UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

K/S HIMPP
Petitioner

v.

BRAGI GmbH
Patent Owner

Case IPR2023-01205
U.S. Patent No. 10,397,688

PETITIONER'S OPPOSITION TO PATENT OWNER'S REVISED MOTION TO AMEND

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I. INTRODUCTION

HIMPP ("Petitioner") opposes Patent Owner ("PO") Bragi's Revised Motion to Amend ("RMTA"). PO's sole argument as to why the proposed substitute claims are patentable is that a new limitation—"wireless earpiece [] configured to read user biometrics"—is allegedly missing from the prior art. This is despite PO admitting that "***[t]echniques 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 [person of ordinary skill in the art] POSITA to implement as of the priority date***."[1] Ex-1036 at 10.[2] Nevertheless, this new limitation fails to render the proposed substitute claims patentable: 1) the claims continue to be obvious, as wireless earpieces that read user biometrics were known, and 2) the new limitation is so broad as to lack enablement. In addition, the substitute claims include amendments that do not respond to patentability grounds and are indefinite. Accordingly, PO's RMTA should be denied.

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[1] PO made this admission in IPR2023-01150 challenging US9843853 ("the '853 patent"), which shares the same specification as and in the same family as the '688 patent.

[2] Emphasis added throughout unless otherwise indicated.

II. SUBSTITUTE CLAIMS ARE OBVIOUS OVER PRIOR ART

The prior art renders obvious PO's proposed substitute claims 15–28.

PO's sole argument for patentability is that none of the prior art references in the Petition—Hain, Shaffer, and Sorensen—disclose wireless earpiece(s) "configured to read user biometrics."[3] RMTA at 7–8. But US7522739 ("Rass") (Ex. 1035) and US2016/0094899 ("Aumer") (Ex. 1029) each disclosed this feature before the '688 patent's priority date. Furthermore, there is no dispute, as PO has admitted, that "[t]echniques 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." Ex-1036 at 10; *see also* Ex-1034-Young-2ndTr.[4], 18:18–22 (PO's expert agreeing that "a [POSITA] would know how to include a sensor in a wireless earpiece to measure the temperature of a user"), 22:12–19 (PO's expert testifying that "a [POSITA] would . . . know how to build a sensor or use an existing sensor to monitor in an individual's heartbeat and . . . and put that into the wireless earpiece"). As discussed below, a POSITA would

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[3] PO acknowledges that Marks, relied on only in the Opposition to PO's MTA, is "no longer relevant to any of Petitioner's Grounds." RMTA at 3, n. 2.

[4] PO has stipulated that Petitioner's second deposition of Dr. Young on September 27, 2024 in IPR2023-01150 applies equally to present IPR2023-01205. Ex-1037.

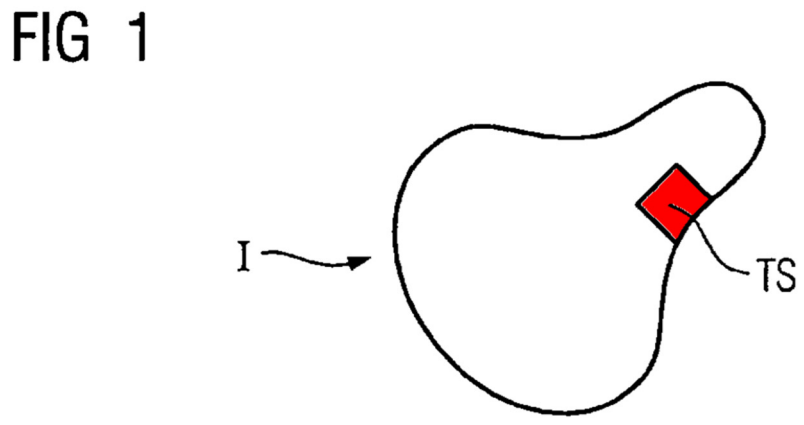
have been motivated to combine Rass's and/or Aumer's teachings with the references in each of the Petition grounds and would have had a reasonable expectation of success in doing so, thereby rendering PO's substitute claims 15–28 obvious. *See* Ex-1028-Kaiei-Decl., ¶¶6–7.

A. Combinations with Rass

1. Overview of Rass

Rass was filed May 10, 2005 and issued April 21, 2009, and is thus prior art to the '688 patent under 35 U.S.C. § 102(a)(1), (2). Ex-1028-Kaiei-Decl., ¶8.

Rass discloses techniques for switching on and off an "in-the-ear (ITE)" hearing aid (I) by fitting it "with a **temperature sensor (TS)** to ***detect the body heat of the hearing aid wearer***." Ex-1035-Rass, Abstract, 2:5–8, 2:53–54, 2:63–64, Figure 1. Ex-1028-Kaiei-Decl., ¶9.



