UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE PATENT TRIAL AND APPEAL BOARD

_____

K/S HIMPP,
Petitioner

v.

BRAGI GmbH,
Patent Owner

_____

Case: IPR2023-01204
U.S. Patent No. 10,117,014

_____

THIRD DECLARATION OF DR. DARRIN YOUNG, PH.D. FOR PATENT OWNER'S REPLY IN SUPPORT OF REVISED CONTINGENT MOTION TO AMEND

Bragi Exhibit 2006
K/S Himpp v. Bragi
IPR2023-01204

TABLE OF CONTENTS

I. INTRODUCTION 1

II. PERSON OF ORDINARY SKILL IN THE ART (POSITA) 3

III. Legal Standards 4

A. Patent Claims 4

B. Burden of Proof for Invalidity 5

C. Claim Construction 6

D. Person of Ordinary Skill in the Art 6

E. Prior Art 6

F. Anticipation 7

G. Obviousness 8

IV. THE ’014 PATENT 11

V. CLAIM CONSTRUCTION 15

VI. OVERVIEW OF ALLEGED PRIOR ART REFERENCES 16

A. Hain 16

B. Steinbrecher 16

C. Sorensen 17

D. Shaffer 17

E. Aumer 17

F. Rass 18

VII. PATENT OWNER’S SUBSTITUTE CLAIMS ARE PATENTABLE 19

A. Proposed Substitute Claims 19

B. The Original Application for the ’014 Patent Includes Support for the Proposed Substitute Claims 23

C. The Original Application for the ’014 Patent Enables the Proposed Substitute Claims 28

D. The Proposed Substitute Claims are Patentable Over the Cited Prior Art 32

1. *Ground 1 – Hain and Rass* 32

2. *Ground 2 – Steinbrecher and Rass* 34

3. *Grounds 3-4 – Shaffer in view of Hain, Sorensen, Steinbrecher, and/or Rass claims 14-21 and 23-26 and Shaffer, Hain, and Rass claim 22* 35

4. *Ground 3 – Shaffer, Hain, and Rass* 36

5. *Ground 1 – Hain and Aumer* 36

6. *Ground 2 – Steinbrecher and Aumer* 38

7. *Ground 3 – Shaffer in view of Hain, Sorensen, Steinbrecher and/or Aumer* 39

8. *Ground 1 – Shaffer, Hain, Aumer, and Rass* 41

VIII. PATENT OWNER'S SUBSTITUTE CLAIMS RESPOND TO GROUNDS 41

IX. PATENT OWNER'S SUBSTITUTE CLAIMS ARE NOT INDEFINITE 41

X. CONCLUSION 42

I, Dr. Darrin Young, declare as follows:

I. INTRODUCTION

1. I have been retained as an independent expert consultant on behalf of Bragi GmbH ("Patent Owner" or "Bragi") in this Inter Partes Review proceeding ("IPR") before the Patent Trial and Appeal Board ("Board" or PTAB") of the United States Patent and Trademark Office ("PTO") regarding U.S. Patent No. 10,117,014 ("the '014 Patent" or "the Challenged Patent") (Ex. 1001).

2. I have been asked to consider, and provide my opinions regarding, whether the Proposed Substitute Claims 14-26 as provided in the Revised Motion to Amend (RMTA) are patentable. I have also been asked to consider and provide my opinions regarding whether the alleged prior art references cited in this proceeding disclose or render obvious the features recited in certain claims of the '014 Patent (proposed claims 14-26, corresponding to original claims 1-13, respectively), which I understand K/S HIMPP ("Petitioner") has challenged in this IPR. In my view, the alleged prior art references do neither. Specifically, I have been asked to review Petitioner's Opposition to Patent Owner's RMTA, the supporting expert declaration, and Petitioner's additional prior art references cited for the first time in Petitioner's Opposition to Patent Owner's Motion to Amend. This declaration is based on the information currently available to me. To the extent that additional information becomes available, I reserve the right to continue my investigation and study, which

may include review of documents and information that may be produced, as well as testimony from depositions that have not yet taken place. My opinions are set forth below.

3. I submitted a first declaration in this proceeding on June 11, 2024, in support of Patent Owner's original Motion to Amend (Paper 12), which I understand has been filed as Exhibit 2001. Further, I submitted a second declaration in this proceeding on October 22, 2024 in support of Patent Owner's Revised Motion to Amend ("RMTA") (Paper 25), which I understand has been filed as Exhibit 2005. My background and credentials remain the same as set forth in paragraphs 3-12 of my first declaration and further expounded upon in my CV (Ex. 2002).

4. In paragraphs 13-16 of my first declaration and in paragraph 4 of my second declaration, I identified the materials I have reviewed in forming my opinions. Since submitting my previous declarations, I have reviewed the Petitioner's Opposition to Patent Owner's RMTA (Paper 29) ("Petitioner's Opposition") and supporting exhibits, including the Third Declaration of Sayfe Kiaei, Ph.D.

5. As stated in my previous declarations, I have been asked to consider the time of the alleged invention to be around August 29, 2015, which I understand is the filing date of the application (U.S. Provisional Application No. 62/211,767 to which the '014 patent claims priority (Ex. 1001, Cover). My opinions reflect how a

person of ordinary skill in the art (as I define in Section II below) would have understood the claims and the specification of the ’014 Patent, the prior art to the patent, and the state of the art, at the time of the alleged invention.

6. In addition, the technical analysis I provide of Petitioner’s prior art and the ’014 Patent and understanding of the relevant legal standards as expressed in my previous declarations remain accurate to the best of my knowledge and I incorporate it herein. I provide additional technical analysis to support the Substitute Claims as set forth in the RMTA and rebut Petitioner’s arguments raised in its Oppositions.

7. As I discuss in detail below, it is my opinion that the Proposed Substitute Claims of the ’014 Patent are patentable, and that the limitations of the Proposed Substitute Claims are not disclosed nor rendered obvious by the prior art references cited by Petitioner in this Inter Partes Review and Petitioner’s Opposition to Patent Owner’s RMTA (Paper 29).

II. PERSON OF ORDINARY SKILL IN THE ART (POSITA)

8. All of my opinions in this declaration are from the perspective of a person of ordinary skill in the art, as I have defined it in my previous declarations (Ex. 2001) and during the relevant time frame (e.g., 2015, including August 29, 2015). During this time frame, I possessed at least the qualifications of a POSITA, as defined in my first declaration (Ex. 2001).

9. I am not an attorney or a legal expert. The legal standards I applied in

reaching the conclusions expressed throughout this declaration were provided to me by counsel. In preparing this declaration, I have endeavored to faithfully apply these legal standards. I do not intend to offer opinions on the law. Below, I describe the law I applied in considering whether the claims of the Challenged Patent are patentable.

