

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.;
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

OURARING, INC.,
Patent Owner.

IPR2025-00147
Patent 11,188,124 B2

Before LINDA E. HORNER, NEIL T. POWELL, and
MICHAEL A. VALEK, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Petitioner”) filed a Petition to institute *inter partes* review of claims 1–6 and 8–20 of U.S. Patent No. 11,188,124 B2 (Ex. 1001, “the ’124 patent”). Paper 3 (“Pet.”). Ouraring, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 10 (“Prelim. Resp.”).¹

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the petition and the preliminary response shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

Upon consideration of the Petition and the Preliminary Response, and for the reasons explained below, we determine that Petitioner has shown a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. Thus, we grant the Petition and institute an *inter partes* review of claims 1–6 and 8–20 of the ’124 patent.

A. *Real Parties in Interest*

Petitioner identifies Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. as the real parties in interest for the Petitioner. Pet. 1. Patent Owner identifies Oura Health Oy and Ouraring, Inc. as the real parties in interest for the Patent Owner. Paper 4 (Patent Owner’s Mandatory Notices), 1.

¹ Patent Owner did not file a brief requesting discretionary denial of institution.

B. Related Matters

The parties identify the following related matter involving the '124 patent: *Ouraring, Inc. v. RingConn, LLC*, No. 1:24-cv-01020 (D. Del.). Pet. 1; Paper 4, 1.

Petitioner also identifies that it has challenged the following additional patents, “all directed to wearable electronic devices.” Pet. 1.

U.S. Patent No.	IPR/PGR
11,868,178 ²	PGR2024-00030
11,868,179	PGR2024-00031
11,599,147	IPR2024-00930
9,582,034	IPR2024-00928
10,893,833	IPR2024-00929
10,139,859	IPR2024-01077
11,874,701	PGR2024-00038
11,874,702	PGR2024-00039
10,281,953	IPR2024-01078, IPR2024-01079
10,842,429	IPR2024-01080

C. The '124 Patent

The '124 Patent is titled “Wearable Computing Device” and was issued November 30, 2021, based on an application filed September 4, 2020, that asserts the benefit of a series of provisional and nonprovisional

² US 11,868,178 was also challenged in: *Ultrahuman Healthcare Pvt. Ltd. v. Ouraring, Inc.*, IPR2025-00411; *RingConn LLC v. Ouraring, Inc.*, IPR2025-00412, and *RingConn LLC v. Ouraring, Inc.*, PGR2025-00018. The Director discretionarily denied these petitions. IPR2025-00411, Paper 12 (June 25, 2025); IPR2025-00412, Paper 11 (June 25, 2025); and PGR2025-00018, Paper 11 (June 25, 2025).

applications, the earliest of which was filed November 29, 2013. Ex. 1001, codes (22), (45), (54), (60).

The '124 Patent discloses a wearable computing device (“WCD”) in the shape of a ring. Ex. 1001, 1:39–41. The Abstract describes a smart ring including a curved housing having a U-shape interior storing components including a curved battery approximately conforming to the curved housing and a semi-flexible printed circuit board (“PCB”) approximately conforming to the curved housing, with various devices mounted on the PCB. *Id.* at code (57).

Figure 4 of the '124 Patent is reproduced below.

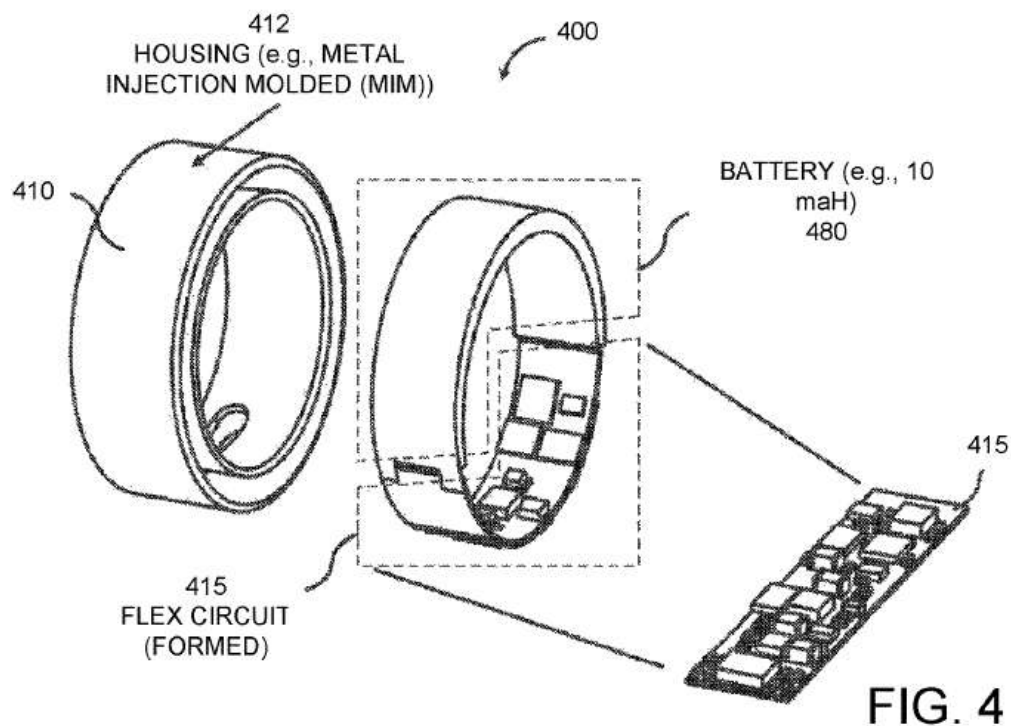


Figure 4 is an exploded view of WCD 410 illustrating battery 480 and flexible PCB 415, which are configured to fit inside the U-shape of ring housing 412 of the WCD. Ex. 1001, 5:4–6, 12:61–64, 13:19–21.

Figures 7 and 8 of the '124 Patent are reproduced below.

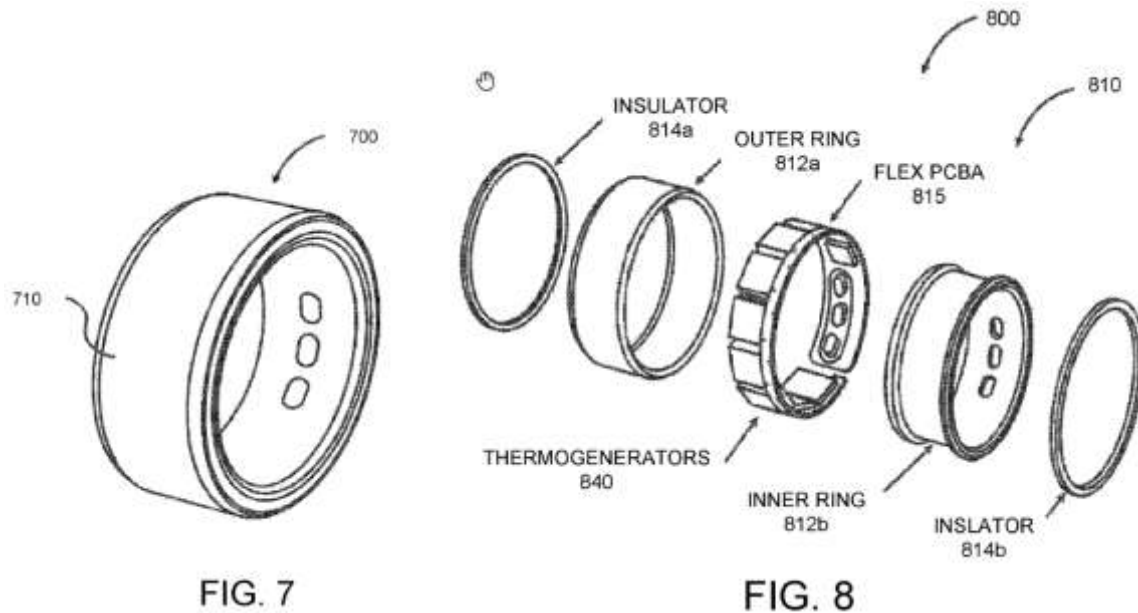


Figure 7 is a perspective view of a WCD, and Figure 8 is an exploded view of the WCD of Figure 7. Ex. 1001, 5:12–16, 11:62–64. Figures 7 and 8 illustrate a design of the housing for the WCD, where the ring includes outer ring 812a, inner ring 812b, and insulators 814a and 814b. *Id.* at 11:64–67. Also shown in Figure 8 are flexible PCBA 815 and thermogenerators 840. *Id.* at Fig. 8. According to the '124 Patent, a thermoelectric generator charges a battery of the WCD by the difference between a wearer's body temperature and the ambient temperature. *Id.* at 11:58–62, 12:1–8.

