

U.S. Patent No. 10,281,953
Reply Declaration of Brian W. Anthony, Ph.D.

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

Case No. IPR2024-01078
U.S. Patent No. 10,281,953

**REPLY DECLARATION OF BRIAN W. ANTHONY, PH.D.
IN SUPPORT OF PETITION FOR INTER PARTES REVIEW
OF U.S. PATENT NO. 10,281,953**

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LIST OF EXHIBITS¹

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Ex-1001	U.S. Patent No. 10,281,953 (“the ’953 Patent”)
Ex-1002	Declaration of Dr. Brian W. Anthony
Ex-1003	Curriculum Vitae of Dr. Brian W. Anthony
Ex-1004	Prosecution History of the ’953 Patent (Application No. 15/854,783)
Ex-1005	U.S. Patent Publication No. 20120016245 to Niwa (“Niwa”)
Ex-1006	U.S. Patent No. 8,954,135 to Yuen (“Yuen”)
Ex-1007	U.S. Patent No. 10,303,867 to Schröder (“Schröder”)
Ex-1008	Certified Translation of DE 102013012339.9 to Schröder
Ex-1009	Original DE 102013012339.9 to Schröder
Ex-1010	U.S. Patent Publication No. 2014/0244009 (“Mestas”)
Ex-1011	U.S. Provisional Patent App. No. 61/768,279 to Mestas
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Ex-1013	U.S. Patent Publication No. 20120218184 to Wissmar (“Wissmar”)
Ex-1014	U.S. Patent Publication No. 2010/0219989 to Asami (“Asami”)
Ex-1015	U.S. Patent Publication No. 2011/0080339 to Sun (“Sun”)
Ex-1016	U.S. Patent No. 9,218,058 to Bress (“Bress”)

¹ Four-digit pin citations that begin with 0 are to the page stamps added by Samsung in the bottom right corner of the exhibits. All other pin citations are to original page, column, paragraph, and/or line numbers.

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Ex-1017	U.S. Patent No. 8,031,172 to Kruse (“Kruse”)
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Ex-1020	Claim Mapping Table
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Ex-1362	U.S. Patent No. 11,868,178
Ex-1363	U.S. Patent No. 11,874,702
Ex-1364	U.S. Patent No. 10,139,859

I, Dr. Brian Anthony, declare:

I. INTRODUCTION

1. I am the same Dr. Brian W. Anthony who submitted a Declaration in this proceeding (Ex-1002). I submit this Reply Declaration on behalf of Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Samsung” or “Petitioner”), in response to portions of the Declaration of Mr. Patrick Mercier (Ex-2018) (“Mercier Decl.”) on behalf of Patent Owner Ouraring, Inc. (“Oura,” “Patent Owner,” or “PO”).

2. In preparation for this Reply Declaration, I have considered the materials discussed in my Declaration (Ex-1002) and this Reply Declaration, including, for example, U.S. Patent No. 10,281,953 (“the ’953 Patent”) (Ex-1001), the references cited by the ’953 Patent, the prosecution history of the ’953 Patent, various background articles and materials referenced in my Declaration (Ex-1002) and in this Reply Declaration, the prior art references identified in my Declaration (Ex-1002) and in this Reply Declaration, the Patent Owner’s Response (“POR”), the Declaration of Dr. Patrick Mercier (Ex-2018) including certain references cited therein, the transcripts of my depositions in this proceeding (Ex-2020, Ex-2021, Ex-2022), and the transcript of the Deposition of Dr. Patrick Mercier (Ex-1081, Ex-

1082, Ex-1085). In addition, my opinions are further based on my education, training, experience, and knowledge in the relevant field.

3. I am being compensated at my usual and customary rate of \$500 per hour. No part of my compensation depends on the outcome of this proceeding, and I have no other interest in this proceeding. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other financial interest in this proceeding.

4. I reiterate the Background and Qualifications, Relevant Legal Standards, Level of Ordinary Skill in the Art, and Technology Background sections of my Declaration (Ex-1002), as if fully set forth herein. Ex-1002 ¶¶4-33, 41-163.

5. For the following reasons, it remains my opinion that, for the '953 Patent: (1) Claims 1-6 and 11-14 are obvious over Mestas (Ex-1010) in view of Asami (Ex-1014); (2) Claims 1-6, 11, 14-15, 38-39, and 41-43 are obvious over Mestas in view of Schröder (Ex-1007); (3) Claims 1-6, 11, 14-15, 38-39, and 41-43 are obvious over Schröder in view of Mestas; (4) Claims 11-15 are obvious over Schröder in view of Mestas in further view of Asami; and (5) Claims 40-43 are obvious over Schröder in view of Mestas in further view of Wissmar (Ex-1013).

II. DR. MERCIER'S ARGUMENTS AGAINST GROUND 1 (MESTAS-ASAMI) FAIL

A. Independent Claim 1 Is Rendered Obvious Over Mestas in View of Asami

1. Asami Is Analogous Prior Art

6. Oura's expert Dr. Mercier incorrectly asserts that Asami is non-analogous art, claiming it is "neither in the same field of endeavor as the '953 Patent nor reasonably pertinent to the problem solved by the '953 Patent." Ex-2018 ¶142. However, as I previously explained, Asami concerns a finger ring with sensors for gesture recognition, placing it in the relevant field of wearable biometric sensing devices. Ex-1002 ¶179. Dr. Mercier's assertion that Asami does not "teach performing any type of physiological monitoring or otherwise managing the user's health" (Ex-2018 ¶144) takes a too narrow view of the relevant field, because the '953 Patent specification states: "In addition or *as an alternative to fitness monitoring . . . WCD 110 can function as a remote input device through, for example, gesture recognition.*" Ex-1001, 7:32-36. Further, Dr. Mercier himself conceded at deposition that "there is discussions of gesture recognition in the patent." Ex-1085, 17:15-19. Therefore, as I previously discussed, a POSITA would have found Asami and the '953 Patent in the same field of endeavor. See Ex-1002 ¶179. The plain language of Asami and the '953 Patent demonstrates that Dr. Mercier's assertion that Asami's "disclosure is not reasonably pertinent to the

problems Petitioner identifies as being solved by '953 Patent" is demonstrably incorrect. Ex-2018 ¶145. Similarly incorrect is his assertion that "there is no logical connection between the problems sought to be solved by Asami and those solved by the '953 Patent." *Id.* ¶146.

2. Dr. Mercier's "Motivation" Argument Against Mestas-Asami Is Incorrect

7. Dr. Mercier asserts that a POSITA would not have been motivated to combine Mestas and Asami, for various reasons. Ex-2018 ¶¶85-97. Dr. Mercier is wrong.

8. *Dr. Mercier's "different purposes" argument fails.* Dr. Mercier contends that Mestas and Asami serve distinct purposes, fitness monitoring vs. gesture input, respectively. Ex-2018 ¶89. This is incorrect. As Dr. Mercier later concedes, "gesture recognition is . . . mentioned in Mestas." *Id.* ¶93. Given that, as I previously explained, a POSITA would have been motivated to implement Asami's more advanced gesture recognition capabilities in Mestas's device in order to improve Mestas's gesture recognition capabilities. Ex-1002 ¶183.

9. Dr. Mercier contends that "Mestas, filed several years after Asami, already recognized and disclosed means for more advanced gesture recognition." Ex-2018 ¶93. First, Dr. Mercier's argument is undermined by his own contention that "gesture recognition is mentioned in passing in Mestas." *Id.* Second, Dr.

Mercier's assertion that Mestas was "filed several years after Asami" makes no difference, because both predated the '953 Patent's priority date, and the relevant inquiry has a POSITA analyze all the prior art available as of the priority date.

10. Dr. Mercier also incorrectly contends that "Mestas's gesture sensor is a 'shoe-based sensor.'" Ex-2018 ¶¶95 (citing Ex-1010 ¶149). While that is just one embodiment of Mestas, Mestas teaches many other embodiments, including detecting a broader array of gestures, e.g., "physical gestures (e.g., waving the user's wrist in a particular pattern)" and "touch gestures." Ex-1010 ¶221.

11. Because both Mestas and Asami address wearable biometric sensing and user interaction, as I previously explained, a POSITA would have been motivated to combine the relevant solutions from each of these references to achieve similar ends and benefits. *See* Ex-1002 ¶¶179-181.

12. ***Dr. Mercier's ring form factor arguments fail.*** Dr. Mercier asserts that implementing Mestas's device in a more compact form "is lifted directly from the '953 Patent" and that "Mestas and Asami provide no such teaching." Ex-2018 ¶¶91-92. I disagree. In his deposition Dr. Mercier admitted that Mestas teaches making wearable devices smaller and tighter to prevent slippage, and Asami discloses a small form factor finger ring device. Ex-1085, 54:22-55:4, 60:17-25, 77:3-6. *See also* Ex-1002 ¶¶181-182.

13. Further, both Mestas and Asami teach that the device can have different circumferential sizes, as PO and Dr. Mercier concede. Ex-1085, 60:17-25; Ex-2018 ¶95 (“Asami teaches that its device . . . ‘may be enlarged in size as an arm ring or armlet’”) (quoting Ex-1014 ¶92). This further shows that a POSITA would have been motivated to design the device with different form factors, including Asami’s finger-ring, including to prevent the device from slipping off.

14. Dr. Mercier also asserts that Mestas’s ribbing to reduce slippage teaches away from the claimed finger-ring. Ex-2018 ¶104. I disagree. On the contrary, as I previously explained, because Mestas discusses the problem of slippage, a POSITA would have been motivated to reduce device size – and slippage – further by using a finger ring. *See* Ex-1002 ¶¶181-182.

15. Moreover, Dr. Mercier admitted at his deposition that the inventor did not invent the ring form factor, curved batteries, or biometric sensors for rings, Ex-1081, 15:11-23, and that the patent “doesn’t describe how to miniaturize batteries and other things like that.” Ex-1085, 125:9-14. And he also admitted that miniaturization and integration of known components into a ring form factor would have been within a POSITA’s routine skill. *See* Ex-1081, 17:3-7; 18:17-19:9.

16. Dr. Mercier also asserts that Asami teaches away from the invention because it would have motivated a POSITA to wear both Asami’s finger-ring and

Mestas's wristband. Ex-2018 ¶¶96. Dr. Mercier's argument mischaracterizes the prior art. Asami teaches that in just one embodiment (the Third Embodiment), parts of the device may be electrically separated into a signal supply-side device and a measurement-side device. Ex-1014 ¶¶136, 137. Dr. Mercier's argument ignores the other embodiments in Asami where the device is not so separated, with the measurement part being on the same device as the signal part. *See, e.g., id.* Fig. 1A, 1B, 10A, 10B (First Embodiment and Second Embodiment).

17. As I previously explained, design incentives and market forces would have motivated a POSITA to combine Mestas with Asami, resulting in a finger ring form-factor device that is easier to wear, less obtrusive, and more likely to be used continuously—directly addressing design preferences articulated in both references. *See* Ex-1002 ¶¶181-182.

18. ***Dr. Mercier's no expectation of success arguments are incorrect.*** Dr. Mercier contends that miniaturization and integration would be non-trivial, and that a POSITA would not have had a reasonable expectation of success in adapting Mestas's components, "especially its curved battery system, to the severe size constraints of a functional finger ring." Ex-2018 ¶¶97. I disagree. In fact, in deposition Dr. Mercier acknowledged that electronic components were trending smaller, and thus a POSITA would have been motivated to use smaller curved

batteries. Ex-1081, 147:20-149:11 (“Q: “And would you agree that there was a general drive around 2013 towards making batteries smaller?” A: “Yes.”). He also admitted that making a curved battery out of a flat one was “within the skill set of a POSITA at the time.” Ex-1085, 131:9-17.