10. I have been informed that an issued patent is presumed valid and that the challenger of the patent's validity bears the burden of proving invalidity of the patent.

III. Legal Standards

11. I am not an attorney. However, counsel has explained the applicable legal standards and below is my understanding of those standards.

A. Patent Claims

12. Patent claims describe the invention made by the inventors and describe what the patent owner owns and what the owner may prevent others from doing.

13. Claims may describe products, such as machines or chemical compounds, or processes for making or using a product. Claims are usually divided into parts or steps called limitations.

14. There are two types of claims: independent claims and dependent claims. An independent claim sets forth all the requirements that must be met in order to be covered by that claim. Thus, it is not necessary to look at any other claim

to determine what an independent claim covers. A dependent claim does not itself recite all of the requirements of the claim, but refers to another claim for some of its requirements. In this way, the claim depends on another claim. The law considers a dependent claim to incorporate all of the requirements of the claims to which it refers.

15. The dependent claim then adds its own additional requirements. To determine what a dependent claim covers, it is necessary to look at both the dependent claim and any other claims to which it refers.

16. In that case, the dependent claims incorporate the limitations of the independent claim upon which they depend and, if a reference fails to disclose any of the limitations of an independent claim, the claims which depend on that claim cannot be made invalid by that reference. As a result, any of the references at issue in this proceeding that fail to disclose all of the limitations of an independent claim necessarily also fail to disclose all of the limitations of claims which depend on that claim.

B. Burden of Proof for Invalidity

17. I understand that the party challenging the validity of an issued U.S. patent in an IPR bears the burden of proving invalidity through facts supported by a preponderance of the evidence. I understand that a "preponderance of the evidence" means evidence sufficient to prove that a fact is more likely true than it is not.

C. Claim Construction

18. I understand that the first step in determining validity is to properly construe the claims. I further understand that, in this proceeding, the Board must determine the scope of the claims by using the same claim construction standard that United States District Courts use. Under this standard, words of a claim are given their "ordinary" and "customary" meaning as understood by a person of skill in the art at the time of the invention. I understand that such a person looks to the claims, specification, and file history in understanding the meaning of the claim terms. I have applied this understanding in this declaration.

D. Person of Ordinary Skill in the Art

19. I understand that a person having ordinary skill in the art may be defined by factors such as: (a) the levels of education and experience of the inventor and other persons actively involved in the field; (b) the types of problems encountered in the field; (c) prior art solutions to those problems; (d) rapidity with which innovations are made; and (e) the sophistication of the technology.

E. Prior Art

20. I understand that a patent cannot be invalidated based on one person's testimony alone without corroborating evidence, particularly documentary evidence. Moreover, I understand that corroboration is required of any witness whose testimony alone is asserted to invalidate a patent, regardless of his or her level of

interest in relation to that patent. Accordingly, even if the testifying individual has no interest in the litigation, I understand that that corroboration is still required.

21. In this declaration, I may use the phrase "prior art" when describing specific references. However, my use of this phrase should not be interpreted as agreement that the item(s) described qualify as prior art under the patent laws. I merely use this phrase to address the items labeled as "prior art" by Petitioner and its expert.

F. Anticipation

22. I understand that a patent claim can be found invalid as anticipated if each and every element of the claim, as properly construed, is found either explicitly or inherently in a single prior art reference. If the single prior art reference does not disclose any one claim limitation, then that claim is not anticipated. I further understand that the single prior art reference cannot merely disclose each element; rather, it must disclose all of the elements as arranged in the claim. I have been informed that for a prior art reference to "inherently" disclose something, the reference must necessarily function in accordance with, or include the claimed limitations, to anticipate. The missing descriptive matter cannot merely probably or possibly include the claimed limitations. I further understand that, with respect to an anticipation analysis, it is improper to combine separate, distinct embodiments of a single prior art reference.

23. I understand that for a claim to be anticipated, each claim limitation must be disclosed in a single prior art reference, and the claimed arrangement or combination of those limitations must also be disclosed in that same prior art reference. I understand that for a reference to be anticipatory, the reference must contain an enabling disclosure. I understand that merely naming or describing the subject matter is insufficient if it cannot be produced without undue experimentation.

G. Obviousness

24. I understand that a patent claim can be found invalid as obvious if the differences between the claim and the prior art references would have been obvious to a person of ordinary skill in the art at the time of the invention, taking into account (1) the scope and content of the prior art, (2) the differences between the prior art and the claims, (3) the level of ordinary skill in the art, and (4) any objective indicia of non-obviousness. I further understand that a claim can be found to be obvious in light of either a single prior art reference or multiple prior art references. I understand that references qualify as prior art for an obviousness determination only when they are analogous to the claimed invention. Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed; and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

25. To be obvious in light of a single prior art reference or multiple prior art references, there must be a reason either to modify either the single prior art reference or to combine the two or more prior art references to achieve the claimed invention. I understand that this reason may come from a teaching, suggestion, or motivation to combine or may come from the reference or references themselves, the knowledge or "common sense" of one skilled in the art, or from the nature of the problem to be solved, and may be explicit or implicit from the prior art as a whole.

26. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.

27. I further understand that there is no suggestion to combine, however, if a reference teaches away from its combination with another source. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant, or if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. If when combined, the references would produce a seemingly inoperative device, then they teach away from their combination. I understand that it is improper to combine references where the references teach away from their combination.

28. I understand that the degree of teaching away will depend on the

particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. I understand that a reference teaches away, for example, if (1) the combination would produce a seemingly inoperative device, or (2) the references leave the impression that the product would not have the property sought by the applicant.

29. I understand that if the teachings of a prior art reference would lead one skilled in the art to make a modification that would render another prior art device inoperable, then such a modification would generally not be obvious. I understand that if a proposed modification would render the prior art device unsatisfactory for its intended purpose, then the proposed modification would generally not be obvious.

30. I understand that it is improper to use hindsight in making the obviousness determination.

31. I understand that some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness must be made. For example, I understand that there may be no rational underpinning to support the legal conclusion of obviousness where systems are already complete and the party challenging validity seeks to mix and match components, which each exist in the separate systems, from these complete systems.

32. In paragraphs 13-16 of my previous declaration, I identified the materials I have reviewed in forming my opinions. Since submitting my previous declaration, I have reviewed the Petitioner's Opposition to Patent Owner's RMTA (Paper 29).

