

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

OURARING, INC.,
Patent Owner.

IPR2024-01078
Patent 10,281,953 B2

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

POWELL, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. BACKGROUND

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Petitioner”) filed a Petition for *inter partes* review of claims 1–6, 11–15, and 38–43 of U.S. Patent No. 10,281,953 B2 (Ex. 1001, “the ’953 Patent”). Paper 3 (“Pet.”). Ouraring, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”).

We instituted *inter partes* review as to all challenged claims of the ’953 patent and all of the asserted grounds of unpatentability. Paper 9 (“Dec.”). Subsequently, Patent Owner filed a Response (Papers 19 and 20, “PO Resp.”),¹ Petitioner filed a Reply (Papers 23 and 24, “Reply”), and Patent Owner filed a Sur-reply (Papers 37 and 38, “Sur-reply”).

An oral hearing was held on October 29, 2025. A transcript of the hearing is part of the record. Paper 48 (“Tr.”); Paper 47 (confidential transcript).

For the reasons that follow, Petitioner has not demonstrated unpatentability of any of the challenged claims by a preponderance of the evidence.

B. REAL PARTIES IN INTEREST

Petitioner identifies itself as the real party in interest. Pet. 1. Patent Owner identifies itself and Oura Health Oy as real parties in interest. Paper 6, 1.

¹ The parties filed confidential and public versions of the Response, Reply, and Sur-reply, moving to seal designated information in the confidential versions and certain accompanying exhibits. See Papers 18, 25, 39, 45.

C. RELATED PROCEEDINGS

Patent Owner notes that the '953 Patent "is currently not asserted in any judicial or administrative matters." Paper 6, 1. As the parties note, however, the '953 patent and related patents have also been challenged in the following petitions:

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
PGR2024-00030 (PTAB, filed May 31, 2024), challenging U.S. Patent
No. 11,868,178;

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
PGR2024-00031 (PTAB, filed May 31, 2024), challenging U.S. Patent
No. 11,868,179;

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
IPR2024-00928 (PTAB, filed May 31, 2024), challenging U.S. Patent
No. 9,582,034;

Samsung Electronics Co., Ltd., et al v. Oura Health Oy,
IPR2024-00929 (PTAB, filed May 31, 2024), challenging U.S. Patent
No. 10,893,833;

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
IPR2024-00930 (PTAB, filed May 31, 2024), challenging U.S. Patent
No. 11,599,147;

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
PGR2024-00038 (PTAB, filed June 28, 2024), challenging U.S. Patent
No. 11,874,701;

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
PGR2024-00039, (PTAB, filed June 28, 2024), challenging U.S. Patent
No. 11,874,702;

IPR2024-01078
Patent 10,281,953 B2

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
IPR2024-01077, (PTAB, filed June 28, 2024), challenging U.S. Patent
No. 10,139,859;

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
IPR2024-01079, (PTAB, filed June 28, 2024), challenging the '953 patent;
and

Samsung Electronics Co., Ltd., et al v. Ouraring, Inc.,
IPR2024-01080, (PTAB, filed June 28, 2024), challenging U.S. Patent
No. 10,842,429.

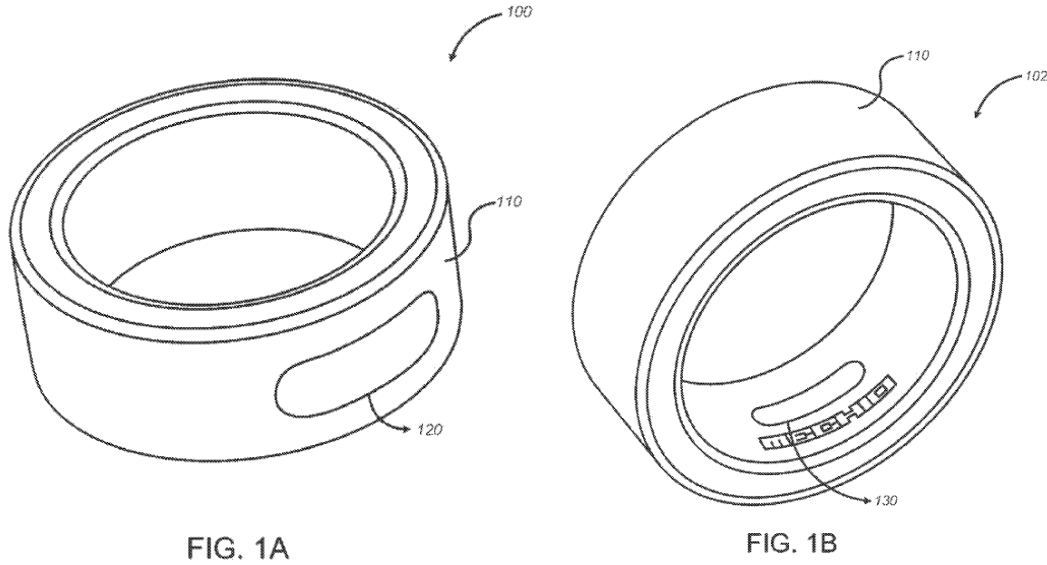
Paper 6, 1–2; Pet. 1. Additionally, although not identified by the parties
here, IPR2025-00147 also involves a patent (11,188,124) from the same
family as the '953 patent.²

D. THE '953 PATENT

The '953 Patent is titled “Wearable Device and Data Transmission
Method” and was issued May 7, 2019, based on an application filed
December 27, 2017, that asserts the benefit of two nonprovisional and two
provisional applications, the earliest of which was filed November 29, 2013.
Ex. 1001, codes (22), (45), (54), (60), (63). The '953 Patent discloses “a
wearable computing device (WCD),” which “can be in the form of a ring
that can be worn on the finger of a human (or animal) user.” *Id.* at 6:54–58.

Figures 1A and 1B of the '953 Patent are reproduced below.

² The Board denied institution in IPR2024-00929, IPR2024-00930,
IPR2024-01079, IPR2024-01080, PGR2024-00031, and PGR2024-00038 in
view of Patent Owner’s statutory disclaimer of all of the challenged claims.
The Board instituted review in IPR2024-00928, IPR2024-01077, IPR2024-
01078, IPR2025-00147, PGR2024-00030, and PGR2024-00039.



Figures 1A and 1B are perspective views of WCD 110. Ex. 1001, 7:17–20. “[T]he WCD 110 can include the exterior window 120 on its exterior wall for input/output data transmission and reception, battery recharge, or status indication. The WCD 110 can also include the interior window 130 on its interior wall for various monitoring or sensing activities.” *Id.* at 7:50–55.

Figure 4 of the ’953 Patent is reproduced below.

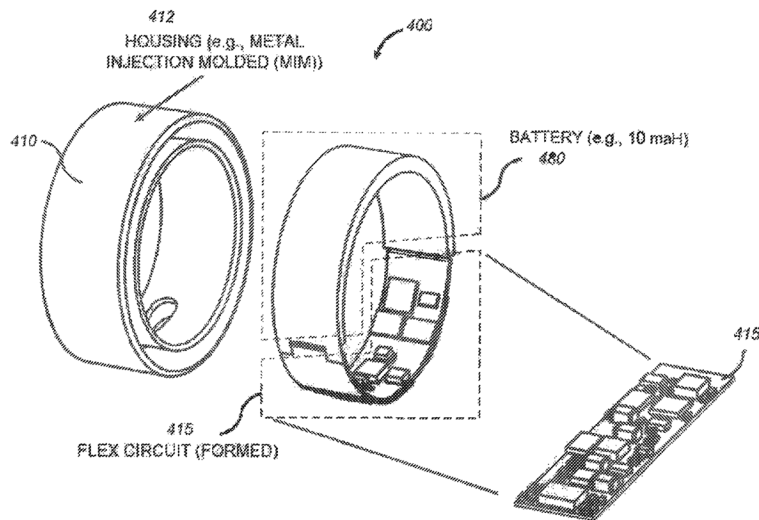


FIG. 4

Figure 4 is an exploded view of WCD 410 illustrating battery 480 and flexible PCB 415, which are configured to fit inside ring housing 412 of WCD 410. Ex. 1001, 3:4–6, 13:58–61.

Figures 7 and 8 of the '953 Patent are reproduced below.

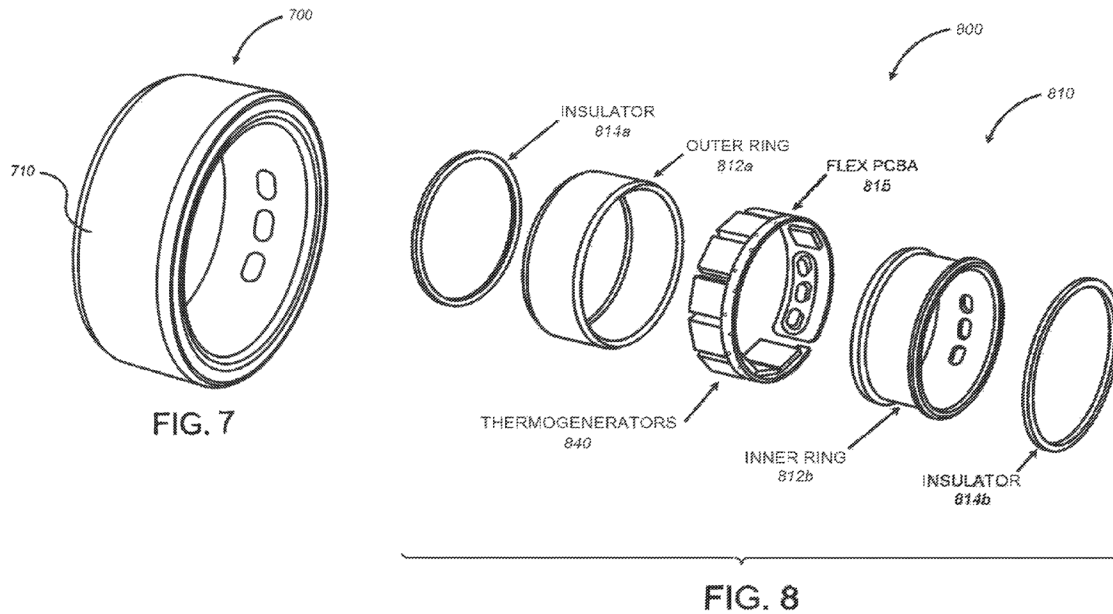


Figure 7 is a perspective view of a WCD, and Figure 8 is an exploded view of the WCD of Figure 7. Ex. 1001, 3:12–16, 12:59–61. Figures 7 and 8 illustrate a design of the housing for the WCD, where the ring includes outer ring 812a, inner ring 812b, and insulators 814a and 814b. *Id.* at 12:59–64.