D. Illustrative Claim

The Petition challenges claims 1–6 and 8–20. Pet. 1. Of these, claims 1 and 14 are independent. Ex. 1001, 33:39–34:19, 35:38–36:23. Claim 1 is reproduced below with the preamble and limitation identifiers referenced in the Petition (*see* Pet. 21–32).

1. [1[pre]] A wearable computing device configured to be worn around a finger of a wearer comprising:

[1[a]] an external housing having an outer surface, an interior surface and sidewalls, wherein the interior surface and the sidewalls are characterized by approximately a C-shaped cross section and define an interior space, and wherein the interior space is configured to retain a plurality of components; wherein the plurality of components comprises:

[1[b]] a curved rechargeable battery disposed within the interior space of the housing, wherein the rechargeable battery is curved to conform to the interior surface;

[1[c]] a printed circuit board disposed within the interior space configured to approximately conform to the interior surface;

[1[d]] one or more sensors disposed upon the printed circuit board, wherein the one or more sensors are selected from a group consisting of: an accelerometer, a gyroscope, and a motion sensor, wherein the one or more sensors are configured to sense physical perturbations and to output sensed data;

[1[e]] a memory disposed upon the printed circuit board, the memory configured to store one or more executable instructions;

[1[f]] a short-range communication module disposed upon the printed circuit board, the short-range communications module configured to communicate a first set of data to a client computing device via a first communications protocol;

[1[g]] a first temperature sensor configured to provide first temperature data associated with a temperature of a wearer of the wearable computing device;

[1[h]] a processor disposed upon the printed circuit board and coupled to the battery, the one or more sensors, the memory, the short-range communication module, and the first temperature sensor, wherein the processor is configured to receive the sensed data, is configured to perform the one or more executable instructions in response to the sensed data, and is configured to direct the short-range communication module to output data to the client computing device; and

[1[i]] a potting material disposed in the interior space encapsulating the plurality of components, wherein the potting material forms an interior wall of the wearable computing device, wherein the potting material is substantially transparent to light selected from a group consisting of: visible light, infrared light, and ultraviolet light.

Ex. 1001, 33:39–34:19.

E. Prior Art and Asserted Grounds

Petitioner asserts that the challenged claims are unpatentable based on the following grounds (Pet. 4):

Claim(s) Challenged	35 U.S.C. §³	Reference(s)/Basis
1, 2, 4, 5, 8–11, 14, 16, 18, 19	103	Mestas ⁴ , Schröder ⁵
3, 6, 12, 13, 15, 17, 20	103	Mestas, Schröder, Yuen ⁶
1–6, 8–20	103	Yuen, Schröder, Mestas

Petitioner relies on the declaration testimony of Dr. Brian W. Anthony (Ex. 1002) in support of the asserted grounds.

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. §§ 102, 103 effective March 16, 2013. Because the challenged patent has an effective filing date after March 16, 2013, we refer to the AIA version of § 103.

⁴ Ex. 1010, US 2014/0244009 A1, published August 28, 2014 (“Mestas”). Petitioner asserts that Mestas qualifies as prior art under 35 U.S.C. § 102(a)(2) based on its provisional filing date of February 22, 2013. Pet. 9–10.

⁵ Ex. 1007, US 10,303,867 B2, issued May 28, 2019 (“Schröder”). Petitioner asserts that Schröder qualifies as prior art under 35 U.S.C. § 102(a)(2) based on its foreign priority date of July 25, 2013. Pet. 13–14.

⁶ Ex. 1006, US 8,954,135 B2, issued February 10, 2015 (“Yuen”). Petitioner asserts that Yuen qualifies as prior art under 35 U.S.C. § 102(a)(2) based on its filing date of June 24, 2013. Pet. 16.

II. PATENTABILITY ANALYSIS

A. *Legal Standards*

In an *inter partes* review, “the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); *see also* 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”); 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art relied upon).

Petitioner’s asserted grounds of unpatentability are based on obviousness under 35 U.S.C. § 103. Section 103 forbids issuance of a patent when:

the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.

35 U.S.C. § 103 (2024); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, objective evidence, such as commercial success, long felt but unsolved needs, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In*

re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

B. Level of Ordinary Skill in the Art

At this stage of the proceeding, there is no dispute about the level of ordinary skill in the art.⁷ Based on the testimony of Dr. Anthony, we determine that a person of ordinary skill in the art would have had at least a four-year degree in electrical engineering, mechanical engineering, biomedical engineering, optical engineering, or related field of study, or equivalent experience, and at least two years’ experience in academia or industry studying or developing physiological monitoring devices such as non-invasive biosensors. A person of ordinary skill in the art would have also been familiar with, for example, sensor system design, including inertial and other motion sensor system design, signal processing, and human-machine interfaces. A higher level of education or skill can substitute for less experience, and vice versa. Ex. 1002 ¶ 29.

We determine that the level of ordinary skill in the art adopted above is consistent with the level of technical understanding and competence reflected in the ’124 patent Specification and the asserted prior art references, based on our review of the limited record.

⁷ Patent Owner does not present evidence or arguments in its Preliminary Response related to the level of ordinary skill in the art.

C. Claim Construction

In an *inter partes* review, we apply the same claim construction standard as would be used by a district court to construe a claim in a civil action involving the validity or infringement of a patent. 37 C.F.R. § 42.100(b). Under that standard, claim terms are 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 invention, in light of the language of the claims, the specification, and the prosecution history of record. *Id.*; *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc); *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012). “The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (alteration in original) (quoting *Vivid Techs., Inc. v. Am. Sci. Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner argues that it is not necessary for us to provide an express construction for any claim term for purposes of determining whether to institute an *inter partes* review. Pet. 9. Patent Owner asserts that Petitioner’s attempt to apply prior art of a “toe band” to the claims of the ’124 patent “necessitates a clear construction of the term ‘wearable computing device configured to be worn around a finger of a wearer,’” as recited in the preamble of the challenged claims. Prelim. Resp. 20. Specifically, Patent Owner argues that the preamble should be construed to limit the claimed wearable computing device to “a finger-worn ring wearable computing device” when the preamble is construed “in light of the intrinsic and extrinsic evidence.” *Id.* at 20–28 (presenting intrinsic evidence from ’124 patent specification (Ex. 1001) and prosecution histories of related

applications (Exs. 2008, 2010, 2011, 2014), and extrinsic evidence from a dictionary (Ex. 2009), prior art documents (Exs. 1006, 1010), and deposition testimony from Dr. Anthony taken in IPR2024-01077 and IPR2024-01078 (Ex. 2016)).

We need not reach the issue of whether the preamble is limiting for purposes of determining institution. Even were we to agree with Patent Owner that the preamble is limiting and the claims are limited to a fingerworn ring, at this stage Petitioner has demonstrated that the cited art teaches or suggests such a limitation. That is, Petitioner relies on the finger-ring of Schroder for the claimed form factor of a “wearable computing device configured to be worn around a finger of a wearer.” Pet. 22 (Ground 1), 45 (Ground 2, relying on Yuen for adding the functionality of light sources with a photodetector, temperature sensors, and varying the sampling frequency of sensor data acquisition), 56 (Ground 3).