Ex-1035-Rass, FIG. 1 (annotated)

When worn, "the hearing aid I or its shell heats up" and "[t]he temperature sensor TS registers this heat" and, when the temperature is above or below a

threshold, the hearing aid is switched on or off, respectively. *Id.*, 2:64–3:2; *see* Ex-1036 at 5 (PO admitting that Rass "discloses the ability to power up or down a hearing aid based on temperature of the hearing aid or shell, registered by a temperature sensor"); *cf.* Ex-1001-USP688, 5:22–25 ("biometric readings, such as heart beat 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"). In Rass, "the switching on and off operations include switching to or from standby mode." Ex-1035-Rass, 2:27–29. Ex-1028-Kaiei-Decl., ¶10.

Rass's invention has the advantages of "a significant increase in user-friendliness" by providing "[a]utomatic switching on and off" with "no need for a mechanical switch," allowing for a standby mode that "extends the useful life or endurance of the hearing aid battery." Ex-1035-Rass, 2:14–31. Ex-1028-Kaiei-Decl., ¶11.

2. Hain and Rass render claims 15, 16, and 18 obvious

Rass teaches "the wireless earpiece is configured to read user biometrics," as recited in substitute claim 15. As discussed *infra* in Section II.A.4, a POSITA would have been motivated to include in a hearing aid, as taught by Hain, a temperature sensor to detect user temperature to automatically switch on and off the hearing aid, as taught by Rass. Thus, Hain and Rass render claims 15, 16, and 18 obvious. Ex-1028-Kaiei-Decl., ¶¶12–13.

3. Shaffer in view of Hain, Sorensen, and/or Rass render claims 15–21 and 23–28 obvious

Rass teaches "the wireless earpiece is configured to read user biometrics," as recited in substitute claims 15 and 23. As discussed *infra* in Section II.A.4, a POSITA would have been motivated to include in a hearing aid, as taught by Steinbrecher, a temperature sensor to detect user temperature to automatically switch on and off the earbud, as taught by Rass. Thus, Shaffer, Hain, Sorensen, and/or Rass render obvious claims 15–21 and 23–28. Ex-1028-Kaiei-Decl., ¶¶26–27.

4. Motivation to combine Hain or Shaffer with Rass[5]

A POSITA would have been motivated to include in a wireless earpiece, as taught by Hain or Shaffer (*e.g.*, Hain's hearing aids 1 and 11, Shaffer's earbuds 1010 and 1012), a temperature sensor to detect user temperature and automatically switch on and off the hearing aid or earbud based on the detected temperature, as taught by Rass. Ex-1028-Kaiei-Decl., ¶¶14, 28.

First, Rass is analogous art to the '688 patent. M.P.E.P. §2141. alit is from the same field of endeavor—wireless electronics, namely wireless earpieces. Ex-1001-USP688, 1:21–24 ("The present invention relates to ***wireless electronics*** and

[5] PO does not dispute that a POSITA would have been, as set out in the Petition, motivated to combine Shaffer with Hain and/or Sorensen with a reasonable expectation of success. Ex-1028-Kaiei-Decl., n. 5.

battery systems. More specifically, ***but not exclusively***, the present invention relates to ***wireless earpieces*** that manage and extend battery life."); Ex-1035-Rass, 1:14–17 ("The present invention relates to ***a hearing aid unit***…"), 2:53–54, 2:63–64, Fig. 1; *see Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1380 (Fed. Cir. 2019) ("To determine the applicable field of endeavor, the factfinder must consider 'explanations of the invention's subject matter in the patent application, including the embodiments, function, and structure of the claimed invention."); *Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352, 1359 (Fed. Cir. 2023) ("field of endeavor may be broadly defined because it relies on 'the complete disclosure of all embodiments in the patent's specification"); *id*., 1359 ("We have affirmed findings of analogous art where the references shared a general field of endeavor."). Ex-1028-Kaiei-Decl., ¶¶15, 29.

To the extent PO argues that the field of endeavor of the '688 patent is wireless earpieces that specifically manage and extend battery life, Rass also falls within this field of endeavor. Ex-1035-Rass, 2:27–31 (describing "extend[ing] the useful life or endurance of the hearing aid battery"), Abstract, 2:5–8, 2:64–3:2, Fig. 1. Ex-1028-Kaiei-Decl., ¶¶16, 30.

Further, the only point of novelty that PO identifies is the requirement that the wireless earpieces are configured to read user biometrics. Although not limited to this alleged point of novelty, the field of endeavor of PO's proposed substitute claims

should at least include wireless earpieces configured to read user biometrics. *See Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016) ("The field of endeavor of a patent is not limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field."). Even then, Rass is from the field of endeavor of wireless earpieces configured to read user biometrics. Rass discloses its hearing aid I fitted with a temperature sensor to "detect the body heat of the hearing aid wearer." Ex-1035-Rass, Abstract, 2:5–8, 2:64–3:2, Fig. 1; *cf.* Ex-1001-USP688, 5:22–23 ("biometric readings, such as heart beat or ***temperature***"). Ex-1028-Kaiei-Decl., ¶¶17, 31.

