

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MAGIC LEAP, INC.
Petitioner,

v.

PERCEPT TECHNOLOGIES INC.
Patent Owner.

Patent No. 8,696,113

Inter Partes Review No. IPR2023-00495

SUPPLEMENTAL DECLARATION OF DR. JOSEPH J. LAVIOLA JR

TABLE OF CONTENTS

	Page
I. INTRODUCTION	4
II. QUALIFICATIONS	5
III. MATERIALS REVIEWED AND CONSIDERED	6
IV. LEGAL UNDERSTANDING	6
A. My Understanding of Claim Construction	6
B. A Person Having Ordinary Skill in the Art	7
C. My Understanding of Obviousness	7
V. OVERVIEW OF THE '113 PATENT	8
VI. CLAIM INTERPRETATION	9
A. The Communication Limitation	10
B. The Measurements Limitation	13
VII. OBVIOUSNESS UNDER OSTERHOUT AND MANN/VAISSIE.....	16
A. Osterhout.....	16
B. Mann/Vaissie	19

Petitioner's Exhibit List

Exhibit Description	Exhibit #
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
Petitioner’s Sur-Reply Claim Construction brief in co-pending litigation No. 1:22-cv-0025-RGA	EX-1011
Return of Service in co-pending litigation No. 1:22-cv-0025-RGA	EX-1012
Application as filed for U.S. Patent Appl. No. 13/841,141	EX-1013
Application as filed for U.S. Patent Appl. No. 13/739,929	EX-1014
Application as filed for U.S. Patent Appl. No. 13/078,589	EX-1015

Exhibit Description	Exhibit #
Application as filed for U.S. Patent Appl. No. 12/621,423	EX-1016
Application as filed for U.S. Patent Appl. No. 12/029,068	EX-1017
Application as filed for U.S. Patent Appl. No. 11/245,756	EX-1018
Excerpts from ANDREW S. TANENBAUM, MODERN OPERATING SYSTEMS (Prentice-Hall, Inc. 2nd ed. 2002)	EX-1019
Excerpts from ANDREW S. TANENBAUM ET AL., STRUCTURED COMPUTER ORGANIZATION (Prentice-Hall, Inc. 6th ed. 2013)	EX-1020
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

I, Joseph J. LaViola Jr., make this declaration in connection with the proceeding identified above.

I. INTRODUCTION

1. I have been retained by counsel for Magic Leap, Inc. (“Petitioner” or “Magic Leap”) in connection with the proceeding identified above. I submit this supplemental declaration in support of Magic Leap’s Petition for *Inter Partes* Review of United States Patent No. 8,696,113 (“Petition”). I understand that Percept Technologies Inc. (“Patent Owner”) states that it is the owner of U.S. Patent No. 8,696,113 (EX-1001, “the ’113 Patent”).

2. I submitted a declaration (EX-1003) dated January 19, 2023, in connection with Magic Leap’s Petition. That declaration included my opinions regarding how a person of ordinary skill in the art (“POSITA”) would have understood the ’113 Patent at the time of invention, and my opinions regarding whether the prior art references used in the asserted grounds of the Petition disclose elements of the claims challenged in that petition. I incorporate by reference my earlier declaration in its entirety.

3. I understand that the Petition challenged claims 1-3 and 12-14 of the ’113 Patent. I also understand that the Patent Trial and Appeal Board (“Board”) issued a decision to institute (Paper No. 10, “DI”) that instituted trial for the

challenged claims. I understand that, after the Board instituted trial, Patent Owner filed a Patent Owner's ("Response") in this proceeding (Paper No. 12).

4. I have been asked to prepare a supplemental opinion in connection with this Response. Generally, I have been asked to assess how a POSITA would understand the plain and ordinary meanings of two claim terms: (1) a dynamic eye tracking mechanism "in communication with" the lens; and (2) wherein the dynamic eye tracking mechanism utilizes optical parameter "measurements". I have also been asked to assess whether the prior art references disclose limitations of the challenged claims (including under the plain and ordinary meanings of the communication limitation and the measurements limitation) in view of the Response.

5. I am being paid \$450 an hour for my work on this matter. My compensation is not dependent on the outcome of this *inter partes* review and in no way affects the substance of my statements in this declaration.

6. I reside in Oviedo, Florida, USA.

II. QUALIFICATIONS

7. I provided details of my qualifications, and a copy of my CV (EX-1004), in connection with my first declaration (EX-1003). For conciseness, I will not repeat them here.