19. Dr. Mercier also cites the testimony of the ’953 Patent inventor at the ITC and contends that it “highlights the substantial real-world difficulties in 2013 associated with sourcing or developing curved batteries that were sufficiently small.” Ex-2018 ¶97. But as shown in that testimony, the inventor merely believed a curved battery was a less readily-available option:

Q. Why didn’t you consider curved batteries at this stage?

A. ***I don’t think we really knew of that as an option at that point in time.*** Secondly, I think we wanted to make something very simple... when we first started the company, we said it would take six months max. And it ended up being three years. So we were a little bit off there...

Q. Why didn’t you consider a curved battery ... at this point?

A. Yeah. So, mostly, we just didn’t know about it, and I think the other -- the other directions we were looking seemed more compelling. Being able to find something off-the-shelf was, you know, definitely the simplest path to getting something out the door.

Ex-2024, 182:13-183:7. That the inventor initially considered flat batteries due to time constraints and simplicity does not mean that curved batteries were unavailable, as Dr. Mercier first argued. In fact, Dr. Mercier agreed at deposition that curved batteries were available at the time of the ’953 Patent. *See* Ex-2020, 172:6-173:2;

Ex-1081, 148:24-149:16; *see also* Ex-1001 at 2 ('953 Patent claims priority to the same 2013 date as the '034, '178, '702, and '859 patents). For example, U.S. Patent Publication No. 20070059595 to Endo et al. ("Endo," Ex-1088) was published in March 2007 with international priority from November 2001. Endo, assigned to Sony Corporation, disclosed how there was a high demand for batteries which supply electric power to portable electronic devices, while decreasing the size and thickness of the battery. Ex-1088 ¶2. Endo discussed that, in order to make various electronic devices more compact, "it has been necessary to efficiently employ the inner spaces of the electronic devices, and it has been especially demanded to use the inner spaces having curved surfaces as spaces for accommodating the batteries serving as the power sources." *Id.* ¶6. Endo thus discloses a "battery in which a possibility of short-circuit is low in the end part . . . and battery characteristics are good even when the electrode has, for instance, a curved form or a semicircular curved surface so as to be adapted to the form of each of the inner spaces of various kinds of electronic devices." *Id.* ¶11. Endo provides an example curved battery 1, in Figure 5 (annotated in blue below).

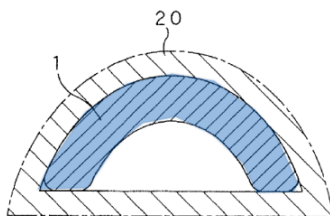


FIG.5

20. Another example is U.S. Patent No. 9,385,396 to Goh et al. (“Goh,” Ex-1089), which was filed December 5, 2014, and claims priority to another U.S. Patent filed March 10, 2009. Goh discloses a curved battery allowing for a “tight contact between the battery cell and the electronic device . . . thereby maximizing space utilization and thus providing high efficiency.” Ex-1089, 9:53-60. As shown in Figures 1 and 2 below, Goh describes using an upper and lower jig with a heater to curve the battery with a radius of curvature R . *Id.*, 7:49-8:30. “Consequently, the battery cell 102 has an average radius of curvature R . The radius of curvature R_2 of the middle part of the battery cell 102 is less than the average radius of curvature R , and the radius of curvature R_1 of each end of the battery cell 102 is greater than the average radius of curvature R .” *Id.*, 8:38-42.

FIG. 1

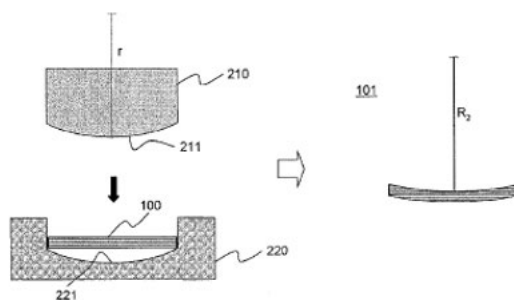
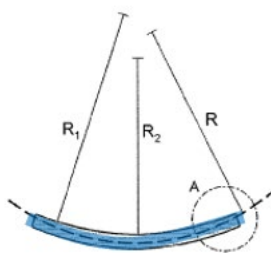


FIG. 2



21. Therefore, a POSITA would have understood and would have known how to implement Mestas's battery, scaled down to a finger ring form factor, in the Mestas-Asami finger ring device. As I previously explained, advances in miniaturization and flexible PCB technology were well-known and within the skill of a POSITA at the relevant time. *See* Ex-1002 ¶¶179-191. In particular, as of the priority date (2013), the relevant components were available in miniaturized forms. *See id.* In fact, Dr. Mercier admits that the '953 Patent *assumes* those miniaturized components exist, and the patent is just about packaging them. Ex-1085, 122:14-123:5, 125:9-14; Ex-2020, 172:6-173:2; Ex-2022, 138:7-142:22.

22. If Dr. Mercier contends that small, curved batteries did not exist prior to or at the time of the '953 Patent, this is contradicted by the evidence. For

example, major manufacturers such as Medtronic patented contoured lithium battery designs to optimize internal space utilization within curved pacemaker and defibrillator housings, demonstrating the practical feasibility of unconventional battery shapes. *See* Ex-1351, Ex-1352. Specifically, Medtronic patented a rechargeable lithium-ion battery featuring a shallow, curved titanium casing tailored explicitly for defibrillators and neurostimulators, allowing the battery to efficiently conform to the internal contours of implantable medical devices. *See, e.g.,* Ex-1353 (U.S. Patent No. 7,968,226); Ex-1354 (U.S. Patent No. 6,881,516). This contoured battery technology successfully achieved commercial implementation.

23. Dr. Mercier states that I “conceded” that Mestas’s components “would necessitate a scaling down by a factor of ‘5 to 10 times.’” Ex-2018 ¶97. But Dr. Mercier’s statement does not rebut obviousness, because, as noted above, the art and market had already achieved such scaling and miniaturization. Further, Dr. Mercier admitted in deposition that a POSITA “would consider shrinking functionality,” and only argues the extent of the scaling; yet Dr. Mercier provides no reasoning or support for his opinion that “[f]ive or 10X is not reasonable.” Ex-1085, 52:21-53:11.

24. Relatedly, a POSITA would have known how to contact vendors for the appropriately sized battery. *See also* Ex-1081, 17:24-18:16 (Dr. Mercier agreeing that the patents lack details on how to manufacture its battery from scratch).

Moreover, Dr. Mercier acknowledged that electronic components naturally trend smaller:

Q. And would you agree that around 2013 there was a general drive towards making electronic components smaller?

A. Yes.

Q. And would you agree that there was a general drive around 2013 towards making batteries smaller?

A. Yes. And to add a little bit to that, the semiconductor industry has benefited tremendously from Moore's law, which is a scaling law that suggests that the -- you know, the number of transistors you can fit on a chip doubles every roughly 18 months. It's a beautiful exponential law that increases computing and electronic capabilities massively every year, which, you know, is used to improve computing capabilities but can be also potentially used to miniaturize electronics. But, unfortunately, there's no kind of equivalent Moore's law for battery design that I'm aware of. And my understanding of batteries is that they scale extremely slowly over time.

Q. Okay. But you would agree that there was kind of a general pressure in the industry around 2013 to attempt to miniaturize batteries, correct?

...

A. I do.

Ex-1081, 147:20-148:16.

25. It is therefore my opinion that a POSITA would have been motivated to use smaller curved batteries in view of this trend at the time. A POSITA would have known to design a ring with a curved battery as disclosed in Mestas, scaled down to fit within the housing of a finger ring as disclosed in Asami, and would have expected success in doing so.

3. Element 1[pre]: “configured as a ring”

26. Dr. Mercier asserts that Mestas is limited to a wristband and “does not list fingers or other small body parts as suitable locations for its device.” Ex-2018 ¶101. He also argues again motivation to combine, by incorrectly contending that “Petitioner fails to explain what is meant by ‘implementing Mestas’s device with Asami’s finger ring.” *Id.* ¶56. However, Mestas-Asami discloses this limitation, as Asami is a finger-ring, and, as explained in detail in my original declaration and above, a POSITA would have been motivated to combine the two for several reasons. *See supra* §II.A.2. As I noted in the Motivation section above, PO’s and Dr. Mercier’s miniaturization objections are unsupported, because as of the priority date (2013) the relevant components were available in miniaturized form. *See supra* ¶21. Contemporaneous work by Asada, Rhee, and others demonstrated the feasibility of miniaturized ring-based sensors, and commercial products launched shortly thereafter (e.g., the NFC Ring in 2013) further confirm that a POSITA would have recognized both the motivation and the ability to adapt Mestas’s teachings into a finger ring format.

4. Elements 1[a]/1[b]: Interior & Exterior Enclosure Portion/Structure

27. Dr. Mercier incorrectly contends that Mestas’s “encasement member” is a single housing and does not teach separate interior and exterior portions.

Ex-2018 ¶¶111. I disagree. Mestas teaches inner and outer molded portions serving the same functional separation as claimed. Ex-1010 ¶¶151-158. Dr. Mercier also incorrectly asserts that injection molding means Mestas does not teach interior and exterior structures “coupled together.” Ex-2018 ¶¶111. Dr. Mercier’s contention is an incorrect and improper claim construction argument.

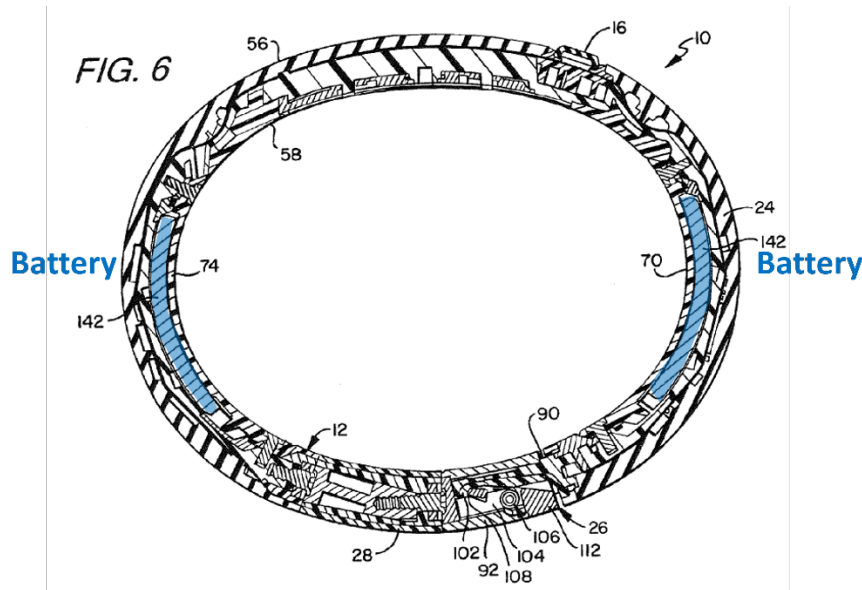
28. In its Response, PO agreed with Petitioner that “no terms need to be construed.” POR, 22. Yet in his declaration, Dr. Mercier argues that the “claimed ‘coupling’ implies an assembly of at least two separate structural pieces,” which is an improper claim construction argument that is unsupported by the intrinsic record.

29. In fact, in his deposition, Dr. Mercier admitted that the claim does not require the “interior enclosure portion” and “exterior enclosure structure” be separate structural pieces later brought together. *See* Ex-1085, 105:24-106:11. While Dr. Mercier pointed to one embodiment in the specification (*id.*, 98:2-6), I understand from counsel that under the law it is not proper to read a limitation from the specification into the claims.

5. Element 1[c]: Curved Battery Proximate Exterior Enclosure

30. Dr. Mercier does not dispute that Mestas discloses this claim limitation, in particular that, as I explained in my original declaration, Mestas’s curved battery

is proximate to the exterior enclosure. *See* Ex-2018 ¶¶115-117; Ex-1002 ¶¶203-205; Ex-1010, Fig. 6 (reproduced below).