Moreover, Rass is reasonably pertinent to a problem faced by the inventors of the '688 patent because it relates to how to configure a wireless earpiece to read user biometrics—the sole claim limitation that PO argues is missing from the prior art. *See Netflix*, 80 F.4th, 1361–1362 ("[A] prior art reference is reasonably pertinent only if 'a person of ordinary skill would reasonably have consulted those references and applied their teachings in seeking a solution to the problem that the inventor was attempting to solve."); *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992) ("If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection."). A POSITA would have reasonably considered Rass, which discloses a temperature sensor fitted in the hearing aid for measuring user temperature. Ex-

1035-Rass, Abstract, 2:5–8, 2:64–3:2, Fig. 1. Furthermore, to the extent PO argues that the inventors of the '688 patent were faced with the problem of managing and extending battery life of a wireless earpiece, Rass discloses techniques to "extend[] the useful life or endurance of the hearing aid battery." Ex-1035-Rass, 2:27–31, Abstract, 2:5–8, 2:64–3:2, Fig. 1. Thus, a POSITA would have reasonably considered Rass when faced with the problem of implementing a wireless earpiece that can manage and extend battery life. Ex-1028-Kaiei-Decl., ¶¶19, 20, 33, 34.

Second, implementing hearing aids or earbuds, as taught by Hain or Shaffer, to include a temperature sensor to detect the temperature of the wearer, as taught by Rass, would have yielded expected, predictable results; and a POSITA would have had a reasonable expectation of success in applying Rass's teachings of a hearing aid temperature sensor to the hearing aids or earbuds of Hain, Steinbrecher, or Shaffer. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415–416 (2007); M.P.E.P. §2143(I)(A). A POSITA would have combined the elements taught by Hain or Shaffer with those taught by Rass—namely, Hain's hearing aids 1 and 11 or Shaffer's earbuds 1010 and 1012, and Rass's hearing aid I fitted with temperature sensor TS—using known and routine electronic device design and manufacturing techniques to modify each of earpiece to include a temperature sensor to detect the temperature of the wearer and further configure each to switch on and off based on the detected temperature. Such modification would have been readily predictable

and recognized by a POSITA and would have been well within the knowledge and skillset of a POSITA. Ex-1028-Kaiei-Decl., ¶¶22, 24, 36, 38. In fact, PO agrees that "***[t]echniques 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***." Ex-1036 at 10. And PO's expert testified that a POSITA would know how to include a sensor in a wireless earpiece to read user temperature. Ex-1034-IPR2023-01150-Young-2ndTr., 18:18–22, 22:12–19.

Third, Rass explicitly discloses several benefits of switching on and off a hearing aid based on the temperature detected by a temperature sensor fitted therein. Rass explains that its invention significantly increases "user-friendliness" by providing automatic switching on and off without requiring a mechanical switch, and allows for a standby mode that "extends the useful life or endurance of the hearing aid battery." Ex-1035-Rass, 2:14–31. Ex-1028-Kaiei-Decl., ¶¶23, 37.

5. Shaffer, Hain and Rass render claim 22 obvious

Rass teaches "the user biometrics is utilized by the wireless earpiece to alter the power mode," as recited in substitute claim 22. PO does not dispute that this new limitation is taught by the prior art and does not address it at all. In fact, PO acknowledged that Rass "discloses the ability to power up or down a hearing aid based on temperature of the hearing aid or shell, registered by a temperature sensor."

Ex-1036 at 5. Switching on and off the hearing aid alters the power mode of the hearing aid. As discussed above, a POSITA would have been motivated to combine Shaffer and Rass with a reasonable expectation of success. Thus, Shaffer, Hain, and Rass render claim 22 obvious. Ex-1028-Kaiei-Decl., ¶40.