33. As stated in my previous declaration, I have been asked to consider the time of the alleged invention to be around August 29, 2015, which I understand is the filing date of the application (U.S. Provisional Application No. 62/211,767 to which the '014 patent claims priority (Ex. 1001, Cover). My opinions reflect how a person of ordinary skill in the art (as I define in Section V below) would have understood the claims and the specification of the '014 Patent, the prior art to the patent, and the state of the art, at the time of the alleged invention.

34. For the technical analysis I provide below of Petitioner's prior art and the '014 Patent, I apply my understanding of the relevant legal standards recited above.

35. As I discuss in detail below, it is my opinion that the Proposed Substitute Claims of the '014 Patent are patentable, and that the limitations of the Proposed Substitute Claims are not disclosed by the prior art references cited by Petitioner in this *Inter Partes* Review and Petitioner's Opposition to Patent Owner's RMTA (Paper 29).

IV. THE '014 PATENT

36. The ’014 Patent discloses a system in which one or more wireless earpieces interact with a smart case in order to preserve battery life, by entering a low power mode when the one or more earpieces are detected in the case, or a high power mode when the one or more earpieces are not detected in the case, presumably removed by the user to play audio.

37. Figure 1 of the ’014 Patent, reproduced below, demonstrates some of the novel aspects in a particular embodiment. As shown below, the invention claimed in the ’014 Patent allows one or more wireless in-ear earpieces to interact with a smart case comprising a rechargeable battery capable of being utilized to charge a wireless earpiece to perform various actions. For example, the ’014 Patent provides multiple functionalities for interaction including utilizing the smart case to preserve the battery life of the wireless earpieces while in a low power mode or state and ensuring charging of the earpieces to a desired level, overcoming the interference from headphone wires.

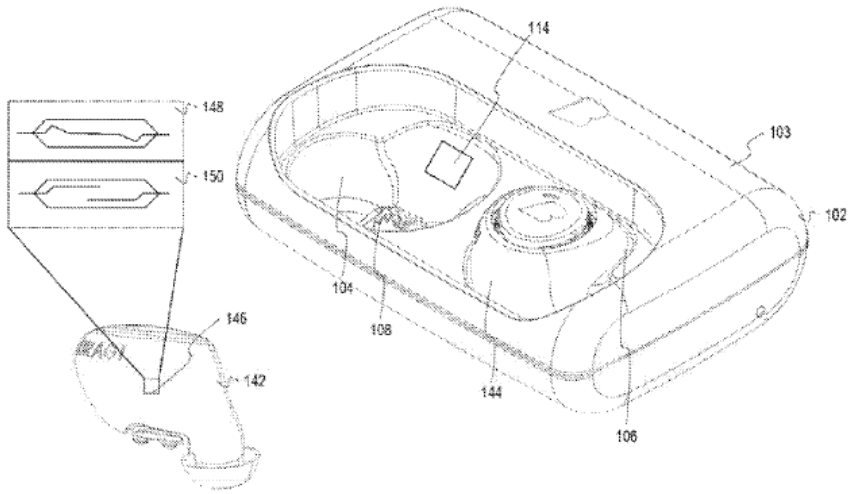


FIG. 1

Ex-1001, Fig. 1.

38. The ’014 Patent discloses a reed switch which is an electrical switch operated by an applied magnetic field, provided by a magnet of the smart case which turns the wireless earpieces on and off. Ex-1001, 2:52-62; Figure 1. The wireless earpiece may operate in a variety of power modes. For example, the wireless earpiece may operate in a power saver or a low power mode, in which the wireless earpiece utilizes minimal power to maintain functionality and alert status of the wireless earpiece. *Id.* at 10:15-36. The wireless earpiece may also operate in a high-power mode, which is implemented upon detecting that the wireless earpieces have been removed from the smart case. *Id.*

39. The ’014 Patent system comprises one or more wireless earpieces and

a smart case. The wireless earpieces may be referred to as a pair or singularly. Ex-1001, 3:1-3. The wireless earpieces are configured to fit into a user's ear. *Id.* at 3:5-11.

40. The smart case is configured to receive the wireless earpieces such that they fit securely inside of the smart case. *Id.* at 3:55-60. The smart case comprises a rechargeable battery utilized to charge the wireless earpieces. *Id.* at 3:31-34. The wireless earpieces may be charged via direct contact or wirelessly.

41. The reed switch operates in a closed mode when no magnetic field is present or in an open mode when a magnetic field is present. *Id.* The magnetic field is supplied by one or more magnets of the smart case, such that the reed switch is in the closed mode when the wireless earpieces are outside of the smart case and in an open mode when the wireless earpieces are in the smart case. *Id.* When the reed switch is in the open mode indicating that the wireless earpieces are in the smart case, the wireless earpieces may be charged by the smart case. *Id.* at 5:39-47. When the wireless earpieces are removed from the case for use, the reed switch is in a closed mode, which results in the wireless earpieces functioning under their own power. *Id.* The reed switch may initiate a self-power (or high power) mode when deactivated (closed) by the magnet of the smart case. *Id.* at 8:1-21. As a result, the wireless earpieces may be fully activated and ready for use.

42. In operation, the wireless earpieces interface with a smart case. The

process begins with one or more wireless earpiece determining whether a magnetic field is present. This determination may be based on the interaction of a magnet or magnetic field with a reed switch of the wireless earpiece. If the magnetic field is not present, the wireless earpiece remains powered on and the reed switch remains closed. When in this state, the onboard battery of the wireless earpiece powers and operates the wireless earpiece to ensure full functionality. Ex-1001, 8:32-53. If a magnetic field is present, the reed switch is opened and the wireless earpiece enters low power mode to preserve battery life.

43. The wireless earpieces include the capability of reading user biometrics and actions, such as heart rate, motion, and so forth. Ex-1001, 4:20-4:22. The claimed wireless earpieces also include the capability of altering their power mode based on biometric readings. *Id.* at 7:27-8:8.

V. CLAIM CONSTRUCTION

44. I understand that claim terms are typically given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the alleged invention. In considering the meaning of the claims, I also understand that one must consider the claim language, specification, prosecution history, and the knowledge of a person of ordinary skill in the art at the relevant time. I do not believe any terms require construction in the present matter.

VI. OVERVIEW OF ALLEGED PRIOR ART REFERENCES

45. In its Petition (Paper No. 1), Petitioner presents three grounds challenging claims 1-14 using various combinations of Hain, Shaffer, and Sorensen.

46. Furthermore, in its Opposition to Patent Owner's RMTA (Paper No. 31), Petitioner again presents seven grounds challenging claims 15-28 using various combinations of the previously asserted prior art references and the Aumer and Rass references which are described below.

