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U.S. INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Doris Johnson Hines
Administrative Law Judge

In The Matter Of	
CERTAIN SMART WEARABLE DEVICES, SYSTEMS, AND COMPONENTS THEREOF	**Investigation No. 337-TA-1398**

COMPLAINANTS' PRE-HEARING BRIEF

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TABLE OF ABBREVIATIONS

Abbreviation	Term
Oura	Complainants Oura Ring, Inc. and Oura Health Oy
Ultrahuman	Respondents Ultrahuman Healthcare Pvt. Ltd., Ultrahuman Healthcare Ltd., and Ultrahuman Healthcare SP, LLC
RingConn	Respondents RingConn LLC and Shenzhen Ninenovo Technology Ltd.
Circular	Respondent Circular S.A.S. (terminated)
Private Parties	Collectively, Oura, Ultrahuman, and RingConn
Staff	Commission Investigative Staff
'178 patent or Asserted Patent	U.S. Patent No. 11,868,178
'179 patent	U.S. Patent No. 11,868,179
'429 patent	U.S. Patent No. 10,842,429
Respondents	Ultrahuman and RingConn
NOII	Notice of Institution of Investigation, 89 Fed. Reg. 27452–53 (Apr. 17, 2024)
Asserted Claims	Claims 1, 2, 12-14, and 17–18 of U.S. Patent No. 11,868,178
SAC	Second Amended Complaint
DI	Domestic Industry
DI Product or Oura Domestic Industry Product	Oura Ring and corresponding Oura application, including Oura Ring Gen. 3 and Oura Ring Gen. 4
Ultrahuman Accused Product	Ultrahuman Ring AIR and its corresponding Ultrahuman application
RingConn Accused Product	RingConn Smart Ring and its corresponding RingConn application, including RingConn Gen. 1 and Gen. 2
Respondents Accused Products	Ultrahuman Accused Product and RingConn Accused Product collectively
Products-at-Issue	Respondents Accused Products and Oura Domestic Industry Products
MAB	Oura's Medical Advisory Board
PCB	Printed Circuit Board

[redacted]

I. INTRODUCTION

Founded in 2013, Oura manufactures the highly successful Oura Ring that has been credited for "single handedly creating the smart ring category" of wearable devices. CX-0821. Since its introduction, Oura has continuously innovated and released four generations of Oura Ring: Gen. 1 in 2015, Gen. 2 in 2018, Gen. 3 in 2021, and most recently Gen. 4 in 2024. Oura's efforts have been recognized across the industry, including being awarded 2020 TIME Magazine's Best Invention (CX-0622), 2022 Best Sleep Tracker by Men's Health Magazine (CX-0630), 2023 CNBC's Disruptor 50 List (CX-0802), and 2023 Health Fitness Award (CX-0628).

The success of Oura Ring is built on the back of extensive research and development, including investments in key acquisitions such as Motiv Inc., a San Francisco based startup, for $165 million.[1] Indeed, while others focused on wrist wearable devices for the past decade, Oura (and Motiv) spent years designing and developing a unique ring structure that could seamlessly integrate all the electronics within the ring. Oura and Motiv protected this intuitive design by investing heavily in its intellectual property. The '178 patent is one such patent covering the Oura Ring. The '178 patent relates to the particular structural design that uses a combination of inner and outer ring structures to house the electronics. Prior to the disclosure of the '178 patent, the traditional wearable rings required the electronic components to be mounted externally to the ring itself, and thus made the rings impractical for daily usage, and were not an elegant solution for consumers.

But Oura's success has engendered competition in the form of copycats and knockoffs, including Respondents Ultrahuman and RingConn who seek to benefit from the market that Oura has built. Rather than invest in their own research and development, both Respondents took a

[1] Motiv Inc. was acquired by Oura through its acquisition of Proxy Inc. Motiv was the original assignee of the parent application of the asserted '178 patent in this Investigation.

[redacted]

[redacted]

[redacted]

Unable to escape the fact that Respondents' Accused Products copied Oura Ring and infringe each Asserted Claim of the '178 patent, Respondents advance meritless non-infringement arguments that are largely based on claim construction that have now been rejected by the ALJ. *See* JX-0011. Respondents' remaining arguments—(1) whether there needs to exist a "cavity" that is independent of components, and (2) whether battery and printed circuit board are positioned "between" an internal and external housing component or "within" an internal housing component—are equally meritless.

Indeed, as for Respondents' "cavity" argument, this is nothing more than a rehash of Respondents' claim construction argument that sought to exclude potting material from the housing component and that the ALJ already considered in rendering her opinion. *See* EDIS No. 827346 (Respondents' Opening Markman Br.) at 5 ("potting glue used to adhere components to a surface is a material that fills—rather than encloses—a space . . . . Such a filler material does not and cannot form a hollow space (i.e., cavity), but rather closes a cavity."); Markman Hr'g Tr. at 56:25-57:6 (ALJ: "does the claim require that there be a cavity independent of the components that fill that cavity?" Staff: "It requires that the components be within the cavity. And I believe that those components could entirely fill that cavity."); 68:8-12 (Respondents: "you had asked . . . if the cavity has to exist . . . independent of the component. And the answer is yes, absolutely."). Despite having their position considered and rejected by the ALJ, Respondents continue to insist that a cavity, independent of components, must exist at the time of importation as part of their non-infringement theory. This argument is baseless.

Respondents' second non-infringement theory (i.e., the cavity in the Respondents'

[redacted]

Accused Products is formed "within" the internal housing component and not "between" internal and external housing components) is equally flawed because a simple teardown of the Accused Products, as shown below, disproves Respondents' contention. But even if some potting material were to escape under some portions of the components, Respondents' claim interpretation would exclude a disclosed embodiment that is covered by the claims and therefore is legally flawed.

Faced with substantial evidence of infringement, Respondents urge invalidity based on obviousness grounds that mix-and-match references from different fields of art and still fall short on disclosing the claimed invention of the '178 patent. Respondents' obviousness defense is a classic formula for improper hindsight. *Rui v. A.B. Chance Co*., 357 F.3d 1270, 1275 (Fed. Cir. 2004) ("This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention.").

Finally, an application of the public interest factors—public health, safety, or welfare conditions in the U.S., the production of like or directly competitive articles in the U.S., and the availability of such products and related products to U.S. consumers—demonstrates that Oura's requested relief of a limited exclusion order and a cease-and-desist order will not have any significant adverse impact. Indeed, Respondents, after initially requesting that the Commission designate the public interest finding to ALJ, tacitly concede as much by failing to present any expert opinion on the issue of public interest.

For reasons set forth herein and as will be demonstrated at the hearing, Oura requests that the ALJ find a violation in this case and recommend the issuance of the requested remedies, including a limited exclusion order, cease-and-desist order, and bond. Oura also requests that the ALJ find that the public interest will not be harmed by Oura's requested remedies.

[redacted]

A. Procedural History

On March 13, 2024, Oura filed a complaint alleging a violation of Section 337 of the importation into the United States, sale for importation, and sale within the United States after importation of certain smart wearable devices, systems, and components thereof on infringement of certain claims of the '178, '179, and '429 patents by Respondents Accused Products. *See* 89 Fed. Reg. 27452, 27452–53 (Apr. 17, 2024). The complaint was amended on March 21 and 22, 2024. *Id.*

On April 12, 2024, the Commission instituted an investigation pursuant to Rule 210.10(b) based on Oura's complaint naming Ultrahuman, RingConn, and Circular as Respondents. *Id.* The Complaint and NOII were further amended after institution to correct the identification of parent company of RingConn. *See* 89 Fed. Reg. 48686, 48686–87 (Jun. 7, 2024). On July 9, 2024, the ALJ issued an initial determination terminating Circular based on settlement. Order No. 12

In the interest of narrowing the disputes, Complainants have narrowed the asserted claims and patents by withdrawing the '179 and '429 patents from this investigation. *See e.g.,* Order No. 13; and Order No. 15. Currently, the Investigation is narrowed to the following seven claims of the '178 patent:

Respondent	Asserted Patent	Asserted Claims
RingConn	'178 patent	1, 2, 12-14, and 17–18
Ultrahuman	'178 patent	1, 2, 12-14, and 17–18

On October 23, 2024, the ALJ issued an Order construing a number of disputed claim terms of the '178 patent. Order No. 17. And on November 8, 2024, the ALJ denied Respondents' motion for summary determination of non-infringement. Order No. 18. The Evidentiary Hearing is scheduled for December 11-17, 2024 with the Initial Determination on violation target of April 18, 2025. Order No. 9.

[redacted]

B. The Parties

1. Oura

Complainant Oura Health Oy is a Finnish company with its principal place of business in Oulu, Finland. *See* CX-0807C at Resp. No. 16; SAC ¶¶ 6-8; CX-0038C ¶ 4. Complainant Ouraring, Inc. (a wholly owned subsidiary of Oura Health Oy) is a Delaware corporation with its principal place of business in San Francisco, CA and a dedicated research, development, and testing facility in San Diego, CA. *See id.* Oura employs [redacted] workers worldwide, with [redacted] based in the U.S. *See* RX-0412C (Carla Mulhern Opening Expert Report) ¶ 20, 97, 168; CX-0730C-CX-0731C; CX-0506C.

Founded in 2013, Oura is a pioneer in developing a smart ring that allows users to take control of their health. In 2020, Proxy, Inc. acquired Motiv, Inc., a company that designed and patented the technology at issue in this investigation. CX-0807C at Resp. No. 19. Then in 2023, Oura acquired Proxy, Inc. for $165 million. *See id*. at Resp. Nos. 18-19; JX-0004; JX-0003 at Oura-ITC 0000231-248; CX-0895 .

Oura is the sole owner of the ’178 patent by assignment of all right, title, and interest. *See* JX-0004.

2. Ultrahuman

Ultrahuman Healthcare Pvt. Ltd. is an Indian Non-Government Company incorporated in Bengaluru, India. SAC ¶ 12; CX-0813C at Resp. No. 1. Ultrahuman Healthcare Pvt. Ltd. is the parent of its wholly owned subsidiaries Ultrahuman Healthcare SP LLC (incorporated under the laws of the United Arab Emirates) and Ultrahuman Healthcare Ltd. (incorporated under the laws of the United Kingdom). SAC ¶¶ 13-14; CX-0813C at Resp. No. 1.

Ultrahuman, directly or through third parties, imports Ultrahuman Accused Products into the U.S. *See* CX-0690C at Resp. Nos. 86-87; CX-0813C at Resp. 4.

[redacted]

3. RingConn

Shenzhen Ninenovo Technology Ltd. is corporation incorporated under the laws of the People's Republic of China with its principal place of business in Shenzhen, China. SAC ¶ 17; CX-0984C at Resp. No. 1; CX-0472C; CX-0005C; CX-1118C. RingConn LLC is a subsidiary of Shenzhen Ninenovo Technology Ltd. incorporated in Delaware. *Id.*

RingConn, directly or through third parties, imports its Accused Products into the U.S. *See* CX-0691C at Resp. Nos. 86-89; CX-0984C at Resp. No. 4; CX-0006C; CX-0008C; CX-0010C; CX-0476C; CX-0011C; CX-0477C; CX-0478C; CX-0479C; CX-0009C; CX-0480C; CX-0481C; and CX-0482C.

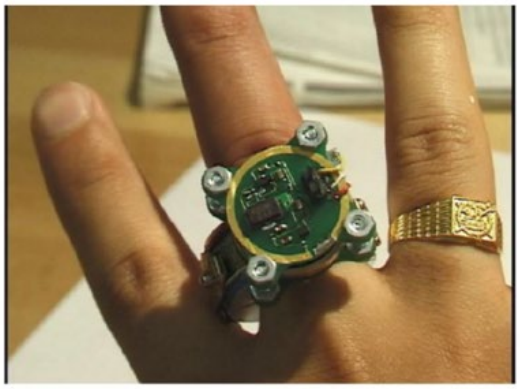
C. Overview of Technology

The technology at issue is smart wearable rings that monitor user's health and fitness. While consumers today have many options for wearable technology, including wrist watches, chest strap monitors, smart glasses, and smart rings, in 2013 (the priority date of the '178 patent), the wearable landscape was different. Tajana S. Rosing Expert Report ("Rosing Rep.") ¶¶ 62-80. Behind the spotlight, two startups—Oura in Finland and Motiv in California—were developing a wearable device that could be worn continuously, including while sleeping, to track the full health of the user. The only way such an ambitious goal could be achieved was to design a wearable that was unintrusive, attractive, could survive daily wear and tear, and seamlessly blend into a user's life. Both set out to develop such a wearable in a form factor that was largely ignored by others: a ring. *See* Rosing Rep. ¶ 45.

The ring form factor had been ignored by others for several reasons. It presents unique challenges, including needing to design components and batteries that are curved to fit the arc of a ring—and operate properly. And unlike wrist wearables that can include vents for heat dissipation, a ring does not have the same luxury. Instead, the components in a ring are typically

[redacted]

subjected to additional heat because the ring is worn tightly around a user's finger and absorbs heat radiated from a user's body. *See* Rosing Rep. ¶¶ 87, 117, 370. Others who tried to design a wearable ring placed all the components external to the ring itself, as shown below:





CX-1123.

This basic design continued through mid-2010s. For example, U.S. Patent No. 10,303,867 ("Schröder") (RX-0018), filed in 2014, includes a chip module (10) protruding from the ring:

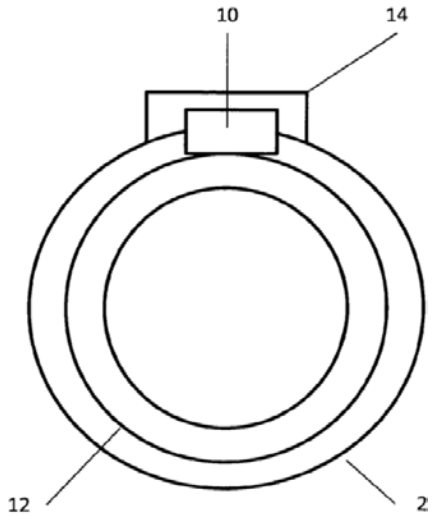


Fig. 3

Even the first Oura Ring (Gen. 1) released in 2015 was bulky, and had the battery and a number of electronic components above the ring itself, as shown below (black ring):

[redacted]



CX-1007; RX-0320C at 51:12-52:16; *see also* RX-0403C ¶ 8.

In 2013, Motiv developed a groundbreaking design, as described in the '178 patent, that provided a roadmap for creating a wearable ring with a structure allowing all the components, including the battery, to be moved within the ring itself. RX-0403C ¶ 25. This achieved the goal of a seamless, elegant design. *Id*. Indeed, Oura's adoption of the '178 patent technology in the Oura Ring Gen. 2 (shown above in silver) in 2018, and the Oura Ring Gen. 3 (shown below) in 2021, made Oura a market leader in wearable smart rings. *Id.* Oura sold over [redacted] rings worldwide from [redacted] through [redacted]. *See* CX-0720C. Because of the value that Motiv's technology provided, Oura acquired Motiv (through Proxy). *See* CX-0807C at Resp. No. 18.

D. The Asserted '178 Patent

The '178 patent, titled "Wearable Computing Device," issued on January 9, 2024 and has an earliest effective priority date of November 29, 2013. *See* JX-0001 (Cover). The '178 patent generally discloses wearable computing devices, such as smart rings, which monitor a user's activity and biosignals to "improve lifestyles, ease access to technology and help monitor activity within the wearer's body." *Id.* at 1:39–46. The '178 patent lists three inventors: Curt C. von Badinski, Michael J. Strasser, and Peter Twiss. *Id.* (Cover). These inventors were the founders of Motiv, Inc.. All interest in Motiv, Inc. was subsequently obtained by Oura through a series of

[redacted]

acquisitions. All rights to the '178 patent are assigned to Ouraring, Inc. JX-0003.