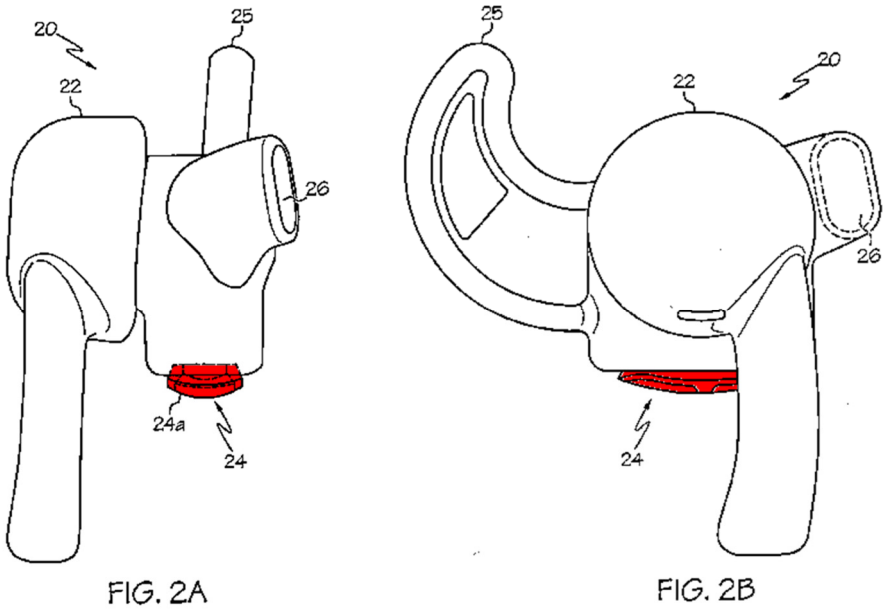
B. Combinations with Aumer

1. Overview of Aumer

Aumer is prior art under 35 U.S.C. § 102(a)(2) at least as of its Aug. 18, 2015 filing date and as of the Sept. 17, 2014 and Feb. 2, 2015 filing dates of Prov. Nos. 62/056,510 (Aumer-Prov1; Ex. 1030) and 62/110,655 (Aumer-Prov2; Ex. 1031), respectively, to which Aumer claims priority. Aumer-Prov1 and Aumer-Prov2 each describe the subject matter that Petitioner relies upon in Aumer herein, as the table below shows. *Penumbra, Inc. v. RapidPulse, Inc.*, IPR2021-01466, Paper 34 at 32 (PTAB Mar. 10, 2023) (precedential). Ex-1028-Kaiei-Decl., ¶41.

Aumer	**Aumer-Prov1**	**Aumer-Prov2**
¶64	9:21–10:1	11:18–32
¶66	10:19–33	12:16–28
¶69–¶72	11:7–12:7	13:8–14:6
¶74	12:21–30	14:20–29
FIGS. 1, 2A, 2B	FIGS. 1, 2	FIGS. 1, 2A, 2B

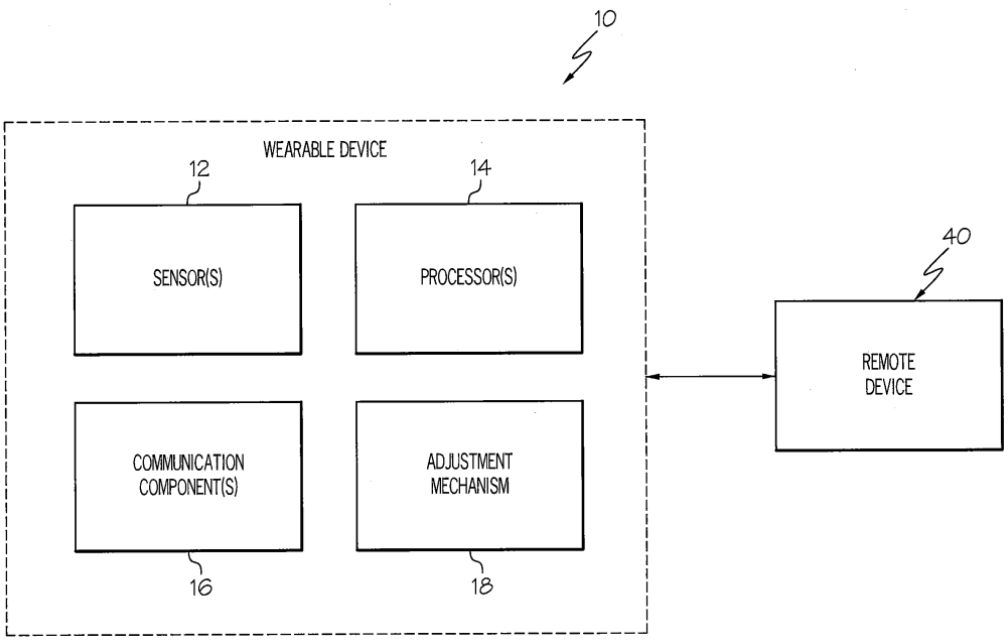
Aumer discloses in Figs. 2A–2B a monitoring earpiece 20, which includes a **sensor module 24**. Ex-1029-Aumer, ¶66.



Ex-1029-Aumer, FIGS. 2A–2B (annotated)

"The sensor module 24 has a region 24a configured to contact a selected area of the ear." *Id.*, ¶66. The sensor module 24 is "configured to detect and/or measure physiological information from the subject." *Id.*, ¶69; *cf.* Ex-1034-Young-2ndTr., 15:2–14, 15:18–22 (PO's expert testifying that a POSITA would understand that the term "user biometrics in the context of the '853 patent means biological, ***physiological*** or chemical characteristics of the user."). Aumer explains that "[t]he ear is an ideal location for wearable health and environmental monitors" and allows for "measuring core body temperature," "monitoring blood gas levels," "measuring cardiopulmonary functioning," etc. Ex-1029-Aumer, ¶64; *cf.* Ex-1001-USP688, 5:22–23 ("biometric readings, such as heart beat or temperature"), 9:66–10:2 ("biometric information (e.g., pulse rate, oxygenation, distance travelled, calories burned, etc.)"); Ex-1034-Young-2ndTr., 17:7–11. Ex-1028-Kaiei-Decl., ¶¶42–43.

Aumer makes clear that the earpiece 20 may function as the "wearable biometric monitoring device 10" of Fig. 1. Ex-1029-Aumer, ¶¶66, 71.



