynamic eye tracking mechanism is “controlling chromatic, refractive, diffractive, transparency, and/or reflective properties of a lens.” (Response, 7.)

But the specification does not describe that adjusting these lens properties involves an exchange. For example, the specification does not describe that, upon the

dynamic eye tracking mechanism controlling chromatic properties of the lens, the lens exchanges anything with dynamic eye tracking mechanism. (EX-1024, ¶25.)

Instead, the passage cited by Patent Owner supports Dr. LaViola’s opinion that “in communication with” means sending communication to or receiving

communication from, without any “exchange” requirement. (EX-1024, ¶¶24-25.)

**D. “Measurements” Has No Specialized Meaning**

Patent Owner additionally proposes that the optical parameter “measurements” in the claims be limited to a particular type of measurement: a “size, length, or amount of something.” (Response, 8-9.) This language is wholly absent from the claims. Patent Owner notes only that, in some examples of measurements found in the specification, the specification “*seems* to be indicating such a determination of size or length.” (Response, 9.) Patent Owner offers no other support for its proposal.

First, whether an example “seems” to Patent Owner to be consistent with its own preferred claim interpretation is not the relevant legal standard. As the Federal Circuit has explained, the inquiry is what the plain and ordinary meaning of the term would be to the ordinary artisan, having reviewed the patent. (*Aylus Networks* at 1358.) Patent Owner offers no evidence to support its view of that plain and ordinary meaning.

Second, Dr. LaViola clarifies that the ordinary artisan would understand “measurements” to simply mean things that are measured. (EX-1024, ¶28.) Many things are subject to being measured—not just size or length. As an example involving optical parameters, a direction of a user’s eye gaze can be measured by a camera from the *position* of the pupil, not necessarily its size or length. (EX-1024, ¶29.) And electrooculography techniques can determine an eye movement by

measuring an electrical potential between the cornea and the retina of the eye—not necessarily the size or length of the cornea or retina. (EX-1024, ¶29.)

The ’113 patent also describes that an eye sensor “determines the position of the eye/pupil/retina”; the skilled artisan would understand determining the position of the eye/pupil/retina to include a measurement of that position, which is not limited to a size or length. Patent Owner is thus incorrect that its examples from the specification, such as “pupil,” “corneal,” or “retina” measurements, are limited to determinations of size and length. (EX-1001, 11:23-24; EX-1024, ¶29.) These examples and others are silent with respect to measuring size or length and do not support Patent Owner’s proposed construction.

Third, the Patent Owner cherry-picks its embodiments from the ’113 patent. The ’113 patent expressly discloses measurements that are not a size, length, or amount. For example, Fig. 5B of the ’113 patent shows a perceptual control system receives “voice parameter *measurement*” as input; and that perceptual *measurements* include “smell, touch, brainwave, temperature / humidity of user, environmental conditions near user.” (EX-1001, 2:29-30, 7:30-34, Fig. 5B; EX-1024, ¶30.) The skilled artisan would understand this to disclose measurements—for instance, measurements of smell, touch, brain waves, temperature, voice parameters—that are not measurements of size, length, or amount. (EX-1024,

¶30.) These examples disprove that “measurements” described in the ’113 patent are limited to measurements of size, length, or amount. (EX-1024, ¶30.)

Fourth, Patent Owner’s new definition of “measurements” contradicts its position in the co-pending litigation. For example, in the litigation, Patent Owner presented claim charts showing how the claims of the ’113 patent were allegedly met by Magic Leap’s products. (EX-1022, EX-1023.) In contending that the measurements limitation is met by the Magic Leap 2 product, Patent Owner specifically highlighted “pupil positions, gaze, vergence, center or rotation of eye, blink events, confidence of gaze and vergence, and eye behaviors (i.e., fixation, smooth pursuit, saccades)” as meeting the claimed optical parameter measurements. (EX-1023, 5.) These include the same measurements (e.g., pupil position) that Patent Owner now claims are not the claimed “measurements.” Yet these measurements are not limited to a measurement of size or length. (EX-1024, ¶29.) For example, measuring a pupil position, by itself, is not limited to measuring the pupil’s size or length. (EX-1024, ¶29.) Nor, for instance, is measuring the gaze, vergence, rotation, or behaviors of an eye. (EX-1024, ¶29.)

- **Eye Tracking Data:** Eye tracking data including eye measurements and information about where your eyes are looking, such as: pupil positions, gaze, vergence, center or rotation of eye, blink events, confidence of gaze and vergence, and eye behaviors (i.e., fixation, smooth pursuit, saccades).