E. ILLUSTRATIVE CLAIM

Of the challenged claims, claims 1 and 38 are independent. Each of claims 2–6, 11–15, and 39–43 depends, directly or indirectly, from one of independent claims 1 and 38. Claim 1 is illustrative for our analysis herein and is reproduced below with certain reformatting:³

³ We have added the same labels that Petitioner uses to identify portions of claim 1. *See, e.g.*, Pet. 21–31.

1. [1[pre]] A wearable computing device, configured as a ring for being worn around the finger of a user, the wearable computing device comprising:
 - [1[a]] an interior enclosure portion for enclosing a printed circuit board, the printed circuit board including a plurality of components of the wearable computing device;
 - [1[b]] an exterior enclosure structure for receiving the printed circuit board and for being coupled with the interior enclosure portion to form a housing of the wearable computing device;
 - [1[c]] a curved, rechargeable battery, disposed proximate the exterior enclosure, the rechargeable battery configured for being wirelessly charged;
 - [1[d]] a flexible printed circuit board disposed proximate the curved battery, the flexible printed circuit board comprising:
 - [1[e]] a plurality of components, the plurality of components disposed on the flexible printed circuit board, the plurality of components comprising an electromagnetic induction or RF charging mechanism, a microprocessor, a sensor module, a light emitting diode, and a transceiver;
 - 1[[f]] wherein at least one of the interior enclosure portion and the exterior enclosure structure defines one or more windows that facilitates at least one of data acquisition, data transmission, electromagnetic radiation a[c]quis[i]tion, and electromagnetic transmission.

Ex. 1001, 48:22–51.

F. ASSERTED GROUNDS

Petitioner asserts that claims 1–6, 11–15, and 38–43 are unpatentable on the following grounds (Pet. 4):

Ground	Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–6, 11–14	103	Mestas ⁴ , Asami ⁵
2	1–6, 11, 14, 15, 38, 39, 41–43	103	Mestas, Schröder ⁶
3	1–6, 11, 14, 15, 38, 39, 41–43	103	Schröder, Mestas
4	11–15	103	Schröder, Mestas, Asami
5	40–43	103	Schröder, Mestas, Wissmar ⁷

In support of its challenges, Petitioner also relies on declarations of Dr. Brian W. Anthony (Exs. 1002, 1079) and Michael A.M. Davies (Ex. 1080). Patent Owner relies on declarations of Dr. Patrick Mercier (Ex. 2018) and Andrew T. Clarke (Ex. 2019).

II. ANALYSIS

A. LEVEL OF ORDINARY SKILL

Petitioner explains the applicable level of skill in the art as follows:

A person of ordinary skill in the art at the relevant time (“POSITA”) 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

⁴ U.S. Patent Application Publication No. 2014/0244009 A1, published Aug. 28, 2014 (Ex. 1010, “Mestas”).

⁵ U.S. Patent Application Publication No. 2010/0219989 A1, published Sep. 2, 2010 (Ex. 1014, “Asami”).

⁶ U.S. Patent No. 10,303,867 B2, issued May 28, 2019 (Ex. 1007, “Schröder”).

⁷ U.S. Patent Application Publication No. 2012/0218184 A1, published Aug. 30, 2012 (Ex. 1013, “Wissmar”).

academia or industry studying or developing physiological monitoring devices such as non-invasive biosensors. A POSITA would have also been familiar with, e.g., sensor system design, including inertial and other motion sensor system design, signal processing, and human-machine interfaces. A higher level of education or skill might make up for less experience, and vice versa.

Pet. 7 (citing Ex. 1002 ¶ 29).

Patent Owner agrees with Petitioner’s proposed definition of a person of ordinary skill in the art. PO Resp. 22; *see also* Ex. 2018 ¶ 27.

We adopt this uncontested definition of the level of ordinary skill in the art. This definition is supported by the record and consistent with the disclosure in the ’953 patent and the references cited in the Petition.

B. 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.*; *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).

Petitioner expresses that it “does not believe that any term requires express construction.” Pet. 8. “Patent Owner agrees with Petitioner that no terms need to be construed.” PO Resp. 22. We agree with the parties that resolution of their dispute does not require us to construe any claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy

need to be construed, and only to the extent necessary to resolve the controversy)(citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

C. PRIOR ART REFERENCES

1. *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.

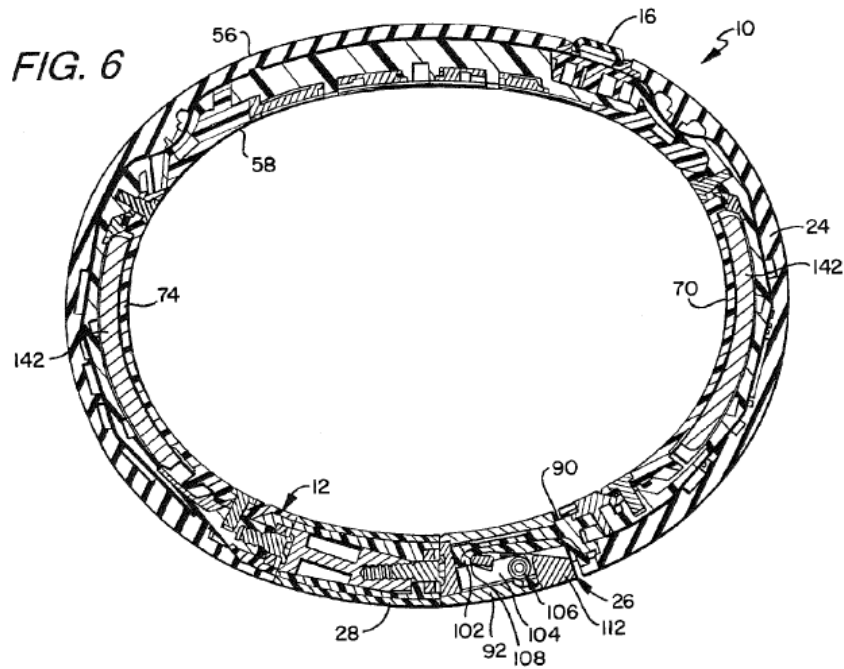
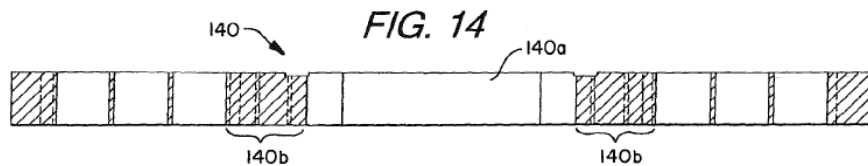


Figure 6 is a cross-section of wearable device 10 including housing 12 in the form of a wearable band such as a wristband. Ex. 1010 ¶¶ 15, 150, 151. Device 10 includes a controller, input button 16, a display, and an indicator system. *Id.* ¶ 150. Housing 12 includes an inner spine member having compartments 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.



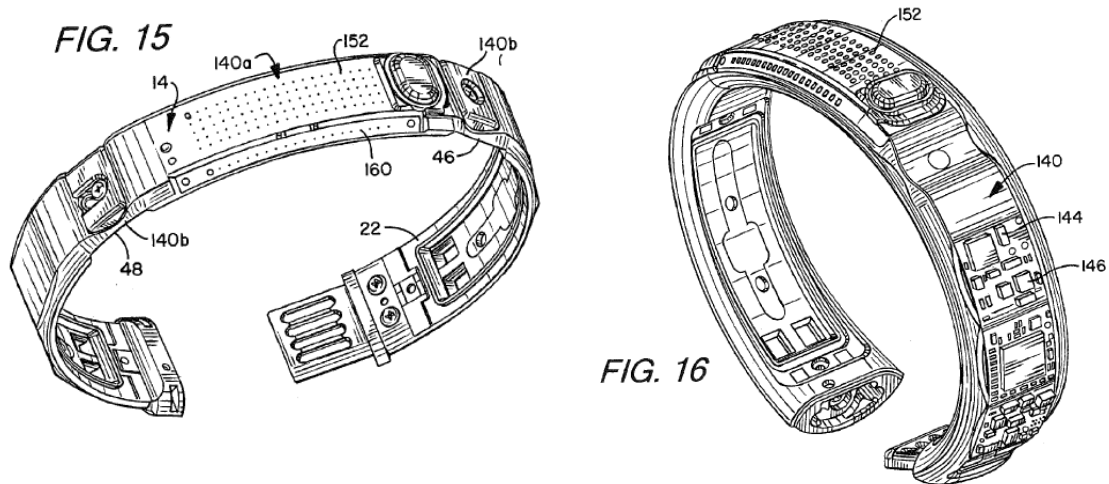


Figure 14 shows flexible PCB member 140, and Figures 15 and 16 show PCB member 140 wrapped around and mounted to spine member 22. Ex. 1010 ¶¶ 25, 26, 164. PCB member 140 is part of controller 14 and supports various components of the controller, including antenna assembly 144, sensor assembly 146, processing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

2. Asami

Asami discloses a wearable electrical apparatus of an input system. Ex. 1014 ¶ 2. As background, Asami discusses input systems that allow a user to input characters through various approaches, such as based on a user's finger trajectory and contact with a touch pad. *Id.* ¶¶ 3–6. Asami seeks “to provide an input system and an electrical apparatus for the input system, which can recognize characters or figures accurately without requiring touch panels nor tablets for receiving input of characters or figures.” *Id.* ¶ 15.

Asami discusses operation of its system in connection with Figure 3A, which is reproduced below.

FIG. 3A

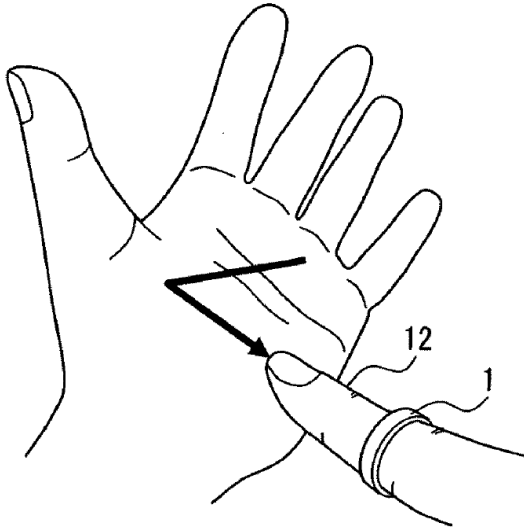


Figure 3A shows first wearable input device 1 worn on finger 12. Ex. 1014 ¶¶ 23, 49. Specifically, Figure 3A “is a perspective view showing one exemplary use of the first wearable input device.” *Id.* ¶ 23.