Ex-1029-Aumer, FIG. 1

Aumer discloses that device 10 (*e.g.*, earpiece 20) includes one or more sensors 12 (*e.g.*, sensor module 24) and "at least one processor 14 that is coupled to the sensor(s) 12 and that is configured to receive and analyze signals produced by the sensor(s)." *Id.*, ¶71. According to Aumer, sensors 12 may include various types of sensors including optical sensors, thermal sensors, electrical sensors, etc. *Id.*, ¶70. Device 10 also includes communication component 16 that "allows the processor(s) 14 to communicate with a wearer of the biometric monitoring device 10 via a remote device 40, such as a smart phone, computer, etc." *Id.*, ¶72. "The remote device 40 may be in wired or wireless communication with the wearable device 10." *Id.*, ¶74. Ex-1028-Kaiei-Decl., ¶¶44–45.

2. Hain and Aumer render claims 15, 16, and 18 obvious

Aumer teaches "the wireless earpiece is configured to read user biometrics," as recited in substitute claim 15. As discussed *infra* in Section II.B.4, a POSITA would have been motivated to include in a hearing aid, as taught by Hain, one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer. *See* Section II.B.1. Thus, Hain and Aumer render claims 15, 16, and 18 obvious. Ex-1028-Kaiei-Decl., ¶¶46–47.

3. Shaffer in view of Hain, Sorensen, and/or Aumer render claims 15–21 and 23–28 obvious

Aumer teaches "the wireless earpiece is configured to read user biometrics," as recited in substitute claims 15 and 23. As discussed *infra* in Section II.B.4, a POSITA would have been motivated to include in an earbud, as taught by Shaffer, one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer. *See* Section II.B.1. Thus, Shaffer, Hain, Sorensen, and/or Aumer render obvious claims 15–21 and 23–28. Ex-1028-Kaiei-Decl., ¶¶60–61.

4. Motivation to combine Hain or Shaffer with Aumer[6]

A POSITA would have been motivated to include in a wireless earpiece, as taught by Hain or Shaffer (*e.g.*, Hain's hearing aids 1 and 11, Shaffer's earbuds 1010

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[6] *See* n. 7 above.

and 1012), one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer. Ex-1028-Kaiei-Decl., ¶¶48, 62.

First, Aumer is analogous art to the '688 patent. M.P.E.P. §2141. It is from the same field of endeavor—wireless electronics, namely wireless earpieces. Ex-1001-USP688, 1:21–24; Ex-1029-Aumer, ¶¶64 ("The ***ear*** is an ideal location for ***wearable health and environmental monitors***."), 66 ("FIGS. 2A-2B illustrate a monitoring apparatus 20 configured to be ***secured to an ear of a subject*** and that ***may function as the monitoring device 10*** . . ."), 74 ("The remote device 40 may be in wired or ***wireless communication with the wearable device 10***."), Figs. 2A–2B; *see Airbus.*, 941 F.3d, 1380; *Netflix*, 80 F.4th, 1359. Ex-1028-Kaiei-Decl., ¶¶49, 63.

Further, the only point of novelty that PO identifies is the requirement that the wireless earpieces are configured to read user biometrics. Although not limited to this alleged point of novelty, the field of endeavor of PO's proposed substitute claims should at least include wireless earpieces configured to read user biometrics. *See Unwired Planet*, 841 F.3d, 1001. Even then, Aumer is from the field of endeavor of wireless earpieces configured to read user biometrics. Aumer discloses a wireless earpiece 20 that includes one or more sensors (*e.g.*, sensor module 24) "configured to detect and/or measure physiological information from the subject" such as temperature, blood gas levels, cardiopulmonary functioning. Ex-1029-Aumer, ¶¶64, 66, 69–72, Figs. 1, 2A–2B; *cf.* Ex-1001-USP688, 5:22–23 ("biometric readings,

such as ***heart beat*** or ***temperature***"), 9:66–10:2 ("biometric information (e.g., ***pulse rate***, ***oxygenation***, distance travelled, calories burned, etc.)"). Ex-1028-Kaiei-Decl., ¶¶51, 65.

Moreover, Aumer is reasonably pertinent to a problem faced by the inventors of the '688 patent because it relates to how to configure a wireless earpiece to read user biometrics—the sole claim limitation that PO argues is missing from the prior art. *See Netflix*, 80 F.4th, 1361–1362; *Clay*, 966 F.2d, 659. Aumer discloses techniques for configuring a wearable biometric monitoring device such as earpiece 20 to include one or more sensors to read user biometrics and improving the biometric signal quality from the sensors. Ex-1029-Aumer, Title, Abstract, ¶¶2, 64, Figs. 2A–2B, 5A–8B. Thus, a POSITA would have reasonably considered Aumer when contemplating the problem of how to configure a wireless earpiece to read user biometrics. Ex-1028-Kaiei-Decl., ¶¶52, 53, 66, 67.