(EX-1023, 5 (emphasis Patent Owner’s).)

### **III. THE CHALLENGED CLAIMS ARE OBVIOUS UNDER THEIR PLAIN AND ORDINARY MEANING**

All limitations of the challenged claims are met by Osterhout, and additionally by Mann/Vaissie, for the reasons set forth in the Petition and described further herein. Either Osterhout or Mann/Vaissie independently demonstrates that all challenged claims are unpatentable.

#### **A. Osterhout Ground**

With respect to the Osterhout ground, Patent Owner only disputes the Petitioner's evidentiary showing with respect to the communication limitation and the measurements limitation, which are common to all challenged claims; and, with respect to claims 12-14, the limitation that "the lens includes a plurality of layers." (Response, 11-25.) The remaining limitations stand unchallenged. But all three of the limitations disputed by Patent Owner are met by Osterhout for the reasons explained in the Petition and further below.

##### **1. Communication Limitation**

The Petition explained how Osterhout meets the limitation that a dynamic eye tracking mechanism is in communication with the lens. (Petition, 17-20.) Patent Owner does not dispute that Osterhout meets the claimed dynamic eye tracking mechanism. Instead, Patent Owner argues only that the eye tracking mechanism is not "in communication with" the lens under its narrow redefinition of "in communication with" as requiring an "active exchange of information."

(Response, 15-25.) As shown above, Patent Owner’s unduly narrow version of “in communication with” is wholly unsupported, improper, and not part of the term’s plain and ordinary meaning, which requires only that the eye tracking mechanism send communication to or receive communication from the lens. (EX-1024, ¶32.)

The Petition set forth at least four independent ways in which Osterhout meets the “in communication with” limitation under that term’s plain and ordinary meaning. (Petition, 19-20.) For example, the eye tracking mechanism is in communication with the lens via a display projected on the lens. (Petition, 20.) The eye tracking mechanism correlates the viewing direction of the eye to a point on the display, which is then used to interpret commands. (Petition, 20.) The eye tracking mechanism is also in optical communication with the lens at least because the lens receives light rays—comprising optical information—that are transmitted by the lens to the eye tracking mechanism and received via a camera. (Petition, 19.) The eye tracking mechanism can also detect eye motions and eye gaze directed toward specific portions of the lens. (Petition, 19.) And a lens uses an embedded optical component to measure the eye motion, and the eye tracking mechanism receives the measured motion and uses it to track the eye. (Petition, 20.)

Each of these embodiments tracks the plain and ordinary meaning of “in communication with” and meets the claim limitations at least for the reasons set forth in the Petition.

## **2. Measurements Limitation**

As explained in the Petition, Osterhout describes using optical parameter measurements to “determine where the user is gazing, or the motion of the user’s eye.” (Petition, 21; EX-1005, [0301].) The Petition identified at least five different ways in which Osterhout meets the limitation that the dynamic eye tracking mechanism utilizes optical parameter measurements; *e.g.*, the dynamic eye tracking mechanism can use “*the corneal reflection and the center of the pupil* as features to track over time.” (Petition, 21-23; EX-1005, [0301], [0304].)

Any of these five examples of optical parameter measurements is sufficient to meet the claim limitation. (EX-1024, ¶36.) Patent Owner argues that its special definition of measurements as only size, length, or amounts applies and is not met by any of the five measurements identified in the Petition. As explained above, Patent Owner’s unduly narrow version of measurements is wholly unsupported, improper, and not part of the term’s plain and ordinary meaning. The five measurements identified above meet the claimed measurements for the reasons set forth in the Petition. (Petition, 21-23.)

Patent Owner's position directly contradicts its position in the co-pending litigation, in which it argued that the Magic Leap 1 and Magic Leap 2 products meet the measurements limitation based on the same measurements it now tries to dismiss from Osterhout. For example, Patent Owner argued that the measurements limitation is met by eye tracking data that includes, for example, "pupil positions," "gaze," "center or rotation of eye," and "blink events":

- **Eye Tracking Data:** Eye tracking data including eye measurements and information about where your eyes are looking, such as: pupil positions, gaze, vergence, center or rotation of eye, blink events, confidence of gaze and vergence, and eye behaviors (i.e., fixation, smooth pursuit, saccades).

(EX-1023, 5 (emphasis Patent Owner's).)