31. Dr. Mercier only contends that Mestas’s battery is too large and “incompatible with a compact finger ring,” and that “Asami does not disclose any battery.” Ex-2018 ¶117. His Mestas contention does not address this actual claim limitation, but again argues the finger ring claim limitation. Dr. Mercier’s assertion is also incorrect because a POSITA would not attempt to bodily incorporate Mestas’s batteries at their size in Mestas. Predictable scaling-down is routine engineering, not undue experimentation; as I explained in the Motivation section and as Dr. Mercier acknowledged, miniaturization market forces would have driven a POSITA to scale down the components, including the batteries; Dr. Mercier also admitted that the patent is not about miniaturization. Ex-1085, 122:14-123:5, 125:9-14; *supra*

¶21. Under my understanding of the legal standard for obviousness, a POSITA can and would consider the references' collective teachings while employing ordinary creativity.

6. Element 1[d]: Flexible PCB Proximate the Curved Battery

32. Dr. Mercier also does not dispute that Mestas discloses this limitation; rather, he only reiterates the miniaturization argument, stating that the scale, layout, and interrelation of Mestas's PCB and batteries are dictated by the larger wristband form factor. Ex-2018 ¶124. Dr. Mercier's assertion is not relevant to this limitation; as I also explained in my original declaration, Mestas teaches a flexible PCB proximate to the curved battery, as required by the claim; the packaging would be simply scaled down to a smaller ring form factor, maintaining the layout. *See* Ex-1002 ¶¶210-213; Ex-1010, Figs. 6, 14-15; *supra* ¶21.

33. Again recycling his miniaturization argument, Dr. Mercier also argues that "[t]he fundamental structure of Asami's ring does not provide the necessary internal space or support for Mestas's PCB-battery assembly." Ex-2018 ¶126. This argument, rebutted above, incorrectly assumes that a POSITA would attempt to bodily incorporate Mestas's battery and PCB at their current sizes into Asami's ring. But that is not correct in my opinion. Rather, a POSITA would have implemented

Mestas's components scaled down and adjusted to the finger ring form factor. *See supra* ¶21.

34. Additionally, Dr. Mercier's assertion that Asami lacks a battery or PCB is incorrect and irrelevant. Ex-2018 ¶125. First, Dr. Mercier admitted in deposition that "there has to be" a power supply in Asami, which could be implemented through a battery. Ex-1085, 72:9-14. More importantly, Dr. Mercier acknowledges that Ground 1 of the Petition relies on Mestas for the electronic components, while Asami supplies the finger-ring form factor. *See* Ex-2018 ¶122. Because the Mestas-Asami combination supplies all the required elements of the claim limitation, Dr. Mercier's argument fails. *See* Ex-1002 ¶¶210-216.

7. Element 1[e]: EM induction or RF charging mechanism, microprocessor, sensor module, LED, and transceiver

35. Dr. Mercier repeats his anti-miniaturization argument, conceding that Mestas discloses all of these components but contending that their "size, power requirements, and integration are specific to that larger form factor." Ex-2018 ¶131. I have rebutted this argument, which does not address the actual claim limitation, above. *See supra* §II.A.2.

36. Dr. Mercier also contends that Asami does not disclose many of these components. Ex-2018 ¶132. However, Ground 1 relies on Mestas for electronic components and Asami for the finger-ring form factor. *See* Pet. §XIII.A. Because

the Mestas-Asami combination meets all claim requirements, PO's and Dr. Mercier's arguments fail.

8. Element 1[f]: Transparent Window

37. Dr. Mercier concedes in his declaration and deposition that Mestas discloses "illumination regions" facilitating "electromagnetic transmission", meeting the claim requirement. Ex-2018 ¶138; Ex-1085, 72:9-14. Yet Dr. Mercier still contends that Mestas-Asami does not disclose this limitation, based again on recycling his miniaturization argument—rebutted above—rather than an analysis of the actual claim limitation. *See* Ex-2018 ¶138 (Mestas "is specific to a wristband display and does not teach how to incorporate windows into the claimed coupled interior/exterior enclosure portions of a finger ring.").

38. Dr. Mercier further contends that Asami does not disclose this limitation (Ex-2018 ¶139), but again Ground 1 of the Petition relies on Mestas for the electronic component limitations and Asami for the form factor. *See id.* ¶136. As I previously explained, the combination discloses all required elements and Dr. Mercier's contention to the contrary fails. *See also* Ex-1002 ¶¶224-226.

B. Dependent Claims 2-6 and 11-14 Are Rendered Obvious Over Mestas-Asami

39. For Claim 2 (processor/transceiver), Dr. Mercier does not contest that Mestas discloses the recited elements, but repeats that Mestas is not a ring and

criticizes the transceiver for not being intended for “transmitting/receiving data packets *based on fine-grained physiological* sensor data.” Ex-2018 ¶¶151-152. But Dr. Mercier’s contention improperly adds a non-existent limitation—“fine-grained physiological”—to the claim language, and therefore fails.

40. Similarly, Dr. Mercier contends that Asami “does not teach a transceiver performing two-way data packet communication activated by a processor based on a *broad range of physiological* sensor data within a *health monitoring* ring as claimed.” Ex-2018 ¶153. But the claim merely recites “at least one transceiver to transmit a first data packet and/or receive a second data packet based in part on the sensor data.” Ex-1001, Cl. 2. Nowhere does it require that the “sensor data” be “physiological,” nor does it require that the ring be “a health monitoring ring.” *Id.* Dr. Mercier belated and improper claim construction argument fails.

41. For Claim 5 (capacitive sensor), Dr. Mercier does not dispute that Mestas discloses capacitive sensing for user interaction, but instead again argues the ring form factor, a different limitation which I addressed and rebutted above. Ex-2018 ¶¶158-159; *see supra* §II.A.3.

42. Dr. Mercier does not discuss Claims 3-4, 6, and 11-14 separately, relying solely on his position that Mestas-Asami does not teach or suggest

independent claim 1, from which they depend. Ex-2018 ¶161. I have rebutted Dr. Mercier's position above. *See supra* §II.A.

III. DR. MERCIER'S ARGUMENTS AGAINST GROUND 2 (MESTAS-SCHRÖDER) FAIL

A. Motivation to Combine

43. Dr. Mercier contends that a POSITA would not have been motivated to combine Mestas and Schröder. Ex-2018 ¶¶163-169. I disagree. Both references concern wearable biometric sensing devices. *See* Ex-1002 ¶271. And, as I explained before, given their similar structural components, a POSITA would be motivated to combine Mestas and Schröder to achieve a compact, multifunctional ring device. *Id.* ¶¶271-283.

44. Dr. Mercier contends that "Schröder's focus is security and discrete event interaction, not continuous physiological health monitoring." Ex-2018 ¶164. But Dr. Mercier again applies an unduly narrow test. The '953 Patent, while including embodiments for a wearable computing device (WCD) sensing physiological parameters, also describes a device sensor generating and reading a "capillary map in order to identify [the user] as the authorized user of the WCD," similar to the focus of Schröder. *See* Ex-1001, 23:22-24; Ex-1007, 9:62-10:9. As I also explained in my original declaration, a POSITA would have considered both Mestas and Schröder to be within the same field as the '953 Patent. Ex-1002 ¶271.

45. Dr. Mercier relies on one of Schröder's embodiments, the one exemplified in Figure 3, to argue that Schröder's "externally accessible, replaceable chip module" teaches away from integrating all components in a compact ring. Ex-2018 ¶165. I disagree. The Petition does not rely on the embodiment in Figure 3, but on the different embodiment illustrated in Figure 8. I note that Dr. Mercier conceded that Figures 4, 7, 8 illustrate different embodiments than Figure 3, without the external chip module. *See* Ex-1081, 77:12-18, 82:4-13, 124:3-7, 145:24-146:2.

46. Dr. Mercier also asserts that "Mestas's battery and PCB would require non-trivial scaling." Ex-2018 ¶166. But again, Dr. Mercier acknowledged that electronic components were trending smaller at the time of the claimed invention, giving a POSITA motivation to make curved batteries smaller. Ex-1081, 147:20-149:11 ("Q: "And would you agree that there was a general drive around 2013 towards making batteries smaller?" A: "Yes.>"). And, as I also noted above, at the time advances in miniaturization and flexible PCB technology were well-known and within a POSITA's skill set. *See supra* ¶21. As of the 2013 priority date, the relevant components were available in miniaturized forms. Ex-2020, 172:6-173:2; Ex-2022, 138:7-142:22; *supra* ¶21.

47. Dr. Mercier also contends that the power requirements of Mestas's "continuous monitoring system" are vastly different from Schröder's event-driven

security functions (Ex-2018 ¶167), but this does not defeat a POSITA's motivation to combine, given the state and trends in miniaturization at the time. I made a similar point during my deposition. *See* Ex-2022, 138:7-143:1 (discussing the availability and scalability of curved batteries for use in a ring). The combination does not involve bodily incorporating Mestas's battery into Schröder's ring. *See* Ex-2021, 307:7-17 (Q: "Whether we're talking about using one or both of Mestas's batteries, the battery disclosed in Mestas's bracelet is too big to put in a ring like Schröder, correct?" A: ". . . what's taught is the benefit of a curved battery. And *I'm not proposing wholesale, just copying and paste that battery into a device of the size of a ring*, but a POSITA would curve the battery to beneficially use the space and size the -- use an appropriate energy density as well as for the power requirements for."). Mestas teaches having curved batteries in a wearable device. It is that teaching that a POSITA would have considered implementing into Schröder. As I explained in my declaration, a battery having a curved shape like the "curved battery" of Mestas would have been obvious, to maximize the available space within the device and avoid increasing the ring's thickness or stressing the battery or housing. *See* Ex-1002 ¶¶205, 337. While Dr. Mercier argues that a POSITA would not be motivated to implement Mestas's battery due to allegedly different power requirements (Ex-2018 ¶167), a motivation exists because Mestas's teachings offer

better use of Schröder's housing, (Ex-2021, 307:3-17, 310:9-19), and teaches increased battery strength (*id.*, 327:6-15).

B. Claims 1 and 38 Are Rendered Obvious by Mestas in View of Schröder

1. Preamble: “configured as a ring”

48. Dr. Mercier contends that Mestas is limited to a wristband “or other large body part athletic device.” Ex-2018 ¶173. However, this limitation is met by combining Mestas-Schröder, as Schröder is a finger-ring.

49. Dr. Mercier also contends that Schröder does not teach a “wearable computing device with the comprehensive physiological monitoring capabilities and integrated componentry of the '953 Patent.” Ex-2018 ¶173. This argument fails, as explained above, because the '953 Patent discloses application of a WCD to a capillary map. *See supra* ¶44. Dr. Mercier attempts to take a narrow view of the claim, but his opinion improperly imposes additional requirements—“comprehensive physiological monitoring”—that are not part of the claim language. *See* Ex-1001, Cls. 1, 38.

2. Elements 1[a]/1[b]/38[a]/38[f]: Interior & Exterior Enclosure Portion/Structure

50. For these elements, Dr. Mercier repeats his improper claim construction argument that Mestas's “single, unitary structure created through a multi-step

molding process” purportedly does not disclose this limitation. Ex-2018 ¶180. As I explained above, this argument fails. *See supra* ¶27.

51. For element 38[f], Dr. Mercier contends that “Schröder does not explicitly state that its interior ring half (component 16) is transparent.” Ex-2018 ¶184. This argument also fails, because, as I previously noted, Schröder teaches that either half of its ring can be PET, which is typically transparent—a transparent polymer resin. Ex-1002 ¶317; Ex-1007, 9:65-10-9; 15:10-11, 15:14-15. A POSITA would have had good reason to pursue both options, given Schröder’s teaching that either half is transparent.