Second, implementing hearing aids or earbuds, as taught by Hain or Shaffer, to include one or more sensors, a processor, and a communication component to read user biometrics, as taught by Aumer, would have yielded expected, predictable results; and a POSITA would have had a reasonable expectation of success in applying Aumer's teachings to the hearing aids or earbuds of Hain, Steinbrecher, or Shaffer. *See KSR*, 550 U.S., 415–416; M.P.E.P. §2143(I)(A). A POSITA would have combined the elements taught by Hain or Shaffer with those taught by

Aumer—namely, Hain's hearing aids 1 and 11 or Shaffer's earbuds 1010 and 1012, and Aumer's earpiece 20 with one or more sensors, a processor, and a communication component—using known and routine electronic device design and manufacturing techniques to modify each earpiece to include one or more sensors, a processor, and a communication component to read user biometrics. Such modification would have been readily predictable and recognized by a POSITA and would have been well within the knowledge and skillset of a POSITA. Ex-1028-Kaiei-Decl., ¶¶55, 58, 69, 72. In fact, PO agrees that "***[t]echniques 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***." Ex-1036 at 10. And PO's expert testified that a POSITA would know how to include a sensor in a wireless earpiece to read user biometrics such as temperature and heart beat. Ex-1034-Young-2ndTr., 18:18–22, 22:12–19.

Third, around the time of Aumer's filings, there were increased consumer interests in personal health and advances in miniaturizing sensors. *See, e.g.*, Ex-1032-Hong, ¶2 ("Recent consumer interest in personal health has led to a variety of personal health monitoring devices being offered on the market."), ¶3 ("Recent advances in sensor, electronics, and power source miniaturization have allowed the size of personal health monitoring devices, also referred to herein as 'biometric

tracking' or 'biometric monitoring' devices, to be offered in extremely small sizes that were previously impractical."); Ex-1033-Kahn, ¶3 ("As medicine advances, and sensors are miniaturized, sensors targeted to consumers are increasingly available."). Importantly, Aumer explicitly disclosed that "[t]he ear is an ideal location for wearable health and environmental monitors" and allows for measurement and monitoring of a plurality of user biometrics such as "core body temperature," "blood gas levels," "cardiopulmonary functioning," etc. Ex-1029-Aumer, ¶64. In view of the consumer interests, advances in sensors, and Aumer's teachings, a POSITA aware of Hain or Shaffer and Aumer before the priority date of the '688 patent would have been motivated to implement each of Hain's hearing aids 1 and 11 or Shaffer's earbuds 1010 and 1012 to include one or more sensors, a processor, and a communication component, as taught by Aumer, to read and provide user biometrics to consumers, allowing them to monitor their personal health. Ex-1028-Kaiei-Decl., ¶¶56, 70.

Fourth, as discussed in Section II.A, it was known prior to the priority date of the '688 patent that a sensor in a wireless earpiece could allow the wireless earpiece to automatically switch its power mode, such as switching on or off or to a standby mode, depending on user biometrics. Ex-1035-Rass, Abstract ("To this end the hearing aid (I) is fitted with a temperature sensor (TS) to detect the body heat of the hearing aid wearer and therefore that the hearing aid is inserted in the auditory

canal. The hearing aid is then switched on and off again based on the temperature signal."), 2:27–29 ("the switching on and off operations include switching to or from standby mode"). A POSITA would have been motivated to include, in each of Hain's hearing aids 1 and 11, Steinbrecher's hearing aid H, or Shaffer's earbuds 1010 and 1012, a sensor that reads user biometrics, as taught by Aumer, for automatically switching the power mode of the hearing aid or earbud depending on user biometrics. Such a feature would provide the added benefit of improving user-friendliness and extending the battery life of the hearing aid or earbud. *Id*., 2:14–31. Ex-1028-Kaiei-Decl., ¶¶57, 71.

C. Combination with Aumer and Rass

1. Shaffer, Hain, Aumer, and Rass render claim 22 obvious

Rass teaches "the user biometrics is utilized by the wireless earpiece to alter the power mode," as recited in substitute claim 22. PO does not dispute that this new limitation is taught by the prior art and does not address it at all. In fact, PO acknowledged that Rass "discloses the ability to power up or down a hearing aid based on temperature of the hearing aid or shell, registered by a temperature sensor." Ex-1036 at 5. Switching on and off the hearing aid alters the power mode of the hearing aid. As discussed in Section II.A.4, a POSITA would have been motivated to combine Shaffer and Rass with a reasonable expectation of success and, in Section II.B.4, a POSITA would have been motivated to combine Shaffer with Aumer with

a reasonable expectation of success. Thus, Shaffer, Hain, Aumer, and Rass render claim 22 obvious. Ex-1028-Kaiei-Decl., ¶74.