And Patent Owner similarly argued for the Magic Leap 1 product that the measurements limitation is met by measurements of "pupil positions" and "cornea positions," highlighting these measurements for emphasis in its claim chart:

- **Eye Tracking Data:** Eye tracking data may include eye measurements and information about where your eyes are looking when you use your Magic Leap 1 device, such as pupil measurements and pupil positions, cornea measurements and cornea positions, glint measurements, gaze, target, and vergence measurements. Magic Leap 1 device eye tracking data will not contain any images of your eyes or measurements of your eyes that we know could uniquely identify you.

(EX-1022, 13 (emphasis Patent Owner's).)

The measurements highlighted by Patent Owner in the litigation are analogous to the optical parameter measurements in Osterhout, *e.g.*, tracking the eye by measuring the corneal reflection and the center of the pupil.

### **3. Lens Limitation**

Patent Owner argues that the limitation in claims 12-14 that “the lens includes a plurality of layers” is not met by a particular embodiment of Osterhout. (Response, 23-25.) The Petition described at least four embodiments of Osterhout that meet the claimed lens with layers; *e.g.*, via a lens with “an electrochromic layer that provides a display characteristic adjustment.” (Petition, 40-42.) Of these four embodiments, Patent Owner disputes only the embodiment in which a “special contact lens” for tracking eye motion includes an embedded optical component such as a mirror. (Response, 23-25; Petition, 42.) The special contact lens meets the “plurality of layers” limitation for at least the reasons set forth in the Petition and unrebutted by any evidence of Patent Owner. (Petition, 42.) And, in any event, Patent Owner does not dispute that Osterhout’s other embodiments meet the limitation.

To the extent Patent Owner argues that a lens that does not meet the limitations of claim 12 cannot also meet the limitations of claim 1 (Response at 24-25), Patent Owner disregards the plain language of claims 1 and 12. Patent Owner is incorrect that the term “lens” is “used identically in each of these claims”: claim

12 includes an express limitation—that the lens “includes a plurality of layers”—that is absent from claim 1. Even if the Board determines the special contact lens does not meet claim 12’s plurality of layers limitation, it should not accept Patent Owner’s invitation to import that limitation into claim 1.

## **B. Mann/Vaissie Grounds**

With respect to the Mann/Vaissie grounds, Patent Owner only disputes the Petitioner’s evidentiary showing with respect to the communication limitation and the measurements limitation; the remaining limitations stand unchallenged. But both of the limitations disputed by Patent Owner are met by Mann/Vaissie for the reasons already explained in the Petition, and explained further below.

### **1. Communication Limitation**

The Petition showed how Mann/Vaissie meets a dynamic eye tracking mechanism that is in communication with the lens. (Petition, 53-56.) For example, the camera of the eye tracking mechanism captures an image of the eye by capturing light rays transmitted by the lens via reflections in the eye—that is, optical communication from the lens to the eye tracking mechanism. (Petition, 53-54.) As the Board recognized, this is sufficient to meet the eye tracking mechanism that is in communication with the lens. (DI, 27.)

Patent Owner argues that the communication limitation is not met because this communication of light rays from the lens to the eye tracking mechanism does

not meet Patent Owner’s redefinition of the term as an “active exchange of information.” (Response, 29.) As explained above, Patent Owner’s redefinition is not part of the plain and ordinary meaning of the communication limitation; for example, the communication need not be “active,” as evidenced by the ’113 patent’s description of lenses with passive displays. (EX-1001, 6:59-67)

Patent Owner also argues that the communication limitation is not met because the eye tracking mechanism does not rely on natural light passing through the lens to track eye motion. (Response, 29-31.) Patent Owner points to an embodiment shown in Fig. 10, in which, as described in the Petition, eye tracker 1010 illuminates the eye via infrared light, and observes the eye via light rays reflected in beamsplitter 1020. (Response, 29; Petition, 52-53.)

However, Petitioner does not rely on Fig. 10 alone to meet the communication limitation; as explained in the Petition, the two-sided mirror 315 of Fig. 3—through which light rays 311 and 321 transmitted the lens “pass through ... without being deflected”—demonstrates how the light rays are communicated from the lens to the eye tracking mechanism. (Petition, 53-54.) The Petition further explains how Mann 526’s disclosure of replacing the two-sided mirror 315 with a partially transparent beamsplitter would further deliver the light rays from the lens to the eye tracking mechanism. (Petition, 54.) As the Board recognized, the combined system as described in the Petition meets the communication

limitation because the light transmitted by the lens, as well as infrared light generated by the eye tracking mechanism, are both captured in an image of the eye by the eye tracking mechanism. (Petition, 54-55; DI, 27.)