52. Moreover, as I also previously noted, a POSITA would recognize transparency is necessary for vein mapping. *See* Ex-1002 ¶318; Ex-2022, 134:10-11. Dr. Mercier himself conceded in deposition that a transparent surface is required on the internal side of the ring for vein mapping. Ex-1082, 196:17-8 (“I’ll concede that it would be pointless to say that you would use infrared diodes and sensors to image something if you can’t get the light into the thing you’re trying to image.”), 197:9-199:21 (“I think it’s fair to say a POSITA would understand there would need to be [transparency on the internal surface].”).

53. And in combination with Schröder’s explicit teaching of “transparent regions, e.g., windows,” a POSITA would indeed have understood that in order for

Schröder's IR diode to image the user's vein pattern, there must be a transparent region, such as the transparent regions already taught in Schröder, on the internal enclosure portion, to allow the IR light to be emitted, touch the user's tissue, and be sensed by the IR receiver.

54. Dr. Mercier further contends that Schröder's ring halves do not "retain[] one or more electronic components." Ex-2018 ¶183. This is incorrect. In deposition Dr. Mercier agreed that "inlay 12, with chip module 10 and various other components on it, is inserted into a recess between ring halves 16 and 18." Ex-1081, 82:10-13, 101:12-16.

55. Schröder does not need to explicitly disclose the details of how its components would fit into its finger ring. Instead, it is well within a level of skill to understand that in view of Schröder's teachings a finger ring would include these components inside the ring. As I described in my original declaration, including components inside of a ring-form factor was well known. *See, e.g.*, Ex-1002 ¶¶69-95 (explaining the various ways to assemble electronic parts within structural cavities were known). For example, Wissmar (Ex-1013) teaches electronic components "located in a cavity within the electronic finger ring." Ex-1013 ¶28. Wissmar's "toroidal shaped finger ring structure 1 is comprised of different electronic components: a battery 2, a RF transceiver 3 and a micro processor 4, a

microstrip line 5, an accelerometer 6, an internal antenna 7, a pressure sensor 8; all mounted on a flexible printed circuit board 9.” *Id.* ¶73.

3. Elements 1[c]/38[c]: Curved Battery, Wirelessly Charged, Proximate to Exterior Enclosure/Proximate the PCB

56. Dr. Mercier asserts that “Mestas’s curved batteries are for a wristband and are dimensionally unsuitable for Schröder’s slim finger-ring.” Ex-2018 ¶190. This assertion again addresses the finger-ring form factor, but Dr. Mercier’s repeat of his downscaling argument is not germane to this claim limitation and has been rebutted above. *See supra* §III.A. Further, as I discussed at Ground 1 for Claim 1[c], Mestas’s curved battery is disposed proximate to the exterior enclosure. *See supra* §II.A.5.

57. Dr. Mercier also contends that Schröder has “no clear teaching of a curved battery proximate” the PCB, Ex-2018 ¶191, but this argument ignores that the combination relies on Mestas for this element.

4. Elements 1[d]/38[b]: Flexible/Curved PCB Proximate the Curved Battery/Proximate the Exterior Enclosure

58. Dr. Mercier concedes that Mestas discloses limitation 1[d] through its “flexible circuit member.” *See* Ex-2018 ¶197. And, as I previously explained, Mestas’s curved battery is proximate to the flexible curved PCB. *See* Ex-1002 ¶¶210-213; Ex-1010, Figs. 6, 14-15; *supra* §II.A.6.

59. Dr. Mercier attempts to distinguish between a “flexible PCB” in claim 1 and a “curved PCB” in claim 38, by arguing without support that “[a] POSITA would understand that a PCB that is simply flexible and bent into a curve by an external frame is not necessarily a ‘curved printed circuit board’ as claimed.” Ex-2018 ¶¶198-199. Dr. Mercier attempts to impose a narrow construction of the “curved printed circuit board” in the claim language that is neither proper at this stage – because it was not disclosed by PO – nor supported by the specification of the ’953 Patent. Dr. Mercier cites no support in the specification for his narrow construction and, in fact, Dr. Mercier later admitted in deposition that a POSITA *was* capable of designing a curved PCB to fit inside a ring. Ex-1085, 130:16-23.

5. Elements 1[e]/38[d]/38[e]: Plurality of Components, Including a Sensor Module and LED

60. Dr. Mercier does not dispute that Mestas discloses claim limitation 1[e], but only argues, again, that “Mestas’s components are for a wristband.” Ex-2018 ¶¶204-207. I rebutted Dr. Mercier’s assertions regarding the ring form factor above. *See supra* §III.B.1 .

61. Dr. Mercier’s assertions regarding claim limitations 38[d] and 38[e] similarly do not dispute the presence of those limitations in Mestas – just that they are “for a wristband.” Ex-2018 ¶¶204-207. In particular, Dr. Mercier admits that “Mestas has a sensor assembly” and “physiological sensors (heart rate, temp, etc.”

and “Mestas has display LEDs,” as required by limitations 38[d] and 38[e]. *Id.*

¶¶206. As I noted before, a POSITA would understand Mestas’s sensors are capable of “sensing a condition of the user.” Ex-1002 ¶325. Dr. Mercier also contends that neither Mestas nor Schröder “teaches an LED for user feedback or integrated physiological sensing (like photoplethysmography sensors).” Ex-2018 ¶206. But that is not a limitation of the claim, which only requires “a light emitting diode.” Ex-1001, Cl. 38.

6. Elements 1[f]/38[f]: Transparent Window/Interior Enclosure Portion

62. Dr. Mercier does not dispute that Mestas discloses claim limitation 1[f], but only argues that “Mestas’s windows are for a wristband.” Ex-2018 ¶¶212-213. I rebutted Dr. Mercier’s assertions regarding the ring form factor above. *See supra* §III.B.1.

63. Dr. Mercier further contends that neither Mestas nor Schröder discloses limitation 38[f], claiming that I “fail[] to explain how the disclosure of transparent potting would disclose a transparent interior enclosure portion.” Ex-2018 ¶214. This is incorrect. As I previously explained, Mestas teaches an interior enclosure portion. Ex-1002 ¶¶198-199. And Schröder teaches that the interior enclosure portion can be made of PET, a transparent polymer resin. Ex-1007, 15:14-15; Ex-1002 ¶¶317-318; *see also supra* ¶51.

C. Dependent Claims 2-6, 11, 14-15, 39, and 41-43 Are Rendered Obvious Over Mestas in View of Schröder

64. Dr. Mercier's declaration does not include any substantive arguments regarding these claims, except to contend, in one sentence, that they are not disclosed because I "ha[ve] not shown the Mestas-Asami [sic] renders Claim 1 and 38 obvious." Ex-2018 ¶216. Dr. Mercier's arguments fail for the reasons I discussed above at independent Claims 1 and 38. *See supra* §III.B.

D. Dr. Mercier's Lack of Enablement Argument Fails

65. Dr. Mercier asserts that Mestas in view of Schröder would not have enabled a POSITA to achieve the claimed invention, citing "technical hurdles" related to the "extreme miniaturization required" and "numerous significant technical gaps related to miniaturization, power management, mechanical and electrical integration, and functional implementation." Ex-2018 ¶¶218, 220. This is incorrect and simply another version of Dr. Mercier's motivation to combine and expectation of success arguments, which I addressed in detail above. *See supra* §III.A. Further, I note that Dr. Mercier admitted at deposition that "the analysis to determine power requirements, volume, availability of space, et cetera, those were all routine design considerations that an engineer would do to implement a system." Ex-1085, 92:22-93:4.

66. I understand from counsel that a combination would not have been obvious if a POSITA would have had to undergone “undue experimentation” to reach the claimed subject matter. That is not the case here. A POSITA would not have had to perform undue experimentation to make simple modifications to Schröder’s ring. Dr. Mercier attempts to overcomplicate the proposed combination or requiring the references to do more than what a POSITA would have been capable of doing. At the time of the ’953 Patent, wearable electronics already were designed and available for purchase. A POSITA would have known how to design a wearable electronic device with components small enough to fit within the device. *See supra* §III.A. Thus, a POSITA would have known how to “reduce the physical size of Mestas’s entire system,” notwithstanding Dr. Mercier’s assertion to the contrary. Ex-2018 ¶219. Further, Dr. Mercier admitted in deposition that the ’953 Patent is not about miniaturization, but simply about packaging, and assumes that the correctly-scaled components are available. *See supra* ¶21.

67. Dr. Mercier again incorrectly focuses on the Figure 3 embodiment of Schröder, where “its main electronics [are] housed in an external, replaceable chip module.” Ex-2018 ¶218. PO’s argument fails because, as I previously explained, the Petition does not rely on the Figure 3 embodiment, but on Figure 8, an embodiment where the electronics are housed inside the ring. *See supra* ¶45. I also

understand from counsel that under the law a reference is presumed enabled, and Dr. Mercier has not rebutted that presumption.

IV. DR. MERCIER'S ARGUMENTS AGAINST GROUND 3 (SCHRÖDER-MESTAS) FAIL

A. Motivation To Combine

68. Dr. Mercier contends there is no motivation to combine Schröder with Mestas, repeating arguments from Ground 2 (Mestas-Schröder). Ex-2018 ¶¶222-243. Dr. Mercier's assertion is incorrect for the reasons previously discussed and the additional reasons presented below.

69. For example, Dr. Mercier again relies on Figure 3 to argue that Schröder's "external, replaceable chip module" teaches away from integrating all components in a compact ring. Ex-2018 ¶227. I as repeatedly discussed above, the Petition relies on a different embodiment in Schröder (e.g., Figure 8), where all components are integrated inside the ring. *See supra* ¶45.

70. Dr. Mercier repeats his argument that Schröder and Mestas are directed to "disparate functions" (Ex-2018 ¶229), but Dr. Mercier applies an unduly narrow test. The '953 Patent describes that the sensor can generate and read a "capillary map to identify [the user] as the authorized user of the WCD," a focus similar to Schröder. Ex-1001, 23:22-24; Ex-1007, 9:62-10:9. That "Mestas's system would

have to be scaled down ‘5 to 10’ times” (Ex-2018 ¶231) is not an impediment to POSITA’s implementing Mestas’s teachings to Schröder.

71. As I explained above, a POSITA would have known how to adapt a curved battery into Schröder’s ring form factor. A battery having a curved shape like the “curved battery” of Mestas would have been obvious to try to avoid increasing the ring’s thickness or straining the battery or housing. To clarify, my opinion was not based on bodily incorporation of Mestas’s battery into Schröder’s ring. *See* Ex-2021, 307:7-17. Rather, implementing a curved battery would have come up in design considerations for the ring. *See* Ex-2020 (Anthony Tr.) at 172:1-5 (“*There’s design flexibility in how you would locate any component to accomplish the design trade-offs with the amount of battery capacity needed relative to the other components that also need to be assembled on the inlay.*”). As I explained at my deposition, “a battery could exist in part of the cavity going partially circumferentially around and following the cavity, following the structure. It could exist as a narrow band all the way around.” *See* Ex-2020 (Anthony Tr.) at 171:19-172:1. Therefore, a POSITA would be motivated to implement Mestas’s teaching of a curved battery, appropriately sized, into Schröder to avoid increasing the ring’s thickness or stressing the battery or housing. *See also* Ex-1002 ¶337.

72. If Dr. Mercier contends that small, curved batteries did not exist prior to or at the time of the '953 Patent, that contention again is contradicted by the evidence. For example, major manufacturers such as Medtronic patented contoured lithium battery designs to optimize internal space utilization within curved pacemaker and defibrillator housings, demonstrating the practical feasibility of unconventional battery shapes. *See also* Ex-1351, Ex-1352. Specifically, Medtronic patented a rechargeable lithium-ion battery featuring a shallow, curved titanium casing tailored explicitly for defibrillators and neurostimulators, allowing the battery to efficiently conform to the internal contours of implantable medical devices. *See, e.g.,* Ex-1353 (U.S. Patent No. 7,968,226); Ex-1354 (U.S. Patent No. 6,881,516). This contoured battery technology successfully achieved commercial implementation.