While wearing first wearable input device 1 on finger 12, a user may “write a character or draw a figure” on a body part other than finger 12. Ex. 1014 ¶ 49. First wearable input device 1 may sense the trajectory of the character or figure. *Id.*

Asami discloses using analysis to “specify a character or a figure, which the user expressed,” dependent on data reflecting the input finger’s trajectory. Ex. 1014 ¶ 75. Data regarding characters or figures input by the user is sent to an external device. *Id.* ¶ 85. “The user can thus readily input a character or figure into the external device.” *Id.* ¶ 90. The external device may perform “processing of displaying characters or figures expressed by

the user on a display screen based on the time-sequence data of the position coordinate inputted from the first wearable input device 1.” *Id.* ¶ 86.

Asami elaborates on the construction of wearable input device 1 in connection with Figures 1A and 1B, which are reproduced below.

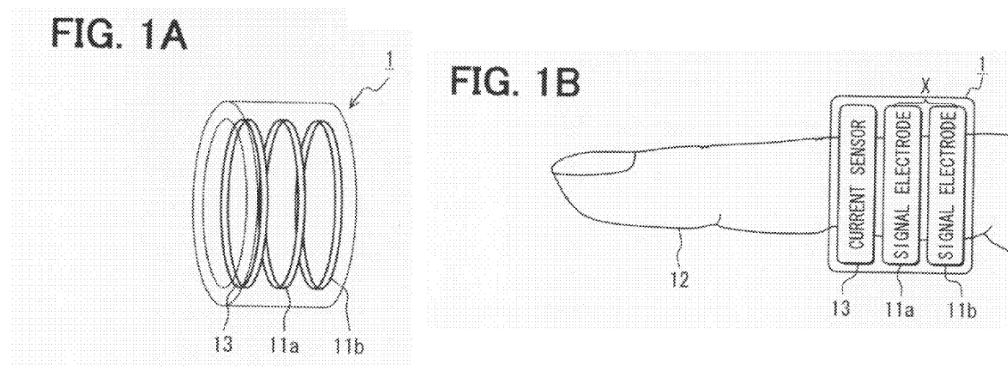


Figure 1A is a perspective view of wearable input device 1, and Figure 1B “is a schematic view showing arrangement of electrodes and a current sensor of the first wearable input device.” Ex. 1014 ¶¶ 19–20.

“[F]irst wearable input device 1 includes a pair of signal electrodes 11a, 11b and a current sensor 13,” which “are arranged in parallel at predetermined intervals along the axial line of a user’s finger 12.” Ex. 1014 ¶ 42. Signal electrodes 11a, 11b have inner surfaces “facing inward of the ring [and] exposed from the finger ring body,” such that “signal electrodes 11a, 11b are brought into contact with the user’s body surface.” *Id.* ¶ 44. When a voltage is applied to signal electrodes 11a, 11b, current flowing in finger 12 is measured using current sensor 13. *Id.* ¶ 45. When current sensor 13 detects larger than zero current, that indicates that the finger wearing wearable input device 1 is contacting another body part, such as the other hand. *Id.* ¶¶ 53–55. Thus, whether the input finger is contacting another body part of the user is determined based on current sensor 13’s current measurement. *Id.* ¶ 55.

First wearable input device 1 also includes a triaxial acceleration sensor. Ex. 1014 ¶ 65. The triaxial acceleration sensor can sense movement of the input finger by detecting acceleration in x, y, and z axes. *Id.* ¶ 73.

3. 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.

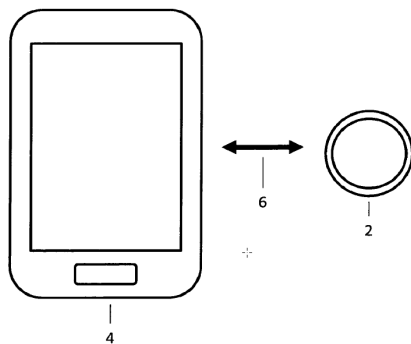


Fig. 1

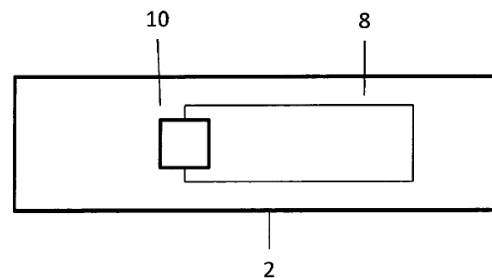


Fig. 2

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, “finger-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,

4:15–18. 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.

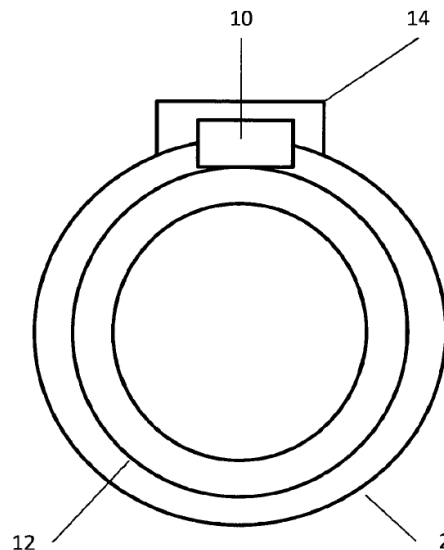


Fig. 3

“[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.

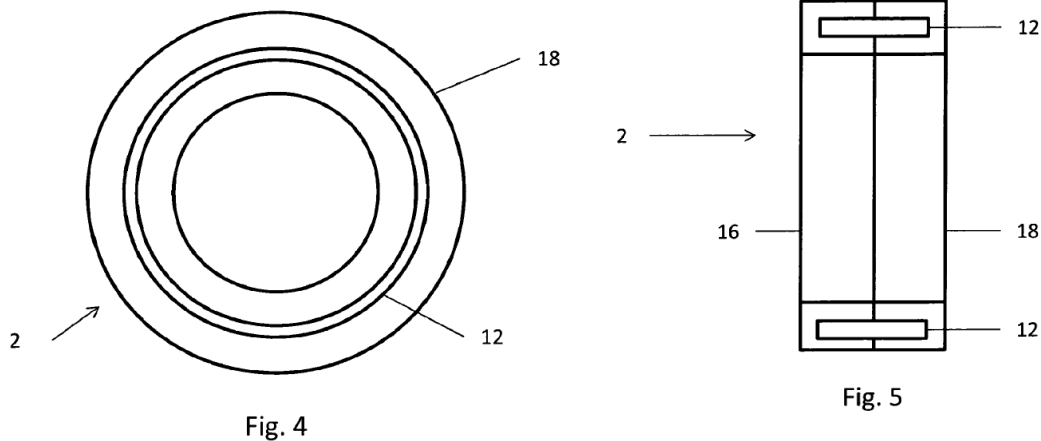
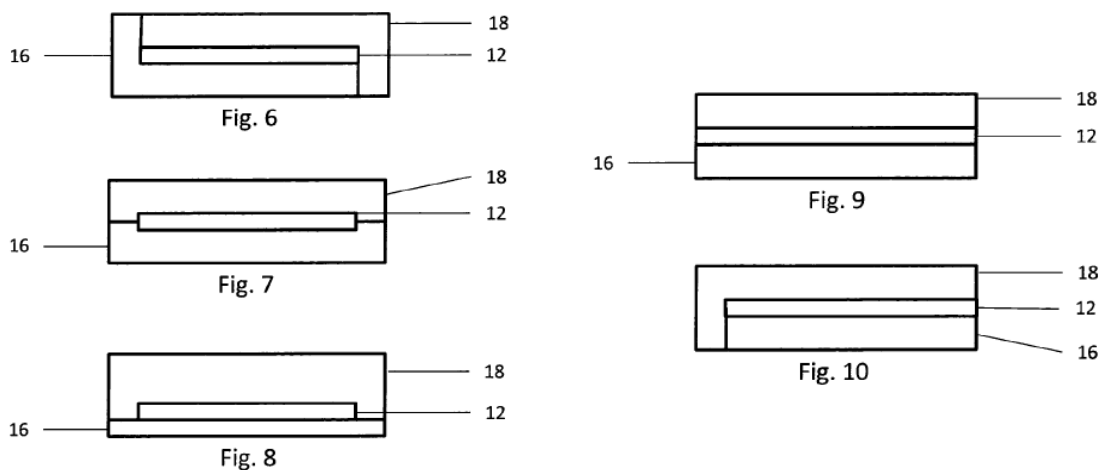


Figure 4 shows a longitudinal cross-section through finger-ring 2 as an exemplary external unit, and Figure 5 shows a cross-section of the finger-ring of Figure 4. Ex. 1007, 3:47–50, 12:4–7. Figure 4 shows one half 18 of finger-ring 2, and Figure 5 shows two ring halves 16 and 18.

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 a 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.

4. *Wissmar*

Wissmar relates to a finger ring that acts as “a multiple sensor device communicating with nearby electronic devices wirelessly.” Ex. 1013 ¶ 1. Wissmar purports that its finger ring serves as an alternative to a computer mouse, “provid[ing] a user-friendly steering device for controlling an external electronic device, such as a computer.” *Id.* ¶¶ 13, 14, 17.

An example of Wissmar’s finger ring appears in Figure 1, which is reproduced below.

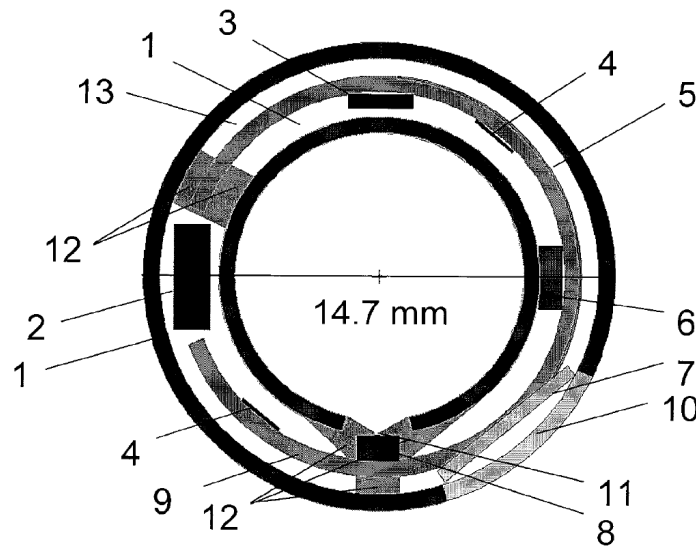


Fig. 1

Figure 1 schematically shows toroidal finger ring 1, which has electronic components mounted to a flexible printed circuit board inside the ring. Ex. 1013 ¶¶ 51, 73.