Further, to the extent Petitioner contends that Yuen’s toe band or earring is structurally and functionally equivalent to a finger-ring (Pet. 45, 57), Patent Owner has not, at this stage of the proceeding, structurally distinguished a device configured to worn around a finger from a toe band or earring. For instance, Patent Owner has not explained how a device to be worn around a finger differs in size, configuration, or design from a toe band or earring. And the ’124 patent recognizes that “a human being’s finger can come in various different sizes and so should the [wearable computing device].” Ex. 1001, 12:64–65. For instance, challenged dependent claim 10 recites that the width of the external housing of the wearable computing device is within a range of 3 mm to 8 mm and a thickness of the device is within a range of 1.5 to 3 mm. *Id.* at 35:8–12. Should Patent Owner pursue this argument during the proceeding, the record would benefit from further

development on the structural similarities and dissimilarities between a fingerworn ring and a toe band.

D. Ground 1: Alleged Obviousness Over Mestas and Schröder

In view of all of the parties' arguments and evidence, we determine based on the current record that Petitioner has shown a reasonable likelihood of prevailing on its challenge of claim 1 of the '124 patent as obvious over Mestas and Schröder. We provide below a brief overview of the cited references and a discussion of the significant issues raised by the parties' arguments at this stage.

1. Overview of Mestas

Mestas discloses a physical activity monitoring method and system. Ex. 1010, code (57).

Figure 1 is reproduced below.

FIG. 1



Figure 1 shows a person utilizing an athletic performance monitoring and feedback system 1. Ex. 1010 ¶¶ 9, 148. System 1 includes wearable device 10 for monitoring the user's activity. Device 10 includes a sensor such as an accelerometer. *Id.* ¶ 148.

Figure 6 is reproduced below.

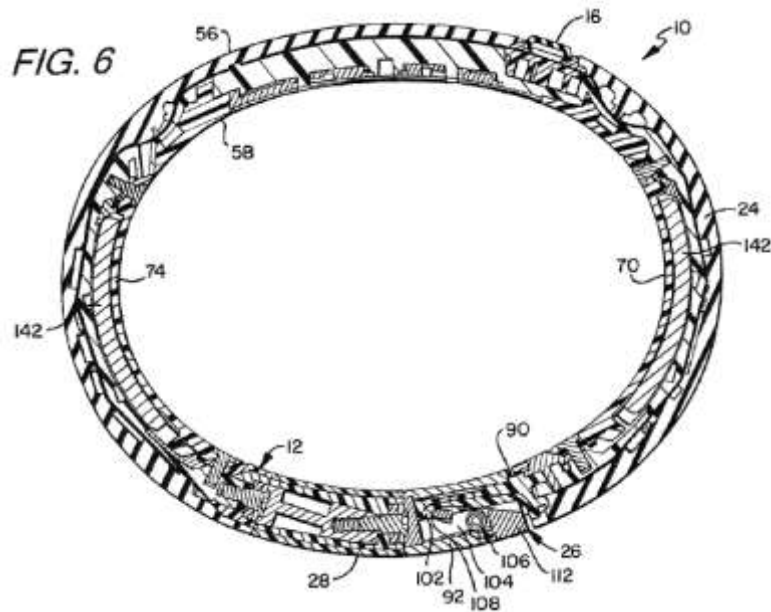
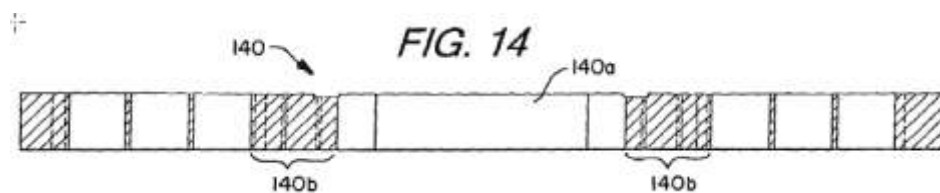


Figure 6 is a cross-section of wearable device 10 including housing 12 in the form of a wearable band such as a wristband. Ex. 1010 ¶¶ 15, 150, 151. Device 10 includes a controller, input button 16, a display, and an indicator system. *Id.* ¶ 150. Housing 12 includes an inner spine member having compartments for power supplies, outer encasement member 24, and fastening mechanism 26. *Id.* ¶ 151. The controller includes batteries 142, which “have a curvilinear or curved configuration.” *Id.* ¶¶ 163, 168.

Figures 14, 15, and 16 are reproduced below.



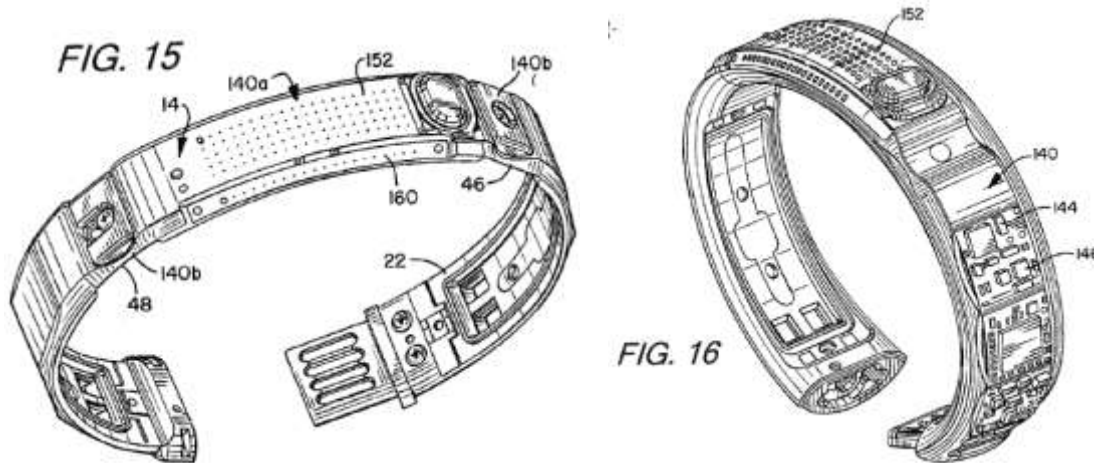


Figure 14 shows flexible PCB member 140, and Figures 15 and 16 show PCB member 140 wrapped around and mounted to spine member 22. Ex. 1010 ¶¶ 25, 26, 164. PCB member 140 is part of controller 14 and supports various components of the controller, including antenna assembly 144, sensor assembly 146, processing units, data storage memory components, and connectors. *Id.* ¶¶ 163, 165.

2. Overview of Schröder

Schröder discloses an external secure unit comprising a memory, a processor, and an interface for sending and receiving data to and from a communication device, such as a smartphone. Ex. 1007, code (57), 1:5–11, 1:42–47, 1:64–67. The external secure unit stores security-relevant data necessary for executing an application program in the communication device. *Id.* at code (57), 1:56–61. A “finger-ring” can be employed as an external secure unit. *Id.* at 1:61–64.

Schröder's Figures 1 and 2 are reproduced below.