73. Dr. Mercier based his conclusion that a curved battery to fit inside a ring form factor didn't exist on the '953 Patent's inventor's ITC testimony. Ex-2018 ¶¶235-237. But Dr. Mercier mischaracterizes that testimony. Indeed, the inventor merely believed a curved battery a less readily-available option:

Q. Why didn't you consider curved batteries at this stage?

A. ***I don't think we really knew of that as an option at that point in time.*** Secondly, I think we wanted to make something very simple... when we first started the company, we said it would take six months max. And it ended up being three years. So we were a little bit off there...

Q. Why didn't you consider a curved battery ... at this point?

A. Yeah. So, mostly, we just didn't know about it, and I think the other -- the other directions we were looking seemed more compelling. Being able to find something off-the-shelf was, you know, definitely the simplest path to getting something out the door.

Ex-2024, 182:13-183:7. That the inventor initially considered flat batteries due to time constraints and simplicity does not mean that curved batteries were unavailable, as Dr. Mercier first argued.

74. Again, Dr. Mercier in fact agreed in deposition that the '953 Patent assumes the availability of appropriately sized batteries. Ex-1085, 125:9-14 ("the '953 patent doesn't describe how to miniaturize batteries."); Ex-1081, 411:18-413:19, 490:14-22, 523:15-17, 526:9-10. A POSITA would know, as a matter of choice, how to select battery specifications to fit inside Schröder's ring and how to source such a battery. Ex-2021, 315:9-316:19-21, 454:2-455:11. As Dr. Mercier agrees, there are teachings on how to configure Schröder's components. Ex-2020, 212:6-214:13; Ex-1081, 130:18-131:14.

75. As I explained above, curved batteries were available at the time. For example, U.S. Patent Publication No. 20070059595 to Endo et al. ("Endo," Ex-1088) was published in March 2007 with international priority from November 2001. Endo, assigned to Sony Corporation, disclosed how there was a high demand for batteries which supply electric power to portable electronic devices while

decreasing, the size, thickness of the battery. Ex-1088 ¶2. Endo discussed that, in order to make various electronic devices more compact, “it has been necessary to efficiently employ the inner spaces of the electronic devices, and it has been especially demanded to use the inner spaces having curved surfaces as spaces for accommodating the batteries serving as the power sources.” *Id.* ¶6. Endo thus discloses a “battery in which a possibility of short-circuit is low in the end part . . . and battery characteristics are good even when the electrode has, for instance, a curved form or a semicircular curved surface so as to be adapted to the form of each of the inner spaces of various kinds of electronic devices.” *Id.* ¶11. Endo provides an example curved battery 1, in Figure 5 (annotated in blue below).

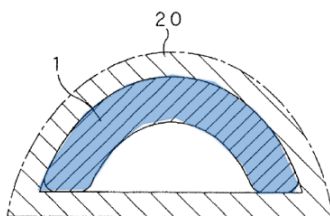


FIG.5

76. Another example is U.S. Patent No. 9,385,396 to Goh et al. (“Goh,” Ex-1089), which was filed December 5, 2014, and claims priority to another U.S. Patent filed March 10, 2009. Goh discloses a curved battery allowing for a “tight contact between the battery cell and the electronic device . . . thereby maximizing space utilization and thus providing high efficiency.” Ex-1089, 9:53-60. As shown

in Figures 1 and 2 below, Goh describes using an upper jig with a heater to curve the battery with a radius of curvature R . *Id.*, 7:49-8:30. “Consequently, the battery cell 102 has an average radius of curvature R . The radius of curvature R_2 of the middle part of the battery cell 102 is less than the average radius of curvature R , and the radius of curvature R_1 of each end of the battery cell 102 is greater than the average radius of curvature R .” *Id.*, 8:38-42.

FIG. 1

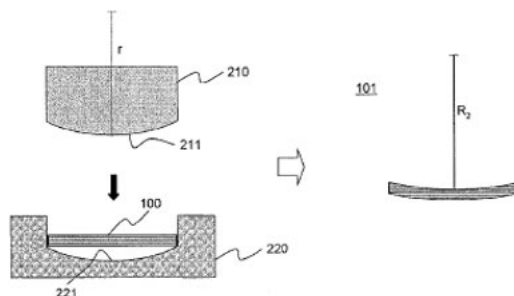
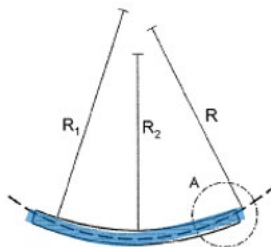


FIG. 2



77. Dr. Mercier also argues that I neglected to address the fact that flexible or curved batteries include flexible packaging materials, and that there “no evidence in the record that such miniaturized batteries with the required power requirements existed.” Ex-2018 ¶240. Dr. Mercier is wrong. For example, major manufacturers,

such as Medtronic, patented contoured lithium battery designs to optimize internal space utilization within curved pacemaker and defibrillator housings, demonstrating the practical feasibility of unconventional battery shapes. *See also* Ex-1351, Ex-1352. Specifically, Medtronic patented a rechargeable lithium-ion battery featuring a shallow, curved titanium casing tailored explicitly for defibrillators and neurostimulators, allowing the battery to efficiently conform to the internal contours of implantable medical devices. *See, e.g.,* Ex-1353 (U.S. Patent No. 7,968,226); Ex-1354 (U.S. Patent No. 6,881,516). This contoured battery technology successfully achieved commercial implementation. Moreover, the inventor's testimony that he eventually had a flat battery made and just bent it, shows also how it is possible to make a curved battery out of a flat one. Ex-2018 ¶237. And Dr. Mercier admitted that making a curved battery out of a flat one was "within the skill set of a POSITA at the time." Ex-1085, 131:8-17.

78. Dr. Mercier also asserts that a POSITA would have used a coin-sized rather than a curved battery. Ex-2018 ¶241. But as I explained at my deposition, such design work was unnecessary since vendors sold appropriate, curved batteries at the time. Ex-2021, 315:9-316:19-21, 454:2-455:11. I further note that Dr. Mercier agreed with me and admitted that making a curved battery out of a flat one was "within the skill set of a POSITA at the time." Ex-1085, 131:8-17; *see also* Ex-

2020, 172:6-173:2; Ex-1081, 148:24-149:1. Thus, as I previously explained, a POSITA would be motivated to use a right-sized curved battery for optimal results. Ex-1002 ¶337.

79. Finally, Dr. Mercier’s contention that there would be no motivation to combine Mestas with Schröder because of the different power requirements of Mestas’s and Schröder’s systems (Ex-2018 ¶239) is incorrect, as I explained above. *See supra* ¶47.

B. Claims 1 and 38 Are Rendered Obvious Over Schröder in View of Mestas

1. Preamble: “configured as a ring”

80. Dr. Mercier acknowledges that “Schröder is a ‘finger-ring,’” but surprisingly asserts without support that it is “not *primarily* a ‘wearable computing device’ as claimed.” Ex-2018 ¶247. I disagree. There is no “primarily” language in the claims. Schröder’s finger-ring includes a processor and a POSITA would regard it as a “wearable computing device.” *See, e.g.*, Ex-1007, Abstract.

81. Dr. Mercier also argues again that “[t]ransforming Schröder’s security ring into the comprehensive physiological monitor of the ’953 Patent by adding Mestas’s features is not obvious.” Ex-2018 ¶247. This merely repeats Dr. Mercier’s motivation to combine argument, which I rebutted above. *See supra* §IV.A.

2. Elements 1[a]/1[b]/38[a]/38[f]: Interior & Exterior Housing Components/Enclosure Portions

82. Dr. Mercier concedes that “Schröder’s ring halves 16 and 18 [] could form a housing around inlay 12.” Ex-2018 ¶252. Yet Dr. Mercier argues that the ring halves do not retain electronic components because “Schröder’s main electronics (chip module 10) are typically external,” citing again Figure 3. *Id.* ¶¶252-253. As I repeatedly noted above, the Petition relies on the different embodiment in Figure 8, where the electronics are inside the ring. *See supra* ¶45. I also note that Dr. Mercier conceded in deposition that Figures 4, 7, and 8 show different embodiments than Figure 3, without the external chip module. *See* Ex-1081, 77:12-18, 82:4-13, 124:3-7, 145:24-146:2. Dr. Mercier’s contention that “Schröder’s IR sensor is in the external chip module” is similarly flawed. Ex-2018 ¶254.

83. Regarding element 38[f], as I previously noted, Schröder explicitly teaches capturing a vein image using an IR sensor that touches the user’s skin, and Dr. Mercier agrees that this requires the housing must have a transparent window on the internal surface facing the skin. *See* Ex-1002 ¶318; Ex-2022, 134:10-11; Ex-1082, 197:9-199:21.

84. As at Ground 2, Dr. Mercier does not dispute that Schröder’s “ring halves could be made of various materials including PET, which can be transparent.” *See* Ex-2018 ¶254. Dr. Mercier argues however that “Schröder does not explicitly

state that its interior ring half (component 16) is transparent.” *Id.* But, as Dr. Mercier also admitted in deposition, a POSITA would recognize transparency of the interior enclosure portion is needed for vein mapping. Ex-2022, 134:10-11; Ex-1082, 196:17-8 (“I’ll concede that it would be pointless to say that you would use infrared diodes and sensors to image something if you can’t get the light into the thing you’re trying to image.”), 197:9-199:21 (“I think it’s fair to say a POSITA would understand there would need to be [transparency on the internal surface].”).

85. And in combination with Schröder’s explicit teaching of “transparent regions, e.g., windows,” a POSITA would have understood that in order for Schröder’s IR diode to image the user’s vein pattern, there must be a transparent region, such as the transparent regions already taught in Schröder, on the internal enclosure portion, to allow the IR light to be emitted, touch the user’s tissue, and be sensed by the IR receiver.

3. Elements 1[c]/38[c]: Curved Battery, Wirelessly Charged, Proximate to Exterior Enclosure/Proximate the PCB

86. Dr. Mercier again repeats arguments he made for Ground 2 (Mestas-Schröder, Ex-2018 ¶¶190-191), which mainly repeat his previously rebutted miniaturization points. *See id.* ¶261 (arguing that “Mestas’s curved battery is for a much larger wristband and is dimensionally and functionally incompatible with Schröder’s slim security ring.”). As I also noted above, this argument does not

challenge this actual claim limitation. As I also mentioned at my deposition, the combination is not about bodily incorporating Mestas's battery into Schröder's ring. Ex-2021, 307:7-17. Instead, a POSITA would be motivated to implement Mestas's teaching of a curved battery, appropriately sized, into Schröder to avoid increasing the ring's thickness or straining the battery or housing. *See also* Ex-1002 ¶337.

4. Elements 1[d]/38[b]: Flexible/Curved PCB Proximate the Curved Battery/Proximate the Exterior Enclosure

87. Dr. Mercier contends that "Schröder's inlay 12 is a thin antenna carrier, not the *comprehensive* flexible PCB of Claim 1." Ex-2018 ¶267. However, the claim language does not include a "comprehensive" limitation. Ex-1001, Cls. 1, 38. Schröder teaches that its inlay constitutes a PCB. Indeed, inlay 12 may be made of "flexible carrier material," such as "Kapton," a polyimide foil widely used for flexible printed circuits. Ex-1007, 12:28-29; Ex-2023, 9; Ex-1081, 80:17-81:10.

88. Similarly, the '953 Patent describes a PCB constructed of a "flexible material . . . such as polyimide." Ex-1001, 16:35-37. Schröder's carrier foils are manufactured using techniques such as "milling, lasering, etching," with components attached to specific foil layers, facilitating a multilayer carrier foil composite. Ex-1007, 13:23-51.