Patent Owner argues this still fails to meet the communication limitation because the eye tracking mechanism does not use the light passed through the lens to track eye motion. (Response, 34.) However, requiring the eye tracking mechanism to use light from the lens for eye tracking would insert *yet another* unsupported limitation into the claim. The claim recites no such thing, and Patent Owner offers no support for why such a limitation would be justified. As Dr. LaViola explains, Patent Owner's interpretation is not part of the plain and ordinary meaning of the communication limitation, and it is undermined by embodiments of the '113 patent in which the lens does not communicate information to the eye tracking mechanism at all, let alone provide light for eye tracking. (EX-1024, ¶43.) Indeed, in Patent Owner's previous formulation of this limitation, the eye tracker was the sender, not the receiver, of the claimed communication. (See Preliminary Response, 5.) Patent Owner's newly suggested limitation should be rejected with the others.

## **2. Measurements Limitation**

Patent Owner argues that the optical parameter measurements utilized in Mann/Vaissie are not the measurements of size or length that it contends are

required by the claims. (Response, 35-36.) In Mann/Vaissie, as explained in the Petition, the optical parameter measurements are met by Vaissie's determining the user's sight direction using the displacement of the user's pupil with respect to the cornea in an image of the eye. (Petition, 57-58.) As explained in the Petition, Vaissie shows explains how the location is determined: a vector PH is measured from the center of the pupil to the barycenter of reflections in the cornea. (Petition, 57-58.) This meets the claimed optical parameter measurements.

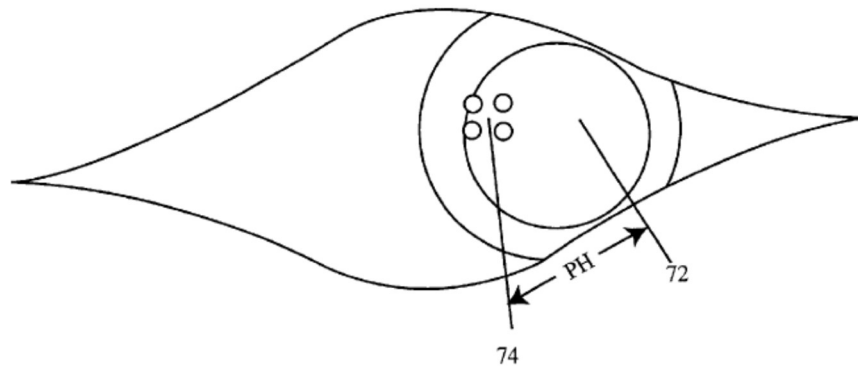


Figure 7b

(EX-1007, Fig. 7b.)

As described above with respect to Osterhout, Patent Owner's narrowed version of "measurements" is unsupported, contradicts the '113 patent, and does not apply here. Moreover, measuring a pupil position, as in Vaissie, is precisely what Patent Owner highlighted as meeting the measurement limitation in the co-pending litigation, as described above. (EX-1022, 13; EX-1023, 5.) But Mann/Vaissie would meet the claimed optical parameter measurements even under

Patent Owner’s narrowed version: measuring the vector PH is a measurement of a length (*i.e.*, the length from the center of the pupil to the barycenter of the corneal reflections), at least because all vectors are characterized by a length. (EX-1024, ¶45.)

#### **IV. THE CHALLENGED CLAIMS ARE OBVIOUS EVEN UNDER PATENT OWNER’S PROPOSED REDEFINITION**

As explained above, Patent Owner’s proposed redefinitions of “in communication with” and “measurements” are incorrect and unsupported by evidence. The Board should reject Patent Owner’s redefinitions and instead apply the terms’ plain and ordinary meanings to the skilled artisan, as supported by Dr. LaViola’s supplementary declaration. However, even if the Board were to adopt Patent Owner’s version of “in communication with” and “measurements,” the claims are still unpatentable as set forth in the Petition and described further below.

For example, with respect to the Osterhout grounds, the “active exchange of information” is met at least by the eye tracking mechanism in communication with the lens via a display projected on the lens. (Petition, 20; EX-1005, [0054]; EX-1024, ¶47.) The eye tracking mechanism correlates the viewing direction of the eye to a point on the lens, which is then used to interpret commands. (Petition, 20; *see also* DI, 16-17.) The exchange is active at least in that the viewing direction is used by a processor to interpret the commands; and further, because the lens display in Osterhout can be an active display, such as an LCoS optical display, or

projection optics with an RGB LED module. (EX-1005, [0063], [0164]; EX-1024, ¶47.)