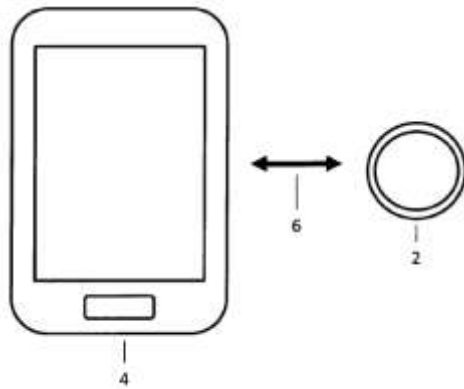


Fig. 1

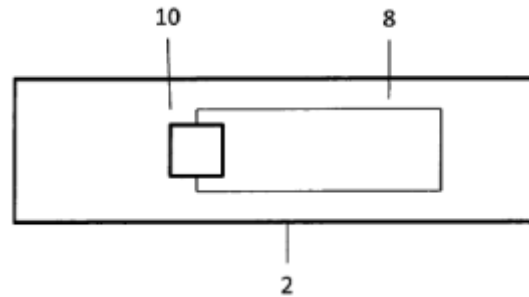


Fig. 2

Figure 1 shows finger-ring 2 as an exemplary external secure unit and smartphone 4 as a communication device, and Figure 2 shows a cross section through finger-ring 2. Ex. 1007, 3:39–44, 3:57–59, 4:58–60.

Schröder discloses a method for authentication by means of finger-ring 2 and smartphone 4. Ex. 1007, 3:59–61. According to Schröder, “[f]inger-ring 2 is worn by a user e.g. permanently on the finger,” which is advantageous as an external secure unit because the ring “cannot be taken away or employed without authorization or get lost.” *Id.* at 3:61–62, 4:16–18. Finger-ring 2 and smartphone 4 are interconnected via contactless communication connection 6, e.g., an NFC (near field communication) connection. *Id.* at 3:64–66, 4:18–22. All security-relevant data necessary for executing applications on smartphone 4, such as email, Facebook, and banking, are stored only on finger-ring 2, not on the smartphone. *Id.* at 4:3–5, 4:10–15.

As schematically indicated in Figure 2, antenna coil 8 and chip or chip module 10 are located in finger-ring 2. Ex. 1007, 4:60–62. These devices are used to communicate with an NFC reader, such as an RFID (radio frequency identification) reader. *Id.* at 5:12–18, 5:49–53.

Schröder's Figure 3 is reproduced below.

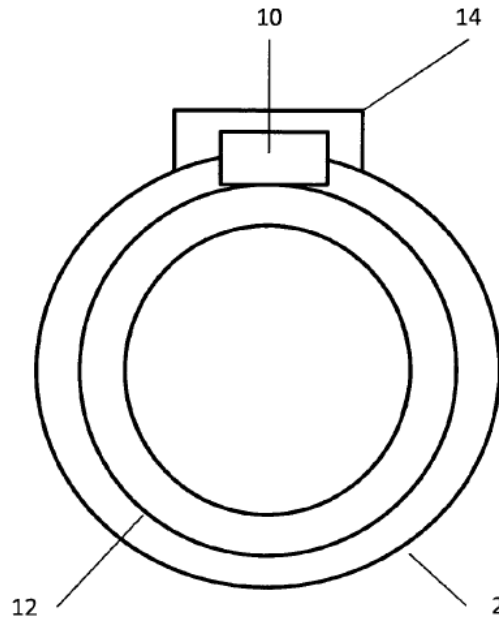


Fig. 3

Figure 3 shows a cross section through an external secure unit in the form of finger-ring 2 with a replaceable chip module 10. Ex. 1007, 3:45–46, 8:54–56. Inlay 12 is inside finger-ring 2 and serves as a carrier for antenna coil 8. *Id.* at 8:56–58. As shown in Figure 3, chip module 10 is inserted into a recess of finger-ring 2. *Id.* at 8:58–59. Chip module 10 is protected by cover 14, which has a hinged or threaded connection to the finger-ring 2. *Id.* at 8:60–63. Chip module 10 is electroconductively connected to antenna coil 8 on inlay 12. *Id.* at 8:63–66. “Advantageously, the chip module 10 is located in a module holder, in order that the contacts of the chip module 10 are properly interconnected to the contacts of a corresponding antenna coil 8.” *Id.* at 9:4–7. According to Schröder, the chip module 10 in Figure 3 is “arranged in particular replaceably,” but “[a]lternatively, the chip module 10 can . . . be firmly connected to the finger-ring 2.” *Id.* at 9:1–4; *see also id.* at

9:13–15 (“Alternatively, it is possible to connect the chip module 10 permanently to the contacts of the inlay 12, e.g. by soldering, crimping, gluing, etc.”).

In a “further embodiment example,” Schröder describes external secure unit 2 as having “an energy storage device, e.g., an accumulator or a battery” that is “connected to the chip module 10.” Ex. 1007, 11:46–67.

Schröder’s Figures 4 and 5 are reproduced below.

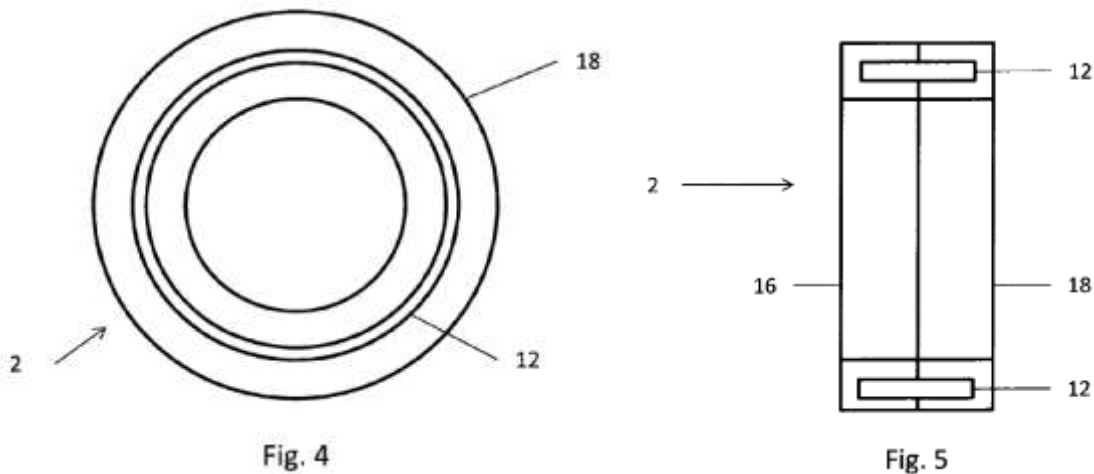
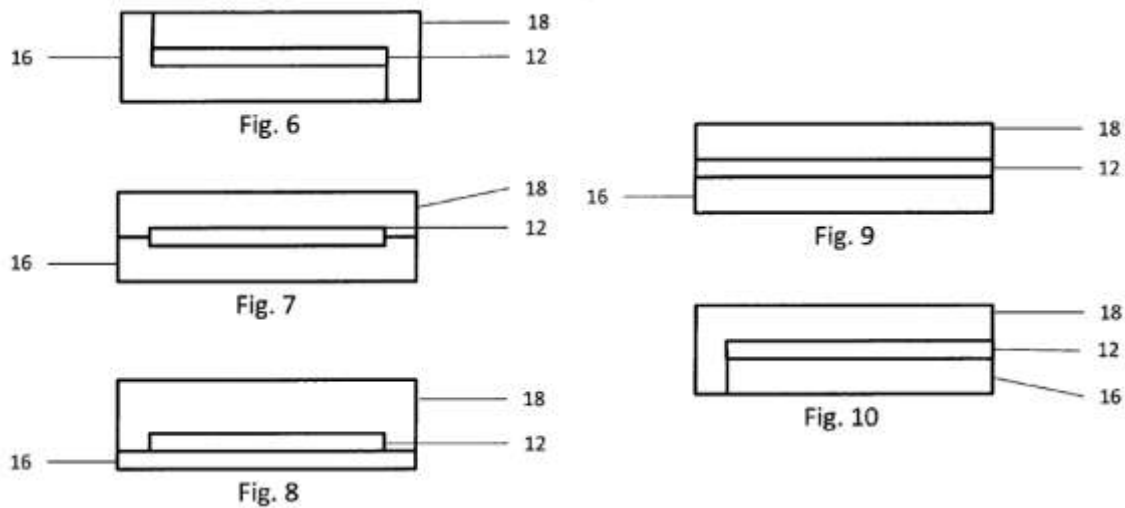


Figure 4 shows a longitudinal cross-section through finger-ring 2 as an exemplary external unit, and Figure 5 shows a cross-section of the finger-ring of Figure 4. Ex. 1007, 3:47–50, 12:4–7. Figure 4 shows one half 18 of finger-ring 2, and Figure 5 shows two ring halves 16 and 18. *Id.* at 12:5–8. As shown in Figures 4 and 5, ring halves 16 and 18 have a recess into which inlay 12 is inserted. *Id.* at 12:8–9. Components 16 and 18 of finger-ring 2 are interconnected in such a way that the connection can be undone in order to insert or exchange inlay 12. *Id.* at 12:20–26. Inlay 12 consists of a flexible carrier material, with antenna coil 8 and chip module 10 connected to each other on the inlay. *Id.* at 12:28–32.