III. SUBSTITUTE CLAIMS ARE NOT ENABLED

The '688 patent specification fails to enable a POSITA to make and use a "wireless earpiece [] configured to read user biometrics," as recited in all substitute claims, under 35 U.S.C. § 112(a). "[T]he specification ***must enable the full scope*** of the invention as defined by its claims. The more one claims, the more one must enable." *Amgen Inc. v. Sanofi*, 598 U.S. 594, 610 (2023). In particular, "[i]f a patent claims an entire class of processes, machines, manufactures, or compositions of matter, the patent's specification ***must enable a person skilled in the art to make and use the entire class***." *Id*. All substitute claims simply require a wireless earpiece to be "configured to read user biometrics," with no restrictions on the type of user biometrics or how their reading is accomplished, and thus the entire class of all user biometrics must be enabled.[7] As PO's expert testified, in the context of the '853 patent, which shares the same specification as the '688 patent, the term "user biometrics . . . means ***biological, physiological or chemical characteristics of the***

[7] Substitute claim 22, which depends from substitute independent claim 15, recites utilizing the user biometrics "to alter the power mode." As such, the "user biometrics" recited in claim 15 need not necessarily be used to alter power.

user. Ex-1034-Young-2ndTr., 15:18–22, 15:2–14. That the claim term "user biometrics" refers to all biological, physiological or chemical user characteristics, not only those measurable by a device worn in the ear for example, is supported by the specification, which states that wireless earpieces "may represent wireless devices that may be ingested or implanted into a user" such as "an endoscopic pill, pacemaker, tracking device, contact lenses, oral implants, bone implants, 5rtificial organs," and that such wireless devices may make measurements. Ex-1001-USP688, 3:21–33. Thus, for any "biological, physiological or chemical characteristics" of the human body, the specification must enable a POSITA to make and use wireless earpieces configured to read that characteristic. *See* Ex-1028-Kaiei-Decl., ¶¶75–78.

The '688 patent specification fails to enable a POSITA to make and use a wireless earpiece configured to read the entire class of user biometrics. The specification discloses a select few human characteristics—heart beat, temperature, pulse rate, oxygenation, distance travelled, and calories burned—as examples of user biometrics (Ex-1001-USP688, 5:22–23, 9:66–10:2) and a select few sensors—"heart rate monitor, pulse oximeter, accelerometers, gyroscopes" for reading user biometrics. *Id*., 9:66–10:4; *see* Ex-2005-Young-2ndDecl. at 29–30 (PO's expert's written description support table) But the specification fails to enable how to make a wireless earpiece configured to read the ***entire class*** of user biometrics. For

example, it fails to enable a wireless earpiece configured to read DNA sequencing, retinal scans, vein patterns, or facial features. Ex-1028-Kaiei-Decl., ¶¶76–78.

The *Wands* factors analysis shows that making a wireless earpiece configured to read all user biometrics such as DNA sequencing, retinal scans, vein patterns, and facial features would require undue experimentation. *See In re Wands*, 858 F.2d at 737 (Fed. Cir. 1988); M.P.E.P., § 2164.01(a); *see also* Ex-1028-Kaiei-Decl., ¶82.

(1) Breadth of the claims: The claim limitation "wireless earpiece [] configured to read user biometrics" is purely functional. There are no structural requirements recited for how reading of user biometrics is accomplished or any other restrictions regarding the types of user biometrics. The term "user biometrics" is itself incredibly broad, covering any "biological, physiological or chemical characteristics of the user." Ex-1034-Young-2ndTr., 15:2–14, 15:18–22. *See* Ex-1028-Kaiei-Decl., ¶¶76–78.

(2) Nature of the invention: The claim limitation "wireless earpiece [] configured to read user biometrics" is the only limitation that PO argues is missing from the prior art. PO does not dispute that the remaining claim features are present in the prior art. Therefore, this claim limitation is the alleged point of novelty of the invention. *See* Ex-1028-Kaiei-Decl., ¶7.

(3) State of the prior art: Research and development on DNA sequencing, retinal scans, vein pattern recognition, and facial recognition have been ongoing.

Techniques for measuring such user biometrics have not stopped changing and evolving. Ex-1028-Kaiei-Decl., ¶79.

(4) Level of one of ordinary skill: This factor is at best neutral with respect to enablement because although the level of skill is high, human biology, physiology, and chemistry are unpredictable. *See* Ex-1034-Young-2ndTr., 15:2–14.

(5) Level of predictability in the art: Reading of user biometrics involves the ability to measure a particular human biological, physiological, or chemical characteristic. *See* Ex-1034-Young-2ndTr., 15:2–14. Although some types of user biometrics are straightforward to measure, *e.g.*, heartbeat or temperature, others can be challenging, *e.g.*, DNA sequencing, retinal scans, vein patterns, or facial features, given they involve biology, chemistry, or physiology—areas that can be highly unpredictable. Ex-1028-Kaiei-Decl., ¶80.

(6) Amount of direction provided by the inventor, (7) existence of working examples; (8) quantity of experimentation needed to make or use the invention based on the content of the disclosure: As noted above, the '688 patent specification identifies a limited set of sensors, but does not explain how to measure the full scope of all user biometrics like DNA sequencing, retinal scans, vein patterns, or facial features. Ex-1028-Kaiei-Decl., ¶81.