Finger ring 1 has two different metallic shells housing the electronic components. Ex. 1013 ¶ 73. Inside the shells, finger ring 1 includes flexible printed circuit board 9 supporting “a battery 2, a RF transceiver 3 and a micro processor 4, a microstrip line 5, an accelerometer 6, an internal antenna 7, [and] a pressure sensor 8.” *Id.* “[A]fter the electrical components are mounted and electrically connected to the FPCB they are painted with a

nonconductive and preferably conformal coating 13. Commonly used conformal coatings are silicone, epoxy, acrylic, urethane and paraxylene.” *Id.* ¶ 76. Coating 13 serves multiple functions, including “absorb[ing] the stress released from forming the FCPB into a toroidal/circular shape, thus reducing the risk of the respective electrical component and FPCB losing mechanical or electrical connection to each other.” *Id.* ¶ 77.

D. GROUND 1 - ALLEGED OBVIOUSNESS OVER MESTAS AND ASAMI

Petitioner contends that claims 1–6 and 11–14 would have been obvious over Mestas and Asami. *See* Pet. 18–45. For the reasons that follow, Petitioner has not shown by a preponderance of the evidence that these claims would have been obvious over the asserted references.

1. *Claim 1*

In its challenge of claim 1 based on Mestas and Asami, Petitioner contends that Mestas teaches most of the claim’s limitations. Pet. 21–31. For example, Petitioner asserts that Mestas teaches claim 1’s “interior enclosure portion,” “exterior enclosure structure,” “curved, rechargeable battery,” “flexible printed circuit board,” and “plurality of components.” *Id.* at 22–30. Additionally, Petitioner contends that “[w]hile Mestas lacks express disclosure that its device is ‘configured as a ring for being worn around the finger,’ Asami teaches this limitation.” *Id.* at 22. Petitioner argues that it would have been obvious to shrink Mestas’s wristband, converting it to a finger-ring like Asami’s:

[a person of ordinary skill in the art] would have been motivated to combine the functionality of Mestas’s athletic monitoring device with Asami’s finger-ring because a [person of ordinary skill in the art] would have found it beneficial to implement Mestas’s device in a more compact form that is not intrusive or obtrusive and is easier for the user to remember to wear.

Id. at 19.

According to Petitioner, an ordinarily skilled artisan would have had a reasonable expectation of success in combining the teachings of Mestas and Asami. Pet. 20. Petitioner reasons that “they both involve biometric sensing devices having similar structural and electronic components within.” *Id.* Petitioner contends that the references’ devices “are similar such that they are programmable using standard processors and are interchangeable regardless of whether the devices are in the form of, e.g., a wristband or a finger-ring.” *Id.* at 20–21.

Patent Owner disputes Petitioner’s position that it would have been obvious to shrink Mestas’s device to a finger-ring form factor with a curved battery and the other components of the challenged claims. PO Resp. 22–30, 32–34. Patent Owner asserts that Mestas discloses components too large for a finger-ring, arguing that Mestas’s omission of any reference to a finger-ring “indicates that Mestas was tailored for larger areas, due to the demands of component sizes, power requirements, [and] product robustness that would not work with a small finger ring.” *Id.* at 22–23. For example, Patent Owner contends that “Mestas’s large wristband battery system is incompatible with a compact finger ring.” *Id.* at 34.

Patent Owner argues that Petitioner’s proposed shrinkage of Mestas’s device would have presented excessive “technical challenges, primarily concerning the adaptation of Mestas’s components, especially its curved battery system, to the severe size constraints of a functional finger ring.” PO Resp. 26. Patent Owner asserts:

Mestas’s battery is engineered for the volume and power demands of a wrist-worn device. EX1010, Fig. 6. As Dr. Anthony conceded, such components would necessitate a scaling down by a factor of “5 to 10 times” for a ring (EX2021, 313:12),

a process that is far from trivial. The testimony of inventor Curt von Badinski highlights the substantial real-world difficulties in 2013 associated with sourcing or developing curved batteries that were sufficiently small yet powerful enough for a viable smart ring (EX2020, 182:3-12, 187:3-25). Commercially available curved cells were not “drop-in” solutions, and Mestas-sized batteries were described as “massive” and unworkable for a ring. EX2020, 188:8-17. The reluctance of battery manufacturers to undertake the required miniaturization efforts (EX2020, 189:12-190:3) would have led [a person of ordinary skill in the art] to conclude that successfully adapting Mestas’s power system into an Asami-style ring housing with Mestas’s full functionality had no expectation of success. Dr. Mercier agrees. EX2018, ¶97.

Id. at 27. Patent Owner further argues that “Mestas teaches the advantages of a larger device to accommodate higher capacity power supplies:

‘[R]ecessed compartments 50, 52 may have an increased size to accommodate larger power supplies having increased capacity.’”

Id. at 29–30 (quoting Ex. 1010 ¶ 154).

Weighing the parties’ arguments and evidence, we do not find Petitioner has provided persuasive support for its position that it would have been obvious to shrink Mestas’s wristband into a finger-ring form factor like Asami’s. In particular, Petitioner fails to account for the significant redesign that would have been required to modify Mestas’s large, curved battery to fit in a finger-ring form factor while still meeting the power needs of Mestas’s device. The record supports Patent Owner’s position that Mestas’s batteries are much too large to fit within a finger-ring form factor, and that they would have to be scaled down “by a factor of ‘5 to 10 times’ for a ring.” PO Resp. 27 (quoting Dr. Anthony’s cross-examination testimony at Ex. 2021, 313:12); *see also* Ex. 2018 ¶ 97 (Dr. Mercier agreeing).

Dr. Anthony's testimony that an ordinarily skilled artisan "would have understood that the electronic components of Mestas's and Asami's biometric devices are similar such that they are programmable using standard processors and are interchangeable *regardless of whether the devices are in the form of, e.g., a wristband or a finger-ring*" is not credible, at least with respect to Mestas's batteries. Ex. 1002 ¶ 191 (emphasis added). Dr. Anthony admitted on cross-examination that it would not have been within the level of skill of a person having ordinary skill in the art to themselves design a smaller version of Mestas's battery, and that such a person would instead need to procure a battery of the appropriate size and specifications for implementation in a finger-ring from a battery manufacturer. Ex. 2021, 315:9–318:9. Yet Dr. Anthony failed to ascertain, for purposes of his testimony, whether there were available curved batteries that would have fit in a finger-ring form factor in 2013. *See id.* at 321:5–10 (testifying he did not ascertain the availability of curved batteries that would have fit in the finger-ring form factor disclosed in another prior art reference).

Further, we credit Dr. Mercier's testimony that "Mestas's curved batteries . . . are dimensionally incompatible with a finger ring." Ex. 2018 ¶ 117. Although larger curved batteries suitable for use in a wristband like Mestas's were known, the record reflects that finger-wearable devices "up to the '953 patent had used [flat] 'coin' type batteries." *Id.* ¶¶ 241–242. Dr. Mercier's testimony that ordinarily skilled artisans had only looked to coin type batteries for finger-worn wearables is supported by the art of record, which consistently shows the use of flat batteries in finger-ring devices, often stacked above and protruding from the general ring shape of the device. *See, e.g.,* Ex. 1005 (Niwa), Figs. 22, 29; Ex. 2025 (Asada '701

patent), Fig. 4; Ex. 1035 (Rhee), Figs. 7-1, 8-1, 8-2; Ex. 1037 (Asada article), Fig. 9; Ex. 1034 (Asada '199 patent), Fig. 2; Ex. 1028 (Kimura), Fig. 24; Ex. 2018 ¶¶ 57–67. In fact, Patent Owner's first-generation ring design, released in 2015, used a Superbowl ring-type design, with the battery and other components mounted on top of the ring. Ex. 2034; Ex. 2018 ¶ 69. This configuration with a flat, coin type battery resulted in a housing having a protrusion at the top of the ring, as opposed to the device of claim 1, which recites a curved battery.

For these reasons, Petitioner's position that an ordinarily skilled artisan would have been motivated to and would had a reasonable expectation of successfully shrinking Mestas's device and its large, curved batteries to a finger-ring form factor is not supported by the evidence. Accordingly, Petitioner does not make a prima facie showing that claim 1 would have been obvious over Mestas and Asami.

a) Objective Indicia

Having considered Petitioner's evidence of obviousness, we now consider and weigh Patent Owner's evidence regarding alleged objective indicia of non-obviousness, i.e., commercial success and long-felt need. As explained below, Patent Owner has provided persuasive evidence of commercial success and demonstrated a nexus between this evidence and claim 1 of the '953 patent.

(1) Nexus

"[A] patentee is entitled to a rebuttable presumption of nexus between the asserted evidence of secondary considerations and a patent claim if the patentee shows that the asserted evidence is tied to a specific product and that the product 'is the invention disclosed and claimed.'" *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (quoting *Demaco*

Corp. v. F. Von Langsdorff Licensing Ltd., 851 F.2d 1387, 1392 (Fed. Cir. 1988) (emphasis added)). “That is, presuming nexus is appropriate when the patentee shows that the asserted objective evidence is tied to a specific product and that product embodies the claimed features, and is coextensive with them.” *Id.* (internal quotation marks omitted). If, on the other hand, “the thing that is commercially successful is not coextensive with the patented invention—for example, if the patented invention is only a component of a commercially successful machine or process, the patentee is not entitled to a presumption of nexus.” *Id.* (internal quotation marks omitted).

“[T]he degree of correspondence between a product and a patent claim falls along a spectrum. At one end of the spectrum lies ‘perfect or near perfect correspondence,’ and at the other end lies ‘no or very little correspondence.’” *Teva Pharms. Int’l GmbH v. Eli Lilly and Company*, 8 F.4th 1349, 1361 (Fed. Cir. 2021) (quoting *Fox Factory*, 944 F.3d at 1374). “Bound up with the coextensiveness requirement is the issue of ‘unclaimed features’ in a commercial product.” *Id.* “[L]ike the coextensiveness requirement itself, the concept of unclaimed features is best viewed as part of a spectrum.” *Id.* On one end of the spectrum, the unclaimed features “amount to nothing more than additional insignificant features,” and on the other end, the unclaimed features are “critical,” “claimed by a different patent,” and “materially impact[] the product’s functionality.” *Id.* (quoting *Fox Factory*, 944 F.3d at 1375). This analysis “requires the fact finder to consider the unclaimed features of the stated products to determine their level of significance and their impact on the correspondence between the claim and the products.” *Id.*

Patent Owner argues its evidence shows that Ouraring’s commercial ring, including Ring Gen. 3 Horizon⁸ and Ring Gen. 4, “is a commercial embodiment of the ’953 Patent and coextensive with challenged claims.” PO Resp. 82–92.