The inventors of the '178 patent recognized that "many current wearable electronics are bulky and can be intrusive or interfere with a person's daily life." *Id.* at 1:42–44. Thus, the "invention overcomes the disadvantages of the prior art by providing a wearable computing device (WCD) in the shape of a ring. The wearable computing device can be worn for extended periods of time and can take many measurements and perform various functions because of its form factor and position on the finger of a user." *Id.* at 1:50–55.

Claims 1, 12-14, and 17-18 are asserted against both Respondents (the "Asserted Claims"). Independent claim 1 is reproduced below:

> 1. **[1-Pre]** A finger-worn wearable ring device, comprising:
>
> **[1a]** an external housing component defining an outer circumferential surface of the finger-worn wearable ring device;
>
> **[1b-i]** an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device, **[1b-ii]** the internal housing component coupled with the external housing component, wherein at least a portion of the inner circumferential surface of the internal housing component is configured to contact a tissue of a user when the finger-worn wearable ring device is being worn by the user;
>
> **[1c]** a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device;
>
> **[1d]** a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion; and

[redacted]

[1e] one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component.

Id. at 44:45-45:8.

Significant to the Asserted Claims, the '178 patent discloses an **outer housing component coupled** to an **inner housing component** to form a space for accommodating the battery, circuit board, sensors, and other components as shown below:

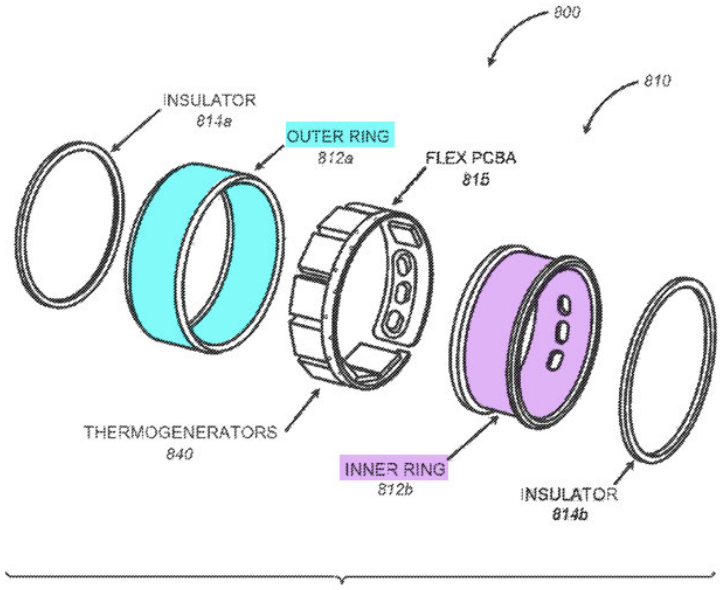


FIG. 8

Id. at Fig. 8 (highlighting added).

Figure 13 shows a cross section of one embodiment of the ring having a housing 1310 that includes an **external housing component 1312** and an **internal potting or encapsulant 1314**. *Id.* at 18:64–67. The **battery 1330** and **printed circuit board 1340** are positioned within space 1320. *Id.* at 19:6–10.

[redacted]

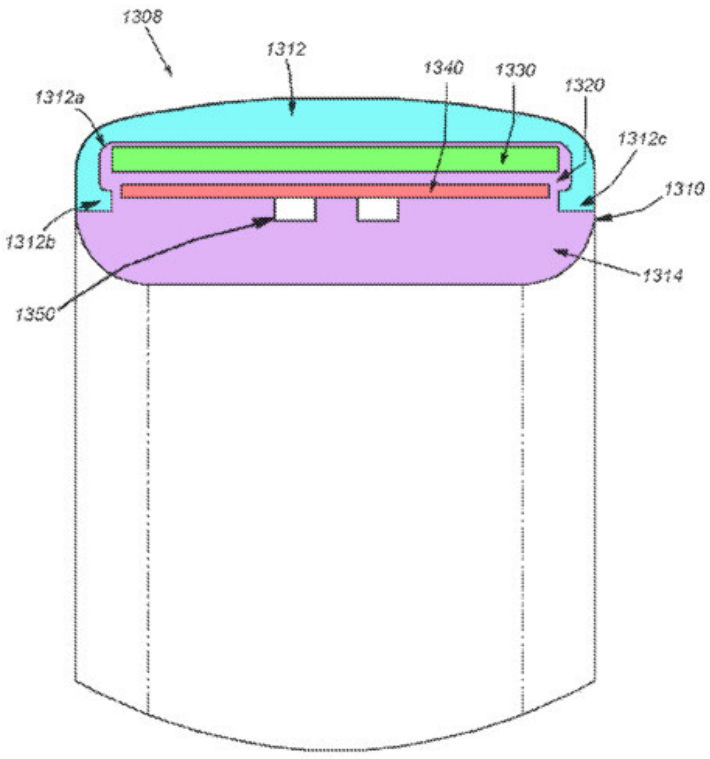


FIG. 13

Id. at Fig. 13.

E. Products-at-Issue

1. The Domestic Industry Products

Oura Domestic Industry Product includes Oura Ring Gen. 3, Oura Ring Gen. 4, and corresponding Oura application. *See* SAC at 7; RX-0402C ¶¶ 3, 9, 55-60, 81-93, 119-130, 142-150, 168-179, 193-201, 225-234, 240-243, 252-256, 263-267, 273-275, 283-285, 292-295, 302-305; CPX-0005; CPX-0012. Oura Gen. 3 is available to consumers in two styles: Horizon and Heritage. *See* RX-0402C ¶ 55; CX-0702; CX-0701.

[redacted]

Oura Ring Gen. 3 (Horizon)	Oura Ring Gen. 3 (Heritage)
	
CX-0702; CPX-0010	CX-0701; CPX-0006

Oura Ring Horizon is an uninterrupted design that has near round exterior for the full length, whereas Heritage variation includes a minor plateau design on the exterior for a portion of the ring as shown above. Outside of the external structure for part of the ring, both styles have the same technical and hardware capabilities. *See id; see also* RX-0402C ¶55.

In addition to Oura Ring Gen. 3, the newly released iteration of Oura Ring (i.e., Oura Ring Gen. 4) that launched in October 2024 is also independently a Domestic Industry Product:

[redacted]

Oura Ring Gen. 4



CPX-0012

The structure for both Oura Ring Gen. 3 and Gen. 4 is generally the same. RX-0320Cat 182:24-25. While Oura Ring Gen. 3 includes a polymer inner ring structure, Oura Ring Gen. 4 has a metal interior. *Id.* at 183:6-11. Thus, both Oura Rings (Gen. 3 and Gen. 4) are structurally configured to have an outer ring structure (metal), an inner ring structure (either polymer in case of Gen. 3 or metal in the case of Gen. 4), and the electronic components (battery, printed circuit board, and all the electronic circuitry) located between the two ring structures. *Id.* at 183: 6-22.

Both Oura Ring Gen. 3 and Gen. 4 are also paired with an Oura Application ("Oura App") that is executed on user's phone.[2] Based on data that is acquired from plurality of sensors located within Oura Ring, the Oura App provides information associated with user's health (e.g., heart rate, blood oxygen, steps, movements, etc.). *Id.* at 95:9-22. And based on the collection of data, the Oura App provides actionable information to the user that interprets the parameters and

[2] The same Oura App connects with both Oura Ring Gen. 3 and Gen. 4.

[redacted]

presents information such as readiness, sleep, stress resilience, and women's health information. *Id.*; *id.* at 96:3-17 ("you have the foundation of the ring . . . . That then enables us to extract and pick up on the physiological signals, which then inform and enable us to develop all of our algorithms."); RX-0403C at ¶¶ 26-27. Therefore, the Oura Ring (either Gen. 3 or Gen. 4)and corresponding Oura Application are integral to the usability of the DI Product. The evidence will show that the Oura DI Products practices each Asserted Claim of the '178 patent.

2. Respondents Accused Products

a. Ultrahuman Accused Products

The Ultrahuman Accused Product is the "Ultrahuman Ring AIR" and its corresponding Ultrahuman application that Ultrahuman began selling in the United States in 2023. *See* SAC ¶ 23(a); RX-0402C ¶ 2; CPX-0002.

Ultrahuman Ring AIR



CX-0538

b. RingConn Accused Products

RingConn Smart Ring (Gen. 1 and Gen. 2) and its corresponding RingConn Application

[redacted]

are the RingConn Accused Products. RX-0402C ¶ 2; SAC ¶ 23(b); CPX-0003 RingConn Smart Ring Gen. 1 was introduced in 2023 and Gen. 2 was recently in 2024.

RingConn Smart Ring



CX-0843

Because RingConn Smart Ring Gen. 2 was released at the tail end of close of fact discovery in this Investigation, the parties have stipulated that with respect to the Asserted Claims of the '178 patent, RingConn's Gen. 1 Smart Ring is representative of RingConn's Gen. 2 Smart Ring such that a finding of infringement or non-infringement by one generation of Representative Accused Product shall be construed as infringement or non-infringement by all size variations of both Representative Accused Products. *See* JX-0008C.

II. OVERVIEW OF APPLICABLE LEGAL STANDARDS

A. Violation of Section 337

Section 337(a)(1)(B)(i) prohibits the "importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or

[redacted]

consignee, of articles that (i) infringe a valid and enforceable United States patent . . .; or (ii) are made, produced, processed, or mined under, or by means of, a process covered by the claims of a valid and enforceable United States patent." 19 U.S.C. § 1337(a)(1)(B).

B. Infringement

35 U.S.C. § 271(a) provides that "whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent." The question of infringement involves a two-step analysis: (1) determine the scope and meaning of the claim terms, and (2) determine whether the properly construed claims encompass the accused product or method. *Markman v. Westview Instruments, Inc*., 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

The first step, claim construction, is a question of law. *Id*. The second step is a question of fact comparing the accused product to the asserted claims as properly construed. *See Grober v. Mako Prods.*, 686 F.3d 1335, 1344 (Fed. Cir. 2012). A patentee may prove infringement by direct or circumstantial evidence. *Lucent Techs., Inc. v. Gateway Inc.*, 580 F.3d 1301, 1318 (Fed. Cir. 2009). A patentee is not required to present direct evidence of infringement. *Symantec Corp. v. Comput. Assocs. Int'l Inc.*, 522 F.3d 1279, 1293 (Fed. Cir. 2008). An accused product that does not literally infringe an asserted claim may still infringe under the doctrine of equivalents. *Seal-Flex, Inc. v Athletic Track & Court Const.*, 172 F.3d 836, 842. "[A] product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 21 (1997). "Equivalence is shown by evidence that the accused device contains an element that is not 'substantially different' from any claim element that is literally lacking, or that the

[redacted]

claimed limitation and the accused component 'perform[ ] substantially the same function in substantially the same way to achieve substantially the same result.'" *Kraft Foods, Inc. v. Int'l Trading Co.*, 203 F.3d 1362, 1371 (Fed. Cir. 2000) (quoting *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 149 F.3d 1309, 1321 (Fed. Cir. 1998)).

Section § 271(b) provides that "[w]hoever actively induces infringement of a patent shall be liable as an infringer." Induced infringement requires an act of direct infringement. *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 572 U.S. 915, 921 (2014). A respondent is liable under 35 U.S.C. § 271(b) for induced infringement when the respondent knew of the patent and "actively and knowingly aided and abetted another's direct infringement." *Ricoh Co., Ltd. v. Quanta Comput. Inc.*, 550 F.3d 1325 (Fed. Cir. 2008) (citing *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1304, 1305 (Fed. Cir. 2006) and *Water Techs. Corp. v. Calco, Ltd.*, 850 F.2d 660, 668 (Fed. Cir. 1988)). To prove inducement, the patentee must "show that the accused inducer took an affirmative act to encourage infringement with the knowledge that the induced acts constitute patent infringement." *Microsoft Corp. v. DataTern, Inc.*, 755 F.3d 899, 904 (Fed. Cir. 2014) (citing *Global-Tech Appliances, Inc. v. SEB S.A.*, 131 S. Ct. 2060, 2068 (2011)). Evidence of "active steps" taken to encourage direct infringement, "such as advertising an infringing use or instructing how to engage in an infringing use, show an affirmative intent that the product be used to infringe, and a showing that infringement was encouraged overcomes the law's reluctance to find liability when a defendant merely sells a commercial product suitable for some lawful use." *Metro-Goldwyn-Mayer Studios Inc. v. Grokster*, 545 U.S. 913, 936 (2005)("*MGM*") (citations and internal quotation marks omitted). A patent holder may prove inducement of infringement by direct or circumstantial evidence. *See Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 843 F.3d 1315, 1331 (Fed. Cir. 2016). "The Federal Circuit has clarified that, to establish contributory

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infringement, the patent owner must prove that: (1) there is direct infringement; (2) the accused infringer had knowledge of the patent at issue; (3) the component has no substantial non-infringing uses; and (4) the component is a material part of the invention." *Bone Care Int'l, LLC v. Roxane Lab'ys., Inc.*, No. 09-cv-285 (GMS), 2012 WL 2126896, at *10 (June 11, 2012)(citations omitted). Intent is presumed in a contributory infringement analysis. *MGM*, 545 U.S. at 932.

C. Validity

A patent issued by the USPTO is presumed to be valid. 35 U.S.C. § 282(a). "The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity." *Id*. Because of this presumption, invalidity must be established by facts supported by "clear and convincing evidence." *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 110–14 (2011).

1. Anticipation

A patent claim is invalid if "the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention." 35 U.S.C. § 102(a).

In order to show a patent is anticipated, a defendant must demonstrate by clear and convincing evidence that "each and every" element and limitation of the claim was described in a single prior art reference, either expressly or inherently. *See Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 958 (Fed. Cir. 2014); *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1082 (Fed. Cir. 2008); *see also Microsoft Corp.*, 564 U.S. at 95. Showing that a "prior art reference discloses part of the claimed invention, which an ordinary artisan might supplement to make the whole, or that it includes multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention" is not enough for anticipation. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008).

Anticipation requires that a single reference "describe the claimed invention with sufficient

precision and detail to establish that the subject matter existed in the prior art." *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1284 (Fed. Cir. 2017). A reference that is ambiguous as to even a single claim limitation cannot, as a matter of law, anticipate a claim. *See id.* A prior art reference does not anticipate a claim even if a skilled artisan viewing the reference would "at once envisage" the missing limitation. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd*, 851 F.3d 1270, 1274 (Fed. Cir. 2017).

2. Obviousness

The determination of obviousness under § 103(a) is a question of law based on underlying facts. *Bayer Schering Pharma AG v. Barr Lab'ys, Inc.*, 575 F.3d 1341, 1346 (Fed. Cir. 2009). The underlying facts include: (1) the scope and content of the prior art, (2) the level of ordinary skill in the pertinent art, (3) the differences between the prior art and the claims at issue, and (4) secondary considerations. *Prometheus Lab'ys, Inc. v. Roxane Lab'ys, Inc.*, 805 F.3d 1092, 1097-98 (Fed. Cir. 2015); *Bayer*, 575 F.3d at 1346-47.

In analyzing obviousness, the prior art must be considered as a whole. *See, e.g.*, *Impax Lab'ys, Inc. v. Lannett Holdings Inc.*, 893 F.3d 1372, 1379-80 (Fed. Cir. 2018). This prevents evaluation of the invention part-by-part; without this important requirement, an obviousness assessment might break an invention into its component parts (A + B + C), then find a prior art reference containing A, another containing B, and another containing C, and on that basis alone declare the invention obvious. *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1275 (Fed. Cir. 2004). For this reason, an obviousness analysis must avoid hindsight bias, either through using the challenged patent itself as a roadmap for putting together pieces of the invention or through conclusory references that a POSA could have combined elements within the prior art to arrive at the claimed invention. *See InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014).

Even if all elements of the invention are disclosed in various prior art references, "[a] party

[redacted]

seeking to invalidate a patent on the basis of obviousness must demonstrate 'by clear and convincing evidence that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1360 (Fed. Cir. 2012). In particular, the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991).