A. Hain

47. Hain generally discloses a dual hearing aid system with magnetic field sensors. Ex.1004. In some scenarios, the magnetic field is only detected by one hearing aid, which indicates that the hearing aid is "telephoning," and the hearing aids (which has detected the magnetic field) remains active. Id. at [0013]. In other scenarios, when the magnetic field is detected by both hearing aids, the hearing aids enter an off state. Id. at Abstract. Hain discloses three modes of operation: "normal operation," the "telephoning" operation, and an off state. Id. at [0021]-[0022].

B. Steinbrecher

48. Steinbrecher is directed to a device for contactless loading of an accumulator battery in a hearing aid when the hearing aid is located in a charging shell. Ex-1006 at [0001]. The charging shell is connected by a main plug, or plug-

in power supply, in order to provide power. Id. at [0024]. This is shown in Figure 1, reproduced below. Steinbrecher does not disclose reading of biometrics and does not discuss biometrics.

C. Sorensen

49. Sorensen is directed to a hearing aid system including a charging station in which a hearing instrument is mounted to charge the hearing instrument without removal of the battery. Ex-1005, Abstract. The system provides communication between the charging station and the hearing instrument when the hearing instrument is placed in the charging station, such that data can be exchanged between the devices. *Id.* at 6:25-62.

D. Shaffer

50. Shaffer discloses a mobile device case which operates as an electrical charger and storage dock for wireless earbuds. Ex-1003 at [0002]. Each earbud may include sensors, including a pressure sensor or a magnetic sensor that identifies when the earbud is within or outside the case. *Id.* at [0011]. The case has electrical components which allow the earbud batteries to be charged in the case when the case is plugged into a power source via a charging cable. *Id.* at [0047].

E. Aumer

51. The Aumer reference is U.S. Patent Pub. No. US 2016/0094899, titled "Methods and Apparatus for Improving Signal Quality in Wearable

Biometric Monitoring Devices." See Ex. 1022. Aumer was filed August 18, 2015, and claims priority to Aumer claims priority to U.S. Prov. App. Nos. 62/056,510 (Ex. 1023) and 62/110,655 (Ex. 1024), filed September 17, 2014, and February 2, 2015, respectively. The purported invention of Aumer relates generally to monitoring devices and methods for measuring physiological information. Ex. 1022 at [0002].

52. Aumer generally discloses a method for improving signal quality in exercise wearables using biometrics. Ex.1022. The user is instructed to start a quality test which triggers the wearable to determine the signal quality to a remote device. *Id*. at [0008]. Signal quality information is then communicated to the user so the user can adjust the wearable if needed. *Id*. at [0007].

F. Rass

53. The Rass reference is U.S. Patent No. 7,522,739, titled "Hearing Aid With A Switching Device For Switching On And Off And Corresponding Method." *See* Ex-1033. The application that became the Rass patent (11/126,088) was filed May 10, 2005. The purported invention of Rass relates generally to a system and method for switching on and off a hearing aid to make it "more user friendly." *See id.* at abstract.

54. The purported invention of Rass provides for switching the hearing aid on or off by a variety of different signals: a temperature signal, pressure signal,

resistance signal, acoustic signal or a remote-control signal. *See id.* at 2:5-2:13.

VII. PATENT OWNER'S SUBSTITUTE CLAIMS ARE PATENTABLE

55. I understand that Patent Owner has proposed potentially substituting claims as listed below. The proposed amendments rewrite each of claims 1-13 as Proposed Substitute Claims 14-26. The Proposed Substitute Claims do not broaden the claim scope or introduce new subject matter. The proposed claim amendments further limit the method and/or system of each of these claims by adding additional functionalities. These amendments further distinguish the claims over the prior art, narrowing the claim scope. The claims are patentable over Petitioner's prior art references. Further, as I discuss below, a POSITA would have understood that the inventor possessed the substitute claims as of the priority date and would have been sufficiently enabled in how to make and use the invention recited in the Substitute Claims. As discussed below, I find that Patent Owner's Proposed Substitute Claims are patentable.

A. Proposed Substitute Claims

56. According to Patent Owner's proposal, I understand that the original claims in the '014 Patent may be canceled and replaced with the proposed Substitute Claims. I have been asked to evaluate these proposed substitute claims. I understand that these are not currently claims in the '014 Patent. I am informed by Counsel that the underlined text is proposed to be added to the original claims,

and text that is struck through is proposed to be removed from the original claims.

Claim 14. [Proposed substitute for claim 1] A method for managing a wireless earpiece, comprising:

powering circuitry of the wireless earpiece utilizing a low power mode in response to detecting a magnetic field is applied to the wireless earpiece;

wherein a portion of the wireless earpiece fits within the ear canal opening and the wireless earpiece is configured to read user biometrics, and

altering the power sent to the circuitry of the wireless earpiece to a high power mode in response to detecting a magnetic field is not applied to one or more of the wireless earpieces.

Claim 15. [Proposed substitute for claim 2] The method of claim 14, further comprising:

operating the wireless earpiece utilizing an onboard battery in response to detecting the magnetic field is not applied to the wireless earpiece.

Claim 16. [Proposed substitute for claim 3] The method of claim 14, further comprising:

charging an onboard battery of the wireless earpiece in response to detecting a magnetic field is applied to the wireless earpiece.

Claim 17. [Proposed substitute for claim 4] The method of claim 14, wherein the magnetic field is applied by a magnet of a smart case configured to

receive the wireless earpiece, wherein the smart case comprises a rechargeable battery configured to charge the wireless earpieces.

Claim 18. [Proposed substitute for claim 5] The method of claim 14, wherein the magnetic field is detected by a reed switch of the wireless earpiece.

Claim 19. [Proposed substitute for claim 6] The method of claim 14, further comprising:

coupling the wireless earpiece to a smart case, wherein:

the smart case comprises a rechargeable battery configured to charge the in-ear wireless earpieces; and

the smart case applies a magnetic field to the wireless earpiece.

Claim 20. [Proposed substitute for claim 7] The method of claim 14, wherein the magnetic field is detected by a reed switch integrated in magnetic contacts that interface with a smart case for securing the wireless earpiece, the smart case comprising a rechargeable battery configured to charge the in-ear wireless earpieces.

Claim 21. [Proposed substitute for claim 8] The method of claim 14, further comprising:

synchronizing data between the wireless earpiece and a smart case in response to detecting the magnetic field.

Claim 22. [Proposed substitute for claim 9] The method of claim 14,

wherein the low power mode is a power saver mode and the user biometrics is utilized by the wireless earpiece to alter the power mode.