Petitioner does not dispute that the Oura Ring Gen. 3 Horizon and Gen. 4 products practice these claims, but argues that the Oura Ring Gen. 3 and Gen. 4 products “include unclaimed features materially impacting functionality” such that they are not entitled to a presumption of nexus. Reply 22–24. Petitioner argues the Our Ring Application is an essential feature of the products that is not claimed in the ’953 patent, but is covered in another of Patent Owner’s patents—U.S. Patent No. 10,842,429. *Id.* at 22. Petitioner further identifies the Oura Membership that was released with the Oura Ring Gen. 3 product as another unclaimed, but essential feature. *Id.* at 23. Petitioner also contends that the sleek and comfortable design and materials of the Oura Ring Gen. 3 and Ring Gen. 4 products are not claimed in the ’953 patent, but in another of Patent Owner’s patents—U.S. Patent No. 11,599,147 (“the ’147 patent”). *Id.* Finally, Petitioner contends that because Patent Owner points to the same products for objective indicia across multiple patents challenged in related

⁸ There are two versions of the Oura Ring Gen. 3 product—the Horizon and the Heritage models. Exs. 2056 (Oura Ring Gen. 3 Heritage), 2057 (Our Ring Gen. 3 Horizon). Although Patent Owner does not distinguish between the two in its arguments, the pictures of the Oura Ring Gen. 3 product in the Response and Dr. Mercier’s Declaration appear to be of the Horizon model. *See* Resp. 83–89; Ex. 2018 ¶¶ 325–342; Ex. 2029 (Oura Ring Gen. 3 tear down images). Accordingly, Patent Owner’s nexus evidence appears to be limited to the Oura Ring Gen. 3 Horizon product. *See* Reply 25 (noting that “Heritage features a ‘plateau’ design and PO does not explain how that design is coextensive with the ’953 Patent claims”).

proceedings whose “claims do not cover the same alleged invention,” nexus cannot be presumed. *Id.* (citing *Fox Factory*, 944 F.3d at 1377).

We find that the evidence presented by Patent Owner is sufficient to establish that the Oura Ring Gen. 3 Horizon and Gen. 4 products are commercial embodiments of claim 1 of the ’953 patent and that claim 1 is coextensive in that it encompasses the entire structural apparatus of these products. *See* PO Resp. 82–92; Ex. 2018 ¶¶ 322–346 (comparing these products to claim 1); Ex. 2029; Ex. 2030; Ex. 2118; Ex. 2119.⁹ Indeed, Petitioner does not challenge any aspect of Dr. Mercier’s limitation-by-limitation analysis showing that these products practice claim 1. But more than just practicing the claimed invention, Patent Owner’s evidence supports that claim 1 recites the overall structure that provides for the particular form factor of the Oura Ring Gen. 3 Horizon and Gen. 4 products, i.e., a finger-ring “wedding band” design that allows for the electronic components to be entirely contained within the ring housing with a curved external surface having no protrusions or bulges. Ex. 2018 ¶¶ 359–360; *see also id.* ¶¶ 322–346 (pictures depicting wedding band design of the Oura Ring Gen. 3 Horizon and Gen. 4 products); Ex. 2019 ¶¶ 47–49 (“[Patent Owner’s] decision to highlight the ring form factor indicates this feature’s importance to the marketplace success of the Oura Ring.”).

We disagree with Petitioner’s assertion that the Oura Ring Application and/or Oura Membership are essential, unclaimed features such that a presumption of nexus is not appropriate. The Oura Application functions in conjunction with the Oura Ring to form a “complete solution”

⁹ Patent Owner and Dr. Mercier only compare these products to claim 1. Patent Owner has not demonstrated a nexus to independent claim 38.

that allows the user to access data tracked by the Oura Ring. Ex. 2019 ¶¶ 20–21. The Oura Application cannot receive or display any information absent the Oura Ring’s ability to collect the information from the user. *Id.* Even though the Oura Application may provide additional unclaimed functionality, such as displaying activity, sleep, and readiness scores based on the data collected by the Oura ring that allow “a user to take advantage of the ring’s offerings,” this functionality is secondary to the ring’s ability to collect that data, without which, the Oura Application would serve no purpose. *See* Ex. 2019 ¶ 21; Ex. 2024, 93:22–95:22.

As the Federal Circuit has explained, “there is rarely a *perfect correspondence* between the claimed invention and the product.” *Fox Factory*, 944 F.3d at 1374. Here, we find that on the spectrum of “unclaimed features,” the Oura Ring Application is closer to the “insignificant features” end because, while it allows the user to access and interpret data tracked by their Oura Ring, it does not materially impact the functionality of the Oura Ring or its structure.¹⁰ *See Teva* 8 F.4th at 1361 (explaining that “like the coextensiveness requirement itself, the concept of unclaimed features is best viewed as part of a spectrum”).

Similarly, the Oura Membership, which provides add-on features such as additional personalized data and insights, is dependent on ring sales and does not materially impact the Oura Ring’s functionality in that such membership is optional, and the ring is fully functional without it. Ex. 1083, 192:10–17; Ex. 2019 ¶ 21; Ex. 2024, 95:11–13. Thus, we likewise find that

¹⁰ The ALJ in the parallel ITC Investigation, presented with similar arguments for the related ’178 patent, rejected the theory that the existence of the Oura Application countered a presumption of nexus. Ex. 2122, 109–110. The ALJ’s reasoning is consistent with our findings here.

on the spectrum of “unclaimed features,” the Oura Ring Membership is closer to the insignificant feature end than the critical feature end. *See Teva*, 8 F.4th at 1361.

We are likewise unpersuaded by Petitioner’s arguments that the sleek and comfortable design and materials are essential, unclaimed features. Reply 23. The specific structure claimed in claim 1 of a finger-ring comprised of an interior enclosure portion and exterior enclosure structure that form a housing holding a curved, rechargeable battery proximate a flexible PCB with its plurality of components serves to create the sleek and comfortable “wedding band” form factor. Ex. 2018 ¶ 360. Thus, the sleek and comfortable design of the Gen. 3 Horizon and Gen. 4 rings is not an added feature, but rather a result of the structure and configuration recited in claim 1. Further, we disagree with Petitioner that the use of “comfortable materials,” which Patent Owner has apparently separately patented, to make its ring constitute an essential, unclaimed feature that would substantially detract from the coextensiveness of these products and claim 1 of the ’953 patent. *See* Ex. 1001, 15:24–37. Petitioner offers no explanation why the “comfortable materials” it refers to are any different than the materials described in the ’953 patent,¹¹ much less show that they are a critical feature that would shift the balance of the coextensiveness analysis. *See* Reply 23.

¹¹ Petitioner cites evidence that the Oura Ring Gen. 3 Horizon and Gen. 4 products are made of titanium. Reply 23 (citing Ex. 2059, 2; Ex. 2098, 2; Ex. 2102). The ’953 patent teaches that its device housing may be made from titanium. Ex. 1001, 15:24–37. Petitioner’s bare citation to the ’147 patent does not identify any allegedly critical feature missing from the ’953 patent, nor show that these products embody that feature, and the testimony it cites is inapposite. *See* Reply 23 (citing Ex. 1082, 216:4–10, 18:24; Ex. 1087).

Finally, Petitioner's argument that there is no nexus because Patent Owner asserts the same objective indicia evidence in multiple proceedings involving different patents is unavailing. The patents challenged in these proceedings, i.e., Patent Nos. 11,874,702; 10,139,859; 10,281,953; and 11,868,178, are all part of the same family. They claim benefit of the same priority applications, presumably have the same expiration date, and, while there are some differences, many of their claims recite substantially overlapping subject matter, namely the structure of a finger-worn wearable ring device. That claim 1 of the '953 patent recites some limitations that may not be found in some of the claims of these other patents, e.g., that the device includes windows facilitating certain purposes, does not show that the patents are related to different inventions. In fact, the claims of all four patents recite the essential components of the ring device, including internal and external housing components or enclosures or bounding member that enclose electronic components such as printed circuit boards, sensors and batteries configured to fit inside the internal and external structures. Thus, we find that the identified claims of these patents all cover substantially overlapping subject matter and are entitled to a presumption of nexus for essentially the same reasons. *See WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1324–25 n.3 (Fed. Cir. 2016) (presuming nexus between a product and the asserted claims of two related patents where the patents cover essentially the same or similar inventions); *Fox Factory*, 944 F.3d at 1377 (explaining that “a presumption of nexus can be appropriate” for multiple patents where the claims of those patents “generally cover the same invention”).

For these reasons, we find that Patent Owner has successfully shown that the Oura Ring Gen. 3 Horizon and Gen. 4 products are coextensive with

claim 1 of the '953 patent and is thus entitled to a presumption of nexus between its objective indicia evidence and that claim.

(2) *Commercial Success*

For the reasons that follow, we find that Patent Owner's evidence of commercial success is probative of non-obviousness. The Oura Ring is Patent Owner's only product offering. Ex. 2019 ¶ 13. Patent Owner introduced a first generation of the Oura Ring (Gen. 1) in March 2015, a second generation (Gen. 2) in 2017, two versions of a third generation (Gen. 3) in 2021, and a fourth generation (Gen. 4) in 2024. *Id.* ¶¶ 15–18. Patent Owner presents evidence of the purported commercial success of the Gen. 3 and Gen. 4 products based on absolute sales (both revenue and unit sales) and sales growth, the Oura Ring's contribution to Ouraring as a company, and its marketplace performance relative to competing products. PO Resp. 93–99; Ex. 2019 ¶¶ 32–45.

Patent Owner's evidence shows considerable sales growth since the introduction of the Oura Ring Gen. 3. Mr. Clarke testified that Patent Owner experienced “substantial sales and sales growth, especially since the introduction of the Oura Ring Gen. 3 in October 2021.” Ex. 2019 ¶ 33 (citing Appendices 6, 7). Gross unit sales increased at a substantial rate after the introduction of the Oura Ring Gen. 3. *Id.* Patent Owner also produced evidence of substantial growth in Oura Membership subscribers, revenue attributable to the Oura Ring, and total revenues in the years following the release of Oura Ring Gen. 3. *Id.* ¶¶ 34–36 (citing Appendices 8, 9).

Mr. Clarke testified that the Oura Ring is critical to Patent Owner's existence as a company. Ex. 2019 ¶ 37. He testified that after the launch of Oura Ring Gen. 3, Patent Owner's valuation increased by more than 200% in one year (April, 2021 – April, 2022). *Id.* ¶ 38 (citing Ex. 2084; Ex. 2085;

Ex. 2086). And he testified about partnerships that Patent Owner has entered into with partner companies, which Patent Owner relies upon as additional evidence of “Oura’s marketplace success.” PO Resp. 96–97 (citing Ex. 2019 ¶¶ 39–40).