In rebutting an obviousness contention, a patent holder can rely on evidence of certain objective "indicia" of non-obviousness. *See, e.g.*, *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 35-36 (1966). Objective indicia "may often be the most probative and cogent evidence in the record," and "may often establish that an invention appearing to have been obvious in light of the prior art was not." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). Such objective indicia of nonobviousness can include industry praise, a long-felt but unresolved need for the invention, commercial success of the invention, copying, and failure of others to make the invention. *See Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1058 (Fed. Cir. 2016); *see also In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Pat. Litig.,* 676 F.3d 1063, 1080 (Fed. Cir. 2012). A patentee producing evidence of objective indicia must show a nexus between the merits of the claimed invention and the objective indicia in order for the evidence to be given substantial weight in an obviousness decision. *Hearing Components, Inc. v. Shure Inc.*, 600 F.3d 1357, 1374 (Fed. Cir. 2010). If the asserted objective evidence is tied to a specific product and that product embodies the claimed features, and is co-extensive with them, then the objective evidence is entitled to a rebuttable presumption of nexus. *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019).

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One such objective indicator of nonobviousness is industry praise for the invention, e.g., in the form of industry awards or praise for a product embodying the claimed invention. *See id.* at 1333-4. Such industry praise is probative of nonobviousness even if it was not precisely limited to the point of novelty of the claimed combination. *Id.*

Another objective indicator of nonobviousness is if the invention satisfies a long-felt but unresolved need. Evidence of a long felt but unresolved need tends to show non-obviousness because it is reasonable to infer that the need would have not persisted had the solution been obvious. *WBIP*, *LLC v. Kohler Co.*, 829 F.3d 1317, 1332 (Fed. Cir. 2016). Evidence of a long-felt need may be shown by identifying a known problem in an industry that remained unsolved until the patented invention. *See*, *e.g.*, *id.*

Another type of objective indicia is the commercial success of an embodiment of the invention claimed in the patent. Commercial success of a patented invention is strong evidence of nonobviousness if there is a relationship, or nexus, between the commercial success and the patented product. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1391-92 (Fed. Cir. 1988) A nexus is presumed if the commercially successful product is disclosed and claimed in the patent. More specifically, "if the marketed product embodies the claimed features, and is coextensive with them, then a nexus is presumed." *See Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130, (Fed. Cir. 2000) ("if the marketed product embodies the claimed features, and is coextensive with them, then a nexus is presumed and the burden shifts to the party asserting obviousness to present evidence to rebut the presumed nexus. The presumed evidence cannot be rebutted with mere argument; evidence must be put forth."). *See also Fox Factory, Inc. v. SRAM*, LLC, 944 F.3d 1366, 1373-74 (Fed. Cir. 2019).

Even if nexus is not presumed, a patent owner can demonstrate a nexus by showing that

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the evidence of secondary considerations is the direct result of the unique characteristics of the claimed invention. *See id.*, at 1373–75. A patentee may also make out a *prima facie* case of such a nexus by showing that the product's commercial success is due to the patented features. *Demaco*, 851 F.2d at 1391-92; *Merck & Co., Inc. v. Teva Pharms USA, Inc.*, 395 F.3d 1364 (Fed. Cir. 2005). The patented invention need not be "solely responsible for the commercial success" as long as a nexus between the success of the product and the patent exists. *Cont'l Can Co., USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1273 (Fed. Cir. 1991); *Ecolochem, Inc., v. S. California Edison Co.*, 227 F.3d 1361, 1378 (Fed. Cir. 2000). Thus, the patented technology does not need to be the *only* driver of the product's success; the existence of other demand drivers does not negate a showing of commercial success.

Yet another objective indicator of nonobviousness is copying of the patented invention. The fact that a competitor copied the patentee's invention, rather than one within the public domain, is probative of nonobviousness because it suggests the competitor saw value in the invention that he could not achieve without copying. *Medtronic, Inc. v. Teleflex Innovations S.a.r.l.*, 70 F.4th 1331, 1339 (Fed. Cir. 2023). The copying inquiry involves a comparison of the competitor's product with the allegedly copied patented product, rather than the patent's claims. *Id.* at 1340. Evidence of access to a patented product along with substantial similarity between an accused infringer's product and the patented product is evidence of copying. *Id.*

Still another objective indicator of nonobviousness is failure of others to make the claimed invention. Failure of others is an objective indicia of nonobviousness because "While absolute certainty is not necessary to establish a reasonable expectation of success, there can be little better evidence negating an expectation of success than actual reports of failure." *Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1354 (Fed. Cir. 2003).

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3. Enablement

The enablement requirement is satisfied if a patent specification teaches those in the art enough that they can make and use the invention without undue experimentation. *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1334 (Fed. Cir. 2003). A patent challenger bears the burden of showing a claim is not enabled by the specification through clear and convincing evidence. *Id.* There are several factors that may be considered in determining whether practicing the full scope of the claimed invention would require undue experimentation, including (1) the breadth of the claims; (2) the nature of the invention; (3) the state of the prior art; (4) the level of one of ordinary skill; (5) the level of predictability in the art; (6) the amount of direction provided by the inventor; (7) the existence of working examples; and (8) the quantity of experimentation needed to make or use the invention based on the content of the disclosure. *See Cephalon, Inc. v. Watson Pharms., Inc.*, 707 F.3d 1330, 1336 (Fed. Cir. 2013). Extensive experimentation does not necessarily render the experiments unduly extensive where the experiments involve repetition of known or commonly used techniques. *Id.* at 1338. If an invention pertains to an art where the results are predictable, e.g., mechanical as opposed to chemical arts, a broad claim can be enabled by disclosure of a single embodiment, and is not invalid for lack of enablement simply because it reads on another embodiment of the invention which is inadequately disclosed." *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533 (Fed. Cir. 1987). Further, lengthy experiments carried out by the patentee to satisfy commercial requirements or to mass-produce the product do not show nonenablement, as "[p]atents are not production documents, and nothing in the patent law requires that a patentee must disclose data on how to mass-produce the invented product." *CFMT, Inc. v. Yieldup Int'l Corp.*, 349 F.3d 1333, 1339 (Fed. Cir. 2003).

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4. Written Description

A patent specification must contain a written description of the invention that allows a person of ordinary skill in the art to which it pertains to recognize that the inventors were in possession of the claimed invention at the time of filing. To show a patent is invalid for lacking sufficient written description, a patent challenger must show that, based upon an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art, the patent would not indicate the inventor(s) had possession of the claimed subject matter at the time of filing. *See Hologic, Inc. v. Smith & Nephew, Inc.*, 884 F.3d 1357, 1361 (Fed. Cir. 2018). The patent challenger bears the burden of showing a claim is invalid for lacking written description with clear and convincing evidence. *Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1072 (Fed. Cir. 2005).

The mere fact that a claim may cover an inoperative embodiment does not mean the claim is invalid for lacking written description. "It is almost always possible to so construe a claim as to have it read on inoperative embodiments, but the alternative of requiring an applicant to be so specific in his claims as to exclude materials known to be inoperative and which even those not skilled in the art would not try would result in claims . . . so detailed as to obscure, rather than to particularly point out and distinctly claim, the invention." *In re Smythe*, 480 F.2d 1376, 1385 (C.C.P.A. 1973) (cleaned up). Rather, "[i]t is not necessary that every permutation within a generally operable invention be effective in order for an inventor to obtain a generic claim[.]" *Capon v. Eshhar*, 418 F.3d 1349, 1359 (Fed. Cir. 2005).

D. Claim Construction

Courts construe claims according to the meaning they would have to a skilled artisan at the time the application was filed, in view of the intrinsic evidence: the claims, the specification, and prosecution history. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005).

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Although claim construction is ultimately a question of law, it is based on underlying factual considerations. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 321–22 (2015). The specification "is always highly relevant to the claim construction analysis[]" and is "the single best guide to the meaning of a disputed term." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). "The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Phillips*, 415 F.3d at 1316 (citation omitted).

After reviewing the intrinsic evidence, courts may consider extrinsic evidence, including expert testimony, dictionaries, and treatises. *Id.* at 1314. Extrinsic evidence consists of all evidence external to the patent and prosecution history, including dictionaries and learned treatises. *Vitronics*, 90 F.3d at 1584. Extrinsic evidence is "less significant than the intrinsic record" because it is generally "less reliable." *Phillips*, 415 F.3d at 1317-18. Courts should disregard extrinsic evidence that is at odds with the intrinsic record. *Id.* at 1317.

E. Domestic Industry – Technical Prong

The "technical prong" requires that the complainant show "that articles exist that are covered by at least one claim of the asserted patent." *Id*. "The test for satisfying the technical prong of the industry requirement is essentially [the] same as that for infringement, i.e., a comparison of domestic products to the asserted claims." *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003).

F. Domestic Industry – Economic Prong

The "economic prong" of the domestic industry requirement is satisfied when one of the economic activities described in Section 337(a)(3) has taken place or is taking place with respect to the protected articles. *See Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 25-26 (Feb. 17, 2011). Meeting any one of these criteria is

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sufficient to satisfy the economic prong. *See id*. at 26; *see also Certain Solid State Storage Drives, Stacked Electronics Components, & Prods. Containing Same*, ITC Inv. No. 337-TA-1097, Comm'n Op. at 7-8 (June 29, 2018); *Certain Variable Speed Wind Turbines & Components Thereof*, Inv. No. 337-TA-376, Comm'n Op. ("Wind Turbines"), at 21 (September 23, 1996). Whether a complainant satisfies the economic prong is not analyzed according to a rigid mathematical formula. *Certain Male Prophylactic Devices*, Inv. No. 337-TA-546, Comm'n Op. at 39 (Aug. 1, 2007). Instead, it is analyzed on a case-by-case basis and requires "an examination of the facts in each investigation, the article of commerce, and the realities of the marketplace." *Id*.

To satisfy the economic prong, a complainant can rely on investments or employment "directed to significant components, specifically tailored for use in an article protected by the patent." *Motorola Mobility, LLC v. ITC*, 737 F.3d 1345, 1351 (Fed. Cir. 2013). The economic prong involves an examination of a complainant's domestic investments with respect to articles protected by the intellectual property at issue or in exploitation of the asserted patent. *InterDigital Comms., LLC v. Int'l Trade Comm'n*, 707 F.3d 1295, 1298 (Fed. Cir. 2013); *Certain Variable Speed Wind Turbines & Components Thereof*, Inv. No. 337-TA-376, Comm'n Op. at 21 (September 23, 1996). The scope of the domestic industry analysis may expand to include investments in non-patented components, if those components are "essential," "necessary," and/or "integral" to the patented component or components of a system or is "central to enabling" exploitation of the article covered by the patented technology. *Certain Magnetic Tape Cartridges and Components Thereof*, Inv. No. 337-TA-1058, Comm'n Op. at 50-54 (April 9, 2019).

The appropriate time period for analyzing a complainant's domestic industry investments for the purpose of satisfying the economic prong is the date the complaint was filed. *Hyosung TNS Inc. v. Int'l Trade Comm'n*, 926 F.3d 1353, 1361 (Fed. Cir. 2019) ("The ITC generally determines

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whether a domestic industry exists as of the date the complaint is filed."); *Certain Thermoplastic-Encapsulate Elec. Motors, Components Thereof, & Prods. & Vehicles Containing Same II*, Inv. No. 337-TA-1073, Comm'n Op. at 6 (April 12, 2019) ("Ordinarily, the relevant date at which to determine if the domestic industry requirement of section 337 is satisfied is the filing date of the complaint."); *Motiva, LLC v. Int'l Trade Comm'n*, 716 F.3d 596, 600, 601 n.6 (Fed. Cir. 2013*); Certain Video Game Sys. & Controller*s, Inv. No. 337-TA-743, Comm'n Op. at 4-5 (Jan. 20, 2012) ("The Commission has held that the appropriate date for determining whether a domestic industry exists or is in the process of being established is the date of filing of the complaint."). Past expenditures should be considered to support a domestic industry claim, so long as those investments pertain to the complainant's industry with respect to the articles protected by the asserted patent, and the complainant is continuing to make qualifying investments at the time the complaint is filed. *Certain Television Sets, Television Receivers, Television Tuners, & Components Thereof,* Inv. No. 337-TA-910, Comm'n Op. at 36 (Oct. 30, 2015); *see also Hyosung TNS Inc.,* 926 F.3d at 1361 (finding investments in research and development regarding claimed features more than five years before the complaint supported domestic industry claim).

With respect to subsections (A) and (B) – significant investments in plant and equipment and significant investments in labor or capital associated with products incorporating the asserted patent – the Commission requires quantitative evidence of claimed investments. *Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879, 883 (Fed. Cir. 2015). Cognizable investments in plant and equipment and labor or capital are not limited to those related to manufacturing, but can also include investments in other activities such as customer support and warranty repair and service. *Certain Adjustable Keyboard Support Sys. & Components Thereof*, Inv. No. 337-TA-670, Order No. 27 at 9-12 (November 4, 2009) (finding a domestic industry under subsection (B) based on

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labor costs associated with activities including quality control testing and customer service). As well, investments in plant and equipment and in labor or capital associated with engineering and research and development activities can be considered under subsections (A) and (B), respectively. *Certain Solid State Storage Drives, Stacked Electronics Components, & Prods. Containing Same*, ITC Inv. No. 337-TA-1097, Comm'n Op. at 8-15 (June 29, 2018). Furthermore, the "Commission has not required complainants to show exploitation of the patented technology (as the concept is understood under subsection (C) to satisfy subsection (A) and (B)."

G. Public Interest

Pursuant to Rule 210.50(b)(1) and the Notice of Institution of Investigation, the ALJ must take evidence on the issue of public interest for purposes of making a recommended determination on public interest under Rule 210.42(a)(1)(ii)(C). The statutory public interest factors are (1) public health and welfare, (2) competitive conditions in the U.S. economy, (3) production of like or directly competitive articles in the U.S., and (4) U.S. consumers. *See* 19 U.S.C. § 1337(d)(1), (f)(1). The Commission almost never denies remedies based on these factors.[3]

"[I]n assessing [the] public interest factors when granting relief, the Commission relies on the strong public interest in enforcing intellectual property rights." *Certain Baseband Processor Chips and Chipsets*, No. 337-TA-543, Comm'n Op. 2011 WL 6121182, at *75 (Oct. 1, 2011), *rev'd on other grounds*, *Kyocera Wireless Corp. v. Int'l Trade Comm'n*, 545 F.3d 1340, 1358 (Fed. Cir. 2008). The protection of US intellectual property rights "provides foreign and domestic businesses alike with a climate of predictability that fosters investment, innovation, and the

[3] Oura has found only three instances and none since 1984: *Certain Automatic Crankpin Grinders*, Inv. No. 337-TA-60, Comm'n Determination & Order (Dec. 17, 1979); *Certain Inclined-Field Acceleration Tubes & Components Thereof*, Inv. No. 337-TA-67, Comm'n Action & Order (Dec. 29, 1980); *Certain Fluidized Supporting Apparatus*, Inv. No. 337-TA-182/188, Comm'n Memo. Op. (Oct. 5, 1984).

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exchange of technology and associated intellectual property rights." *Certain Digital Televisions*, No. 337-TA-617, Comm'n Op. 2009 WL 1124461, at *9 (Apr. 23, 2009), *aff'd in part, rev'd in part on other grounds*, *Vizio, Inc. v. Int'l Trade Comm'n*, 605 F.3d 1330 (Fed. Cir. 2010). The "mere fact that a technological field has been determined to provide benefits to the economy is [not] sufficient to excuse infringement of a patent in that field." *Certain Personal Data & Mobile Commc'ns Devices*, No. 337-TA-710, Comm'n Op. 2011 WL 12488979, at *46 n.56 (Dec. 29, 2011).