89. In Figures 4-10, Schröder's inlay 12 contains chip module 10, antenna 8, and other "electronic devices." Ex-1007, 12:1-3, 13:22-47. Dr. Mercier agreed

these carrier foils may have depressions for inserting electronic devices and conceded that “inlay 12, with chip module 10 and various other components on it, is inserted into a recess between ring halves 16 and 18 in Schröder.” Ex-1081, 105:9-108:9, 82:10-13, 101:12-16. A POSITA would recognize that a substrate with assembled electronic components and interconnecting circuitry constitutes a PCB. Further, as I previously noted, Mestas also expressly discloses the PCB as proximate to the curved battery. Ex-1002 ¶213; Ex-1010 ¶168.

90. Finally, Dr. Mercier’s contention that “Schröder’s microprocessor is in its separate chip module 10, not integral to a curved PCB” is wrong. Ex-2018 ¶268. As I previously explained, Schröder teaches that chip module 10, which includes “at least two physically mutually separate processors,” is on the flexible PCB. Ex-1007, 10:60-61, 15:19-22; Ex-1002 ¶392.

5. Elements 1[e]/38[d]/38[e]: Plurality of Components, Including a Sensor Module and LED

91. Dr. Mercier again argues motivation to combine instead of the actual claim limitation here. *See* Ex-2018 ¶¶273-276. Dr. Mercier does not dispute that Schröder and Mestas together supply all required claim elements; he instead contends that “[t]he combination does not teach integrating Mestas’s varied physiological sensors within Schröder’s ring housing,” which is incorrect as discussed above. *Id.* ¶274; *see supra* §III.B.5.

92. Dr. Mercier also contends that neither Mestas nor Schröder “teaches an LED for user feedback or physiological sensing.” Ex-2018 ¶275. But the claim language does not require that the LED be for the particular purposes Dr. Mercier cites. *See* Ex-1001, Cls. 1, 38.

6. Elements 1[f]/38[f]: Transparent Window/Interior Enclosure Portion

93. Dr. Mercier’s repeats his previous arguments at Ground 2, which are incorrect for the previously detailed reasons. *See supra* §III.B.6. Dr. Mercier concedes that “Mestas has display windows” (Ex-2018 ¶279), which facilitate electromagnetic transmission and satisfy the claim. Dr. Mercier also repeats his argument at Ground 2 that “Dr. Anthony fails to explain how the disclosure of transparent potting would disclose a transparent interior enclosure portion.” *Id.* ¶281. As I previously explained, Mestas teaches an interior enclosure portion (Ex-1002 ¶¶198-199), and Schröder discloses that it may be constructed from PET, a transparent polymer resin. Ex-1007, 15:14-15; Ex-1002 ¶317; *supra* §III.B.6.

7. Dependent Claims 2-6, 11, 14-15, 39, and 41-43 Are Rendered Obvious Over Schröder in View of Mestas

94. Dr. Mercier does not include arguments against obviousness of these claims aside from the arguments against independent claims 1 and 38. Ex-2018

¶283. Dr. Mercier’s challenge to these claims’ obviousness falls with his claim 1 and 38 arguments. *See supra* §IV.B.

C. Dr. Mercier’s Lack of Enablement Argument Fails

95. Dr. Mercier repeats his Ground 2 arguments that the Schröder-Mestas combination lacks enablement due to the “significant challenges associated with battery miniaturization, sourcing, power management, and integration.” Ex-2018 ¶¶284-286. Dr. Mercier’s arguments fail for the reasons I previously discussed. *See supra* §III.D.

V. PO’S ARGUMENTS AGAINST GROUND 4 (SCHRÖDER-MESTAS-ASAMI) FAIL

A. Motivation To Combine

96. Dr. Mercier contends that a POSITA “would not turn to Asami” because “Asami’s gesture input is for a different purpose.” Ex-2018 ¶290. But, as I explained before, Schröder-Mestas and Asami share similar structural components and both address wearable biometric sensing devices. Ex-1002 ¶¶406-407. The addition of Asami’s advanced intuitive gesture interface is consistent with industry trends toward multi-modal input and user-friendly wearable devices. *See id.* ¶407; Ex-2022, 108:5-20. Moreover, gestures and hand motions are not an “unrelated purpose.” Physiological movements themselves carry meaningful biometric information. The ’953 Patent expressly contemplates the use of accelerometers and

motion sensors to determine activity levels such as walking, running, or sleeping. Asami's teachings about finger trajectory sensing thus align directly with biometric monitoring: the same sensors and signal pathways that recognize input gestures can also capture physiological movement data, reduce motion artifacts, and enhance accuracy of biometric readings. By 2013, a POSITA would have understood these convergences and been motivated to apply Asami's gesture-recognition techniques to improve the overall usability, accuracy, and feature set of Mestas- or Schröder-type wearables.

97. Asami's primary functionality is gesture recognition, which is expressly identified as one of the WCD's functions in the '953 Patent and represents one of the problems sought to be solved by the patent. *See, e.g.*, Ex-1001, 9:14-19. As I explained before, POSITA would have been interested in implementing these gesture recognition features in Schröder-Mestas. *See* Ex-1002 ¶¶406-407; Ex-2022, 108:5-109:12.

B. Schröder-Mestas-Asami Renders Obvious Claims 11-15

1. Claim 11

98. Dr. Mercier incorrectly argues that "Petitioner's assertion for Claim 11 under this ground is conclusory and fails to establish obviousness." Ex-2018 ¶296. The Petition cites Ground 1, showing that the three-way combination covers these

claims for the same reasons as Mestas-Asami. *See* Pet., 77; Ex-1002 ¶409. Dr. Mercier does not dispute that the combination covers this claim; to the extent he again argues motivation to combine, I have addressed that above. *See supra* §IV.A.

2. Claim 12

99. Dr. Mercier also incorrectly argues that “Petitioner’s assertion for Claim 12 under this ground is conclusory and fails to establish obviousness.” Ex-2018 ¶299. However, the Petition cites Ground 1 here too, showing that the three-way combination covers these claims for the same reasons as Mestas-Asami. *See* Pet., 77; Ex-1002 ¶410.

100. Dr. Mercier repeats his previous motivation to combine arguments, asserting that because the Schröder-Mestas combination fails, Asami cannot add a “specific processing method” to the device. Ex-2018 ¶303. I addressed Dr. Mercier’s Schröder-Mestas arguments above at Ground 3. *See supra* §IV.A.

101. Dr. Mercier further asserts that “Asami’s disclosure is highly specific to its purpose,” while “[t]he ’953 Patent, in contrast, envisions a much broader application of this functionality.” Ex-2018 ¶¶304-305 (citing the specification of the ’953 Patent, including Fig. 51). But Dr. Mercier does not dispute that the Schröder-Mestas-Asami combination achieves the claimed gesture recognition functionality; his argument that the specification of the ’953 Patent is broader in his

view than Asami is not germane to the issue of whether the prior art reads on the claim limitation. *See id.* ¶305.

3. Claims 13-15

102. Dr. Mercier does not challenge the obviousness of these dependent claims beyond his arguments for independent claim 1. Ex-2018 ¶309. Dr. Mercier's arguments fail for the reasons previously discussed. *See supra* §IV.B.

VI. PO'S ARGUMENTS AGAINST GROUND 5 (SCHRÖDER-MESTAS-WISSMAR) FAIL

A. Motivation to Combine

103. Dr. Mercier contends there is no motivation to combine Schröder-Mestas with Wissmar, arguing that Wissmar's conformal coatings do not address integrating Mestas's system into Schröder's ring. Ex-2018 ¶311. This contention is incorrect. As I previously explained, Schröder-Mestas and Wissmar are analogous prior art, share similar structural components, and address wearable biometric sensing devices. Ex-1002 ¶¶417-418. Dr. Mercier's arguments, most attacking again the Schröder-Mestas combination, have been rebutted above. *See supra* §IV.A.

104. Dr. Mercier further contends that a POSITA would not have turned to Wissmar because "[t]he problems solved by Wissmar's coating . . . are different from the general encapsulation suggested by 'potting' an interior enclosure portion."

Ex-2018 ¶314. I disagree. Wissmar, teaches that its coating is “chosen to *optimize the hermetic encapsulation* and thus increase the lifetime of the internal, electrical components.” Ex-1013 ¶87. And Dr. Mercier admitted in deposition that Wissmar’s “conformal coating” are “used to cover or protect the electronics.” Ex-1085, 94:11-16. As I previously noted, this addresses the problem of the ’953 Patent. Ex-1002 ¶425.

B. Claim 40: Potting comprises an epoxy

105. Dr. Mercier repeats his motivation argument that Wissmar’s epoxy coating is purportedly “structurally and functionally different” from the patent’s “interior enclosure portion,” citing Figure 13 of the patent. Ex-2018 ¶319. Dr. Mercier’s argument is incorrect. Wissmar expressly discloses epoxy for hermetic encapsulation of electronic components, as Dr. Mercier himself admitted at deposition. Ex-1085, 94:5-16; *see* Ex-1013 ¶87. This claim limitation requires only that “the potting comprises an epoxy.” Ex-1001, Cl. 40. Thus, Dr. Mercier improperly demands more from the prior art than the language of the claim.

C. Claims 41-43

106. Dr. Mercier does not address and therefore concedes that Schröder-Mestas-Wissmar teaches these claims.

VII. DR. MERCIER'S OBJECTIVE INDICIA ARGUMENTS FAIL

A. PO is not entitled to a presumption of nexus

107. Dr. Mercier notes that the Administrative Law Judge (ALJ) made several findings regarding objective indicia in U.S. International Trade Commission (“ITC”) Investigation No. 337-TA-1398. Ex-2018 ¶¶321, 347, 360, 363. I understand that the ALJ considered only a limited number of claims of the ’178 Patent and did not consider the ’034 Patent, ’702 Patent, ’859 Patent, or the ’953 Patent. However, Dr. Mercier does not demonstrate that coextensiveness with the ’178 claims establishes coextensiveness with the distinct claims of the ’953 Patent.

108. Dr. Mercier argues “Oura Ring Gen. 3 and Gen. 4 are coextensive with the Challenged Claims of the ’953 Patent,” by providing a claim mapping of Oura Gens. 3 and 4 to only independent claim 1 of the ’953 Patent. Ex-2018 ¶¶323-348. I understand from counsel that PO must “show[] that the asserted objective evidence is tied to a specific product and that product ‘embodies the claimed features, and is coextensive with them.’” While the inquiries of whether Gens. 3 and 4 practice the challenged claims and are coextensive with the challenged claims may overlap, showing that the products practice the claims does not show that there is nexus because notable unclaimed features are not considered. Dr. Mercier’s mapping does not show that the product is in fact coextensive with the ’953 Patent claims because

he does not consider the unclaimed features. Therefore Gens. 3 and 4 are not entitled to a presumption of nexus.

109. Oura Ring Gens. 3 and 4 include significant unclaimed features that are critical or amount to the “heart” of another patent. First, PO’s evidence emphasizes the importance of the Oura Ring Application, with Mr. Andrew Clarke stating that the “Oura Ring and Oura application collectively form a complete solution” (Ex-2019 ¶21) and PO’s employee stating that the application is “essential.” (*id.* (citing Ex-2024, at 95)). The Oura Ring Application provides users “access to three daily scores—Sleep, Readiness, and Activity.” Ex-2019 ¶20 (citing Ex-2051). While the Oura Ring Application, which is essential to PO’s product, is not claimed anywhere in the ’953 Patent, PO’s U.S. Patent No. 10,842,429 recites:

A method for assessing readiness of a user, the method comprising:

...

determining a rest summary for the rest period, based on the measured at least one biosignal and at least one biosignal of a previous rest period;

determining an activity summary for the activity period, based on the obtained movements of an activity period and obtained movements of at least one previous activity period;

determining a body response summary based on the rest summary and the activity summary;

calculating a readiness score based on the body response summary and a previous body response summary, whereby the readiness score indicates a level of readiness of the user; and

using a user interface of the mobile communication device to show elements contributing to the readiness score and instructions

related to physical activity and mental activity for improving the readiness score.