Schröder's Figures 6 to 10 are reproduced below.



Figures 6 to 10 show different cross sections through a finger-ring, which along with Figures 4 and 5, show “possible construction variants of external secure unit 2 in the form of finger-ring 2.” Ex. 1007, 12:1–3; *see also id.* at 3:51–52; 12:43–45 (describing Figures 6–10). In Figures 6 to 10, finger-ring 2 has ring-shaped components 16 and 18, with inlay 12 arranged between the components. *Id.* at 12:43–55.

According to Schröder, “inlay 12 can have at least one chip module 10 with at least one antenna coil 8, with at least one further electronic device, e.g. a display, optionally being arranged on the inlay 12.” Ex. 1007, 12:61–65.

3. Analysis

a) Independent Claim 1

Petitioner contends that Mestas and Schröder render obvious the subject matter of independent claims 1 and 14, and claims 2, 4, 5, 8–11, 16, 18, and 19 depending therefrom. Pet. 31–54, 66–70. Petitioner contends that Mestas teaches most of these challenged claims’ limitations. *Id.* at 21–44. Petitioner contends that Mestas describes its wearable device can be worn in

a variety of locations and that its “form factor flexibility demonstrates that Mestas’s technology is inherently adaptable to diverse wear locations, including a smaller form like a finger[-]ring.” *Id.* at 18–19 (citing Ex. 1010 ¶¶ 143, 151, 162; Ex. 1002 ¶ 166). Petitioner further contends that Schröder discloses a biometric finger-ring that includes “all the electronic components . . . arranged inside a ring form factor, which would have informed a [person of ordinary skill in the art] [that] Mestas’s device could be adapted to such a form factor.” *Id.* at 19 (citing Ex. 1007, 3:61–63, Figs. 1, 4; Ex. 1002 ¶ 166).

Petitioner asserts that a person of ordinary skill in the art would have been motivated to “combine the functionality of Mestas’s biometric monitoring device with Schröder’s finger-ring” for “a more compact and comfortable form” and to make it “easy for the user to remember to wear and easier for the user to wear for extended periods of time, which improves data collection.” Pet. 19 (citing Ex. 1002 ¶¶ 167–168). Petitioner further argues that such a person of ordinary skill in the art would have been motivated to make such a modification in light of “[d]esign incentives and market forces . . . given the progress in miniaturization.” *Id.*

Patent Owner contends that Petitioner’s challenge has numerous deficiencies. Prelim. Resp. 30–42. According to Patent Owner, a person of ordinary skill in the art would not have combined the teachings of Mestas and Schröder because (1) they are not analogous, and (2) the Petition relies on improper hindsight. *Id.* at 30–31. Patent Owner further contends that Petitioner fails to identify where either prior art reference discloses “wearable computing devices.” *Id.* at 32. Patent Owner also contends that Mestas and Schröder do not disclose or suggest a ring having a “curved rechargeable battery.” *Id.* at 33–36. Patent Owner also contends that Mestas and Schröder do not disclose or suggest a “printed circuit board” that is

“disposed within the interior space” that conforms to the interior surface of a finger-ring. *Id.* at 37–40. Patent Owner also contends that Petitioner has not shown that Mestas in view of Schröder enables one having ordinary skill in the art to make and use the invention without undue experimentation. *Id.* at 41–42.

In view of all of the parties’ arguments and evidence, we determine Petitioner has shown a reasonable likelihood of prevailing on its challenge of claim 1 of the ’124 patent as obvious over Mestas and Schröder. We turn now to discussions of the significant issues raised by the parties’ arguments at this stage.

(1) *Reasons to Combine*

Petitioner contends that a person of ordinary skill in the art “would have been motivated to combine Mestas’s and Schröder’s teachings and would have had a reasonable expectation of success because each relates to the same well-known technologies.” Pet. 18 (citing Ex. 1002 ¶¶ 165–182). Petitioner further contends that the references are analogous because they are “both directed to wearable biometric sensing devices having similar structural components.” *Id.* According to Petitioner, Mestas’s “form factor flexibility demonstrates that Mestas’s technology is inherently adaptable to diverse wear locations, including a smaller form like a finger[-]ring” and “Schröder teaches that all the electronic components can be arranged inside a ring form factor, which would have informed a [person of ordinary skill in the art] Mestas’s device could be adapted to such a form factor.” *Id.* at 18–19 (citing Ex. 1010 ¶¶ 143, 151, 162; Ex. 1002 ¶ 166; Ex. 1007, 3:61–63, Figs. 1, 4).

Petitioner contends that “a [person of ordinary skill in the art] would have found it beneficial to implement Mestas’s device in a more compact and comfortable form, easy for the user to remember to wear and easier for the user to wear for extended periods of time, which improves data collection.” Pet. 19 (citing Ex. 1002 ¶¶ 167–168). Petitioner further asserts given the progress in miniaturization, “[d]esign incentives and market forces would have motivated a [person of ordinary skill in the art] to apply Schröder’s teachings to Mestas.” *Id.*

Patent Owner responds that one of ordinary skill would not have combined Mestas and Schröder because “Mestas focuses on continuous physiological health monitoring, not Schröder’s security and discrete event interaction.” Prelim. Resp. 30 (citing Ex. 1010 ¶ 143 and Ex. 1007, code (57), 3:61–63, 9:54–10:4) (arguing “Mestas and Schröder are not analogous”). Patent Owner also contends that Petitioner relies on improper hindsight in proposing that a person of ordinary skill in the art would have found it beneficial to implement Mestas’s device in a more compact form. *Id.* (citing Ex. 1010 ¶¶ 154, 203 and Ex. 1007, 8:57–58, 12:28–32). Patent Owner asserts that “Petitioner’s generalized statement that the two references ‘relate[] to the same well-known technologies’ is legally insufficient” for a reason to combine. *Id.* at 31.

After considering the parties’ arguments and evidence, we determine that Petitioner’s showing of reasons to combine Mestas and Schröder is sufficient for purposes of granting institution of an *inter partes* review. Although general similarities between the references are usually not by themselves sufficient to show a reason to combine particular teachings, Petitioner here also provides more particularized contentions, such as “[i]mplementing Mestas’s device in Schröder’s ‘finger-ring’ form factor

would ensure a tighter fit than a device worn, e.g., on the user's arm or wrist, reducing motion artifacts, providing better shielding against ambient light, and permitting higher quality reading from device sensors (e.g., accelerometer, heart rate, temperature)" and that Mestas's concern with "slippage around a user's wrist or other body part" would have motivated a person of ordinary skill in the art "to consider placing the device on the finger, as in Schröder, to improve traction and prevent slippage." Pet. 19–20 (citing Ex. 1002 ¶ 169; Ex. 1010 ¶ 152). These reasons are sufficient to present a reasonable likelihood of prevailing as to at least one challenged claim based on the proposed combination of Mestas and Schroder for purposes of institution. Patent Owner will have an opportunity to further address Petitioner's reasoning during the proceeding.