Section 337 mandates remedies to the complainant "except in those limited circumstances in which the statutory public interest concerns are so great as to trump the public interest in enforcement of intellectual property rights." *Baseband Processor Chips*, 2011 WL 6121182, at *77. The rare times that statutory public interest outweighed the public interest in intellectual property enforcement were unique. They usually involved situations where there was "inadequate supply within the United States—by both the patentee and domestic licensees—[which] meant that an exclusion order would deprive the public of products necessary for some important health or welfare need: energy efficient automobiles, basic scientific research, or hospital equipment." *Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1360 (Fed. Cir. 2010) (citing *Certain Fluidized Supporting Apparatus & Components*, No. 337-TA-182/188, Comm'n Op. 1984 WL 63741 (Oct. 1984) (hospital burn beds); *Certain Inclined-Field Acceleration Tubes & Components*, No. 337-TA-67, Comm'n Op. 0080 WL 594319 (Dec. 1, 1980) (nuclear accelerator tubes); *Certain Automatic Crankpin Grinders*, No. 337-TA-60, Comm'n Op. 0079 WL 419349 (Dec. 1979) (energy-efficient car engine components)).

Regarding public health and welfare, investigations that typically give rise to such concerns involve medical devices or pharmaceuticals. *See Certain Toothbrushes*, No. 337-TA-391,

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Comm'n Op. 1997 WL 696291, at *2 (Oct. 15, 1997). The Commission has also raised public interest concerns in investigations of products involved in government-funded scientific research or used by first responders. *See Certain Microfluidic Devices*, No. 337-TA-1068, Comm'n Op. 2020 WL 225020, at *16-17 (Jan. 10, 2020) (cancer and cardiovascular research); *Baseband Processor Chips*, 2011 WL 6121182, at *74 (communications devices used by first responders); *Inclined-Field Acceleration Tubes*, 0080 WL 594319, at *10–15 (nuclear research). Even then, the investigated products must be "indispensable" and "greatly superior" to other available products for the Commission to deny a remedy. *Id.*, at *14.

Regarding competitive conditions in the U.S. economy, "the appropriate standard is not that no remedy should issue if every consumer cannot obtain the exact device desired that was found to infringe the patents at issue. Rather, the impact is assessed in the aggregate and consideration is given to whether there are reasonable substitutes for the devices subject to the exclusion order in terms of features, price points, and other pertinent factors." *Certain Elec. Digital Media Devices*, No. 337-TA-796, Comm'n Op. 2013 WL 10734395, at *80 (Sept. 6, 2013).

Regarding production of like or directly competitive articles in the U.S., the Commission has denied a remedy based on demand only when the domestic industry was unable to meet the demand of the United States market in a commercially reasonable time. *See Crankpin Grinders*, 0079 WL 419349, at *10–11 (denying remedy where complainant could not meet demand for component necessary for increased automotive fuel efficiency required by public policy); *but see Certain Crystalline Cefadroxil Monohydrate*, No. 337-TA-293, Comm'n Op. 1990 WL 10008086, at *17 (Mar. 21, 1990) (rejecting public interest argument where domestic supply was sufficient to meet demand). Whether a time period is commercially reasonable depends on the circumstances. *See Certain Air Mattress Sys.*, No. 337-TA-971, Comm'n Op. 2017 WL 11165550, at *36 (June

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20, 2017) (refusing to issue a cease-and-desist order where alternatives would not be available within the three months before the patent would expire), *vacated in part*, 2020 WL 861520 (Feb. 19, 2020).

And regarding U.S. consumers, "the appropriate standard is not that no remedy should issue if every consumer cannot obtain the exact device desired" after a remedy issues. *See Elec. Digital Media Devices*, 2013 WL 10734395, at *80. Rather, the question is whether reasonable substitutes will be available to consumers if the accused products are excluded. *Id.*; *see also In re Certain Blood Cholesterol Testing Strips*, No. 337-TA-1116, Comm'n Op. 2020 WL 2617310, at *21 (May 1, 2020) ("consumers will continue to have multiple options for blood cholesterol testing even if the Accused Products are excluded").

H. Remedy

The Commission has broad discretion in the deamination of the form, scope, and extent of remedy. *Hyundai Elec. Indus. Co. v. U.S. Int'l Trade Comm'n*, 899 F.2d 1204, 1208-09 (Fed. Cir. 1990). Upon a finding of a violation of Section 337, the Commission may issue one or more of the following remedies: a limited exclusion order ("LEO"), a general exclusion order ("GEO"), and/or a cease-and-desist Order ("CDO"). CX-0822 at 322, 326, 336. Here, Oura is seeking a LEO. *See* SAC, at 2, 25.

If the Commission determines that a violation of Section 337 has occurred, it is required to consider the effect that a potential LEO, GEO, and/or CDO will have on the public interest, based on a consideration of four "factors" enumerated in the statute: (1) the impact of the proposed remedy on U.S. public health and welfare; (2) the impact of the proposed remedy on competitive conditions in the U.S. economy; (3) the impact of the proposed remedy on the production of like or directly competitive articles in the U.S.; and (4) the impact of the proposed remedy on U.S. consumers. 19 U.S.C. § 1337(d)(1) and (f)(1). Unless the Commission finds that the articles should

not be excluded after consideration of these four factors, Section 337 provides that the Commission *shall* issue an exclusion order. 19 U.S.C. § 1337(d)(1).

For cease-and-desist orders, the Commission has the authority to issue such an order against any infringing products in the U.S. where the inventory of such products is "commercially significant" *Certain Kinesiotherapy Devices & Components Thereof*, Inv. No. 337-TA-823, Order to Cease and Desist (June 17, 2013). Pursuant to Section 337(f), the Commission may issue a cease-and-desist order against any respondent that maintains a "commercially significant" inventory of infringing products in the United States. *See, e.g.*, *Certain Agricultural Vehicles and Components Thereof*, Inv. No. 337-TA-487, Comm'n Op. at 13 (Sept. 24, 2004) (citing *Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, USITC Pub. No. 2391, Comm'n Op. at 37-42 (June 1991)). "[T]here is no lower limit on the number of articles a domestic respondent must have in inventory before that inventory can be found to be 'commercially significant.'" *Certain Agricultural Vehicles and Components Thereof*, Inv. No. 337- TA-487, Comm'n Op. at 14 (Sept. 24, 2004).

I. Bonding

When determining the proper amount of bond, the Commission considers what amount would be required to offset the competitive advantage gains by a respondent's infringing act, and the bond theoretically enables a respondent to continue importing during the 60-day Presidential Review Period without destroying a complainant's U.S. market by undercutting its prices." 19 U.S.C. § 1337(j)(3). *See also*, 19 C.F.R. § 210.50(a)(3); *Certain Beverage Dispensing Sys.& Components Thereof,* Inv. No. 337-TA-1130, Comm'n Op. at 27 (March 26, 2020); *Certain Silicon Microphone Packages & Prods. Containing the Same*, Inv. No. 337-TA-629, Comm'n Op. at 19 (August 18, 2009); *Certain Electric Fireplaces, Components Thereof, Manuals for Same, Certain Processes for Mfg. or Relating to Same & Certain Prods. Containing Same*, Inv. No. 337-TA-

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791/826 (Consolidated), Comm'n Op. at 19 (May 29, 2013); Soucie, Aimee, and Andrew Kasnevich, *Unfair Competition and the ITC: A Treatise on Section 337 Actions*, 2023 Ed., at 349. *See also*, *Certain Mechanical Lumbar Supports & Prods. Containing Same*, Inv. No. 337-TA- 415, Initial Determination and Recommended Determination, at 74-75 (June 29, 1999).

The price differential between respondent's products that directly complete with the domestic industry products may be relevant to determining the appropriate bond amount. *Certain Digit. Video Receivers & Related Hardware & Software Components*, Inv. No. 337-TA-1103, Comm'n Op. at 31 (May 13, 2020). *See also, Certain Network Devices, Related Software & Components Thereof (II)*, Inv. No. 337-TA-945, Comm'n Op. at 127 (June 1, 2017) ("When reliable price information is available, the Commission has often set the bond by eliminating the differential between the domestic product and the imported, infringing product."); *Certain Loom Kits for Creating Linked Articles*, Inv. No. 337-TA-923, Comm'n Op. at 17 (June 26, 2015) ("The Commission typically sets the bond based on the price differential between the imported infringing product and the domestic industry article or based on a reasonable royalty."); *Certain Digit. Processors & Digit. Processing Sys., Components Thereof, & Prods. Containing Same*, Inv. No. 337-TA-559, Recommended Determination on Remedy and Bonding, at 7 (May 11, 2007).

III. STANDING, PERSONAL JURISDICTION, AND IMPORTATION

A. Statutory Authority

The Commission has statutory authority over this Investigation. *Certain Video Security Equipment and Systems, Related Software, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-1281, 2023 WL 3074844, Comm'n Op. at *6 (Apr. 19, 2023).

B. Standing

Ouraring, Inc. owns all right, title, and interest in the '178 patent and thus has statutory standing to bring this investigation. JX-0001; JX-0003; *Certain Active Matrix Organic Light-*

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Emitting Diode Display Panels and Modules for Mobile Devices, and Components Thereof, Inc. No. 337-TA-1351, 2024 WL 2271608, Comm'n Op. at *7-8 (May 15, 2024). Respondents and Staff have not challenged Oura's standing in this Investigation.

C. Personal Jurisdiction

The Commission has personal jurisdiction over all Respondents. Oura consented to the personal jurisdiction of the Commission by filing its original Complaint and participating in this Investigation. *See Certain Toner Cartridges, Components Thereof, & Sys. Containing Same*, Inv. No. 337-TA-1174, Initial Determination at 34–35 (July 23, 2020), EDIS Doc. ID 719096, Comm'n Notice (Sept. 8, 2020). Each of the Respondents has consented to the Commission's personal jurisdiction because they appeared and participated in this Investigation and did not contest the Commission's personal jurisdiction. *See Certain Windshield Wiper Devices & Components Thereof*, Inv. No. 337-TA-881, Initial Determination, at 5 (May 8, 2014); *Certain Access Control Sys. and Components Thereof*, Inv. No. 337-TA-1016, Final ID, at 26 (Jul. 26, 2016); *Certain Miniature Hacksaws*, Inv. No. 337-TA-237, ID, 1986 WL 379287 at *1 (Oct. 15, 1986).

D. *In Rem* Jurisdiction and Importation

The Commission has *in rem* jurisdiction over the accused products by virtue of their importation into the United States. *See Sealed Air Corp. v. U.S. Int'l Trade Comm'n,* 645 F.2d 976, 985-86 (C.C.P.A. 1981) (Commission's jurisdiction over imported articles is sufficient to exclude such articles); *Enercon GmbH v. ITC*, 151 F.3d 1376, 1380 (Fed. Cir. 1998). This importation requirement is satisfied by importation for any purpose, including sale, offer for sale, testing, promotion, or sale after importation. *See Certain Abrasive Prods.*, Inv. No. 337-TA-449, Initial Determination, EDIS Doc. ID 60726, at 61 (Feb. 8, 2002) (finding importation satisfied where a promotion sample of the product was imported because "the importation requirement does not address a purpose for the imported products"). Complainants need only prove importation of

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a single accused product to satisfy the importation requirement. *See Certain Purple Protective Gloves*, Inv. No. 337-TA-500, Order No. 17 at 5 (Sept. 23, 2004); *Certain Trolley Wheel Assemblies*, Inv. No. 337-TA-161, Comm'n Op. at 7–8 (Nov. 1984). As discussed below, the evidence will show that Respondents sell for importation to the U.S., import, and/or sell after importation each of the Respondents Accused Products.

1. The infringing Ultrahuman Accused Products and components are imported into the United States in violation of Section 337

Ultrahuman manufactures the Ultrahuman Accused Product [redacted] *See, e.g.*; CX-1008; CX-1009; CX-0693; CX-0486. [redacted] See e.g.; CX-1386C at 61:19-23; 71:24-72:3. Ultrahuman Healthcare Pvt. Ltd. is the entity involved in the sale for importation and sale after importation of Ultrahuman Accused Product. *See* CX-0772C at Resp. No. 4. [redacted] *Id.* [redacted]. *Id.* at Resp. No. 8. [redacted] CX-0690C at Resp. Nos. 86-87; CX-0772C at Resp. Nos. 4-5, 8.

Ultrahuman further violates Section 337 as direct infringer, by importing components into the U.S., used by Ultrahuman to make the Ultrahuman Accused Product (which infringes the Asserted Claims of the '178 patent), [redacted]. CX-0027C. For example, [redacted] *Id.* The PCB component of the Ultrahuman Accused

[redacted]

Product is supplied by [redacted]. *Id.*

Ultrahuman [redacted]. CX-1386C at 67:14-69:15. Although [redacted] (*id*. at 70:12-71:23), [redacted]. CX-0027C.

2. The infringing RingConn Accused Products and components are imported into the United States in violation of Section 337

RingConn [redacted]. *See, e.g.*; CX-1013; CX-1014; CX-1015; CX-0694. Indeed, RingConn's corporate witness, Mr. Hao Wu, [redacted] See e.g.; CX-1387C at 27:21-28:3; 43:25-44:12. RingConn sells the RingConn Accused Product directly to customers from its website. CX-0771C at Resp. No. 4. Once purchased by customers in the United States, the entities involved in the importation, sale for importation, or sale after importation into the United States include [redacted]. *Id.* RingConn also admits that the RingConn Accused Products and the components within the RingConn Accused Products are imported into the United States. CX-0691C at Resp. Nos. 86-89; CX-0984C at Resp. Nos. 5-6, 8-9.

RingConn further violates Section 337 as direct infringer, by importing components into

[redacted]

the U.S., used by RingConn to make RingConn Accused Product (which infringes the Asserted Claims of the '178 patent), [redacted]. CX-0984C at Resp. No. 2; CX-0473C; CX-0474C; CX-0475C. [redacted]

[redacted] *Id.*

IV. TECHNICAL ANALYSIS OF THE ASSERTED '178 PATENT

A. Claim Construction

1. Level of Ordinary Skill in the Art

The ALJ found that the level of skill, training, and experience for a skilled artisan for the '178 patent would have:

> (1) at least three years of experience with research or development of health or medical devices, wearable sensors, or consumer products; and (2) a related degree (e.g., at least a bachelor's degree) in mechanical, industrial, or electrical engineering, or related field.

JX-0011 at 4.

2. Agreed Constructions

The ALJ adopted the agreed upon constructions for the following claim terms from the '178 patent:

Claim Term	Agreed Construction
"A finger-worn wearable ring device" (claim 1)	The preamble is limiting
"[positioned/configured to fit] within a cavity" (claim 1)	Plain and ordinary meaning, which is: "[positioned/configured to fit] within a hollow space"
"[the internal housing component] coupled with [the external housing component]" (claim 1)	Plain and ordinary meaning, which is "[the internal housing component] is connected with [the external housing component]"

JX-0011 at 5.

[redacted]

3. Disputed Constructions

The ALJ has issued construction for the following disputed terms:

Claim Term	ALJ Construction
an [internal/external] housing component	Plain and ordinary meaning, which is an [internal/external] structure that encloses space and does not necessarily exclude potting material
circumferential	Plain and ordinary meaning, which does not require a closed shape.

Id. at 6-17.

B. Infringement and Domestic Industry (Technical Prong)

Respondents violate Section 337 as direct infringers by importing into the U.S., selling for importation, or selling within the U.S. after importation Respondents Accused Products that infringe the Asserted Claims of the '178 patent under 35 U.S.C. § 271(a).

Oura also satisfies the "technical prong" of § 1337(a)(2)'s domestic industry requirement because Oura Ring Gen. 3, Oura Ring Gen. 4, and corresponding Oura App practice at least one valid claim of the '178 patent as shown below.

1. Independent Claim 1

a. Preamble: A finger-worn wearable ring device.

Each of the Products-at-Issue (i.e., Ultrahuman Accused Product, RingConn Accused Products, and Oura Domestic Industry Products) satisfy the preamble of claim 1. Indeed, as discussed in more detail below, Respondents acknowledge that the Respondents Accused Products and Oura Domestic Industry Products are smart ring devices configured to be worn on a user's finger. *See e.g.; CX*-0690C at Resp. No. 1 ("Ultrahuman admits that the Accused Products include a device that can be worn on a finger."); *Id.* at Resp. Nos. 2 and 4; CX-691C at Resp. No. 2 (RingConn admits that RingConn Accused Products includes a ring); *Id.* at Resp. No. 4.