IV. AMENDMENTS DO NOT RESPOND TO GROUNDS

All the proposed substitute claims include at least one amendment that does not respond to any ground of unpatentability involved in this IPR and thus PO's RMTA should be denied. 37 C.F.R. § 42.121(a)(2)(i) ("A motion to amend may be denied where . . . [t]he **amendment** does not respond to a ground of unpatentability involved in the trial."). PO does not rely on any of the following amendments to overcome any ground of unpatentability in this IPR: "a portion of the wireless earpiece fits within the ear canal opening" (substitute claims 15–28), "the smart case comprises a rechargeable battery configured to charge the wireless earpieces" (substitute claims 17, 19), and "the user biometrics is utilized by the wireless earpiece to alter the power mode" (substitute claim 22).

V. SUBSTITUTE CLAIMS ARE INDEFINITE

All the proposed substitute claims are indefinite because they lack antecedent bases for several claim terms recited in the proposed claim amendments, and thus "fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

A. Substitute claims 15–28: "the ear canal opening"

All the substitute claims directly or indirectly recite "***the*** ear canal opening," which lacks antecedent basis, and it is thus unclear which "ear canal opening" is being referenced.

B. Substitute claim 22: "the power mode"

Substitute claim 22 recites "a power saver mode" and "alter[ing] ***the*** power mode," and depends from claim 15, which recites "a low power mode" and "a high power mode." As such, it is unclear which "power mode" should be altered when claim 22 recites "alter[ing] ***the*** power mode."

VI. CONCLUSION

PO's RMTA does not present a patentable claim. In addition to not overcoming the prior art, the proposed amendments lack enablement, do not all respond to a ground, and render all claims indefinite. As such, PO's RMTA should be denied.

Respectfully submitted,

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Updated Table of Exhibits for IPR2023-01205

Exhibit	Description
1001	U.S. Patent No. 10,397,688 ("'688 patent")
1002	Declaration of Sayfe Kiaei, Ph.D.
1003	U.S. Patent Application Publication No. 2015/0245126 ("Shaffer")
1004	Certified English translation of DE Patent Application No. 102007039455 ("Hain")
1005	U.S. Patent No. 8,265,315 ("Sorensen")
1006	Certified English translation of EP Patent Application No. 1727395 ("Steinbrecher")
1007	GB Patent Application No. 1254017 ("Brown")
1008	File History for U.S. Patent No. 9,843,853 ("'853 FH")
1009	DE Patent Application No. 102007039455 (original German version of Hain)
1010	Affidavit of James Doing (Certificate of Translation for Hain)
1011	EP Patent Application No. 1727395 (original German version of Steinbrecher)
1012	Affidavit of James Doing (Certificate of Translation for Steinbrecher)
1013	U.S. Patent Application Publication No. 2013/0007484
1014	Colburn, "The Resilience of the Reed Relay," IEEE Spectrum (August 28, 2015) [https://spectrum.ieee.org/the-resilience-of-the-reed-relay]
1015	U.S. Patent No. 2,264,746
1016	Hamlin Application Note AN104: Reed Switch and Reed Sensor Activation (2008) [https://www.sparkfun.com/datasheets/Components/Buttons/AN104.pdf]
1017	File History for U.S. Patent No. 10,117,014 ("'014 FH")
1018	File History for U.S. Patent No. 10,397,688 ("'688 FH")
1019	U.S. Patent No. 7,259,647
1020	Second Declaration of Sayfe Kiaei, Ph.D.

Exhibit	Description
1021	U.S. Patent Application Publication No. 2015/0200554 ("Marks")
1022	Transcript of Deposition of Darrin Young (7/15/2024)
1023	Exhibit 4 to Deposition of Darrin Young
1024	IPR2023-01150, Paper 8, Institution Decision
1025	IPR2023-01150, Paper 12, Patent Owner's Motion to Amend
1026	IPR2023-01150, Exhibit 2001-Young Declaration
1027	IPR2023-01150, Paper 24, Preliminary Guidance
1028	Third Declaration of Sayfe Kiaei, Ph.D.
1029	U.S. Patent Application Publication No. 2016/0094899 ("Aumer")
1030	U.S. Provisional Application No. 62/056,510 ("Aumer-Provisional1")
1031	U.S. Provisional Application No. 62/110,655 ("Aumer-Provisional2")
1032	U.S. Patent Application Publication No. 2014/0275852 ("Hong")
1033	U.S. Patent Application Publication No. 2013/0072765 ("Kahn")
1034	IPR2023-01150, Transcript of Second Deposition of Darrin Young (9/27/2024)
1035	U.S. Patent No. 7,522,739 ("Rass")
1036	IPR2023-01150, Paper 37, PO's Corrected Reply to Petitioner's Opposition to PO's Revised Contingent Motion to Amend
1037	Patent Owner's Stipulation to Applicability of Second Deposition of Darrin Young in IPR2023-01150 to IPR2023-01204 and IPR2023-01205

CERTIFICATE OF SERVICE

I hereby certify that on December 6, 2024, I caused a true and correct copy of the foregoing materials:

- Petitioner's Opposition to PO's Revised Motion to Amend
- Updated Table of Exhibits
- Exhibits 1028–1037

to be served via electronic mail by consent on counsel of record at:

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