Claim 23. [Proposed substitute for claim 10] A system comprising:

a left earpiece and a right earpiece each of the left earpiece and the right earpiece comprising circuitry operating the earpiece, a battery powering the circuitry operating the earpiece, and a reed switch connecting the battery to the circuitry, wherein the reed switch connects the circuitry to the battery when a magnetic field is not detected and wherein the reed switch disconnects the circuitry from the battery when a magnetic field is detected;

a smart case housing for charging the left earpiece and the right earpiece,

a first receptacle for receiving the left earpiece disposed within the smart case housing, wherein a portion of the left wireless earpiece fits within the ear canal opening and the left wireless earpiece is configured to read user biometrics, and;

a second receptacle for receiving ~~a~~ the right earpiece disposed within the smart case housing, wherein a portion of the right wireless earpiece fits within the ear canal opening and the right wireless earpiece is configured to read user biometrics, and;

a first interface associated with the first receptacle for electrically connecting the smart case to the left earpiece;

a second interface associated with the second receptacle for electrically connecting the smart case to the right earpiece;

an intelligent control disposed within the smart case housing and operatively connected to the first interface and the second interface.

Claim 24. [Proposed substitute for claim 11] The system of claim ~~10~~ 23 wherein the smart case further comprises a display.

Claim 25. [Proposed substitute for claim 12] The system of claim ~~11~~ 24 wherein the display is moveably connected to the smart case to transition from a first position to a second position.

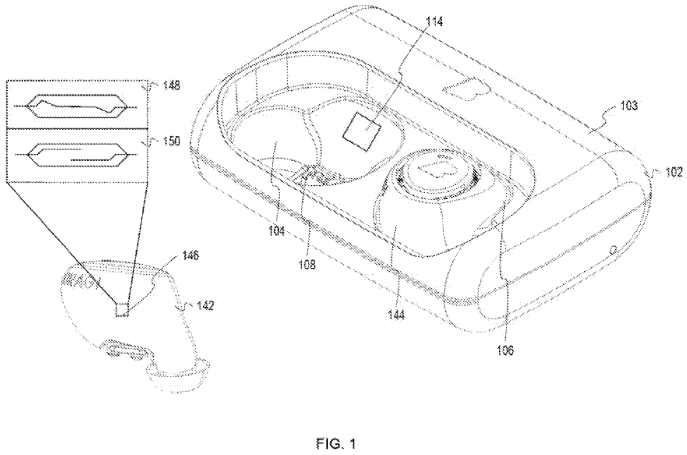
Claim 26. [Proposed substitute for claim 13] The system of claim ~~12~~ 25 wherein the smart case further comprises at least one manual input for receiving user input to provide additional functionality.

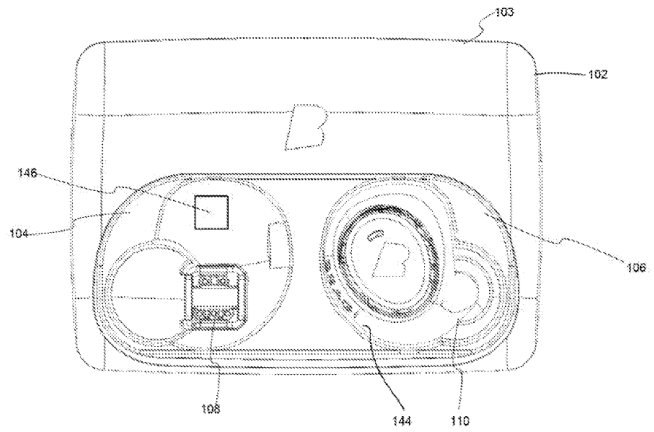
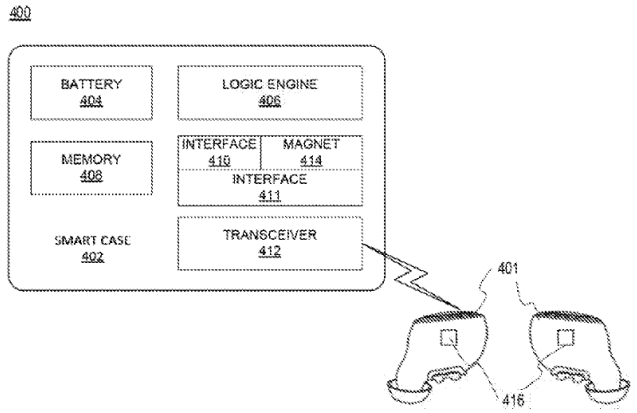
B. The Original Application for the ’014 Patent Includes Support for the Proposed Substitute Claims

57. I have been asked to provide my opinions regarding whether the Proposed Substitute Claims are supported by the original application for the ’014 Patent. In performing this analysis, I have applied the plain and ordinary meaning of the terms. I include exemplary citations to the original application for both the existing limitations of the claims and the limitations added by each proposed substitute claim. The ’014 patent issued from U.S. Patent Application No. 16/245,031 (“the ’031 Application”), which is found at pages 1-36 of Exhibit 1008.

58. As noted above, the Proposed Substitute Claims rewrite claims 1-21

with additional limitations. The following features, found in the Substitute Claims, were supported by the ’031 Application. A POSITA would have found that the inventor was in the possession of the features (and each claim as a whole) at the time of filing the ’031 Application.

Claim Limitation	Proposed Substitute Claims	Support from Original U.S. Application for the ’014 Patent
Wherein a portion of the wireless earpiece fits within the ear canal opening	14-26	In one embodiment, the wireless earpieces 142, 144 include a set of left and right ear pieces configured to fit into a user’s ears. [4:19-20]  FIG. 1 Figure 1

		 FIG. 2 Figure 2  FIG. 4 Figure 4
Wherein the wireless earpiece(s) . . . is configured to read user biometrics	14-26	The wireless earpieces 142, 144 may be configured to play music or audio, receive and make phone calls or other communications, read user biometrics and actions (e.g., heart rate, motion, sleeping, etc.). [4:20-4:22]