But Respondents' expert, Mr. Ramon Alarcon, takes a remarkable position that to meet

[redacted]

this limitation, the products must have actually "been worn on a finger when it is imported, shipped, or sold." RX-0050C ¶¶ 48, 49, 52, and 53; *Id.* at ¶ 44 ("the preamble provides that the 'wearable ring device' must have been 'finger-worn,' and not that 'wearable ring device' is configured to be worn on a finger."). In other words, only if a user wears the Respondents Accused Products at the time of importation would the Accused Products be infringing according to Mr. Alarcon. *Id.*

First, this argument should be rejected as Respondents did not propose a construction of the preamble that requires the ring to be worn to infringe the claims. The plain meaning of the preamble is that the ring is of a shape "intended" to be worn on the finger, not that it be worn. Indeed, Figs. 1-21 show the inventive ring without any "finger" shown. JX-0001 at 9:54-56 ("the WCD 110 can be worn by the user (e.g., on a finger)"). Second, Respondents are wrong because the "finger-worn wearable ring device" limits the claims to types of devices (i.e., finger-worn rings) as opposed to other types of wearables, including rings that could be worn on other parts of the body (e.g., toe bands). *See e.g.,* RX-0402C ¶¶ 45, 51 (explaining that finger-worn wearable ring device refers to a device "that can be worn by the user on his or her finger"); ¶ 59 (explaining that a device is a finger-worn wearable ring device if "it is shaped and sized to fit a user's finger").

And the distinction as to the type of wearable device that the preamble emphasizes is important because unlike wrist-worn wearables, finger-worn wearables are configured to measure signals directly from the arteries in the finger rather than the surface capillaries in the wrist. By contrast, other wearables such as toe bands (or rings) are worn on an appendix furthest from the heart, and therefore the types of signals that such devices can measure is vastly different. Thus, the preamble of claim 1 of the '178 patent does not distinguish on whether the user is actually wearing the ring, but rather specifies the type of device the claim is directed towards. Each of the

[redacted]

Products-at-Issue in this case are finger-worn wearable ring devices as explained by Dr. Sarrafzadeh in his opening report.

(i) Ultrahuman Accused Product

Ultrahuman Accused Product includes a physical finger-worn wearable ring device that can be worn by the user on his or her finger. RX-0402C ¶¶ 45-50; CX-0693 at Oura-ITC 0000565; CX-0375. CX-0536 (describing the optimal finger for the Ultrahuman Accused Product); CX-0935 (Ultrahuman Accused Product Brochure); CX-0690C at Resp. No. 1 ("Ultrahuman admits that the Accused Products include a device that can be worn on a finger."); *id*. at Resp. No. 2 (Admits that the Accused Products include a ring); *id.* at Resp. No. 4 ("Ultrahuman admits that the Accused Products include a device that is considered a smart ring").



CX-0693 at Oura-ITC 0000566.

(ii) RingConn Accused Product

RingConn Accused Product is a finger worn wearable ring device configured to be worn

[redacted]

by the user on his or her finger. RX-0402C ¶¶ 51-54; CX-0704C; CX-0694 at Oura-ITC 0000697; CX-0704C . RingConn also admits that the RingConn Accused Product is a "smart ring." *See* CX-0691C at Resp. No. 2 (Admits that the RingConn Accused Products include a ring); *id.* at Resp. No. 4 (Admits that RingConn Accused Products include a smart ring)."



CX-0405.

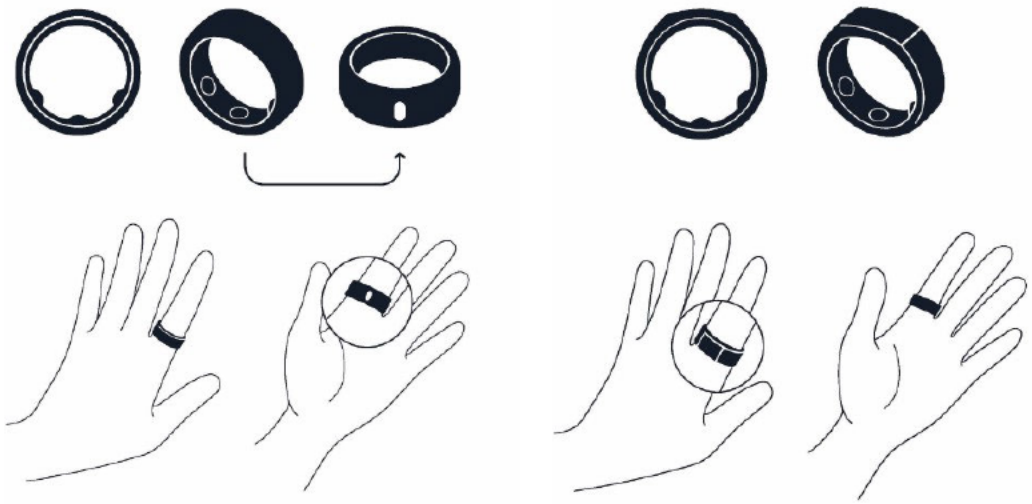
(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

Oura Ring Gen. 3 is a finger-worn wearable ring device for both the Horizon and Heritage variations. RX-0402C ¶ 55-58. For example, the Oura DI Product (Gen. 3) contains a ring, as shown below, and the user guide instructs that the ring is configured to be worn on the user's finger:

[redacted]

Oura Ring Gen. 3 (Horizon)	Oura Ring Gen. 3 (Heritage)
 CX-0702	 CX-0701



CX-0695 at Oura-ITC 0032116.

(b) Oura Ring Gen. 4

The Oura Ring Gen. 4 is also a finger-worn wearable ring device because it is shaped and sized to fit a user's finger similar to the Oura Ring Gen. 3. RX-0402C ¶¶ 59-60. For example, the Oura DI Product (Gen. 4) contains a ring, as shown below, and as Dr. Sarrafzadeh opined it is configured to be worn on a user's finger:

[redacted]



CX-0667.

b. Limitation 1[a]: an external housing component defining an outer circumferential surface of the finger-worn wearable ring device

As an initial matter, Respondents' expert, Mr. Alarcon, does not dispute that Ultrahuman Accused Product practices limitation 1[a]. *See* RX-0050C ¶¶ 54-67. Nor does Mr. Alarcon dispute that the Oura Domestic Industry Products Oura Ring Gen. 3 (Horizon) or Oura Ring Gen. 4 practice this limitation. *Id.* at ¶¶ 63-67. Mr. Alarcon only challenges that the RingConn Accused Product and Oura Ring Gen. 3 (Heritage variation) include an external housing component defining an outer circumferential surface. *Id.* at ¶¶ 54-67.

But Mr. Alarcon's contention here was largely based on a claim construction that has since been rejected by the ALJ. *Id.* at ¶ 56 ("The feature [of RingConn Accused Product] that Dr. Sarrafzadeh opines infringes this limitation does not have a circumferential surface because it is not circular, ovular, or elliptical under the Respondents' construction; is not a closed geometric shape with a circumference; and is not curved under the Complainants' construction"); *Id.* at ¶ 64 ("surface of the [Oura Ring Gen. 3] Heritage is not a curved surface because of the flat portion"

[redacted]

referring to the plateau design on the outer surface). As the *Markman* Order found the term "'circumferential' has its plain and ordinary meaning and does not require a closed shape." JX-0011 at 16-17. Thus, in light of the *Markman* Order, Respondents' limited objection to RingConn Accused Product or Oura Ring Gen. 3 (Heritage variation) fails.

(i) Ultrahuman Accused Product

The Ultrahuman Accused Product includes an external housing component defining an outer circumferential surface of the finger-worn wearable ring device. RX-0402C ¶¶ 62-71; CX-0692C at Resp. No. 129; CX-0538 at Oura-ITC 0000581; CX-0671; CX-0650C; *See also* CX-0651C-CX-0659C; CX-0666C at UH-ITC 059995. Indeed, Ultrahuman itself refers to the external metallic structure as an "outer shell" because the structure houses the electronic components. CX-0538 at Oura-ITC 0000581; CX-0671.

As explained by Dr. Sarrafzadeh, the exterior metallic structure of Ultrahuman Accused Product forms the "external housing component," as shown below, and defines an outer circumferential surface of the external housing component:



CX-0537.

[redacted]

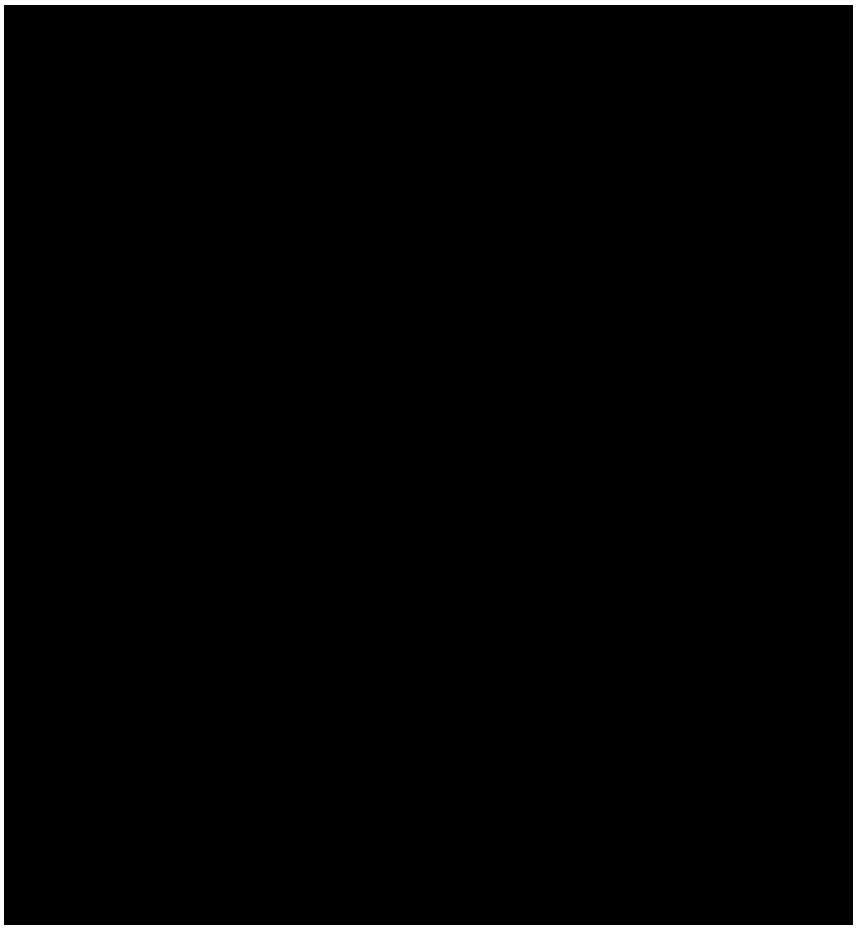


CX-0314.

[redacted]

CX-1069; *See also* CX-1071; RX-0325C at 274:24-275:1 (identifying the metallic structure as the "external housing component").

[redacted]



CX-1380C.



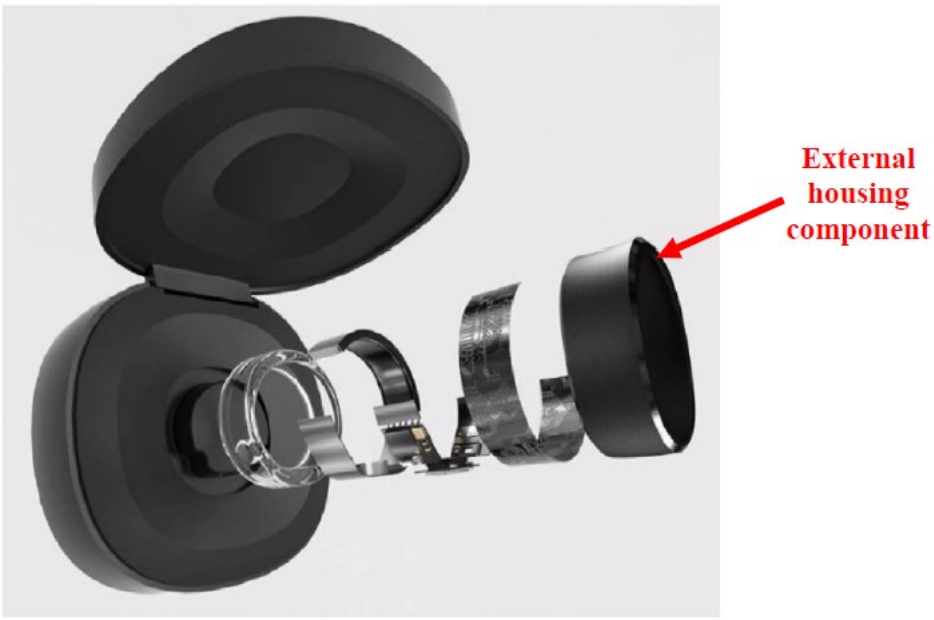
CX-0058.

Thus, the Ultrahuman Accused Product satisfies limitation 1[a] of the ’178 patent.

[redacted]

(ii) RingConn Accused Product

The RingConn Accused Product includes an external housing component defining an outer circumferential surface of the finger-worn wearable ring device. RX-0402C ¶¶ 72-80; CX-0647C. As explained by Dr. Sarrafzadeh, the external metallic structure of the RingConn Accused Product forms the "external housing component," as shown below, and defines an outer circumferential surface of the external housing component:



CX-0567 at Oura-ITC 0000720.

[redacted]

[redacted]



CX-0403.

[redacted]

CX-1040.

[redacted]



CX-1034.



CX-0067; *See also* RX-0400C.

RingConn disputes that it's products practice this limitation only on the basis that "RingConn's current design . . . includes an outer surface that is not circumferential because it is not circular, ovular, or elliptical and does not have a circumference." RX-0050C ¶ 58. But this is

[redacted]

the same flawed argument that Respondents advanced for the *Markman. See e.g.,* Markman Hr'g Tr. at 82:5-9 (Explaining that Respondents construction requires the claim to have a closed shape and "that closed shape needs to have a circumference."). The ALJ, however, rejected this claim interpretation in the *Markman* Order and found that the term "circumferential" has a plain and ordinary meaning and is not limited to a closed shape and the closed shape is circular, ovular, or elliptical. JX-0011 at 14-17. Mr. Alarcon's supplemental expert report offers no further opinions on this limitation post-*Markman* Order. *See* Alarcon Supp. Rep. ¶¶ 10-40.

Because the external metallic structure of the RingConn Accused Products has a circumferential surface under the plain and ordinary meaning, RingConn Accused Products practices limitation 1[a] of the '178 patent.