(2) *Wearable Computing Devices*

According to Patent Owner, Petitioner fails to argue that Mestas and Schröder disclose or suggest "[a] wearable computing device configured to be worn around a finger of a wearer," as recited in the preamble of claims 1 and 14. Prelim. Resp. 31. We disagree.

First, Petitioner argues that the Mestas-Schröder combination teaches a wearable electronic device configured to be worn around a finger of a wearer. Pet. 21. Petitioner asserts that "Mestas teaches a wearable electronic device" that "can be used to monitor user biometrics and movement" and that "[w]hile Mestas lacks express disclosure that its device is 'configured to be worn around a finger,' Schröder teaches a 'finger-ring' that 'is worn by a user[,] e.g., permanently on the finger.'" *Id.* at 21–22 (citing Ex. 1010 ¶¶ 148, 201, Figs. 1, 16, Ex. 1007, 3:59–62) (second and third alterations in original).

Second, to the extent Patent Owner is arguing that Petitioner has failed to allege that the combination would result in a “wearable *computing* device,” we disagree. Petitioner asserts, for example, that Mestas and Schröder are “both directed to wearable biometric sensing devices having similar structural components, *e.g.*, housing, with electronic components such as flexible [printed circuit boards], wirelessly charged batteries, processors and memory, sensors, and communication modules within.” Pet. 18 (citing specifically Ex. 1010 ¶ 163 and Ex. 1007, 4:7–10 as disclosing “processor and memory”). These assertions that each of Mestas and Schröder discloses a processor is sufficient, on the current record, to demonstrate that the device resulting from the proposed combination would have computing capabilities and thus satisfy the preamble’s recitation of a “wearable computing device.”

Further, although Patent Owner presents a claim construction for “wearable computing device configured to be worn around a finger of a wearer,” the proffered construction focuses on the “configured to” limitation and not on “computing.” Prelim. Resp. 20–28 (defining the preamble as “a finger-worn ring wearable computing device”). Thus, to the extent Patent Owner believes this recitation distinguishes the prior art, we leave any issue as to whether the combination fails to result in a wearable “computing” device to further development of the record during the proceeding.

(3) *Curved Rechargeable Battery*

Independent claims 1 and 14 recite a curved rechargeable battery. Ex. 1001, 33:48–50, 35:48–51. Petitioner contends that Mestas discloses rechargeable batteries with a curved configuration and that it would have been obvious to implement the rechargeable batteries of Mestas in

Schröder’s finger-ring form factor. Pet. 26. Petitioner asserts that such a modification would have been “desirable and feasible, given the advancements in flexible battery miniaturization.” *Id.* (citing Ex. 1002 ¶¶ 195–197).

Patent Owner argues that “Mestas offers no clue as to how or why one having ordinary skill in the art would adapt the batteries of Mestas to the ring of Schröder, which is considerably smaller than the batteries themselves.” Prelim. Resp. 34. Patent Owner further argues that Petitioner’s assertion about “advancements in flexible battery miniaturization” is “entirely unsupported and makes little sense.” *Id.* at 34–35.

On the current record, Petitioner’s assertions about “advancements in flexible battery miniaturization” are sufficiently supported. As noted above, the Petition relies on the expert testimony of Dr. Anthony about the state of the art in battery miniaturization at the time of the invention. Pet. 26 (citing Ex. 1002 ¶¶ 195–197). Specifically, paragraph 196 of Dr. Anthony’s declaration provides that “rechargeable batteries powering wearable electronic devices were not only well-known by 2013, but had also undergone significant advancements in terms of miniaturization and energy density” that “made it feasible to incorporate batteries or battery-like devices such as supercapacitors into smaller form factors, such as finger[-]rings, without sacrificing functionality.” Ex. 1002 ¶ 196 (referring back to Section V (Technology Background)).

Specifically, Section V.B.5. (¶¶ 93–98) of Dr. Anthony’s declaration is entitled, “Miniaturization of batteries for wearable devices was well known.” This section discusses, with reference to various exhibits, evidence purporting to show that by 2013, lithium-polymer batteries and solid-state batteries were available and had been integrated into small, curved devices

such as finger[-]rings. *Id.* ¶¶ 93–98 (citing Exs. 1016, 1017, 1018, 1019, 1021).

Dr. Anthony proffers that “lithium-polymer (Li-Po) batteries and solid-state batteries, which were available by 2013, offered compact, flexible, lightweight options with improved energy densities, making them ideal for use in miniaturized wearable electronics.” Ex. 1002 ¶ 196.

Dr. Anthony also asserts that a “[person of ordinary skill in the art] would have recognized that the power requirements for Mestas’s athletic monitoring functionalities (e.g., accelerometer, heart rate sensor) would be met with miniaturized Li-Po or solid-state batteries, given the advancements in energy storage technology at the time.” *Id.* ¶ 197.

To the extent Patent Owner wishes to contest Dr. Anthony’s testimony about the state of the art of battery miniaturization, it will have an opportunity to cross-examine Dr. Anthony during the proceeding to further develop the record.

Patent Owner also argues that Schröder does not show a battery in any figure or describe its shape or position in the one “unshown” embodiment that refers to a battery. Prelim. Resp. 33. Petitioner appears to rely, however, on Mestas for its teaching of a curved rechargeable battery, and relies on Schröder only for the finger-ring form factor. Pet. 26. Thus, although Patent Owner’s characterizations of Schröder may be correct, Patent Owner’s argument is unavailing because it does not distinguish Petitioner’s asserted combination of Mestas’s curved battery and Schröder’s finger-ring form factor. Pet. 26. *See Janssen Pharms., Inc. v. Teva Pharms. USA, Inc.*, 97 F.4th 915, 928 (Fed. Cir. 2024) (criticizing trial court’s analysis for “tackl[ing] the express statements of each reference one-by-one—identifying

each difference or dissimilarity between an individual reference and the claims, but not fully assessing the teachings in toto”).

Patent Owner argues that Schröder teaches away from Petitioner’s proposed modification because it “teaches that its (optional) battery is connected to the chip module 10, which is flat and located on top of the ring such that it is accessible.” Prelim. Resp. 35. That argument is based on Schröder’s description of Figure 3. *Id.* (citing Ex. 1007, 8:60–63). Petitioner, on the other hand, relies on Schröder’s Figure 4 embodiment as the ring form factor in which to use Mestas’s rechargeable, curved battery. Pet. 19 (citing Ex. 1007, Fig. 4 for Schröder’s ring form factor; Ex. 1002 ¶ 166); see also *id.* at 14–15 (describing Schröder’s Figures 1, 4, and 8).

Schröder’s Figure 4 shows two ring halves 16 and 18, respectively, having a recess into which inlay 12 is inserted, and inlay 12 consists of a flexible carrier material on which is arranged at least one antenna coil 8 and at least one chip module 10. Ex. 1007, 12:4–9, 12:28–32, Fig. 4. Thus, in the Figure 4 embodiment, on which Petitioner relies, chip module 10 is not located on top of the ring as shown in the Figure 3 embodiment. Schröder also discloses, as shown in the cross section of Figure 8, that at least one ring half 16, 18 includes a recess into which at least one inlay 12 is inserted. *Id.* at 12:10–12, 12:26–28.

Patent Owner argues that Schröder has no “recessed compartments” and that Petitioner does not explain how or why Schröder would be modified to include such compartments. Prelim. Resp. 35. This argument is unavailing because Petitioner does not propose modifying Schröder to include recessed compartments. Rather, Petitioner argues that Schröder teaches a finger-ring having a recess in at least one ring half where Mestas’s battery would be

positioned. Pet. 14–15 (discussing portion of component 18 in which inlay 12 is placed).

Patent Owner argues that Petitioner does not explain how Mestas’s batteries would not “increase the wearable device’s thickness.” Prelim. Resp. 35. At this stage, Petitioner’s contention and supporting evidence that one of ordinary skill would have found it feasible to implement Mestas’s curved battery in Schröder’s finger-ring form factor is sufficient. Pet. 26 (citing Ex. 1002 ¶¶ 195–197). To the extent Patent Owner disputes that showing, this issue would benefit from further development during the proceeding.