Not only has Patent Owner demonstrated revenue and unit sales growth, but it also has shown continued strong market share even in view of growing competition in the market. We credit Mr. Clarke’s testimony that the Oura Ring created a new market segment within the wearables marketplace and that Patent Owner has been credited as “one of the market pioneers” for the smart ring marketplace segment among other accolades. Ex. 2019 ¶ 41 (citing Exs. 2036, 2048, 2058, 2089, 2090, 2091, 2092). We also credit Patent Owner’s assertion “as of December 2024 that the market share of the Oura Ring within the smart ring marketplace segment was 49 percent, despite the growing competition within the segment.” PO Resp. 98 (citing Ex. 2050).

Patent Owner’s commercial success arguments are also supported by evidence demonstrating its clear leadership position within the smart ring marketplace segment and its ability to secure corporate partnerships. Ex. 2019 ¶¶ 39–42 (citing Ex. 2036 (describing Patent Owner as “one of the market pioneers”); Ex. 2048 (describing Patent Owner as “the smart ring market leader”); Ex. 2050 (demonstrating an industry forecast of Patent Owner’s market share to be 49 percent by the end of 2024 after the debut of the Oura Ring Gen. 4 product); Ex. 2058 (describing Oura Ring as retaining its spot as “the best smart ring around” despite other competition); Exs. 2087–2088 (describing Oura Ring partnerships); Ex. 2089 (describing Patent Owner as “synonymous with ‘smart ring’”); Ex. 2092 (stating the

Oura Gen. 4 product “continues to define the category” even amid a much more competitive field).

Petitioner offers a number of arguments against Patent Owner’s commercial success showing. *See* Reply 24–28. Petitioner asserts that earlier generations of the Oura Ring with the same features did not succeed and that the sales increases following the release of the Oura Ring Gen. 3 are due to unclaimed features, marketing, and the Oura Membership.

Id. at 24–26. Petitioner also disputes Patent Owner’s argument that revenues it relies upon are attributable to the Oura Ring, urging that they also arise from membership services and other sources. *Id.* at 24. Petitioner further asserts that Patent Owner did not create a new market segment and the market growth followed expected trends, not Patent Owner’s contribution. *Id.* at 24, 28. As explained below, these arguments are largely unavailing.

As an initial matter, Petitioner’s contention that Oura Ring’s increased sales were due to marketing is not persuasive. Even though Patent Owner increased its marketing expenditure from FY 2021 onward (Ex. 2107, 5; Ex. 2108, 5; Ex. 2109, 6; Ex. 2110, 6), its cost of sales, which includes marketing expenses, as a percentage of revenue decreased over that same time period. Ex. 1083, 182:23–185:11; Ex. 2019 (Appx. 4).

We also are not persuaded by Petitioner’s argument that sales of Oura memberships detract from the overall substantial increases in sales and revenue after the launch of the Oura Ring Gen. 3. More than 80 percent of Oura’s revenue is directly attributable to ring sales. Ex. 2019 (Appx. 4). Almost all of Patent Owner’s other revenue comes from Oura Membership subscriptions (*see id.*), which is a service that allows the user to receive “detailed performance metrics tracked by the Oura Ring.” Ex. 2019 ¶¶ 20–21. Accordingly, we find Mr. Clarke’s testimony that 100 percent of

Patent Owner’s overall revenue is attributable to the Oura Ring product to be credible. Ex. 2019 ¶ 37.

We also disagree with Petitioner that the relevant market for assessing commercial success is overall wearables market as opposed to the smart ring segment. Mr. Davies bases his opinions regarding an alleged lack of commercial success on the fact that the smart ring product category is a relatively small component of the much broader wearables market, which includes unrelated devices such as smart watches, for example. *See* Ex. 2135, 32:5–35:1. But the evidence of record shows that the industry recognizes smart rings as a distinct submarket of the broader wearables market. For instance, CNBC recognized the smart ring market as a separate market from other wearables and characterized Samsung’s debut of its smart ring as Samsung’s entry into the smart ring market, despite Samsung also selling smartwatches. Ex. 2036, 3–4. Similarly, Zdnet identified a separate smart ring market, describing Oura as “the smart ring market leader.” Ex. 2048, 2; *see also* Ex. 2089, 3 (“The smart ring market size could surpass \$1 billion by the 2030s.”); Ex. 2091, 2 (discussing smart rings as distinct from smartwatches and fitness bands). While the smart ring market is smaller than the smart watch market, the record supports Patent Owner’s showing that it is a distinct market segment, and the appropriate one to consider in determining Patent Owner’s market share for purposes of commercial success. *See* Ex. 2019 ¶¶ 23–26.

It is undisputed that Patent Owner is a market leader and holds a substantial share of the smart market segment that it helped to establish. Ex. 2135, 23:18–22 (Mr. Davies acknowledging that Patent Owner has a “significant share within [the smart ring category of the market]”); Ex. 2019 ¶¶ 26, 42; Ex. 2036, 4 (describing Patent Owner as “one of the market

pioneers”). We are not persuaded that Patent Owner’s success in the smart ring market is simply due to serendipitous timing, as asserted by Petitioner. Reply 25 (citing Ex. 1080 ¶¶ 175–207). Indeed, as Patent Owner points out, Petitioner does not explain in its Reply what exactly it considers serendipitous about the timing of these products’ entry into the market or seriously dispute the evidence showing substantially increased sales and revenues since their launch. *See* Sur-reply 19–20, 22–23 (bullet-pointing un rebutted aspects of its showing and noting that Petitioner’s “serendipitous timing” argument is premised on incorporating lengthy expert testimony with little explanation).

We also disagree with Petitioner’s argument that the Oura Ring “Gens. 1/2 and 3/4 differ little,” yet the former “were less successful.” Reply 25. Petitioner does not show that the Gen. 1 and 2 rings actually practice claim 1, or any other claim, of the ’953 patent. For example, Petitioner does not show that the Gen. 1 and Gen. 2 rings had a “curved, rechargeable battery,” as recited in claim 1 of the ’953 patent. Dr. Anthony testifies that “Gens. 1 and 2 also include a battery.” Ex. 1079 ¶ 119. But Petitioner does not provide evidence that the Gen. 1 and Gen. 2 rings had a curved battery. Moreover, one readily discernible difference between the earlier Gen. 1 and Gen. 2 products and the later Gen. 3 and Gen. 4 products is that the later products embody a wedding ring outer housing, likely made possible by the use of a curved battery positioned and configured as recited in claim 1, while the earlier products have a flat surface on the top of the ring (a “plateau design”). *Compare* Ex. 2034 (Gen. 1), Ex. 1355, 1 (Gen. 2), *with* Ex. 2029 (Gen. 3), Ex. 2030 (Gen. 4); *see also* Ex. 1079 ¶ 119 (showing a diagram of the Gen. 1 product with a flat battery protruding from the top of the device); Ex. 2098, 1 (“plateau design”). This suggests that

there are, in fact, significant differences between the earlier Gen. 1 and Gen. 2 products and the Gen. 3 Horizon and Gen. 4 products. Petitioner never addresses these differences head-on, which undermines the premise for its arguments concerning the Gen. 1 and Gen. 2 products.

Petitioner’s reference to other allegedly unclaimed features (i.e., “expanded sensors and improved battery life”) in the Gen. 3 and Gen. 4 products is likewise unpersuasive because it does not rebut the presumption of nexus. Reply 25. As noted above, the existence of unclaimed features standing alone does not defeat the presumption of nexus. *See Fox Factory*, 944 F.3d at 1374 (“[W]e have never held that the existence of one or more unclaimed features, standing alone, means nexus may not be presumed. Indeed, there is rarely a *perfect correspondence* between the claimed invention and the product.”); *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1273 (Fed. Cir. 1991) (“It is not necessary . . . that the patented invention be solely responsible for the commercial success, in order for this factor to be given weight appropriate to the evidence, along with other pertinent factors”). And Petitioner does not persuasively show that the features it refers to are critical such that they would overcome Patent Owner’s nexus showing.

In contrast, there is merit to Petitioner’s argument that “Mr. Clarke did not separate sales for Heritage and Horizon” models of Gen. 3 of the Oura Ring. Reply 25. That is, Mr. Clarke apparently relies on *all* Gen. 3 product sales for commercial success, lumping sales for the Gen. 3 Heritage and Gen. 3 Horizon products together in his analysis. Ex. 2019 (Appendix 7); *see also* Ex. 1080 ¶¶ 228–234 (Mr. Davies distinguishing between these models). Yet, the evidence Patent Owner offers to show nexus is limited to the Gen. 3 Horizon product. Ex. 2018 ¶¶ 322–346; *see*

also Ex. 2056 (depicting Gen. 3 Heritage product); Ex. 2057 (depicting Gen. 3 Horizon product); Ex. 2099, 3 (describing the Gen. 3 Heritage as having “a flat top that houses the battery” while the Gen. 3 Horizon has a “fully round” design with a “*flexible* battery to accommodate the shape”).¹² Based on the record before us, we discern no way to clearly distinguish sales for only the Gen. 3 Horizon product from the general Gen. 3 sales figures Patent Owner relies upon. This issue does not arise for the Gen. 4 product, which apparently is not offered in a Heritage product design. For this reason, we discount the weight of Patent Owner’s commercial success evidence, particularly as it relates to the Gen. 3 product, while the overall showing remains probative of non-obviousness.

On balance, we find Patent Owner’s commercial success showing to be moderately probative of non-obviousness.

(3) *Long-Felt Need*

Patent Owner asserts that its evidence that the ’953 patent fulfilled a long-felt need for a comfortable and compact smart ring that a user would want to wear around the clock weighs in favor of non-obviousness of the claimed ring. PO Resp. 99–101. Specifically, Patent Owner asserts that prior efforts to develop a smart ring by others such as the “researcher Asada” were too large to be used and put the components and battery atop the ring.

¹² The ITC determined that Patent Owner had presented a sufficient nexus showing for both the Gen. 3 Horizon and Gen. 3 Heritage products. Ex. 2122, 69–80 (reviewing both the Gen. 3 Horizon product and the Gen. 3 Heritage product to determine whether they practice the claimed invention of the related ’178 patent), 108 (referring to the technical domestic industry analysis in the determination of nexus). Here, however, claim 1 recites a “curved, rechargeable battery” and the record is more limited with Patent Owner offering a technical analysis of only the Gen. 3 Horizon product.

Id. at 99–101; *see id.* at 8–15 (reproducing pictures of devices from various exhibits). Patent Owner notes that even its own first-generation product had a “Superbowl ring-type design.” *Id.* at 100 (citing Ex. 2034).