(iii) Oura Domestic Industry Products

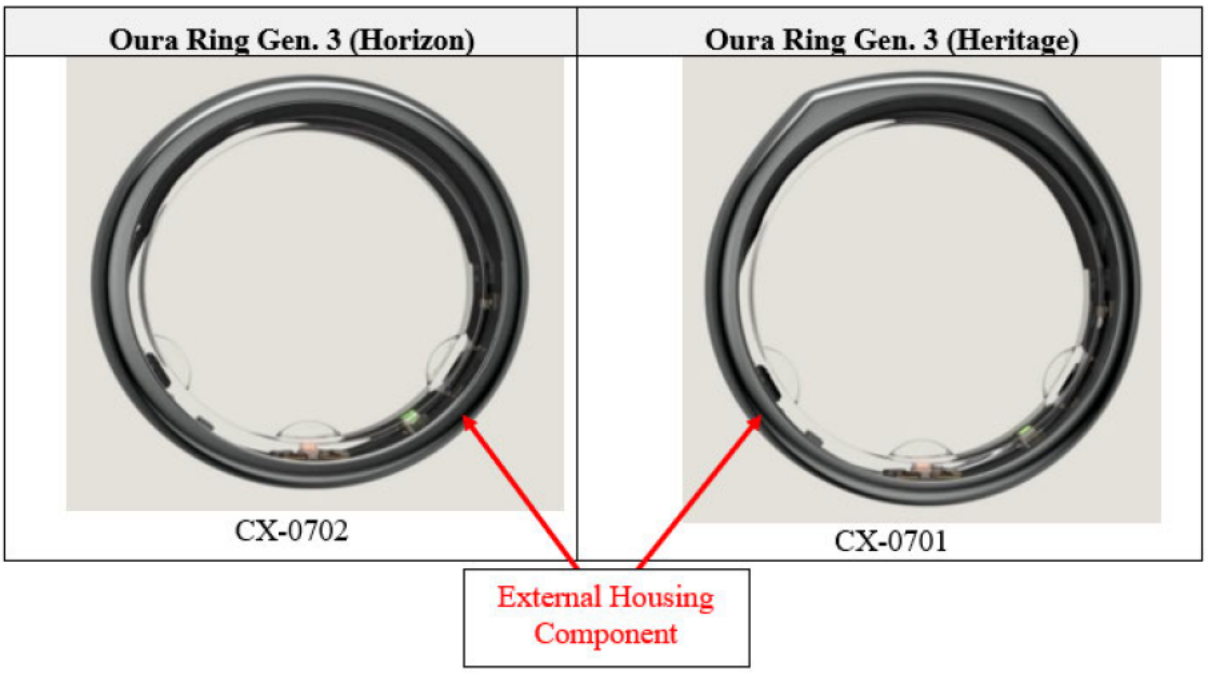
(a) Oura Ring Gen. 3

Both variations of Oura Ring Gen. 3 (i.e., Horizon and Heritage) include an external housing component defining an outer circumferential surface of the finger-worn wearable ring device. RX-0402C ¶¶ 82-88; CX-0700C (Horizon); CX-0527C (Heritage); CX-0047; CX-0048; CX-0173 (Horizon); CX-0142 (Heritage). As explained by Dr. Sarrafzadeh, the external metallic structure of Oura Ring Gen. 3 forms the "external housing component," as shown below, and defines an outer circumferential surface of the external housing component:

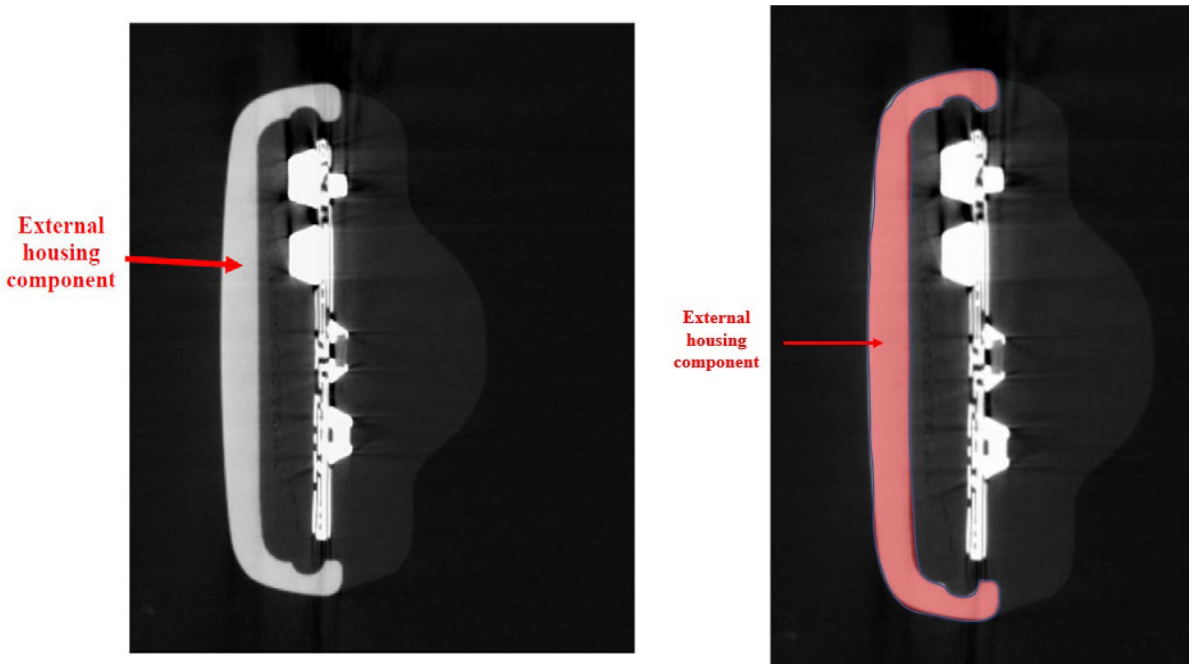
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CX-0040C at 0:04-0:05; CX-0528.



[redacted]



CX-0048.

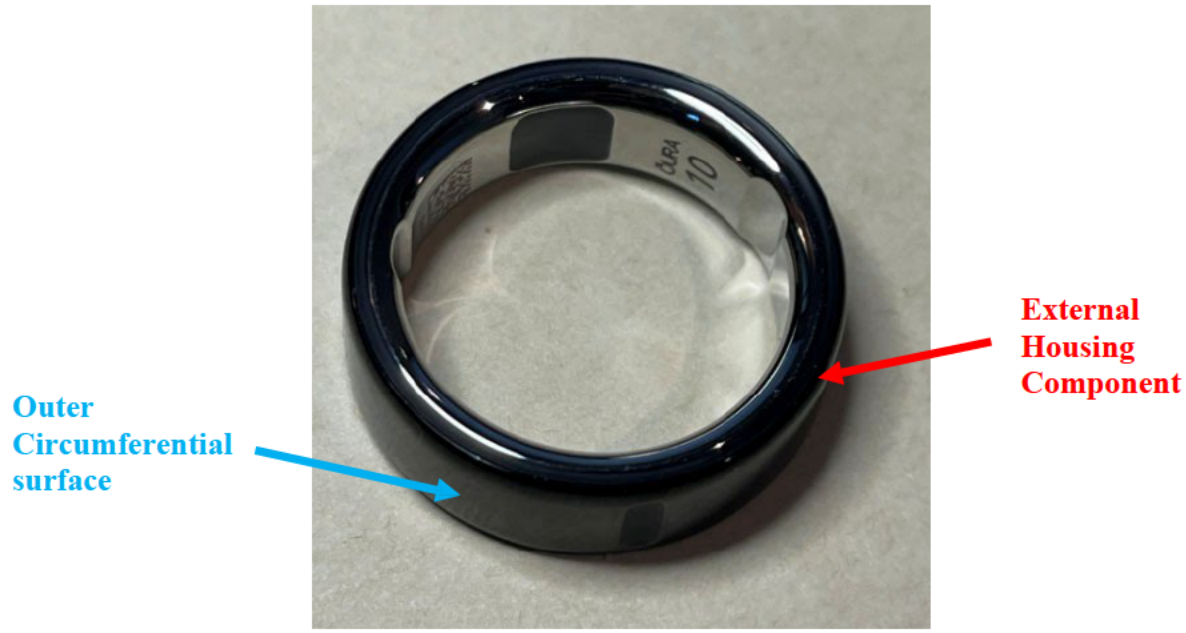
As noted above, Respondents' expert does not dispute that Oura Ring Gen. 3 (Horizon) practices this limitation. Instead, Mr. Alarcon only disputes that Oura Ring Ge. 3 (Heritage) has a circumferential surface because a portion of the external structure of Heritage has a slight plateau design that is designed to allow wearer to "easily identify the top of the ring and accurately position the ring so that the sensors are on the palm side of your finger closest to the arteries which give the most precise measurement." RX-0050C ¶¶ 63-64. But the *Markman* Order construed "circumferential" as having a plain and ordinary meaning and rejected Respondents' construction that "circumferential" refer to the entire closed structure. Therefore, either variation of Oura Ring Gen. 3 (i.e., Horizon or Heritage) practices limitation 1[a] of the '178 patent.

(b) Oura Ring Gen. 4

Oura Ring Gen. 4 also includes an external housing component which is the metallic external structure of the ring having outer circumferential surface. RX-0402C ¶¶ 89-93. Respondents' expert, Mr. Alarcon, does not dispute that Oura Ring Gen. 4 satisfies this limitation.

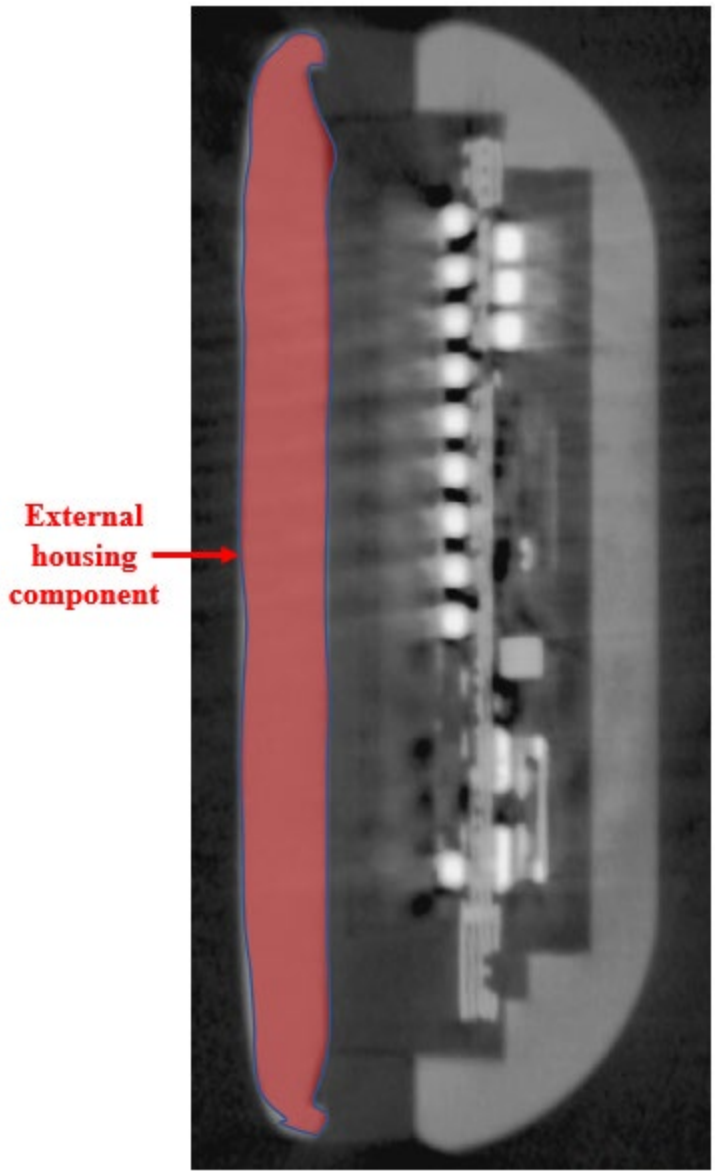
[redacted]

See RX-0050C ¶¶ 63-67. Indeed, as explained by Dr. Sarrafzadeh, the external metallic structure of Oura Ring Gen. 4 forms the "external housing component," as shown below, and defines an outer circumferential surface for at least portion of the external housing component:



CX-0699;CX-0668; *see also* CX-0077C; CX-0076C; CX-0071C; CX-0075C; CX-0074C; CX-0670C at Oura-ITC 0032500.

[redacted]



CX-0076C.

Thus, Oura Ring Gen. 4 independently satisfies limitation 1[a] of the '178 patent.

c. Limitation 1[b-i]: an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device

Each of the Products-at-Issue (i.e., Ultrahuman Accused Product, RingConn Accused Products, and Oura Domestic Industry Products) practice limitation 1[b-i] of the '178 patent.

Respondents' expert, Mr. Alarcon, initially argued that neither the Ultrahuman Accused

[redacted]

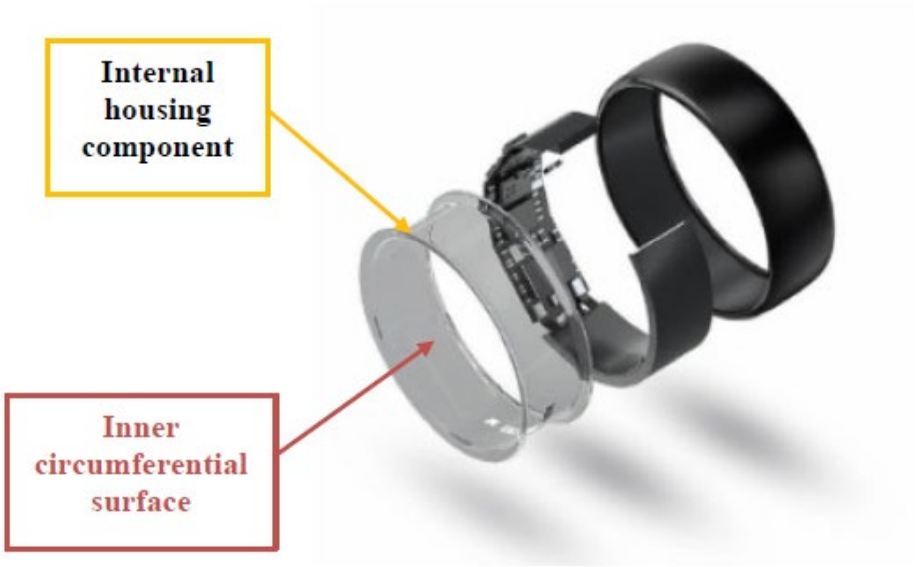
Product, the RingConn Accused Product, nor Oura Ring Gen. 3, has "an internal housing component" because a POSITA would not consider a structure formed of potting material to be an "internal housing component." RX-0050C ¶¶ 68-93.[4] But the *Markman* Order rejected that argument. JX-0011 at 6-14. In the supplemental expert report, Mr. Alarcon now argues that a portion of the potting material that Dr. Sarrafzadeh refers to as the "crust" of the potting material cannot be considered an "internal housing component." Alarcon Supp. Rep. at ¶¶ 12-14, 17-20. Instead, according to Mr. Alarcon, a POSITA would consider the *entirety* of the potting material within the ring to be the internal housing component. *Id*. Respondents' expert was just as wrong pre-*Markman* Order as he is now again. *Id.*

(i) Ultrahuman Accused Product

The Ultrahuman Accused Product includes an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device. RX 0402C ¶¶ 95-106; CX-0706C; CX-0707C-CX-0715C (same for additional sizes); *See also* CX-0716C-CX-0717C; CX-0537; *see also* CX-0057; CX-0058; CX-0055; CX-0056. As Dr. Sarrafzadeh explained in his opening report and at his deposition, [redacted]

[4] Mr. Alarcon does not dispute that Oura Ring Gen. 4 has an "internal housing component" as the inner ring structure of Gen. 4 is formed of metallic material. *See* RX-0050C ¶¶ 144-149. Instead, Mr. Alarcon's objection to Gen. 4 was limited to "circumferential," arguing that because the inner surface of Gen. 4 "has small bumps and two divots," a POSITA would understand that the surface of Gen. 4 "is not circular, elliptical, or ovular under the Respondents' construction." *Id.* at ¶ 146. Mr. Alarcon is wrong on this point as well as discussed below.

[redacted]



CX-0537.

Dr. Sarrafzadeh explained "the layer that is closer to inside the ring. So the outer layer of that is the crust and that is your internal housing component as I have shown in a number of places in my report with proof." RX-0325C at 27:10-16; *Id.* at 30:23-32:25 ("We call it the crust of the solid object. That's an internal housing component . . . . Furthermore this also verifies the blow out on [paragraph] 103 [of Sarrafzadeh Opening Report] that is provided by [ ] Ultrahuman. So the crust that I showed you matches what is labeled as internal housing component that is provided actually by Ultrahuman, not by me, and is shown by way of example on paragraph 103."); RX-0402C ¶¶ 104, 277.