		In another embodiment, biometric readings, such as heartbeat or temperature may be utilized by the wireless earpieces 142, 144 and smart case 102 to alter the power mode or status of the wireless earpieces 142, 144, as well as the smart case 102 (e.g., may be placed in a low power mode). For example, if the wireless earpieces 142, 144 are near the smart case 102 and no heartbeat is detected, the smart case 102 may send a command for the wireless earpieces 142, 144 to shut themselves down or enter a low power mode with minimum functionality. In one embodiment, power to onboard sensory arrays may be terminated and only essential functions remain on. For example, in the low power mode allows charging of the wireless earpieces 142, 144 and/or smart case 102 and uploads/downloads to the wireless earpieces 142, 144 while in the low power mode. [7:27-8:8]
wherein the smart case comprises a rechargeable battery configured to charge the wireless earpieces	17, 19-20	The smart case 102 encloses a battery, and various other circuitry (not shown). The battery of the smart case 102 may be utilized to charge the wireless earpieces 142, 144 through direct contact or wirelessly. As a result, the smart case 102 may act as a custom charger for ensuring the proper power management and functionality of the wireless earpieces 142, 144. For example, the battery of the smart case 102 may be utilized to charge the wireless earpieces 142, 144 any number of times before the smart case 102 and corresponding battery may require charging. In one embodiment, the smart case 102 may include one or more solar panels, or surfaces configured to charge the smart case 102 utilizing ambient or direct sunlight. The smart case 102 ensures that the duty cycle of the wireless earpieces 142, 144 are maximized by properly maintaining power

		levels. For example, the smart case 102 may keep the wireless earpieces 142, 144 fully charged during a time period of inactivity, such as before being purchased (e.g., on a shelf or as part of inventory) or once purchased. [5:3-15] The smart case includes interfaces 108, 110 within the receptacles 104, 106. The interfaces 108, 110 are hardware interfaces for electrically connecting the wireless earpieces 142, 144 to the smart case 102. The interfaces 108, 110 may include any number of contact points, busses, wires, or other physical connectors for interfacing the wireless earpieces 142, 144, with the smart case 102. The interfaces 108, 110 may alternatively include inductive chargers for charging the wireless earpieces 142, 144. In one embodiment, the interfaces 108, 110 are magnetic for automatically coupling with contact points or interfaces of the wireless earpieces 142, 1144. In another embodiment, the interfaces 108, 110 may represent male (or alternatively female) connectors for interfacing with the wireless earpieces 142, 144, such as micro-USB, or other developing miniature external connectors. The interfaces 108, 110 may be utilized to charge the wireless earpieces 142, 144. Wireless charging is also contemplated utilizing an inductive charger integrated in the smart case 102 or other charging devices compatible with the wireless earpieces 142, 144. The interfaces 108, 110 may also be utilized to synchronize data between the wireless earpieces 142, 144. [6:6-20] The smart case 102 may also include a port 112. The port 112 may be utilized to interface with the

		smart case 102. For example, the port 112 may be utilized with a connector to charge the battery of the smart case 102. The port 112 may also be utilized to download or upload data stored by the smart case 102 that may have previously been stored in the wireless earpieces 142, 144. The port 112 may be a miniaturized port, such as USB Type C, micro-USB, or other miniaturized port suitable for connecting to another electronic device, such as a wall charger, desktop computer, laptop, or wireless device (e.g., smart phone, tablet, etc.) In another embodiment, the smart case 102 may include a dedicated port for charging, such as for receiving a male direct-current (DC) connector. [7:5-13]

C. The Original Application for the ’014 Patent Enables the Proposed Substitute Claims

59. I have also been asked to evaluate whether the Proposed Substitute Claims are enabled by the original application. I have been informed that, to be enabling, a specification or application must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation, as of the patent’s effective filing date.

60. I understand that Petitioner contends that the claim term “biometrics” is not enabled because the specification discloses limited examples of biometrics that can be read by the claimed invention. Petitioner notes that the ’014 specification does not disclose the ability to read the “full class” of “biometrics,”

for example, DNA sequencing, retinal scans, vein patterns, and facial features. Pet. Opp. at 21. Petitioner contends that a POSITA could not implement a wireless earpiece system that reads these biometrics without undue experimentation.

61. I understand that the factors to consider when determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims.

62. Based on the content of the Proposed Substitute Claims, the citations above, and the entire context of the specification it is my opinion that a POSITA would have had enough information to make and use the full scope of the Proposed Substitute Claims without undue experimentation.

i. **The breadth of the claims.** The claims require a wireless earpiece configured to fit within the ear canal and to read user biometrics. Further, the reading of user biometrics is confined to the structure of the earpiece. Thus, a POSITA would understand that only a limited set of biometrics would be appropriate for use in an earpiece worn within the ear and for performing associated functions, which would include

powering down. *See* Ex. 1008 at 7:27-8:8. In my opinion, a POSITA would not implement Petitioner's examples for reading biometrics in a wireless earpiece system, such as retina scan and facial recognition because these examples relate to the face and eyes, while the claims earpieces are worn within the ear.

ii. **The nature of the invention.** As I explained for the previous factor, the suitable user biometrics are limited by the structure of the earpiece because it is worn in the ear. Also, Petitioner's claim that the ability to "read user biometrics" is the only point of novelty is incorrect. The invention is all of the claimed elements in their entirety, of which reading biometrics is one aspect.

iii. **The presence or absence of working examples.** The specification provides a working example of the invention being used to read biometrics to alter the power mode. *See* VII.B. In my opinion, this is evidence of enablement.

iv. **The state of the prior art.** The "evolving" research Petitioner points to relating to DNA sequencing, facial recognition, and retinal scans is irrelevant as these techniques would not be

employed in an earpiece, particularly to adjust the power mode.

v. **<u>The relative skill of those in the art.</u>** In my opinion, a POSITA would understand how to implement the techniques disclosed in the specification within a wireless earpiece system.

vi. **<u>The predictability or unpredictability of the art.</u>** In my opinion and based on my experience, techniques to read biometrics that would be implemented in an earpiece, such as heartbeat or temperature, were known in the art and within the skill level of a POSITA to implement as of the priority date.

vii. **<u>The quantity of experimentation necessary.</u>** Little experimentation would be needed to make or use the claimed earpiece system because the types of biometrics that can be read by an earpiece worn in the ear (e.g., heartbeat and temperature) were known to a POSITA and the specification further describes how embodiments would use the biometric readings to alter the power mode of the claimed earpieces.

viii. **<u>The amount of direction or guidance presented.</u>** The specification provides detailed guidance for how to implement the claims in an embodiment of the invention. *See* VII.B. Given

the claimed structure is limited to wireless earpieces and the purpose of the invention is providing for power mode adjustments, the specification provides sufficient guidance for using the invention.

63. Based on the foregoing, it is my opinion that the term "biometrics," as used in the Proposed Substitute Claims, is enabled by specification of the '014 Patent. To the extent Petitioner and/or Petitioner's expert argue differently, I reserve the right to respond.

D. The Proposed Substitute Claims are Patentable Over the Cited Prior Art

1. *Ground 1 – Hain and Rass*

64. Petitioner's Opposition states that Hain in combination with Rass renders obvious Proposed Substitute Claims 14-16, and 18. Pet. Opp. at 4. According to Petitioner, "a POSITA would have been motivated to include in a hearing aid, as taught by Hain, a temperature sensor to detect user temperature automatically to switch on and off the hearing aid, as taught by Rass." *Id.* Petitioner fails to show that a POSITA would have been motivated to combine Hain and Rass.