Patent Owner argues that Petitioner fails to explain why a person of ordinary skill in the art would believe the batteries of Mestas would be any improvement to Schröder, which is an RFID security device not intended to take continuous power-consuming measurements. Prelim. Resp. 35–36. As we understand Petitioner’s contention, Petitioner is not proposing to add Mestas’s battery to Schröder’s particular RFID ring. Rather, Petitioner is proposing to modify Mestas’s computing device to be in the form of a ring, such as the ring form factor disclosed in Schröder.

After considering the parties’ arguments and evidence, we determine that Petitioner’s showing for the curved rechargeable battery limitation is sufficient for purposes of granting institution of an *inter partes* review.

(4) *Printed Circuit Board*

Claims 1 and 14 recite “a printed circuit board” that is “disposed within the interior space” and that conforms to the interior surface of the wearable computing device. Ex. 1001, 33:51–53, 35:52–56. Petitioner contends that Mestas teaches a printed circuit board 140 disposed within the

device's interior space that "approximately conforms to the interior surface." Pet. 27–28 (citing Ex. 1010 ¶¶ 164, 177, 181, Figs. 14, 15, 21; Ex. 1001, 15:37–39, Figs. 4, 5, 10F; Ex. 1002 ¶¶ 200–206).

Patent Owner argues that Mestas's flexible circuit member 140 "is dictated by the much larger form factor and structural requirements of a wristband" and that "Mestas's layout is incompatible with Schröder" because Schröder's "chip module 10 (to which the battery and sensor are connected) protrudes outside the ring 2." Prelim. Resp. 38–40. According to Patent Owner, "[n]either Mestas nor Schröder suggests this specific miniaturized and integrated arrangement within a ring." *Id.* at 40.

Patent Owner's arguments are based in large part on Schröder's Figure 3 embodiment. Prelim. Resp. 38–40. Petitioner and Dr. Anthony, however, rely on Schröder's Figure 4 to teach that all the electronic components can be arranged inside a ring form factor. Pet. 19 (citing Ex. 1007, Fig. 4; Ex. 1002 ¶ 166); *see also id.* at 34 (citing Ex. 1007, 14:35–49 (describing a method for injection molding the finger-ring); Ex. 1002 ¶ 227). Figure 4 depicts a different arrangement of elements than the finger-ring in Figure 3, which has "an insertable chip module with a cover." Ex. 1007, 3:45–46; *compare* Ex. 1007, Fig. 3 (depicting protruding chip module 10 and cover 14), *with id.*, Fig. 4 (lacking these elements). Furthermore, Petitioner's contention is adequately supported by Schröder, which discloses two ring halves 16 and 18, respectively, having a recess into which inlay 12 is inserted, and inlay 12 consisting of a flexible carrier material on which is arranged at least one antenna coil 8 and at least one chip module 10. *Id.* at 12:4–9, 12:28–32, Figs. 4, 5 (showing a cross-section of Fig. 4).

After considering the parties' arguments and evidence, we determine that Petitioner's showing for these limitations of claims 1 and 14 is sufficient for purposes of granting institution of an *inter partes* review.

(5) *Enabling Disclosure*

Patent Owner argues that "Petitioner has not shown that Mestas in view of Schröder enables one having ordinary skill in the art to make and use . . . the invention without undue experimentation." Prelim. Resp. 41. According to Patent Owner, "Petitioner fails to explain how one would apply the curved battery teaching of Mestas to Schröder" given that "[t]he batteries of Mestas are about twice the diameter of the entire ring of Schröder and specifically designed for a wristband." *Id.*

"To render a claim obvious, the prior art, taken as a whole, must enable a skilled artisan to make and use the claimed invention." *Raytheon Techs. Corp. v. Gen. Elec. Co.*, 993 F.3d 1374, 1380 (Fed. Cir. 2021). "[P]rior art patents and publications enjoy a presumption of enablement, and the patentee/applicant has the burden to prove nonenablement for such prior art." *Apple Inc. v. Corephotonics, Ltd.*, 861 F. App'x 443, 450 (Fed. Cir. 2021) (nonprecedential; *inter partes* review context); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1354 (Fed. Cir. 2003). "In general, a prior art reference asserted under § 103 does not necessarily have to enable its own disclosure, i.e., be 'self-enabling,' to be relevant to the obviousness inquiry." *Raytheon*, 993 F.3d at 1380. For example, such a reference could provide the motivation to combine, and then be combined with a reference in which the limitation in question is enabled, or the reference could be used to supply the claim elements if it is enabled by another reference. *Id.* But "if an obviousness case is based on a non-self-enabled reference, and no other

prior art reference or evidence would have enabled a skilled artisan to make the claimed invention, then the invention cannot be said to have been obvious.” *Id.* at 1377.

At this stage of the proceeding, we rely on a presumption of enablement for Schröder and Mestas, including Schröder’s teaching that inlay 12 made of a flexible carrier material can be inserted into a recess in one half 18 of finger-ring 2 and have chip module 10 arranged thereon. Ex. 1007, 12:4–9, 12:28–32, Figs. 4, 5; *see also Amgen*, 314 F.3d at 1354. We also credit Petitioner’s expert’s testimony as to the advances in miniaturization. Ex. 1002 ¶¶ 195–197. Patent Owner will have an opportunity to cross examine Dr. Anthony during the proceeding. To the extent Patent Owner argues that the cited prior art is not sufficiently enabled in its post-institution briefing, we will address that issue in view of the full record.

b) Objective Evidence of Nonobviousness

“Objective evidence of nonobviousness is an important component of the obviousness inquiry because evidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art was not.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (internal quotation marks omitted).

“For objective evidence of secondary considerations to be relevant, there must be a nexus between the merits of the claimed invention and the objective evidence.” *Volvo Penta of the Americas, LLC v. Brunswick Corp.*, 81 F.4th 1202, 1210 (Fed. Cir. 2023). “A showing of nexus can be made in

two ways: (1) via a presumption of nexus, or (2) via a showing that the evidence is a direct result of the unique characteristics of the claimed invention.” *Id.*

Patent Owner contends that its commercial product—the Oura Ring—is “revolutionary” and a success, with more than more than 2,500,000 sales. Prelim. Resp. 2–3. According to Patent Owner, the Oura Ring is coextensive with and embodies the ’124 patent. *Id.* at 3.

We determine that Patent Owner’s argument and evidence concerning commercial success and nexus are best evaluated on a fully developed record.

4. Conclusion Regarding Ground 1

In view of the foregoing, Petitioner has demonstrated a reasonable likelihood of establishing obviousness of claim 1 of the ’124 patent over Mestas and Schröder.

E. Ground 2: Alleged Obviousness Over Mestas, Schröder, and Yuen

In asserting obviousness of claims 3, 6, 12, 13, 15, 17, and 20 over Mestas, Schröder, and Yuen, Petitioner contends that a “[person of ordinary skill in the art] would have been motivated to combine Mestas-Schröder’s teachings with Yuen’s teachings and would have had a reasonable expectation of success.” Pet. 44. According to Petitioner, it would have been obvious “to combine the functionality of the Mestas-Schröder biometric monitoring device with the additional functionality of Yuen, such as light sources with a photodetector between them, to improve the device’s sensing efficiency” and Yuen’s “specific temperature sensors” and “the ability to vary the sampling frequency, for example to conserve power.” *Id.* at 45 (citing Ex. 1002 ¶ 273). Petitioner also contends that Yuen discloses an

“earring” or “toe band”, “which a [person of ordinary skill in the art] would have understood are structurally and functionally similar or identical to a ‘finger[-]ring.’” *Id.* (citing Ex. 1006, 24:35–40; Ex. 1002 ¶ 274).