Indeed, Ultrahuman itself refers to the portions of the potting that Dr. Sarrafzadeh identifies as the "internal housing component," as an "inner shell," which suggests a structure such as a housing that encloses space (e.g., turtle shell, seashell):

[redacted]



CX-0539 at Oura-ITC 0000536; CX-0672; RX-0402C ¶¶ 98-99.

[redacted]

CX-1069.

[redacted]



CX-1077.

Additionally, as shown above, at least a portion of the inner surface of the internal housing component is "circumferential" under the plain and ordinary meaning of the term. RX-0402C ¶ 101. Nonetheless, Mr. Alarcon attempts to draw a distinction where there is none by suggesting that "the Ultrahuman Accused Products also do not include an 'inner circumferential surface'" because "[u]nder Respondents' proposed construction, 'circumferential' means 'circular, ovular, or elliptical.'" RX-0050C ¶ 124. Mr. Alarcon therefore reasons that because the "inner surface of the Ultrahuman Accused Products includes a truncated, flat portion," the inner surface is not "circumferential." *Id.* The *Markman* Order, however, rejected Respondents' narrow interpretation. JX-0011. Yet even in his supplemental report, Mr. Alarcon continues to argue that "[t]he inner surface of the Ultrahuman Accused Product is a closed shape, but it is not circumferential because it includes a flat portion." Alarcon Supp. Rep. ¶ 21. But again Mr. Alarcon's opinion is counter to the *Markman* Order that indicated that circumferential does not require a closed shape (i.e., the entirety of the ring). Thus, Ultrahuman Accused Product includes an internal housing component

[redacted]

defining an inner circumferential surface of the finger-worn wearable ring device.

Finally, even assuming arguendo this limitation is not literally met, [redacted] distinguish the missing claim element from the corresponding aspects of the accused device." *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1423 (Fed. Cir. 1997). As Dr. Sarrafzadeh opined, "a shell . . . performs substantially the same function, in substantially the same way, to achieve substantially the same result as the claimed 'internal housing component.'" Sarrafzadeh Opening Rep. ¶¶98-100. *See, e.g., Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1330 (Fed. Cir. 2009) (affirming denial of noninfringement JMOL motion where patentee's expert testified that the circular arcs and rounded corners of the accused product met by equivalents the "corners" limitation of the claim because "both function as actual and potential reference points for joining adjacent stent rings, fulfill this function through their similar locations, and can or do result in offset connections between stent rings."). Indeed, [redacted] *Northern Corp. v. Davis Core & Pad Co., Inc.*, 782 F.2d 159, 166 (Fed. Cir. 1986) (evidence was sufficient to support a finding of infringement under doctrine of equivalents of accused product that had recess in a bar that were located not on surface of indentation but internal thereto where claim required "recess located in the side portions of said indentation" because the recesses in the accused product performed the same function of making the bar flexible, in the same way by adding a cavity of space and achieved the same result a flexible bar); *Voda v. Cordis Corp.*, 536 F.3d 1311, 1326–27 (Fed. Cir. 2008) (same, where "[patentee's] experts testified that

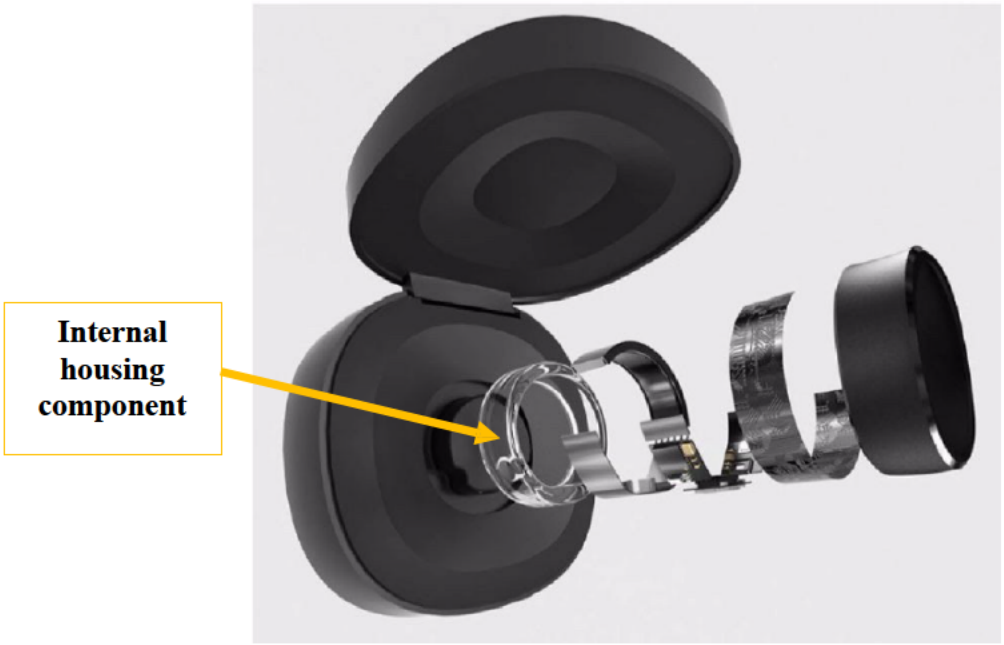
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the difference in shape between the redesigned curve portion and a straight portion was so insubstantial that cardiologists would have difficulty distinguishing the two during use.").

For at least these reasons, Ultrahuman Accused Product practices limitation 1[b-i] of the '178 patent.

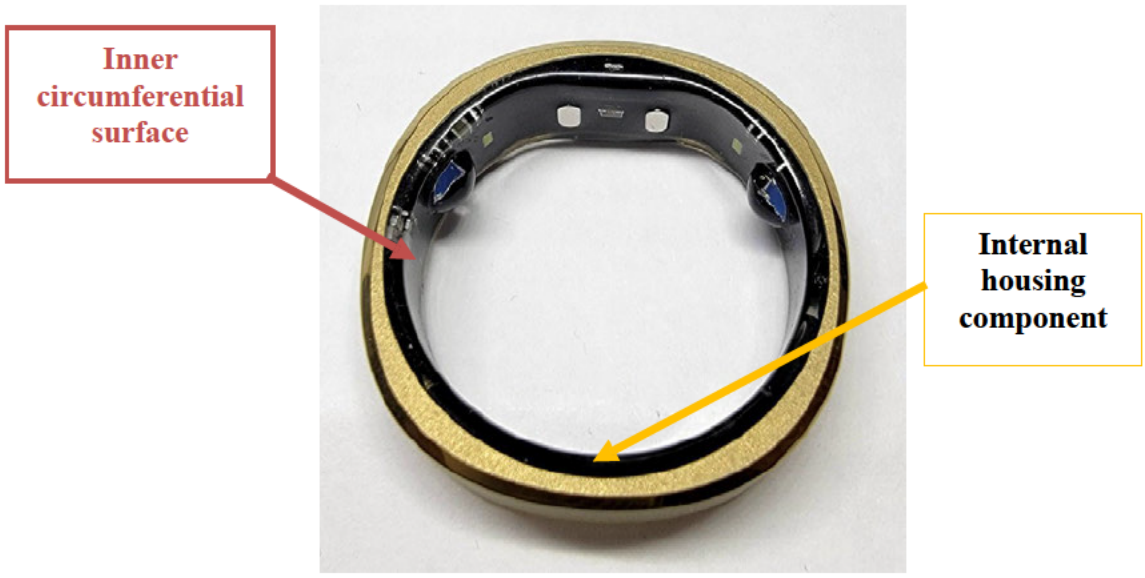
(ii) RingConn Accused Product

The RingConn Accused Product includes an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device. RX-0402C ¶¶ 107-118; CX-0032C-CX-0037C; CX-0066; CX-0067; CX-0064; CX-0065; CX-0567 at Oura-ITC 0000720. As Dr. Sarrafzadeh explained in his opening report and at his deposition, the portion of the potting material that is cured to form a molded structure is the "internal housing component" of the RingConn Accused Product that includes portions having an inner circumferential surface as shown below:



CX-0567 at Oura-ITC 0000720.

[redacted]



CX-0406.

[redacted]

CX-1040.

[redacted]

[redacted]

CX-1045; *See also* CX-1044; RX-0325C at 27:10-16 [redacted]

Yet in the supplemental expert report, Mr. Alarcon argues that the "inner surface of the RingConn product is a closed shape but it is not circumferential because it has a flat portion and epoxy bumps as part of the surface." Alarcon Supp. Rep. at ¶ 15. In other words, Mr. Alarcon insists that any minor deviation from the curvature of the surface (e.g., epoxy bumps or divots etc.) would make an otherwise circumferential surface non-circumferential. Mr. Alarcon is wrong again because the *Markman* Order indicated that "circumferential" has a plain and ordinary meaning.

[redacted]

JX-0011. Therefore, Mr. Alarcon attaching narrower interpretation to "circumferential" fails. As Dr. Sarrafzadah has explained, the inner housing component of the finger-worn wearable ring has a circumferential surface that contacts the skin of the user. RX-0402C ¶ 116.

Finally, as with Ultrahuman Accused Product, even assuming arguendo this limitation is not literally met, the inner ring structure of RingConn Accused Product meets the "internal housing component" limitation by equivalence because "only 'insubstantial differences' distinguish the missing claim element from the corresponding aspects of the accused device." *Sage Prods.*, 126 F.3d at 1423. As Dr. Sarrafzadeh opined, "[redacted]" RX-0402C ¶¶24, 114. *See, e.g., Cordis Corp.*, 561 F.3d at 1330 (Fed. Cir. 2009) (affirming denial of noninfringement JMOL motion where patentee's expert testified that the circular arcs and rounded corners of the accused product met by equivalents the "corners" limitation of the claim because "both function as actual and potential reference points for joining adjacent stent rings, fulfill this function through their similar locations, and can or do result in offset connections between stent rings."). [redacted]. *Great Northern*, 782 F.2d at 166 (evidence was sufficient to support a finding of infringement under doctrine of equivalents of accused product that had recess in a bar that were located not on surface of indentation but internal thereto where claim required "recess located in the side portions of said indentation" because the recesses in the accused product performed the same function of making the bar flexible, in the same way by adding a cavity of space and achieved

[redacted]

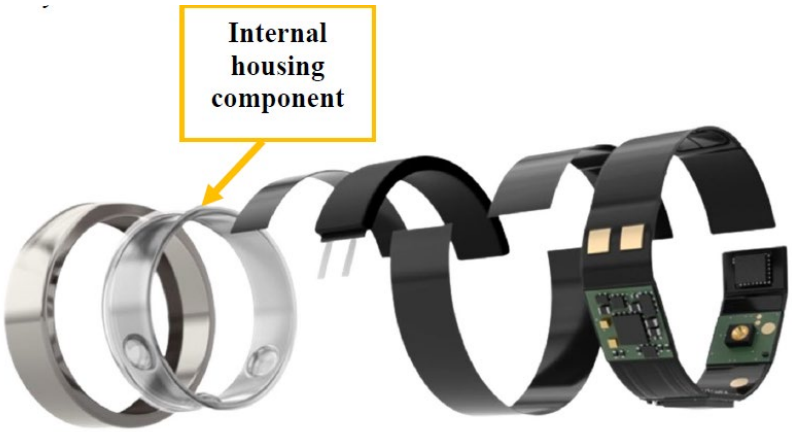
the same result a flexible bar); *Voda* 536 F.3d at 1326–27 (same, where "[patentee's] experts testified that the difference in shape between the redesigned curve portion and a straight portion was so insubstantial that cardiologists would have difficulty distinguishing the two during use.").

For at least the reasons set forward above, RingConn Accused Product practices limitation 1[b-i] of the '178 patent.

(iii) Oura Domestic Industry Products

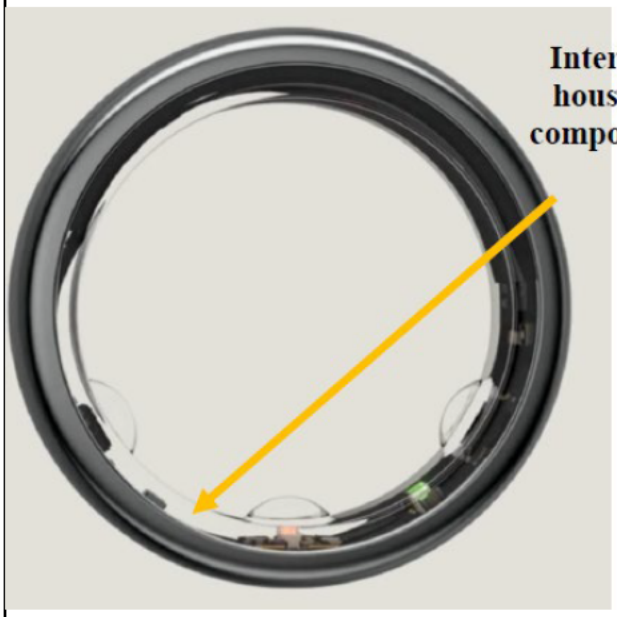
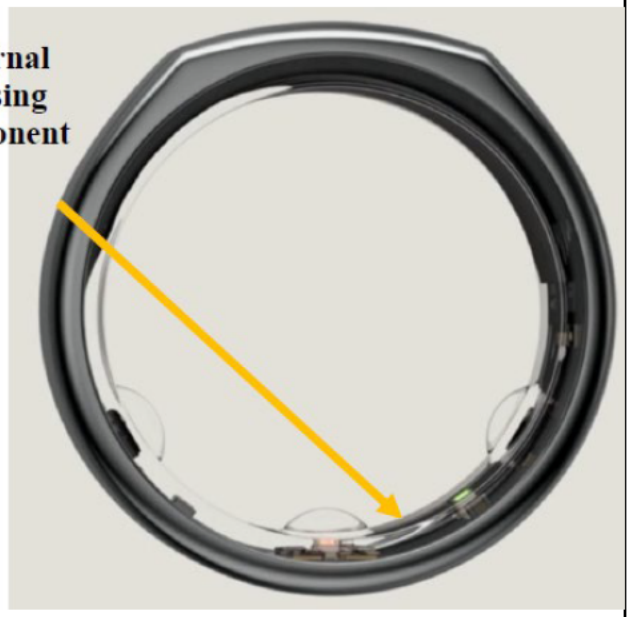
(a) Oura Ring Gen. 3

Oura Ring Gen. 3 includes an internal housing component which is the molded internal structure of the ring. RX-0402C ¶¶ 119-125; CX-0176 (Horizon); CX-0142 (Heritage); CX-0696C at Oura-ITC 0032166; CX-0529; *see also* CX-0047; CX-0048; CX-0045; CX-0046; CX-0040C at 0:04-0:05; CX-0528. As Dr. Sarrafzadeh explained in his opening report and at his deposition, the portion of the potting material that is cured to form a molded structure is the "internal housing component" of the Oura Ring Gen. 3 Accused Product that includes portions having an inner circumferential surface as shown below:



CX-0040C at 0:04-0:05; CX-0528.