III. MATERIALS REVIEWED AND CONSIDERED

8. In performing my analysis and preparing this supplemental declaration, I reviewed the Petition and the cited exhibits, including the '113 Patent and its prosecution history; the Response; and the Board's decision to institute. In addition to the above exhibits and other documents, my opinions herein are based upon my personal knowledge, professional judgment, education, and experience gained through my years as a computer scientist, professor, and consultant.

IV. LEGAL UNDERSTANDING

A. My Understanding of Claim Construction

9. I have been advised and understand that claim construction is a matter of law and that the final claim construction will ultimately be determined by the Board. I have been advised and understand that patent claims are construed from the perspective of one of ordinary skill in the art at the time the claimed invention was made. I have further been advised and understand that, in an *inter partes* review, patent claims are to be construed according to the methodology set forth in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005). In performing my analysis and rendering my opinions, I have interpreted the claim terms by giving them the ordinary and customary meaning they would have to the POSITA reading the '113 patent as of March 15, 2013, and in light of its specification and file history.

B. A Person Having Ordinary Skill in the Art

10. I have been advised and understand that a POSITA is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity, not an automaton. With this understanding, a POSITA at the time of the invention claimed in the '113 patent would have been a person holding a B.S. degree and a Masters degree in Computer Science, Computer Engineering, Electrical Engineering, Physics, or an equivalent field, as well as one to two years of academic or industry experience in wearable electronic devices or comparable industry experience. This is the same definition of the POSITA that I provided in my previous declaration. (EX-1003 ¶ 21.)

C. My Understanding of Obviousness

11. I have been advised and understand that a claimed invention is unpatentable if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a POSITA to which the subject matter pertains. This means that even if all of the requirements of the claim cannot be found in a single prior art reference that would anticipate the claim, the claim can still be invalid.

12. It is my understanding that obviousness is a question of law based on underlying factual findings: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of skill in the art; and

(4) objective considerations of non-obviousness. I understand that for a single reference or a combination of references to render the claimed invention obvious, a POSITA must have been able to arrive at the claims by altering or combining the applied references.

13. I also understand that prior art references can be combined under several different circumstances. For example, it is my understanding that one such circumstance is when a proposed combination of prior art references results in a system that represents a predictable variation, which is achieved using prior art elements according to their established functions.

14. I also understand that when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to combine the references exists so as to avoid impermissibly applying hindsight when considering the prior art. I understand this test should not be rigidly applied, but that the test can be important to avoiding such hindsight.

V. OVERVIEW OF THE '113 PATENT

15. I provided an overview of the '113 Patent and its prosecution history in my first declaration. (EX-1003 ¶¶ 26-39.) For conciseness, I will not repeat the details here.

VI. CLAIM INTERPRETATION

16. I have been asked to discuss the plain and ordinary meaning of “a dynamic eye tracking mechanism in communication with the lens” in claim 1. I will refer to this limitation herein as the “communication limitation.” I have also been asked to discuss the plain and ordinary meaning of “wherein the dynamic eye tracking mechanism utilizes optical parameter measurements” in claim 1. I will refer to this limitation herein as the “measurements limitation.” The communication limitation and the measurements limitation are common to all challenged claims. Below I provide my opinions on those plain and ordinary meanings. Throughout this declaration, I have applied those plain and ordinary meanings, as well as the plain and ordinary meaning for all other claim terms.

17. Having reviewed the Response, I understand the Response to dispute whether (1) Osterhout or (2) the combination of Mann ’526 and Vaissie (“Mann/Vaissie”) meets the communication limitation and the measurements limitation of the challenged claims. 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”). As I understand the Response, Patent Owner does not dispute whether Osterhout or Mann/Vaissie meets the remaining limitations of the challenged claims.

18. I understand the Response to take the position that the communication limitation and the measurements limitation are to be given their plain and ordinary meanings for purposes of this proceeding. As the Response states, the communication limitation is “readily understandable and does not require further interpretation”; the patentee “did not provide the term any special meaning”; and “there is no clear reason to depart from the plain and ordinary meaning of this term.” (Response at 6.) I agree with those characterizations of the communication limitation. I also agree with the Response’s position that the measurements limitation is to be given its plain and ordinary meaning. (*Id.* at 8-9.) However, as described below, I disagree with Patent Owner as to what the plain and ordinary meaning is for both the communication limitation and the measurements limitation.

A. The Communication Limitation

19. In the Response, the Patent Owner provides what it considers to be the plain and ordinary meaning of the communication limitation. According to the Patent Owner’s definition, the plain and ordinary meaning of “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 at 7-8.)

20. I am not aware of any evidentiary support that Patent Owner has provided to support its definition of the communication limitation. For example, I am not aware of any documentary evidence, expert declaration, or testimony provided by Patent Owner to support its position in the Response.