Moreover, a measurement of a “size, length, or amount of something” (Response, 9) is met at least by Osterhout’s various disclosures of determining the user’s gaze or eye motion. (EX-1024, ¶48.) For example, as described in the petition, Osterhout discloses that electrical potentials of the cornea and retina are “measured and monitored.” (EX-1005, [0301].) An electrical potential of the cornea or the retina is an “amount” measured by this process. (EX-1024, ¶48.)

And with respect to the Mann/Vaissie ground, the “active exchange of information” is met at least by the eye tracker 1010 receiving optical information from the lens, as described above; tracking the user’s eye to control a cursor position in a window manager; and presenting the window manager, with the cursor, in the electronic display of the lens. (Petition, 50-51; EX-1006, 14:22-25, 26:10-19, Figs. 1C, 1D; EX-1024, ¶49.) The communication is active at least in that tracking the cursor and presenting the reality window manager to the lens are active processes; and there is an exchange of information at least in that the lens communicates optical information to the eye tracker, and the eye tracker communicates cursor and display information to the lens. (EX-1024, ¶49.)

Further, as described above, “a determination of size or length” is met at least by the measurement of the vector PH—representing the displacement and

angle of the pupil in relation to the barycenter of the corneal reflections—to indicate the user’s gaze direction. (EX-1024, ¶50.) Measuring the vector PH is a measurement of length at least because the measured distance of the pupil to the barycenter is a length. (EX-1024, ¶50.)

## V. CONCLUSION

For the foregoing reasons, as well as those set forth in its Petition, Petitioner respectfully requests cancellation of the challenged claims 1-3 and 12-14 of the ‘113 patent.

Dated: January 18, 2024

By /Mehran Arjomand/  
Mehran Arjomand  
Reg. No.: 48,231  
Bryan Blumenkopf  
Registration No.: 73,282  
MORRISON & FOERSTER LLP  
707 Wilshire Boulevard, Suite 6000  
Los Angeles, CA 90017  
Tel. (213) 892-5630  
Fax: (213) 892-5454  
[MArjomand@mofo.com](mailto:MArjomand@mofo.com)  
[BBlumen@mofo.com](mailto:BBlumen@mofo.com)

**Certification of Word Count (37 C.F.R. § 42.24)**

I hereby certify that this PETITIONER’S REPLY TO PATENT OWNER RESPONSE has 5,539 words (as counted by the “Word Count” feature of the Microsoft Word™ word-processing system), exclusive of a table of contents, a table of authorities, a listing of facts which are admitted, denied, or cannot be admitted or denied, a certificate of service or word count, or appendix of exhibits.

Dated: January 18, 2024

By /Mehran Arjomand/  
Mehran Arjomand  
Registration No.: 48,231  
MORRISON & FOERSTER LLP  
707 Wilshire Boulevard, Suite 6000  
Los Angeles, CA 90017  
Tel: (213) 892-5630  
Fax: (213) 892-5454  
MArjomand@mofo.com

**Certificate of Service (37 C.F.R. § 42.6(e)(4))**

I hereby certify that the attached PETITIONER'S REPLY TO PATENT OWNER RESPONSE was served on the below date on the Patent Owner via e-mail (by consent) to the following counsel of record for the Patent Owner:

Steven A. Swernofsky  
Reg. No. 33,040  
LOS ALTOS LAW  
3616 Far West Blvd, Ste 117-245  
Austin, TX 78731  
Phone: 650-518-5080  
[steven.swernofsky@losaltoslaw.com](mailto:steven.swernofsky@losaltoslaw.com)

Tarek N. Fahmi (Reg. No. 41,402)  
Ascenda Law Group, PC  
2150 N. First St., Suite 420  
San Jose, CA 95131  
Tel: 866-877-4883  
Email: [tarek.fahmi@ascendalaw.com](mailto:tarek.fahmi@ascendalaw.com)

Jonathan Tsao (Reg. No. 61,241)  
Ascenda Law Group, PC  
2150 N. First St., Suite 420  
San Jose, CA 95131  
Tel: 866-877-4883  
email: [jonathan.tsao@ascendalaw.com](mailto:jonathan.tsao@ascendalaw.com)

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Dated: January 18, 2024

/Mehran Arjomand/  
Mehran Arjomand  
Registration No.: 48,231  
MORRISON & FOERSTER LLP  
707 Wilshire Boulevard, Suite 6000  
Los Angeles, CA 90017  
Tel: (213) 892-5630  
Fax: (213) 892-5454  
[MArjomand@mofo.com](mailto:MArjomand@mofo.com)