65. First, Rass is not analogous art to the '014 Patent. Rass is not in the same field of endeavor as the '014 Patent. The '014 Patent's stated field of invention relates to "wireless electronics and *battery systems* [and] more specifically . . . wireless earpieces managing and extending battery life," to include techniques for

charging the earpieces using a smart case. Ex. 1001 (1:21-1:24) (emphasis added). Whereas Rass's field of invention is "a hearing aid unit [and corresponding method] with a switching device for switching the hearing aid on and off." Ex. 1035 (1:14-1:17). Further, Rass only focuses on turning the device on and off, *id.* (1:17), while the '014 Patent focuses on preserving battery life through varying power modes and actively charging the earpieces, using a smart case. *E.g.*, Ex. 1001 (10:33-10:36).

66. Rass is also not reasonably pertinent to the particular problem the inventor of the '014 Patent was interested in solving. Rass is concerned with switching a hearing aid on and off, Ex. 1033 (1:15-1:17), Whereas the '014 Patent is concerned with managing and extending battery life of wireless electronics through the variation of power modes and methods of charging. Ex. 1001 (1:24-1:41).

67. Comparing Hain and Rass gives the same result. Hain is directed to a hearing aid system having the ability to detect magnetic fields for alternating between various (i.e., more than two) power modes. Ex. 1004. Rass seeks to implement a switch to turn on or off the hearing aid by detecting various "signals," one of which is related to the temperature of the hearing aid shell. Rass discloses an in-ear hearing aid that includes a temperature sensor. "When wor[n], the hearing aid I or its shell heats up. The temperature sensor TS registers this heat. Once a certain temperature threshold is exceeded, the device is switched on." Ex. 1033 at 2:64-2:67.

This temperature sensor is not detecting the body temperature of the wearer, which is understood by a POSITA to be a biometric signal. Rather, the temperature sensor is detecting an increase in heat, which could be the result of power dissipation of the hearing aid device itself.

68. Second, implementing a hearing aid that adjusts power modes based on magnetic fields as taught by Hain to include a temperature sensor taught by Rass would not yield a predictable result. A POSITA would not have been motivated to incorporate a temperature sensor in Hain because of the interference signal imposed on the temperature sensor and sensor electronics due to the magnetic field emitted by the telephone when it is being held next to the user's ear during conversation. The interference signal can produce a wrong temperature reading, thus, causing the hearing aid to shut down.

69. Finally, a POSITA would not have had a reasonable expectation of success in combining Hain and Rass because there was no motivation to combine these references besides Petitioner's hindsight.

2. *Ground 2 – Steinbrecher and Rass*

70. Petitioner's Opposition states that Steinbrecher in combination with Rass renders Substitute Claims 23-24 obvious. Pet. Opp. at 4. But a POSITA would not have been motivated to combine Rass with Steinbrecher for many of the same reasons a POSITA would not have combined Hain with Rass.

71. Rass is not in the same field of endeavor or directed to the same pertinent problem as the ’014 Patent. Rass is also not in the same field of endeavor or directed to the same pertinent problem as Steinbrecher. Steinbrecher relates to a “procedure and a device for the contactless loading of an accumulator battery in a hearing aid […] located in a charging shell.” Ex. 1011 (9:3-5). This is not the same field of endeavor as Rass, which implements a switch for turning a hearing aid on and off. Steinbrecher’s focus on developing contactless charging techniques is addressing a different problem (i.e., the need for improved charging methods, using an external device) than Rass (developing an on/off switch). Steinbrecher is not concerned with monitoring temperature of the hearing aid or hearing aid shell, and besides hindsight, a POSITA would not have combined Steinbrecher’s charging techniques with biometric readings.

3. *Grounds 3-4 – Shaffer in view of Hain, Sorensen, Steinbrecher, and/or Rass claims 14-21 and 23-26 and Shaffer, Hain, and Rass claim 22*

72. Petitioner’s Opposition states that Shaffer in view of Hain, Sorensen, Steinbrecher, and/or Rass renders Substitute Claims 23-24 obvious. Pet. Opp. at 4. But a POSITA would not have been motivated to combine Rass with Shaffer for the same reasons a POSITA would not have combined Hain with Rass.

73. Rass is not in the same field of endeavor or directed to the same pertinent problem as the ’014 Patent. Rass is also not in the same field of endeavor

or directed to the same pertinent problem as Shaffer. Shaffer is directed "to a mobile device case that serves as an electrical charger and storage dock for rechargeable wireless audio earbuds." Ex. 1003 [0002]. The focus on Shaffer is on the charging case, not the wireless earbuds themselves. Shaffer is not concerned with turning a hearing aid on or off.

74. A combination of Shaffer and Rass would not be a predictable result or have a reasonable expectation of success because there would be no motivation to combine these references.

75. A POSITA would also not be motivated to combine Rass with Hain or Steinbrecher for the reasons explained for Grounds 1 and 2.

4. *Ground 3 – Shaffer, Hain, and Rass*

76. Petitioner's Opposition states that Shaffer in combination with Hain and Rass renders Substitute Claim 22 obvious. Shaffer, Hain, and Rass do not render Substitute Claim obvious because a POSITA would not have been motivated to combine these references for the reasons explained for Grounds 1-4 above.

5. *Ground 1 – Hain and Aumer*

77. Petitioner's Opposition states that Hain in combination with Aumer renders obvious Proposed Substitute Claims 14-16 and 18. Pet. Opp. at 13. A POSITA would not have been motivated to combine Hain and Aumer for many of the same reasons why a POSITA would not have combined Hain and Aumer.

78. ***First***, Aumer is not analogous to the ’014 Patent. Here, Petitioner asserts that Aumer and the ’014 Patent are from the same field of endeavor as both references are directed to wireless electronics. Petitioner’s stated field of endeavor is wrong. The ’014 Patent’s stated field of invention relates to “wireless electronics and battery systems [and] more specifically . . . wireless earpieces managing and extending battery life.” Ex. 1001 (1:21-1:24). Aumer, on the other hand, defines its field of invention as “monitoring devices and methods for measuring physiological information.” Ex. 1027 [0002].

79. Aumer is also not reasonably pertinent to the problem with which the inventor is involved. As the title discloses, Aumer is concerned with improving signal quality, Ex. 1029, whereas the ’014 Patent is concerned with managing and extending battery life of wireless electronics. Ex. 1001 (1:24-1:41). Comparing Hain with Aumer yields the same result.