21. I do not believe that the Response accurately represents the plain and ordinary meaning of the communication limitation to a POSITA after reading the '113 patent. I believe Patent Owner's proposed meaning of the communication limitation as requiring "active exchange of information" is too narrow to capture its plain and ordinary meaning to the POSITA. In my view, the POSITA would not have applied any specialized meaning to "in communication with" and instead would recognize the term to have a widely understood meaning: sending communication to or receiving communication from.

22. In my view, the plain and ordinary meaning of "in communication with" to the POSITA does not require *active* communication, as suggested in the Response. The POSITA would recognize that, for example, communications (including communication to or from a lens) can be passive as well as active.

23. This is consistent with the '113 Patent itself. For example, at 6:59-67, the '113 Patent describes various types of lenses that can be used with digital eyewear. (EX-1001 at 6:59-67.) This passage explains that such lenses can include "*passive or active display or projection based implementations.*" (*Id.* at

6:66-67 (emphasis added).) Lenses with passive displays (which can passively communicate information) are thus expressly contemplated by the '113 Patent. Another example is described at 7:35-46 and shown in Fig. 5C: in a wearable optics device, a display projector 620 is provided to project images on the lens display 601. (*Id.* at 7:35-46, Fig. 5C.) The lens display 601 is an example of a passive display that can passively receive and present images from the display projector. The '113 Patent further discloses that this wearable optics device can be used with dynamic eye tracking. (*Id.* at 8:27-30.)

24. In my view, the plain and ordinary meaning of “in communication with” to the POSITA does not require an *exchange* of information, as suggested in the Response. The POSITA would recognize that, for example, a sender of information can be in communication with a recipient of the information, even if there is no *exchange* between the sender and the recipient. As a hypothetical example, Alice can send an email to Bob, who receives the email but exchanges nothing in response. 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 nothing has been *exchanged* in this one-way communication. As another example, a speaker who presents an oral lecture to an audience of listeners is in communication with the audience, even if the audience exchanges nothing in return with the speaker.

25. This view is consistent with the '113 Patent. In the sole portion cited by Patent Owner for support, at 8:40-60, the specification discloses 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 at 7; EX-1001 at 8:40-60.) The passage also provides that “shading control” of the lens can be provided and can be controlled using optical parameters. (*Id.* at 8:42-51.) But none of these features involves an “exchange” between the lens and the dynamic eye tracking. Instead, as Patent Owner characterizes it, the dynamic eye tracking mechanism is “controlling chromatic, refractive, diffractive, transparency, and/or reflective properties of a lens.” (Response at 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* information with dynamic eye tracking mechanism. Instead, the passage cited by Patent Owner describes a one-way sending of information to the lens (i.e., to control various properties of the lens).

B. The Measurements Limitation

26. In the Response, the Patent Owner provides what it considers to be the plain and ordinary meaning of the measurements limitation. According to the

Patent Owner's definition, the plain and ordinary meaning of "measurements" requires that the term is limited to just specific types of measurements: that is, measurements of a "size, length, or amount of something." (Response at 8-9.)

27. I am not aware of any evidentiary support that Patent Owner has provided to support its definition of the measurements limitation. For example, I am not aware of any documentary evidence, expert declaration, or testimony provided by Patent Owner to support its position in the Response.

28. I do not believe that the Response accurately represents the plain and ordinary meaning of the measurements limitation to a POSITA after reading the '113 patent. Patent Owner's proposed plain and ordinary meaning of "measurements" is too narrow. The POSITA would understand the plain and ordinary meaning of "measurements" to refer, simply, to things that are measured. Certainly, measurements (including optical parameter measurements) can include measurements of size, length, or amount. But as the POSITA would recognize, under the plain and ordinary meaning of measurements, there are many examples of measurements (including optical parameter measurements) that are not measurements of size, length, or amount.

29. The '113 Patent does not support Patent Owner's unduly narrow interpretation of optical parameter measurements. In the Response, Patent Owner points to the '113 Patent as describing, *e.g.*, "ciliary, pupil, corneal, lens, iris,

eyelid, retina measurements”; and speculates that each such measurement “seems to be indicating such a determination of size or length.” (Response at 9.) Patent Owner is incorrect: while these measurements may in some cases be determinations of size or length, such as a diameter of a pupil, the POSITA would understand there are other cases in which they are not. To give one example involving optical parameters, a direction of a user’s eye gaze can be measured (e.g., by a camera) based on a measured position of the pupil, not necessarily its size or length. To give another example, electrooculography techniques determine an eye movement by measuring an electrical potential between the cornea and the retina of the eye—not the size or length of the cornea or retina. And to give an example taken directly from the ’113 Patent itself, the ’113 Patent describes that an eye sensor “determines the position of the eye/pupil/retina”; the POSITA would understand determining the position of the eye/pupil/retina to include at least a measurement of that position, which is not limited to a size or length.