Patent Owner presents the same arguments against Ground 2 as relied on for Ground 1. Prelim. Resp. 42. Patent Owner further argues that Petitioner’s challenge fails because Yuen “does not disclose the shape of a ring in any form factor” and asserts that “a ‘toe band’ is not a ring” and “an earring device is not structurally similar to a finger[-]ring.” *Id.* at 42–44.

1. Overview of Yuen

Yuen discloses a portable biometric monitoring device having a physical size and shape adapted to couple to the user’s body. Ex. 1006, codes (54), (57). The device includes a housing, a band to secure the monitoring device to the user’s body, and a physiological sensor within the housing. *Id.* at code (57). The sensor generates data representative of a physiological condition, such as the user’s heart rate. *Id.*

Figure 3 is reproduced below.

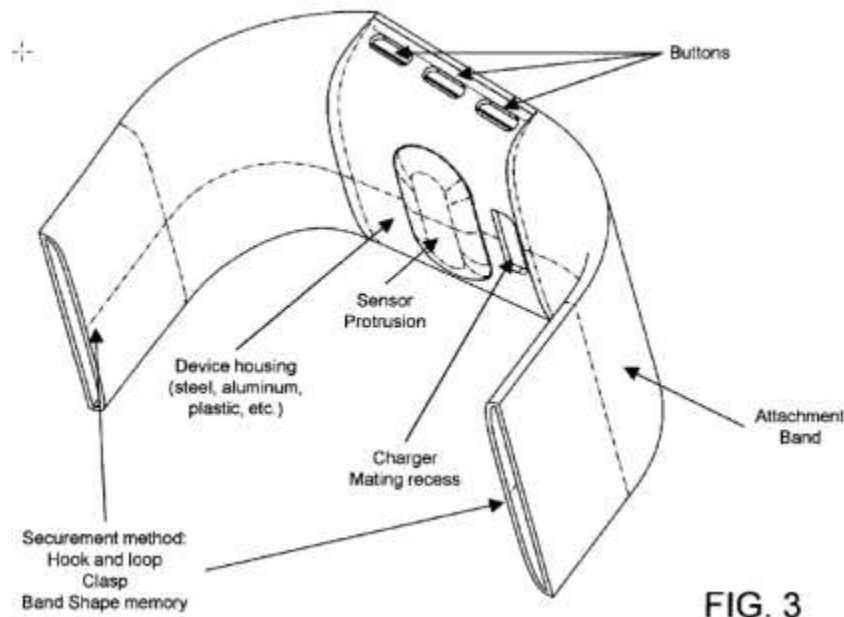


Figure 3 shows a portable biometric monitoring device, including an attachment band, a device housing, a sensor protrusion, and a recess for mating a charger and/or data transmission cable. Ex. 1006, 2:18–22, Fig. 3. According to Yuen, the protrusion firmly maintains the sensor in contact with the skin of the user. *Id.* at 2:22–25.

Figure 5 is reproduced below.

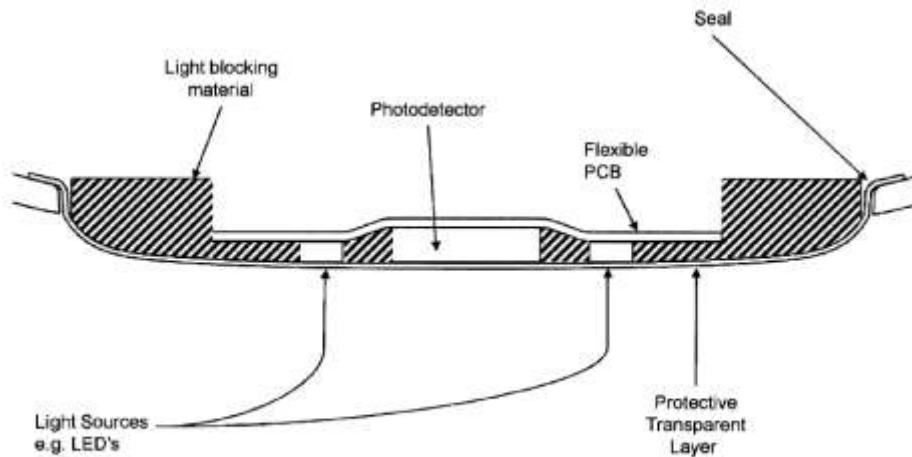


FIG. 5

Figure 5 shows a cross section of a sensor protrusion of a portable biometric monitoring device, including light sources and a photodetector mounted on a flexible PCB. Ex. 1006, 2:29–39.

Yuen discloses that a user may wear the biometric monitoring device “on their wrist or ankle (or arm or leg)” and further discloses that “[t]he biometric monitoring device . . . may also be integrated and worn in a necklace, chest band, bra, patch, glasses, earring, or toe band.” Ex. 1006, 24:4–6, 24:35–37.

2. Analysis

At this stage of the proceeding, the parties’ dispute turns, in large part, on the issue of whether Yuen’s toe band or earring are structurally and

functionally similar or identical to Schröder’s “finger[-]ring” or a “wearable computing device configured to be worn around a finger of a wearer,” as recited in the preamble of independent claims 1 and 14. As discussed in detail above in the claim construction section, even were we to agree with Patent Owner that the preamble is limiting and the claims are limited to wearable computing devices configured to be worn around a finger of a wearer, Petitioner relies on the finger-ring of Schroder in this Ground for the claimed form factor of a “wearable computing device configured to be worn around a finger of a wearer.” Pet. 45. Further, to the extent Petitioner contends that Yuen’s toe band or earring is structurally and functionally equivalent to a finger-ring (*id.*), Patent Owner has not, at this stage of the proceeding, structurally distinguished a device configured to worn around a finger from a toe band or earring. Should Patent Owner pursue this argument during the proceeding, the record would benefit from further development on the structural dissimilarities between a finger-ring and a toe band and why those differences undermine Petitioner’s showing.

Because the record would benefit from further development, and in view of our determination that Petitioner’s first ground meets the threshold for institution an *inter partes* review, we do not determine whether Petitioner’s second ground meets that threshold.

F. Ground 3: Alleged Obviousness Over Yuen, Schröder, and Mestas

In asserting obviousness of claims 1–6 and 8–20 over Yuen, Schröder, and Mestas, Petitioner contends that a “[person of ordinary skill in the art] would have been motivated to combine the teachings of Yuen, Schröder, and Mestas and would have had a reasonable expectation of success.” Pet. 56. According to Petitioner, it would have been obvious “to combine Yuen’s

device with Schröder’s ‘finger[-]ring’ to create a more compact, non-intrusive, and easily wearable device,” “to incorporate Schröder’s wireless inductive charging to replace Yuen’s wired charging . . . [for] ease of use, reliability, and the elimination of cords,” and to implement Schröder’s authentication feature in Yuen’s device “to improve its versatility and value to the user.” *Id.* at 57–58. Petitioner further contends it would have been obvious “to add Mestas’s rigid-flex [printed circuit board] to the Yuen-Schröder device for its flexibility and ability to fit more electronic components in the device and securely house such sensitive electronics” and to implement Mestas’s curved battery in the Yuen-Schröder device because a curved battery allows a larger battery to conform to a ring’s circular shape without stressing the battery or ring housing.” *Id.* at 58–59.

At this stage, Patent Owner does not dispute Ground 3 separately from Grounds 1 and 2. Prelim. Resp. 44–51. In view of our determination that Petitioner’s first ground meets the threshold for institution an *inter partes* review, we do not determine whether Petitioner’s third ground meets that threshold.

III. CONCLUSION

For the foregoing reasons, the information presented in the Petition and accompanying evidence establishes a reasonable likelihood that Petitioner would prevail in showing the unpatentability of at least one of the challenged claims.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *granted*; and

FURTHER ORDERED that *inter partes* review is instituted.

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Patent 11,188,124 B2

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