80. Second, implementing a hearing aid as taught by Hain to include a biometric sensor would not have been a “predictable result” because Aumer is not the same field of endeavor as Hain (or the ’014 Patent). Hain is concerned with adjusting power modes based on detecting the presence or absence of a magnetic field. Aumer is concerned with detecting biometric signals and biometric signal quality.

81. Third, any supposed "increased consumer interests in personal health and advances in miniaturizing sensors" *see* Pet. Opp. at 17. A POSITA concerned with the problems described in Hain would not have been motivated to add biometric monitoring to the magnetic-field hearing aid system of Hain. This would not have helped with improving the magnetic field to adjust power modes disclosed by Hain.

82. Fourth, Petitioner alleges it was well known prior to the '014 Patent's priority date that a sensor in a wireless earpiece could allow the earpiece to automatically switch on or off depending on user biometrics. *See* Pet. Opp. at 18-19. Petitioner, however, does not establish that this capability was well-known. Petitioner points to a single patent (Rass) that discloses the ability to power up or down a hearing aid device based on temperature of the hearing aid or its shell registered by a temperature sensor—not directly a user's temperature.

83. Therefore, Hain in view of Aumer fails to render obvious the Proposed Substitute Claims of the '014 Patent.

6. *Ground 2 – Steinbrecher and Aumer*

84. Petitioner's Opposition states that Steinbrecher in combination with Aumer renders Substitute Claims 23-24 obvious. Opp. at 13. A POSITA would not have been motivated to combine Steinbrecher and Aumer for reasons similar to why a POSITA would not have been motivated to combine Hain and Aumer in Ground 1 or Steinbrecher and Rass in Ground 2.

85. Aumer is not in the same field of endeavor or directed to the same pertinent problem as the ’014 Patent. Aumer is also not in the same field of endeavor or directed to the same pertinent problem as Steinbrecher. Aumer is concerned with improving biometric signal quality in monitoring devices. Steinbrecher is concerned with providing improved techniques for contactless charging, particularly using an external component. The only basis for combining these components is Petitioner’s hindsight.

7. *Ground 3 – Shaffer in view of Hain, Sorensen, Steinbrecher and/or Aumer*

86. Petitioner’s Opposition states that Shaffer in view of Hain, Sorensen, Steinbrecher, and/or Aumer renders Substitute Claims 14-21 and 23-26 obvious. Opp. at 13. However, a POSITA would not have been motivated to combine these references for reasons similar to those explained for Grounds 1 and 2.

87. First, Aumer is not in the same field of endeavor as the ’014 Patent. And Aumer is not in the same field of endeavor as Shaffer or the ’014. Aumer’s “field of the invention” is “monitoring devices and methods for measuring physiological information.” Ex. 1022. Shaffer is directed “to a mobile device case that serves as an electrical charger and storage dock for rechargeable wireless audio earbuds.” Ex. 1003 at [0002].

88. Second, implementing an earbud as taught by Shaffer to include a biometric sensor would not have been a “predictable result” because Aumer is not

the same field of endeavor as Shaffer (or the ’014 Patent). Thus, a POSITA would not have been motivated to combine these references.

89. Third, any supposed “increased consumer interests in personal health and advances in miniaturizing sensors,” *see* Pet. Opp. at 8, that may have existed as of Aumer’s filing is irrelevant. A POSITA concerned with addressing the problems described in Shaffer would not have been motivated to add the ability to read user biometric signals to the earbud Shaffer discloses. This would not have helped with improving Shaffer’s “mobile device case that serves as an electrical charger and storage dock for rechargeable wireless audio earbuds.” Ex. 1006 at 1:1-1:3.

90. Fourth, Petitioner alleges it was known prior to the ’014 Patent’s priority date that a sensor in a wireless earpiece could allow the earpiece to automatically switch on or off depending on user biometrics. *See* Pet. Opp. at 18-19. Petitioner, however, does not establish that this capability was well-known. Petitioner points to a single patent (Rass) that discloses the ability to power up or down a hearing aid device based on temperature of the hearing aid or its shell registered by a temperature sensor.

91. Thus, Hain in combination with Sorensen and/or Aumer fails to render Substitute Claims 15-21 and 23-28 obvious.

8. *Ground 1 – Shaffer, Hain, Aumer, and Rass*

92. Petitioner's Opposition states that Shaffer in combination with Hain, Aumer, and Rass renders Substitute Claim 22 obvious. Opp. at 18. For the reasons explained in Sections VII.D.1-5 above, a POSITA would not have been motivated to combine these references to result in Substitute Claim 22.

VIII. PATENT OWNER'S SUBSTITUTE CLAIMS RESPOND TO GROUNDS

93. Petitioner's Opposition claims that Patent Owner's Proposed Substitute Claims do not respond to the grounds in the Petition. Pet. Opp. at 23. But, independently or dependently, each of Patent Owner's Proposed Substitute Claims directly respond to the grounds by including the limitation that "the wireless earpieces are configured to read user biometrics."

IX. PATENT OWNER'S SUBSTITUTE CLAIMS ARE NOT INDEFINITE

94. Petitioner's Opposition claims that all the Proposed Substitute Claims are indefinite because of a lack of antecedent basis. Pet. Opp. at 19-23. But it is my opinion and understanding that all of Patent Owner's Proposed Substitute Claims have explicit or implicit antecedent basis.

95. First, Petitioner argues that the claim term "the ear canal opening" in Substitute Claims 15-28 lacks antecedent basis and is therefore, indefinite. Pet. Opp. at 19-23. But a POSITA would be able to reasonably ascertain the scope of the claim

term “the ear canal opening” as the ear canal opening of a person wearing the earpiece. Thus, the claim term “the ear canal opening” does not render Substitute Claims 15-28 indefinite.

96. Petitioner contends that Substitute Claim 22 is indefinite because it recites “a power saver mode” and “alter[ing] the power mode” while depending on Substitute Claim 15, which recites “a low power mode” and “a high power mode.” Pet. Opp. at 24. However, there is clear antecedent basis in the immediately preceding line in Substitute Claim 22, which specifically refers to “the low power mode [i.e., the power saver mode].” Therefore, a POSITA would understand that “alter[ing] the power mode’ refers to “the low power mode” immediately preceding it.

X. CONCLUSION

97. This declaration represents the opinions that I have formed up to date based on the material currently available to me. I reserve the right to revise, supplement, and/or amend my opinions stated in this declaration based on new information that becomes available to me and on my continuing analysis of the materials available to me.

98. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the

like so made are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: December 27, 2024

Dr. Darrin Young