30. Further, Fig. 5B of the ’113 Patent, which “illustrates perceptual optimization utilizing optical and perceptual parameters,” shows various measurements that are not measurements of size or length. (EX-1001 at 2:28-29, Fig. 5B.) For example, the figure 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.” The POSITA 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. This further demonstrates that Patent Owner’s proposed meaning of measurement is unduly narrow.

VII. OBVIOUSNESS UNDER OSTERHOUT AND MANN/VAISSIE

31. In the Response, Patent Owner takes the position that the challenged claims are not unpatentable under Osterhout or Mann/Vaissie, because those references do not meet the communication limitation or the measurements limitation of the claims. (Response at 15-22.) I disagree with Patent Owner’s position. In my view, the challenged claims are unpatentable as obvious in view of Osterhout, and additionally unpatentable as obvious in view of Mann/Vaissie, under any reasonable claim construction, for the reasons set forth in the Petition and in my previous declaration (EX-1003). I will not repeat all of the details here. However, below I will discuss certain additional aspects of Osterhout and Mann/Vaissie as applied to the challenged claims.

A. Osterhout

32. Osterhout meets the communication limitation and the measurements limitation, as explained in the Petition and in my previous declaration. The Petition explained how Osterhout meets the limitation that a dynamic eye tracking

mechanism is in communication with the lens. (Petition at 17-20.) Patent Owner does not dispute that Osterhout teaches 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 at 15-25.) As explained above, Patent Owner’s unduly narrow version of “in communication with” is 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.

33. 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 at 19-20.) For example, the eye tracking mechanism is in communication with the lens via a display projected on the lens. (*Id.* at 20.) The eye tracking mechanism correlates the viewing direction of the eye to a point on the lens, which is then used to interpret commands. (*Id.*) 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. (*Id.* at 19.) The eye tracking mechanism can also detect eye motions and eye gaze directed toward specific portions of the lens. (*Id.* at 19.) And in another embodiment, 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. (*Id.* at 20.)

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

35. Osterhout further meets the 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 at 21; EX-1005, [0301]; EX-1003, ¶ 65.) 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 at 21-23; EX-1005, [0301], [0304]; EX-1003, ¶¶ 65-67.)

36. Any of these five examples of optical parameter measurements is sufficient to meet the claim limitation. Patent Owner argues that its special definition of measurements, which includes only measurements of 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 not part of the term’s plain and ordinary meaning. The five measurements identified above meet the claimed measurements for at least the reasons set forth in the Petition. (Petition at 21-23.)

37. Patent Owner additionally argues that the limitation in claims 12-14 that “the lens includes a plurality of layers” is not met by one of the numerous embodiments of Osterhout that were identified in the Petition. (Response at 23-25.) The Petition described at least four embodiments of Osterhout in which the claimed lens with layers is disclosed; *e.g.*, via a lens with “an electrochromic layer that provides a display characteristic adjustment.” (Petition at 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 at 23-25; Petition at 42.) The special contact lens meets the “plurality of layers” limitation for at least the reasons set forth in the Petition. Patent Owner does not dispute that the other embodiments described in the Petition meet the “plurality of layers” limitation.

B. Mann/Vaissie

38. The Petition explained how Mann/Vaissie meets the limitation that a dynamic eye tracking mechanism is in communication with the lens. (Petition at 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. (*Id.* at 53-54.) This is sufficient to meet the requirement that the eye tracking mechanism is in communication with the lens. (DI at 27.)

39. 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 at 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 described above. (EX-1001 at 6:59-67)

40. Patent Owner also argues that the eye tracking mechanism does not rely on natural light passing through the lens to track eye motion. (Response at 29.) 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 at 29; Petition at 52-53.) Patent Owner argues that this does not demonstrate that the eye tracking mechanism receives light rays from the lens to track eye motion. (Response at 30-31.)

41. As explained in the Petition, it is the two-sided mirror 315 of Fig. 3—through which light rays 311 and 321 transmitted the lens “pass through ... without

being deflected”—that demonstrates how the light rays are communicated from the lens to the eye tracking mechanism. (Petition at 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. (*Id.* at 54.) 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, can both be captured in an image of the eye by the eye tracking mechanism.