Petitioner argues that Patent Owner’s reliance on earlier unsuccessful attempts to commercialize a wearable ring with a curved battery is not sufficient to show that a person having ordinary skill in the art recognized a need that was long felt or that others had tried and failed to solve the problems. Reply 28–29.

Establishing long-felt but unsolved need requires objective evidence that an art-recognized problem existed in the art for a long period of time without solution, *Newell Cos., Inc. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988), and that the claimed invention satisfies the long-felt need, *Sjolund v. Musland*, 847 F.2d 1573, 1582 (Fed. Cir. 1988). Moreover, the alleged long-felt need must not have been satisfied by another before the claimed invention. *See Newell*, 864 F.2d at 768 (“[O]nce another supplied the key element, there was no long-felt need or, indeed, a problem to be solved . . .”). Consideration of objective indicia also includes “the failure of others to produce alternatives to the patented invention.” *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). As with other objective indicia, this evidence must demonstrate that any “inability or unwillingness of competitors” to develop alternative products “is rooted in the subject matter” of the challenged claims. *See id.*

On the record before us, we agree with Petitioner that Patent Owner has not established a compelling case of a long-felt need in the industry or that others had tried and failed to solve the problems. Patent Owner’s evidence that Dr. Asada recognized advantages of a wearable ring over other wearables (Ex. 1025, 1:56–58) and recognized that comfort and compactness

were key in a wearable ring (Ex. 1035, 9–10; Ex. 1037, 3) is not adequate to establish a long-felt need in the art. This anecdotal evidence of a few researchers is not sufficient to establish a long-felt need in the art.

Also, the fact that Dr. Asada found his initial prototype to be “too large to be of use in real life” (Ex. 1035, 74) does not demonstrate failure of others. It is not clear that this prototype was designed for other than a testing environment, and it appears that this initial prototype was only his first attempt to construct such a ring. Ex. 1035, 10 (describing that a goal of the thesis was to develop “technology for obtaining reliable measurements of vital signs for long-term use” and addressing issues including motion artifact minimization and power consumption requirements), *id.* at 74 (noting that “to be practical, [the ring sensor] had to be reduced to a size no larger than a college ring”).

Further, Dr. Mercier’s testimony regarding his own efforts in developing a smart ring as part of the Center of Wearable Sensors at UCSD is not persuasive of failure of others because the evidence does not reflect that Dr. Mercier was working on a commercial design, as opposed to a ring used for academic research, in which case the packaging and overall structure of the ring may not have been a paramount concern. Ex. 2018 ¶ 363. In other words, it is not clear from Dr. Mercier’s testimony whether he and his colleagues chose to design a ring similar to Dr. Asada’s prototype because that was the most expedient route or because they were unable to design a more compact ring.

The anecdotal evidence that Dr. Asada and Dr. Mercier did not commercialize a wearable ring with a curved battery is not sufficient to establish long-felt need in the industry. Likewise, the assertion that Patent Owner used a “Superbowl ring-type design” in its initial product offering is

insufficient evidence, standing alone, to show that the industry was unable to design a different ring design.¹³ Accordingly, we give little weight to Patent Owner's showing of long-felt need.

b) Conclusion as to Claim 1

As explained above in Section II.D.1, Petitioner does not show a prima facie case of obviousness of claim 1 over Mestas and Asami. Patent Owner's commercial success showing further evinces the non-obviousness of claim 1. Weighing that evidence in view of the totality of the record, we conclude that even if Petitioner's affirmative showing was not already deficient, there is likely sufficient objective indicia of non-obviousness to overcome that showing. Accordingly, Petitioner has not shown by a preponderance of the evidence that claim 1 would have been obvious over Mestas and Asami.

2. Claims 2–6 and 11–14

Each of claims 2–6 and 11–14 depends, directly or indirectly, from claim 1. Because Petitioner has not met its burden to show that claim 1 would have been obvious over Mestas and Asami, its showing for the dependent claims is likewise deficient. Accordingly, Petitioner has not shown by a preponderance of the evidence that any of claims 2–6 and 11–14 would have been obvious over Mestas and Asami.

¹³ The judge in the parallel ITC proceeding found evidence of long-felt weighing in favor of non-obviousness for the claims of a different, but related patent. Ex. 2122, 116. That finding, however, appears to be premised on evidence that is not before us here. *See id.* (citing evidence).

E. GROUND 2 – ALLEGED OBVIOUSNESS OVER MESTAS AND SCHRÖDER

Petitioner asserts that claims 1–6, 11, 14, 15, 38, 39, and 41–43 would have been obvious over Mestas and Schröder. *See* Pet. 45–59. For the reasons that follow, Petitioner has not shown by a preponderance of the evidence that these claims would have been obvious over the asserted references.

1. *Claim 1*

In asserting obviousness of claim 1 over Mestas and Schröder, Petitioner contends that Mestas teaches most of claim 1’s limitations. Pet. 48–51. For example, Petitioner asserts that Mestas teaches claim 1’s “interior enclosure portion,” “exterior enclosure structure,” “curved, rechargeable battery,” “flexible printed circuit board,” and “plurality of components.” *Id.* at 49–51. Additionally, Petitioner contends that “[w]hile Mestas lacks express disclosure that its device is ‘configured as a ring for being worn around the finger,’ Schröder teaches this limitation.” *Id.* at 49. As in Ground 1, Petitioner argues that it would have been obvious to shrink Mestas’s wristband and its components into a finger-ring form factor. *Id.* at 46–48. For substantially the same reasons as discussed above in Section II.D.1, the evidence does not support Petitioner’s position that shrinking Mestas’s wristband and its curved batteries into a finger-ring form factor would have been obvious, and Petitioner identifies no additional teaching in Schröder that affects this analysis. *See* Pet. 46–48 (not addressing battery size or shape in the alleged reasoning for combining the references); 50 (asserting “Mestas teaches Element 1[c] for the reasons described at Ground 1” with no additional reliance on teachings in

Schröder). Accordingly, Petitioner does not make a prima facie showing that claim 1 would have been obvious over Mestas and Schröder.

a) Objective Indicia

As explained above in Section II.D.1.a), Patent Owner has provided persuasive evidence of commercial success and demonstrated a nexus between this evidence and claim 1 of the '953 patent.

b) Conclusion as to Claim 1

As explained above in Section II.E.1, even before considering the objective indicia evidence, Petitioner's showing for claim 1 is deficient. Patent Owner's commercial success showing further evinces the non-obviousness of claim 1. Weighing that evidence in view of the totality of the record, we conclude that even if Petitioner's affirmative showing was not already deficient, there is likely sufficient objective indicia of non-obviousness to overcome that showing. Accordingly, Petitioner has not shown by a preponderance of the evidence that claim 1 would have been obvious over Mestas and Schröder.

2. Claim 38

Petitioner's assertions that claim 38 would have been obvious over Mestas and Schröder largely rest on its assertions that claim 1 would have been obvious over Mestas and Schröder. Pet. 55–57. In particular, Petitioner's challenge of claim 38 as allegedly obvious based on Mestas and Schröder rests on Petitioner's position that it would have been obvious to shrink Mestas's wristband and curved batteries to a finger-ring form factor, which we find unpersuasive for the reasons discussed above. *See id.* at 56–57 (asserting that the “curved battery” in limitation 38[c] is taught “for the same reasons discussed” for limitation 1[c]). Accordingly,

Petitioner has not demonstrated obviousness of claim 38 over Mestas and Schröder.

3. *Claims 2–6, 11, 14, 15, 39, and 41–43*

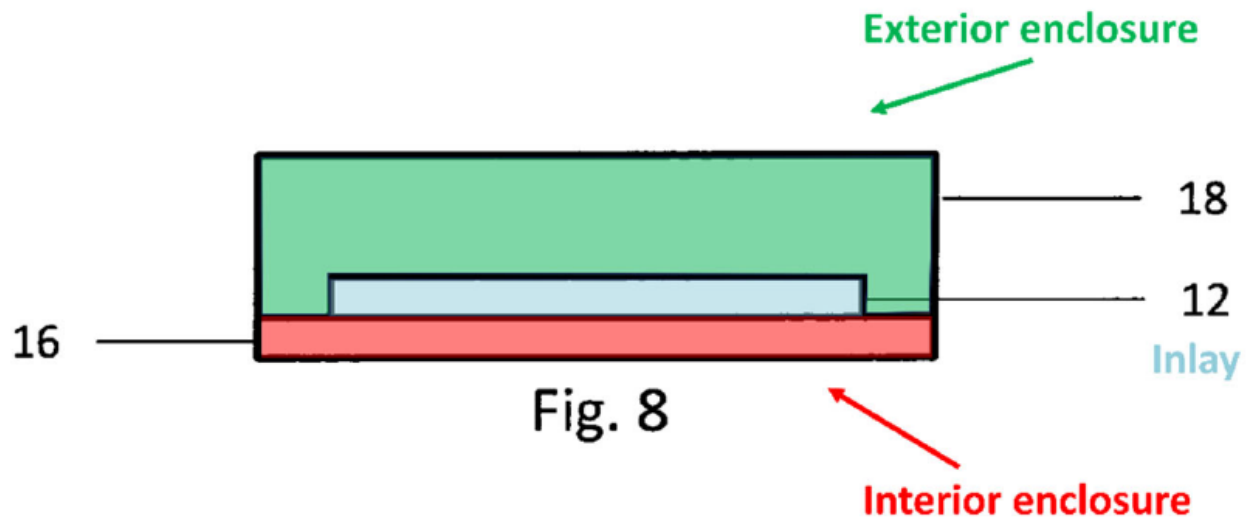
Each of claims 2–6, 11, 14, 15, 39, and 41–43 depends, directly or indirectly, from either claim 1 or claim 38. Because Petitioner has not met its burden to show that the base claims would have been obvious over these references, its showing for the dependent claims is likewise deficient. Accordingly, Petitioner has not shown by a preponderance of the evidence that 2–6, 11, 14, 15, 39, and 41–43 would have been obvious over Mestas and Schröder.

F. GROUND 3 – ALLEGED OBVIOUSNESS OVER SCHRÖDER AND MESTAS

Petitioner asserts that claims 1–6, 11, 14, 15, 38, 39, and 41–43 would have been obvious over Schröder and Mestas. *See* Pet. 59–75. For the reasons that follow, Petitioner has not shown by a preponderance of the evidence that these claims would have been obvious over the asserted references.

1. *Claim 1*

In Ground 3, Petitioner contends that Schröder teaches most limitations of claim 1. Pet. 61–67. For example, Petitioner asserts that Schröder teaches claim 1’s “wearable computing device, configured as a ring for being worn around the finger,” “interior enclosure portion,” “exterior enclosure structure,” “flexible printed circuit board,” “plurality of components,” and “one or more windows.” *Id.* at 61–68. When addressing the “interior enclosure portion” and “exterior enclosure structure” recited in independent claim 1, Petitioner illustrates its position with an annotated version of Schröder’s Figure 8, reproduced below.