Ex-1086, 24:65-25:16. The fact that PO obtained the '429 Patent covering the calculation of the sleep, readiness, and activity scores and displaying the scores on a user interface shows how these features amount to more than an insignificant feature not claimed by the '953 Patent.

110. Second, the Oura Ring Membership works “hand-in-hand” with the Oura Ring, “such that a user’s experience improves over time as the Oura Ring gathers mores data, enabling Oura to generate more nuanced insights into the user.” Ex-2019 ¶21. The Oura Ring Membership was released with the Gen. 3 launch but the claims of the '953 Patent do not recite a membership for users nor the “nuanced insights into the user” via the mobile application.

111. Third, PO’s evidence emphasizes the sleek and comfortable design and materials used in the ring. *See, e.g.*, Ex-2100, 11 (sleekness); Ex-2102 (comfort); Ex-2059, 2 (materials); Ex-2098 (same). While Dr. Mercier agrees that the '702 Patent does not explicitly recite a “sleek and comfortable” requirement, the '953 Patent also does not explicitly recite a “sleek and comfortable” requirement. *See e.g.*, Ex-1081, 34:1-15 (“while there’s no explicitly stated upper bound, a POSITA would understand that there is an upper bound, you know, to abide by the desires and recommendations of the specification to make the ring comfortable”), 215:3-11

(“Q. The claims don’t recite an aesthetically pleasing ring, correct? A. That’s right. That language isn’t in the claims, but, again, the claims are read in light of the specification, and the specification, you know, makes small and comfortable use very important.”); *see also* Ex-1082, 216:4-17. The ’953 Patent also does not recite the specific material used as the internal and external housing components. Yet PO’s U.S. Patent No. 11,599,147, recited using various materials, such as “titanium, titanium alloy, steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide, and a metal alloy.” Ex-1087, 33:56-62, 34:33-36. The fact that PO obtained the ’147 Patent covering the materials to be used shows how these features amount to more significant features not claimed by the ’953 Patent.

112. Finally, PO attempts to point to the same products for the same alleged objective indication across four patents, which rebuts its contention that the products are coextensive with the ’953 Patent claims. The claims across U.S. Patent Nos. 11,868,178, 10,139,859, 11,874,702, and the ’953 Patent do not cover the same invention. For example, the ’953 Patent recites “a transparent interior enclosure portion,” which is not recited in the other three patents. This is a significant feature, as shown by Dr. Mercier’s arguments about the prior art’s teaching of substantially transparent material but there is not any analysis regarding which evidence of the

same secondary considerations asserted across the four patents is attributable to the claims requiring this feature and those that do not. Thus, nexus cannot be presumed.

B. PO has not proven actual nexus

113. Due to the significant unclaimed features, PO, Dr. Mercier, and Mr. Clarke cannot demonstrate that actual exists between the evidence presented and the claims of the '953 Patent because the evidence is directed to significant unclaimed features. I understand that Dr. Mercier only opines on nexus, copying, and long-felt need, while Mr. Clarke provides arguments about the alleged commercial success.

1. Commercial success

114. Mr. Clarke argues that, Gens. 3 and 4 have been a “significant success in the marketplace,” as based on the “absolute sales and sales growth, the Oura Ring’s contribution to Oura as a company, and its marketplace performance relative to competing products.” Ex-2019 ¶32. Yet Dr. Mercier does not opine on the Gen. 3 and 4’s “commercial success” and Mr. Clarke refused to provide any technical analysis of the ring’s nexus to the challenged claims. *See, e.g.*, Ex-1083, 192:19-193:2. Therefore, Gens. 3 and 4 have not been shown as a “success” or how the sales figures are a direct result to the claimed invention of the '953 Patent.

a. Sales and sales growth are based on unclaimed features

115. Mr. Clarke argues that Oura's success is evidenced by substantial sales and sales growth since the introduction Gen. 3 and continued increase with the Gen. 4. Ex- 2019 ¶33. But sales are not due to the claimed invention of the '953 Patent, as discussed below.

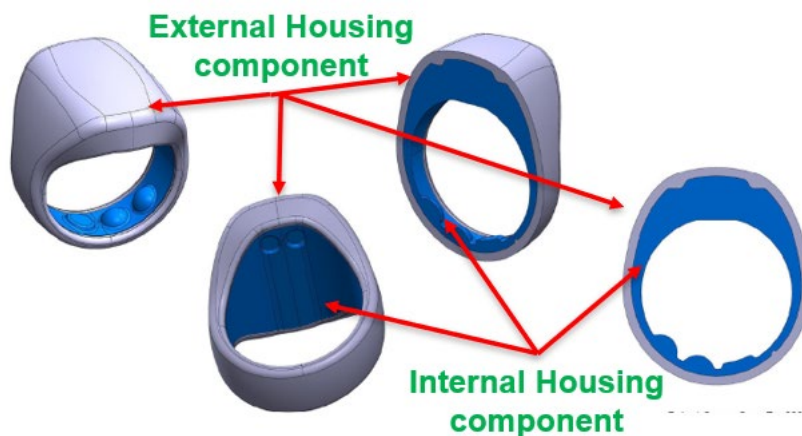
b. Generations 1 and 2's commercial sales show that the characteristics of the '953 Patent were not commercially successful

116. While Dr. Mercier and PO do not assert that Oura Ring Generations 1 and 2 are coextensive with the claims of the '953 Patent (*see* Ex-1081, 47:6-13, 49:2-50:9), there is no difference between Gens. 1 and 2 to Gens. 3 and 4 other than the improved sensors, sleekness and comfort of the ring, which are not recited in the '953 Patent. For example, Mr. Clarke explained that the Gen. 3 included "new green LED sensors, red LED sensors, and upgraded temperature sensors for "improved monitoring of a user's heart rate, blood oxygen sensing, period prediction, among other metrics and features." Ex-2019 ¶17. Mr. Clarke relies on Ex-2098, which discusses the materials the ring is made of, the weight and dimensions, compatibility, connectivity, but there is no mention of the circular form factor of the ring. Similarly, Ex-2100 discusses how the Gen. 3 is "sleek and compact." *Id.*, 11. These features are again all unclaimed in the '953 Patent.

117. Mr. Clarke then discusses how the Gen 4 brought “battery life improvements, greater measurement accuracy, and an all-new circular titanium-based design.” Ex-2019 ¶18. Mr. Clarke relies on Ex-2059, which discusses how the Gen. 4 ring was made of titanium, details its “smart sensing platform” to give the user the most complete picture of health by using research-grade sensors, battery life, and the Oura Ring Membership. Yet these features are all unclaimed in the ’953 Patent.

118. But it is clear that Gens. 1 and 2 are a finger-worn wearable ring computing device, which include an exterior enclosure structure and interior enclosure portion, where the interior enclosure portion contacts the user’s tissue. *See also* Ex-1081, 49:20-68:3 (analyzing the aspects of the Gens. 1 and 2 products contained aspects of the claims, such as an inner and outer enclosing portions, battery, and PCB); Ex-1082, 229:7-230:2 (“Q. And is the ring depicted in Exhibit 2121 similar to any figures you described in your declarations” A. “Yes. This is a real-life depiction of the Oura generation 1 design.”).

Gen. 1



Ex-2034, 7 (not redacted in the exhibit)

Gen. 2

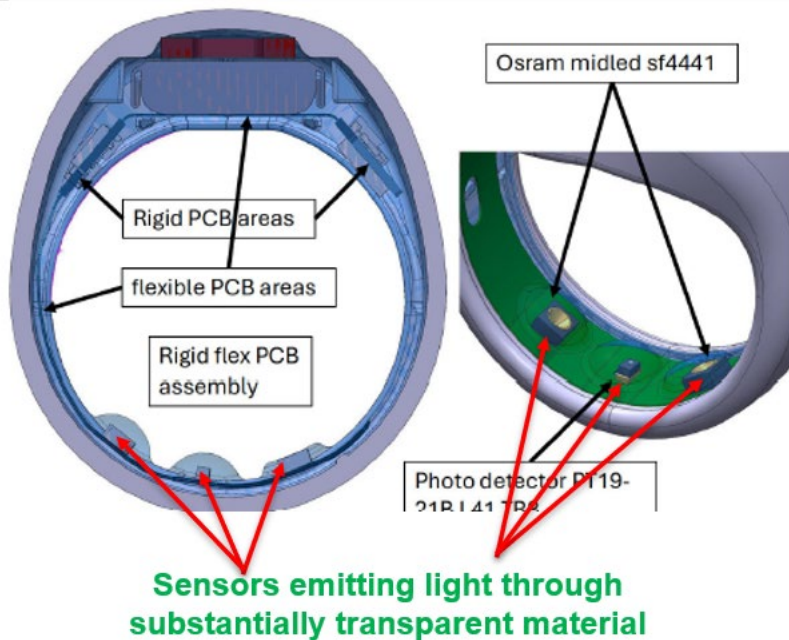


Ex-1355, 1.

119. Gens. 1 and 2 also include a battery, PCB, and a plurality of components, including at least one light emitting diode, between the housing components, as recited in the '953 Patent. Gens. 1 and 2's sensors emit light through

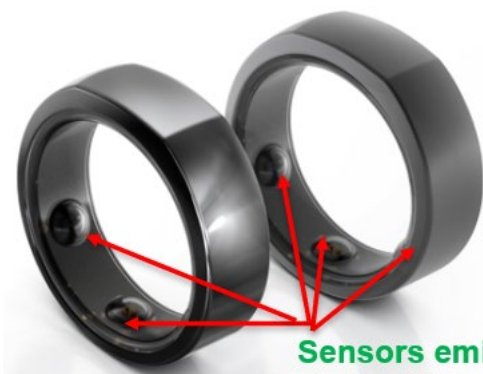
a transparent material to contact the user's tissue. Gens. 1 and 2 further have a microprocessor and a transceiver included inside the device.

Gen. 1



Ex-2034, 7 (not redacted in the exhibit)

Gen. 2.



**Sensors emitting light through
substantially transparent material**

Ex-1355, 1.

SENSORS

- Oura proprietary pulse waveform and pulse amplitude variation detection with infrared PPG sensor
- Body temperature sensor
- 3D accelerometer and gyroscope

Ex-1356, 3.

Battery Life

- Up to one week with a single charge
- Wireless charging: charging time 20–80 minutes depending on how often you charge

Ex-1356, 4.

PRODUCT SPECS

- Dual-core arm-processor: ARM Cortex based ultra low power MCU
- In-ring memory to store data up to 6 weeks
- Water resistant: 100m / 328ft
- Bluetooth Smart, Airplane mode

Ex-1356, 3.