42. Patent Owner argues that this system 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 at 34.) Patent Owner apparently suggests that the claims are further limited by requiring the eye tracking mechanism to use light from the lens for eye tracking. But there is no requirement in the claims. In my view, such requirement would be inconsistent with the plain and ordinary meaning of the communication limitation as understood by a POSITA.

43. This suggested requirement would also be inconsistent with Patent Owner’s own examples, from the ’113 Patent, of the dynamic eye tracking mechanism communicating with the lens. For example, the Response identifies a passage from the ’113 Patent in which “a zoom feature is provided in which a

focal length of the lens can be controlled by the dynamic eye tracking mechanism.” (Response at 4 (citing EX-1001 at 9:7-13, 4:31-35).) Additionally, the Response identifies examples from the ’113 Patent in which “the dynamic eye tracking mechanism controls chromatic, refractive, diffractive, transparency, and/or reflective properties of the lenses.” (*Id.* at 4-5 (citing EX-1001 at 8:53-60).) These examples do not disclose that a communication with the lens, let alone light passed through the lens to the eye tracking mechanism, is used to track eye motion. In fact, they do not appear to disclose the lens communicating information to the eye tracking mechanism at all. For at least these reasons, in view of the ’113 Patent, a POSITA would not understand the plain and ordinary meaning of “in communication with” to require that an eye tracking mechanism in communication with a lens must use light from the lens (or anything communicated from the lens) for eye tracking.

44. Patent Owner argues, as with Osterhout, 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 at 35-36.) In the Mann/Vaissie combination, as explained in the Petition, the optical parameter measurements are met at least by the disclosures in Vaissie of determining the user’s sight direction by determining the location of the user’s pupil in an image of the eye. As explained in the Petition, Vaissie 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 at 57-58.)

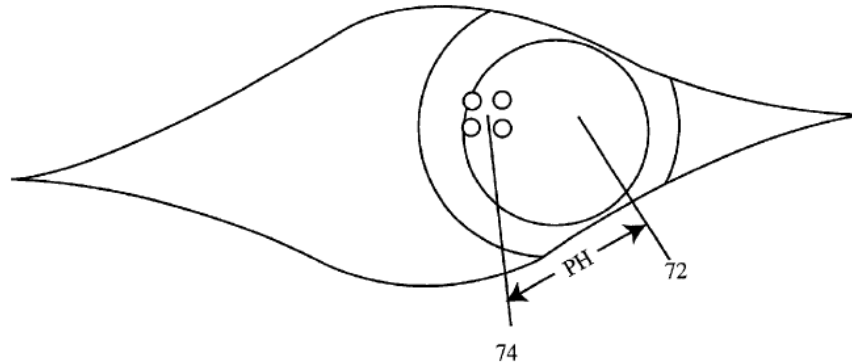


Figure 7b

(EX-1007, Fig. 7b.)

45. As described above with respect to Osterhout, Patent Owner's narrowed version of "measurements" does not track the plain and ordinary meaning of this term, and does not apply to Mann/Vaissie. Moreover, measuring a pupil position, as in Vaissie, is what I understand Patent Owner highlighted as meeting the measurement limitation in the co-pending litigation. (EX-1022 at 13; EX-1023 at 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).

46. In my view, even if the Board were to adopt Patent Owner’s versions of the communication and measurements limitations, the claims are still unpatentable as set forth in the Petition and described further below.

47. 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 at 20; EX-1005 at [0164].) The eye tracking mechanism correlates the viewing direction of the eye to a point on the lens, which is then used to interpret commands. The exchange is active at least in that the viewing direction is used to interpret the commands, an active process; and further, because Osterhout discloses the lens display can be an active display, such as an LCoS optical display, or projection optics with an RGB LED module. (EX-1005 at [0164].)

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

49. And with respect to the Mann/Vaissie grounds, the “active exchange of information” is met at least by the eye tracker 1010 receiving optical

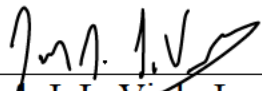
information from the lens, as described above; tracking the user's eye to control a cursor position in a reality window manager; and presenting the window manager, with the cursor, in the electronic display of the lens. (Petition at 50-51; EX-1006 at 14:22-25, 26:10-19, Figs. 1C, 1D.) The communication 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.

50. Further, as described above, “a determination of size or length” is met at least by the measurement of the vector PH—representing the distance and angle of the pupil in relation to the barycenter of the corneal reflections—to indicate the user's gaze direction. Measuring the vector PH is a measurement of length at least because the measured distance of the pupil to the barycenter is a length.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code.

Executed the 18th of January, 2024 in Oviedo, Florida.

Respectfully submitted,



Joseph J. LaViola Jr., Ph.D.