In the figure above, Petitioner identifies ring half 16 as the interior enclosure and ring half 18 as the exterior enclosure. *Id.* at 62–64. Regarding the curved battery in limitation 1[c], Petitioner argues that it would have been obvious incorporate Mestas’s teaching of a curved battery and position that battery in the cavity occupied by inlay 12 “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 60, 64–65.

Patent Owner disputes Petitioner’s assertions. PO Resp. 62–74. Patent Owner further asserts that “Mestas’s system would have to be scaled down and completely redesigned in order to fit in a small ring format like . . . Schröder.” *Id.* at 63–64 (citing *id.* at 22–27, including argument that Mestas’s battery would have required “scaling down by a factor of ‘5 to 10’ times for a ring”). According to Patent Owner, difficulties associated with the large size of Mestas’s curved batteries would have made it unobvious to incorporate such curved batteries into a finger-ring form factor like Schröder’s. *Id.* at 26–27.

We find that Patent Owner has the better position and that Petitioner has not shown that a wearable ring device having a curved battery, as

required by limitation 1[c], would have been obvious over Schröder and Mestas.

We begin by discussing what Schröder does and does not disclose with respect to limitation 1[c]. It is undisputed that Schröder teaches that its finger-ring may include a battery and that this battery may be connected to a chip module 10. Ex. 1007, 11:46–50. But none of Schröder’s figures depict the location of that battery. And the embodiment in Schröder’s Figure 3 depicts chip module 10 extending above the inlay and through the upper ring half, resulting in a protrusion at the top of the ring. *Id.* at Fig. 3. This suggests that a battery located proximate to that chip module would also protrude from the top of the ring similar to the “Superbowl ring-type design” exhibited in other prior art devices (*see* Ex. 2018 ¶¶ 57–69) and undermining Petitioner’s alleged reasoning for incorporating a curved battery, i.e., “to conform to a ring’s circular shape without stressing the battery or ring housing” (*see* Pet. 60, 64–65).

Petitioner seeks to avoid the import of Figure 3 by pointing to other disclosures in Schröder. *See* Reply 13. In particular, Petitioner points to the embodiments in Figures 4, 7 and 8 (which depict inlay 12 between ring halves 16 and 18) and Schröder’s teaching that the chip module and other components can be located on the carrier foil. Pet. 62–66. But even those figures depict inlay 12 as occupying only a relatively small space between the ring halves, and Schröder acknowledges that if electronic devices are added to its inlay, they may not fit. Ex. 1007, 13:31–35 (stating that devices “should not protrude beyond the carrier foil *if possible*”) (emphasis added), 14:9–13 (suggesting the use of paste to compensate for steps or shoulders that may arise through chip module 10). Accordingly, while Schröder does teach that components can be arranged on inlay 12 and that inlay 12 is

positioned between the two ring halves, it does not identify the battery specifically as one of those components nor does it suggest that larger components can be accommodated within that space. *See* Ex. 1007, 12:40–42, 12:61–65, 13:23–35.

These limits in Schröder’s disclosure serve to highlight what seems to be improper hindsight in Petitioner’s position. Petitioner and Dr. Anthony assume that a POSITA would position the battery between Schröder’s ring halves and implement Mestas’s curved battery because it “allows a larger battery to conform to a ring’s circular shape without stressing the battery or ring housing.” Pet. 60, 64–65; Ex. 1002 ¶¶ 337, 351–354. That position, however, ignores alternative designs that are at least equally supported by Schröder’s disclosure (*see* Ex. 1007, Fig. 3), but would *not* result in a ring configured as recited in the challenged claims.

Petitioner attempts to downplay this concern by characterizing the modification of Schröder’s ring to include Mestas’s curved battery as an obvious “matter of choice” in design. *See* Reply 10–11 (citing Ex. 1079 ¶¶ 71–77). We disagree. As explained above, the record supports Patent Owner’s argument that Mestas’s batteries are much too large to fit within a ring form factor because they are “5 to 10 times” the size that would be required for a finger ring. PO Resp. 27 (quoting Ex. 2021, 313:12). Petitioner argues that it “does not propose bodily incorporating Mestas’s battery into Schröder’s ring,” which on the surface is correct. *See* Reply 10. But this does not help Petitioner meet its burden because its actual obviousness theory that “a POSITA would have found it trivial to implement Mestas’s teachings into a ring like Schröder’s ‘finger-ring’” is not persuasive. *See* Pet. 60 (citing Ex. 1002 ¶ 338). For the same reasons explained in Section II.D.1 above in our analysis of Ground 1, Dr.

Anthony's testimony that it would have been "trivial" to implement Mestas's teaching of a curved battery (Ex. 1002 ¶ 338) in the much smaller form factor of Schröder's ring is not credible. *See* Ex. 2021, 315:9–318:9 (acknowledging that it would have been beyond the level of ordinary skill to miniaturize Mestas's battery, but that a POSITA could try to procure one); 321:5–10 (conceding that he did not try to ascertain whether such a battery was available in the relevant time frame). Instead, we credit Dr. Mercier's testimony that Petitioner's proposed modification would have presented intractable practical challenges. Ex. 2018 ¶¶ 228, 230–240 (describing various aspects of battery design that Dr. Anthony did not consider). As before, Dr. Mercier's testimony is further supported by evidence showing a consistent pattern of flat battery use in prior art finger-ring devices. *See, e.g.,* Ex. 1005 (Niwa), Figs. 22, 29; Ex. 2025 (Asada '701 patent), Fig. 4; Ex. 1035 (Rhee), Figs. 7-1, 8-1, 8-2; Ex. 1037 (Asada article), Fig. 9; Ex. 1034 (Asada '199 patent), Fig. 2; Ex. 1028 (Kimura), Fig. 24; Ex. 2018 ¶¶ 57–67.

In sum, Petitioner's showing for limitation 1[c] is deficient in multiple respects. First, Petitioner assumes that an ordinarily-skilled artisan would have been motivated to implement Mestas's curved battery in the much smaller interior space occupied by Schröder's inlay 12 without sufficiently considering the feasibility of that modification or alternative designs suggested by Schröder. Second, even if we accept Petitioner's purported rationale for the combination (which we do not because we find it that it is predicated on improper hindsight), Petitioner has not shown that an ordinarily-skilled artisan would have had a reasonable expectation of successfully implementing the proposed modification.

a) Objective Indicia

As explained above in Section II.D.1.a), Patent Owner has provided persuasive evidence of commercial success and demonstrated a nexus between this evidence and claim 1 of the '953 patent.

b) Conclusion as to Claim 1

As explained above in Section II.F.1, even before considering the objective indicia evidence, Petitioner's showing for claim 1 is deficient. Patent Owner's commercial success showing further evinces the non-obviousness of claim 1. Weighing that evidence in view of the totality of the record, we conclude that even if Petitioner's affirmative showing was not already deficient, there is likely sufficient objective indicia of non-obviousness to overcome that showing. Accordingly, Petitioner has not shown by a preponderance of the evidence that claim 1 would have been obvious over Schröder and Mestas.

2. Claim 38

Independent claim 38 recites a "curved battery" limitation similar to that in claim 1. *See* Ex. 1020, 1 (Petitioner mapping limitation 1[c] to limitation 38[c] in claim 38). Indeed, Petitioner argues that "Schröder-Mestas teaches Element 38[c] for the same reasons discussed" with respect to limitation 1[c]. Pet. 73. Accordingly, for the same reasons explained above in Section II.F.1 for limitation 1[c], Petitioner's showing for limitation 38[c] is deficient, and Petitioner has not shown obviousness of claim 38 over Schröder and Mestas.

3. Claims 2–6, 11, 14, 15, 39, and 41–43

Each of claims 2–6, 11, 14, 15, 39, and 41–43 depends, directly or indirectly, from either claim 1 or claim 38. Because Petitioner has not met its burden to show that the base claims would have been obvious over these

references, its showing for the dependent claims is likewise deficient. Accordingly, Petitioner has not shown by a preponderance of the evidence that 2–6, 11, 14, 15, 39, and 41–43 would have been obvious over Schröder and Mestas.

G. GROUND 4 – ALLEGED OBVIOUSNESS OVER SCHRÖDER, MESTAS, AND ASAMI

In asserting obviousness of claims 11–15 over Schröder, Mestas, and Asami, Petitioner contends that “[a] POSITA would have been motivated to combine Schröder-Mestas’s teachings with Asami’s teachings and would have had a reasonable expectation of success.” Pet. 75. According to Petitioner, it would have been obvious “to implement Asami’s more advanced gesture recognition capabilities in the Schröder-Mestas device.” *Id.* at 76. Petitioner’s Ground 4 arguments and evidence do not cure the above-discussed deficiencies in Petitioner’s assertions that claim 1 would have been obvious over Schröder and Mestas. Accordingly, Petitioner has not carried its burden for Ground 4.

H. GROUND 5 – ALLEGED OBVIOUSNESS OVER SCHRÖDER, MESTAS, AND WISSMAR

Building from Ground 3, Petitioner’s challenge of claims 40–43 over Schröder, Mestas, and Wissmar cites Wissmar as disclosing certain limitations of dependent claims 40–43. Pet. 79–82. For example, addressing claim 40’s recitation that “the potting comprises an epoxy,” Petitioner argues that it would have been obvious “to include Wissmar’s epoxy coating in the Schröder-Mestas device to improve the reliability of the device.” *Id.* at 80. Petitioner’s Ground 5 arguments and evidence do not cure the above-discussed deficiencies in Petitioner’s assertions that claim 1

would have been obvious over Schröder and Mestas. Accordingly, Petitioner has not carried its burden for Ground 5.

III. CONCLUSION

Petitioner has not shown by a preponderance of the evidence that claims 1–6, 11–15, 38–43 of the '953 patent are unpatentable:

Ground	Claims	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1	1–6, 11–14	103	Mestas, Asami		1–6, 11–14
2	1–6, 11, 14, 15, 38, 39, 41– 43	103	Mestas, Schröder		1–6, 11, 14, 15, 38, 39, 41–43
3	1–6, 11, 14, 15, 38, 39, 41– 43	103	Schröder, Mestas		1–6, 11, 14, 15, 38, 39, 41–43
4	11–15	103	Schröder, Mestas, Asami		11–15
5	40–43	103	Schröder, Mestas, Wissmar		40–43
Overall Outcome					1–6, 11–15, 38–43

IV. ORDER

It is:

ORDERED that claims 1–6, 11–15, and 38–43 of the '953 patent have not been shown to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2024-01078
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