If the commercial success were a direct result of the unique characteristics of the claimed invention of the '953 Patent, then Generations 1 and 2 would also have been

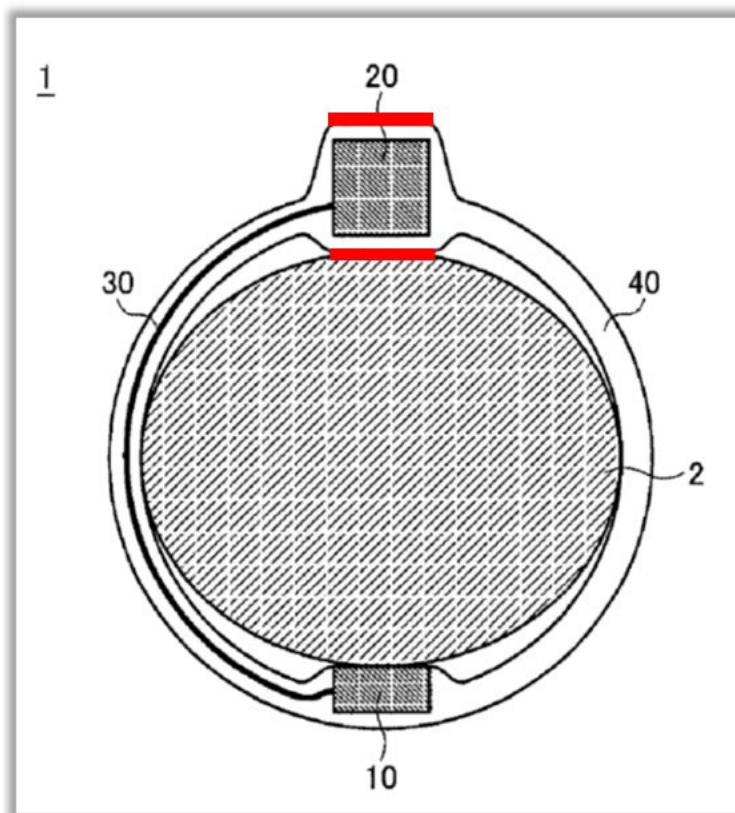
successful. To the extent that Dr. Mercier did not address Generations 1 and 2 on the basis that they are not in a “wedding band” form factor, the claims of the ’953 Patent do not require a wedding band form factor with unitary thickness throughout. Therefore, there is no basis to exclude the Gen. 1 “Super Bowl ring” or Gen. 2’s plateaued design ring from his analysis.

**c. Mr. Clarke fails to distinguish the sales of the Gen. 3
Oura Ring**

120. Mr. Clarke asserts that the company’s monthly unit sales since the launch of the Gen. 3 [REDACTED] its earlier average monthly unit sales. Ex-2019 ¶33. While Dr. Mercier and Mr. Clarke do not assert that Gens. 1 and 2 are coextensive with the claims (Ex-1081, 47:6-13, 49:2-50:9), Mr. Clarke did not attempt distinguish the sales of when the Gen. 2 was available for purchase after the launch of Gen. 3. Ex-1083, 104:3-106:7. The alleged sales of Gen. 3 thus also include sales of Gen. 2.

121. Mr. Clarke also failed to distinguish the sales between the two Gen. 3 models: Heritage and Horizon. The Heritage Gen. 3 has been described to include a “classic plateau design.” Ex-2098; Ex-2056; Ex-2099. While Dr. Mercier asserts that Gen. 3 is coextensive with the claims of the ’953 Patent, Dr. Mercier does not explain how the Heritage Gen. 3, with its flat-top, is coextensive with the claims. In a related proceeding, however, Dr. Mercier argues that Niwa does not disclose an

external housing component with an external circumferential surface because Niwa teaches that the top of its ring is “planar” as shown in Dr. Mercier’s annotation of Niwa Figure 1 below. *See* PGR2024-00030, Ex-2018 ¶¶187-188.



122. To the extent that Dr. Mercier asserts that Heritage Gen. 3 is not coextensive with the claims due to its similar planar surface, Mr. Clarke did not distinguish the sales of the Heritage Gen. 3 models as compared to the Horizon Gen. 3 models to support any commercial success of a coextensive product. In fact, his declaration does not even mention that the Gen. 3 has two models, even when noting

that the Gen. 2 did come in two models (Balance and Heritage). *Compare* Ex-2019 ¶16 with ¶17.

123. Mr. Clarke contends that the sales of Gen. 3 [REDACTED] over time (Ex-2019, Appendix 7) but Gen. 3's only enhanced capabilities included how its sensors "expand[ed] from infrared to include red and green LEDs that enable daytime heart rate, workout heart rate, and SpO2 sensing with the same long-lasting battery life of up to 7 days." Ex-2043. The red and green LEDs, enabled heart rate detection, SpO2 sensing, and a 7 day-long battery are not specifically recited in the '953 Patent claims or make it any structurally difference from Gens. 1 and 2.

124. Mr. Clarke further argues argues that "[c]onsistent with the growth in Oura Ring unit sales is the growth in subscribers to the Oura membership." Ex-2019 ¶34. The Oura Ring Membership was launched with the Gen. 3's launch to provide "additional personalized data and insights in the Oura application, such as an in-depth sleep analysis, live and accurate heart rate monitoring, body temperature readings for early illness detection and period prediction[.]" Ex-2019 ¶21. The '953 Patent does not recite a membership or providing health insights to the user. Ex-1082, 222:16-224:13. The Membership is a separate product offering that is not direct result of the unique characteristics of the '953 Patent.

125. Mr. Clarke continues that, since the launch of the Oura Ring Gen. 4, sales of the Oura Ring in just the first quarter of FY2025 [REDACTED] of Oura's full year FY2024 sales. Ex-2019 ¶36. The Gen. 4 ring similarly includes the same unclaimed features of the Gen. 3 ring. Additionally, PO argues that its success is due to the ring, but as I previously testified "having good marketing" leads to sales. Ex-2020, 68:16-60:22. Mr. Clarke attempts to downplay PO's marketing efforts (Ex-1083, 179:13-186:2), but it is undisputable that PO's marketing [REDACTED] [REDACTED] in FY2021, [REDACTED] in FY2022 to [REDACTED] in FY2023. *See* Ex-2107, 5; Ex-2108, 5; Ex-2109, 6; *see also* Ex-2110, 6 (marketing expenses totaling [REDACTED] From October 2024 to Q1 2025). In my experience commercializing a product, I understand that the [REDACTED] and the "addition of experience professionals in marketing, sales, and product development" of course would lead to an increase in sales. Ex-2047, 5.

d. Contribution from Oura ring to the Oura company doesn't show success

126. PO and Mr. Clarke argue that the Oura ring is critical to PO's existence as a company because "[REDACTED] of Oura's overall revenue is attributable to the Oura Ring" and that "Oura's only product offering is the Oura Ring." Ex-2019 ¶¶37-38. But Mr. Clarke does not specify whether the Generation 3 and 4 Oura Ring contributed to the Oura company or Oura Rings in general (thus including Gens. 1

and 2). Moreover, Mr. Clarke's testimony that the "[REDACTED]

[REDACTED]" Ex-2019 ¶36 n. 8. The
Oura ring is *not* the only product offering when users have to pay for at least the
[REDACTED] separate from their
purchase of the Oura ring. Ex-1083, 194:17-195:23. Therefore [REDACTED]
[REDACTED].

127. The company's brand partnerships to the Oura Ring products, but the
partnerships spanning "a range of areas such as women's health, metabolic health,
behavioral health, and fitness and lifestyle" and "glucose biosensing" are unclaimed.
Ex-2019 ¶40. Nowhere in the '953 Patent is a mobile application or using the
sensors to provide health and wellness insights for "women's health, metabolic
health, behavioral health, and fitness and lifestyle" or glucose sensing claimed. Mr.
Clarke is also unclear on the timing associated with the Oura Ring. He states that
"[a]s of November 2023, Oura had entered into over 600 partnerships." It is unclear
whether the "over 600 partnerships" are tied to the Gen. 3 or over the history of the
company, from the Gen. 1 launch to present.

**2. PO did not create a new market segment within the
wearables market**

128. PO argues that Oura's development and commercialization enabled the company to be labeled as one of the market pioneers in the smart ring marketplace. POR, 97-98. PO's evidence to support this discusses the health tracking (Ex-2089), battery life, and application support (Exs-2026, 2060), which are unclaimed in the '953 Patent. As Mr. Clarke discussed, there were others in the market earlier or even around the same time as Oura. Ex-1083, 205:13-23 ("I don't dispute that there may have been other rings"), 205:24-209:3 (discussing other smart ring companies).

3. PO has not established copying by others

129. Dr. Mercier argues that Ultrahuman and RingConn copied the use of "external housing and internal enclosure portion of [the] Oura Ring where the internal housing is made of internal potting to develop a directly competing product." Ex-2018 ¶351. PO additionally argues that RingConn also copied the "optical protrusion in the potting material" of Oura Ring. *Id.* ¶355. But as I explained in above in Section IV.A, PO has failed to show that Gen. 3 is coextensive with the challenged claims and PO cannot show the asserted copying is directed to the challenged claims or the claims of other Oura patents, or some combination thereof. Specifically, the "optical protrusions in the potting material" are not explicitly claimed in the '953 Patent.

130. Dr. Mercier asserts that Ultrahuman and RingConn smart rings have

copied Oura Ring Gen. 3 (Ex-2018 ¶¶349-356) but the features that are “copied” were well known in the art as evidenced by the prior art, as I described in Ex-1002 over the prior art and the technology background section.

4. Dr. Mercier has not shown a long-felt need

131. Dr. Mercier argues that there was a long felt need to have a finger worn ring with an arrangement with “comfort and compactness” and a “curved battery in conjunction with a printed circuit board mounted within a ring housing.” Ex-2018 ¶¶357, 358-359. But a ring that is comfortable to wear like a wedding band with a curved battery with a PCB within the housing were well known in the art (Ex-1002, Section V) and therefore cannot provide nexus.

132. Dr. Mercier asserts that Asada was the world’s leading wearable ring researcher and realized that comfort and compactness were key, but that Asada’s prototype failed to achieve these goals. Ex-2018 ¶357. However, as I described at my deposition, Dr. Mercier mischaracterizes the scope of Asada’s research by omitting the fact that Asada’s primary research focus was addressing pressure-induced variations in ring sensors and mitigating associated noise. Notably, Asada did not identify nor emphasize any technical issues related to battery challenges. Ex. 2020, 125:5-127:1.

133. Dr. Mercier also claims he was “shocked” of PO’s use of a curved

battery as evidence of long felt unresolved need. Ex-1082, 221:7-23. Asada and Dr. Mercier inability to successfully commercialize a wearable ring with a curved battery does not show that a POSITA recognized a need that was long felt or that others had tried and failed to solve the problems. Critically, Dr. Mercier fails to provide any evidence indicating that either his or Asada's attempts or inability to commercialize a wearable ring was specifically due to issues with curved battery technology. Dr. Mercier does not rule out other plausible factors for lack of commercialization success, such as insufficient marketing strategies, limited expertise regarding manufacturing scale-up, or prohibitive production costs. Consequently, failure to bring a wearable ring with a curved battery to market does not demonstrate that a POSITA would have recognized a long-felt need, nor that commercialization attempts had been made and failed to resolve technical issues specifically related to curved battery technology.

134. I note that Dr. Mercier added that the ITC Initial Determination:

found that for the related '178 patent, the "record evidence demonstrates a long-felt but unresolved need for a compact, comfortable ring that could provide continuous health monitoring, and that others failed to provide such a wearable monitoring system." The ALJ cited consumer desire for a less obtrusive yet accurate tracker, especially for sleep, as evidence of this need. Accordingly, the ALJ concluded, "This factor weighs in favor of a determination of non-obviousness of the asserted claims." Ex. 2018 at 116.

Ex-2018 ¶360. Yet again the ITC did not consider the '953 Patent claims, which are

different than the '178 Patent claims considered by the ITC. The '953 Patent claims also do not recite a “compact, comfortable ring that could provide continuous health monitoring,” nor “a less obtrusive yet accurate tracker, especially for sleep.” There is no connection between what the ITC found for a limited number of claims to the '953 Patent's claims challenged here.

VIII. CONCLUSION

135. All of the challenged claims are obvious over the prior art.

136. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

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

138. I declare under penalty of perjury that the foregoing is true and correct.

U.S. Patent No. 10,281,953
Reply Declaration of Brian W. Anthony, Ph.D.

Dated: September 2, 2025

Respectfully submitted,



Brian W. Anthony, Ph.D.