[redacted]

Oura Ring Gen. 3 (Horizon)	Oura Ring Gen. 3 (Heritage)
	
CX-0702	CX-0701

Thus, as with Respondents Accused Products, even assuming arguendo this limitation is not literally met, the inner ring structure of Oura Ring Gen. 3 meets the "internal housing component" limitation by equivalence because "only 'insubstantial differences' distinguish the missing claim element from the corresponding aspects of the accused device." *Sage Prods.*, 126 F.3d at 1423. As Dr. Sarrafzadeh opined, "the molded internal structure of the Oura Domestic Industry Product, Oura Ring Gen. 3, is an internal housing component because it encloses space, namely the components, battery, and PCB that reside in the space between the metallic exterior structure and the molded internal structure." RX-0402C ¶¶24, 123. *See, e.g., Cordis Corp.*, 561 F.3d at 1330 (Fed. Cir. 2009) (affirming denial of noninfringement JMOL motion where patentee's expert testified that the circular arcs and rounded corners of the accused product met by equivalents the "corners" limitation of the claim because "both function as actual and potential reference points for joining adjacent stent rings, fulfill this function through their similar locations, and can or do result in offset connections between stent rings."). Indeed, the inner potting structure in the Oura

[redacted]

Ring Gen. 3 performs the same function of protecting the electrical components from elements (i.e., housing), in the same way by enclosing the components, and achieves the same result. *Great Northern*, 782 F.2d at 166 (evidence was sufficient to support a finding of infringement under doctrine of equivalents of accused product that had recess in a bar that were located not on surface of indentation but internal thereto where claim required "recess located in the side portions of said indentation" because the recesses in the accused product performed the same function of making the bar flexible, in the same way by adding a cavity of space and achieved the same result a flexible bar); *Voda* 536 F.3d at 1326–27 (same, where "[patentee's] experts testified that the difference in shape between the redesigned curve portion and a straight portion was so insubstantial that cardiologists would have difficulty distinguishing the two during use.").

Mr. Alarcon disputes that Oura Ring Gen. 3 meets this limitation for two reasons—both of which are now moot in light of the *Markman* Order: (1) "the Oura Ring Gen. 3 resin or potting material is not an internal housing component under the proposed construction of either Respondent" (RX-0050C ¶ 129; ¶¶ 130-135), and (2) Oura Ring Gen. 3 has "bumps or spheres in the resin over some of the components," and therefore "a POSITA would understand that the inner surface profiles (in red [reproduce below]) of the Oura Gen. 3 have perimeters—not a circumference—made up of multiple shapes/segments that is not circular, elliptical, ovular, or substantially circular." *Id.* ¶ 136.

[redacted]



Oura-ITC 0194033 (Horizon) (annotations added)



Oura-ITC 0194032 (Heritage) (annotations added)

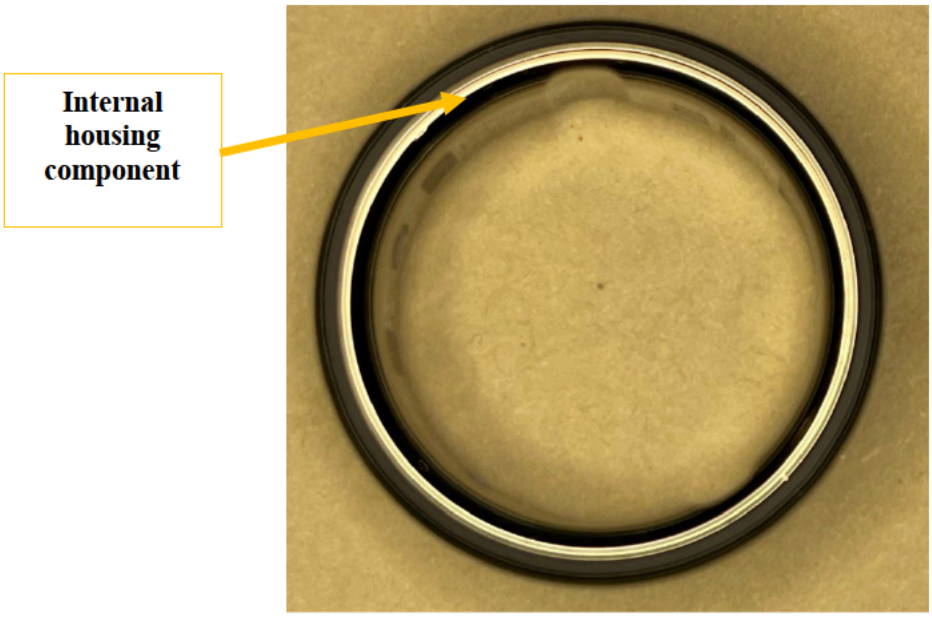
CX-0702; CX-0701.

However, both rationales offered by Mr. Alarcon on why Oura Ring Gen. 3 does not satisfy this limitation fall apart in light of the *Markman* Order. Order No. 17. For at least the reasons set forward above, the evidence will show the Oura Ring Gen. 3 (either Horizon or Heritage variation) satisfies limitation 1[bi] of the '178 patent.

(b) Oura Ring Gen. 4

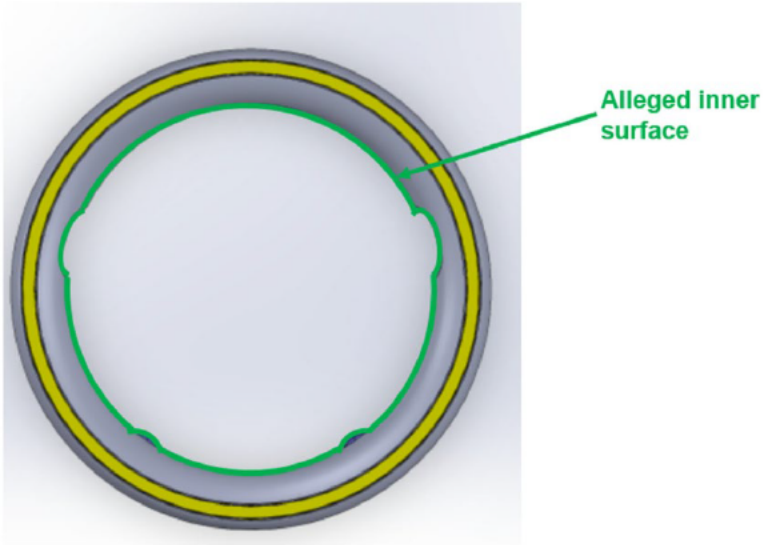
Oura Ring Gen. 4 also includes an internal housing component having an inner circumferential surface which is a separate metallic internal structure having circumferential surface. RX-0402C ¶¶ 126-130; CX-0670C; CX-0699; *see also* CX-0077C; CX-0076C; CX-0071C; CX-0075C; CX-0074C.

[redacted]



CX-0668.

Respondents' argue that Oura Ring Gen. 4 fails to meet limitation [b-i] only because "the inner surface of the Oura Ring Gen. 4 . . . has small bumps and two divots along the alleged internal surface . . . . [and] POSITA would understand that the alleged inner surface (green [below]), due to either of these features, is not circular, elliptical, or ovular under the Respodnents' construction." RX-0050C ¶ 146.



Id.

[redacted]

Again, Mr. Alarcon is wrong under the *Markman* Order that rejected Respondents' overly narrow construction of "circumferential." Order No. 17. Because Respondents do not dispute that this limitation is satisfied for any other reason, Oura Ring Gen. 4 also independently satisfies limitation 1[b-i] of the '178 patent.

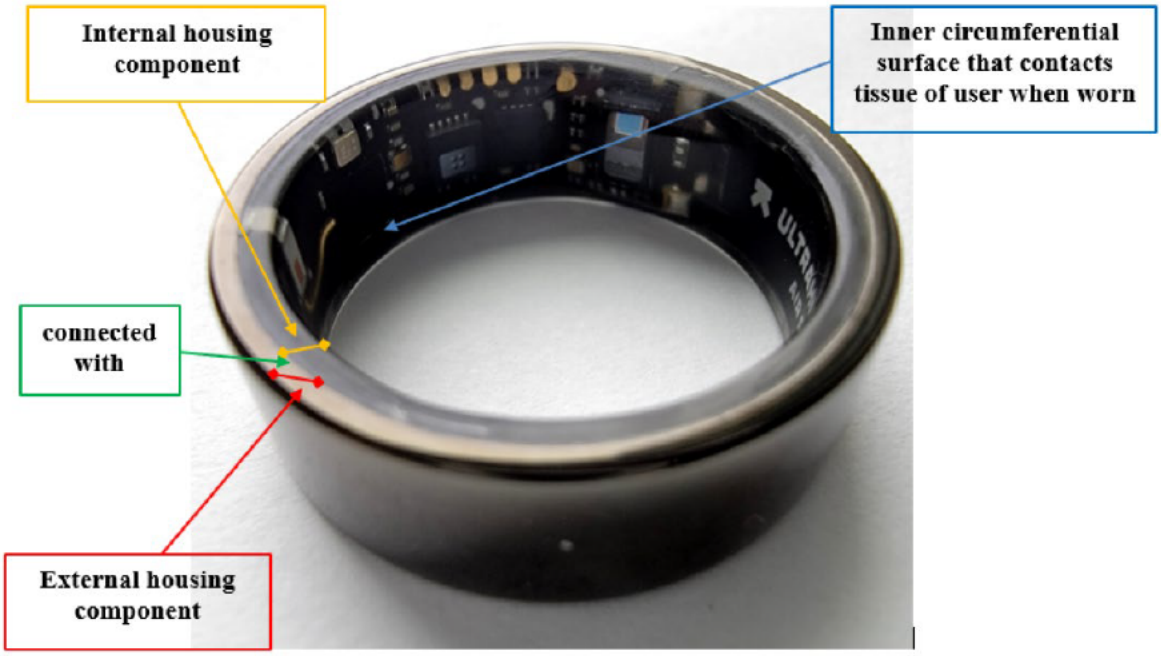
d. Limitation 1[b-ii]: the internal housing component coupled with the external housing component, wherein at least a portion of the inner circumferential surface of the internal housing component is configured to contact a tissue of a user when the finger-worn wearable ring device is worn by the user

(i) Ultrahuman Accused Product

The Ultrahuman Accused Product includes the internal housing component coupled with (i.e., connected with) the external housing component, wherein at least a portion of the inner circumferential surface of the internal housing component is configured to contact a tissue of a user when the finger-worn wearable ring device is worn by the user. RX-0402C ¶¶ 132-136.

As explained by Dr. Sarrafzadeh, the internal housing component (i.e., the inner molded shell) is "connected with" the external housing component (i.e., outer metal shell) because the epoxy resin (i.e., potting) seals and adheres to the outer metal shell, and the inner circumferential surface is the inside of the ring that is formed of potting material which contacts the tissue of the user when the ring is worn:

[redacted]



CX-0314.



CX-0058.

Mr. Alarcon disputed that Ultrahuman Accused Product meets this limitation only on the basis that "internal housing component" cannot be the potting material and therefore is not

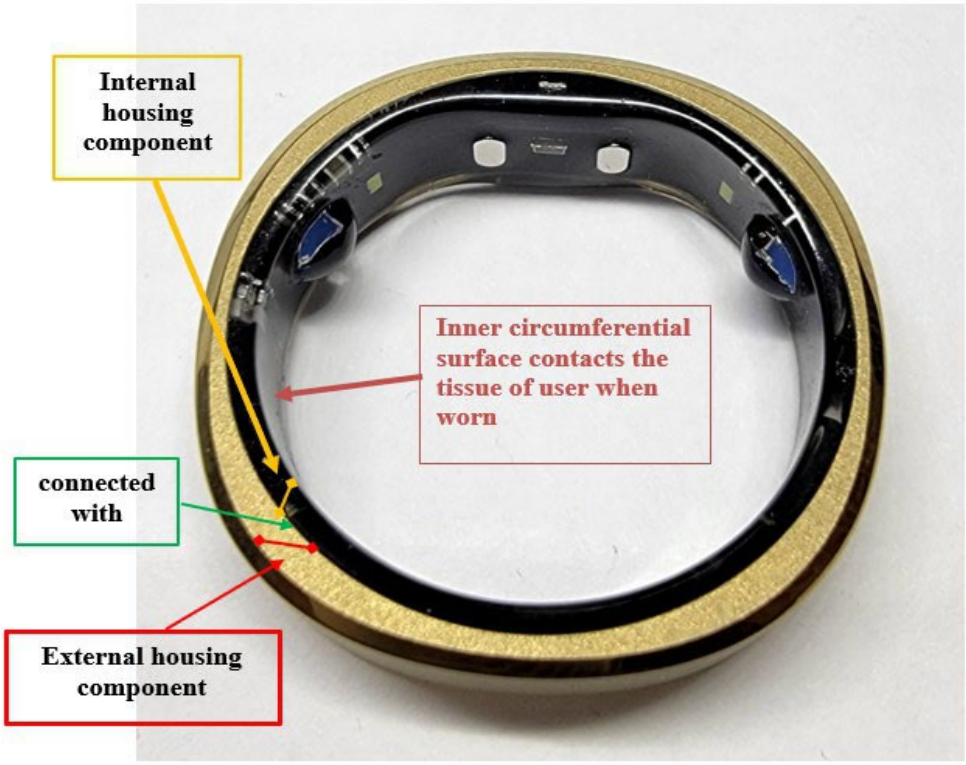
[redacted]

"connected with" the external housing component. RX-0050C ¶¶ 153-54. But, as noted above, *Markman* Order renders Ultrahuman's contention moot on this limitation. Thus, Ultrahuman Accused Product practices limitation 1[b-ii] of the '178 patent.

(ii) RingConn Accused Product

RingConn Accused Product includes the internal housing component coupled with (i.e., connected with) the external housing component, wherein at least a portion of the inner circumferential surface of the internal housing component is configured to contact a tissue of a user when the finger-worn wearable ring device is worn by the user. RX-0402C ¶¶ 137-141; CX-0032C-CX-0037C.

As explained by Dr. Sarrafzadeh, the internal housing component is "connected with" the external housing component because the epoxy (i.e., potting) seals and adheres to the outer metal structure, and the inner circumferential surface is the inside of the ring that contacts the tissue of the user when the ring is worn:



[redacted]

CX-0406.



CX-0067.

Similar to his contention on Ultrahuman Accused Product, Mr. Alarcon disputes that RingConn Accused Product meets this limitation only on the basis that "RingConn Accused Product does not have an 'internal housing component' as explained above." RX-0050C ¶ 152. But, as with Ultrahuman, the *Markman* Order renders RingConn's contention moot on this limitation. Thus, RingConn Accused Product practices limitation 1[b-ii] of the '178 patent.

(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

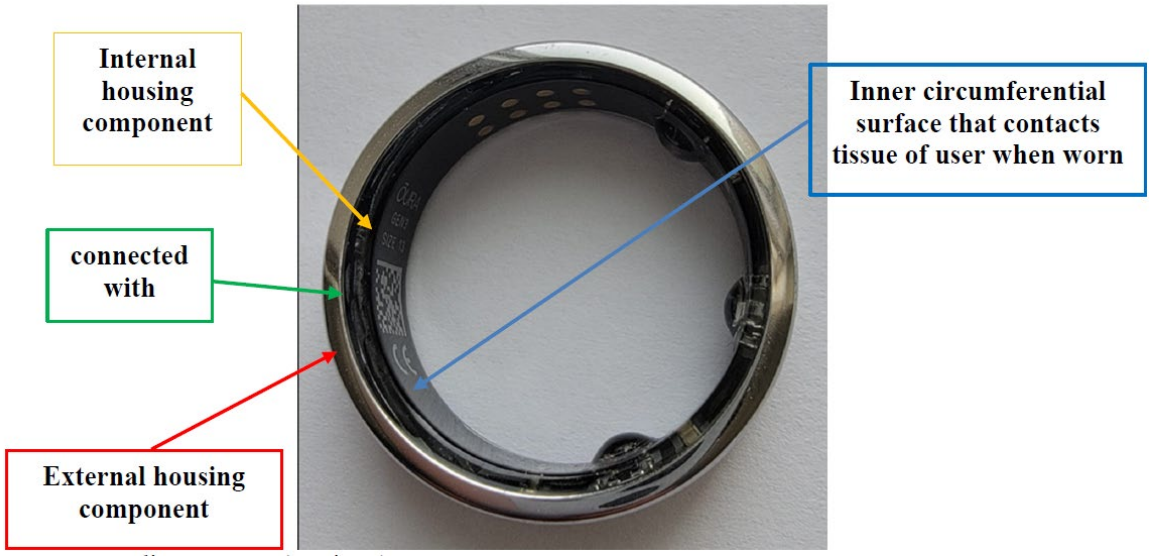
Oura Ring Gen. 3 includes the internal housing component coupled with (i.e., connected with) the external housing component, wherein at least a portion of the inner circumferential

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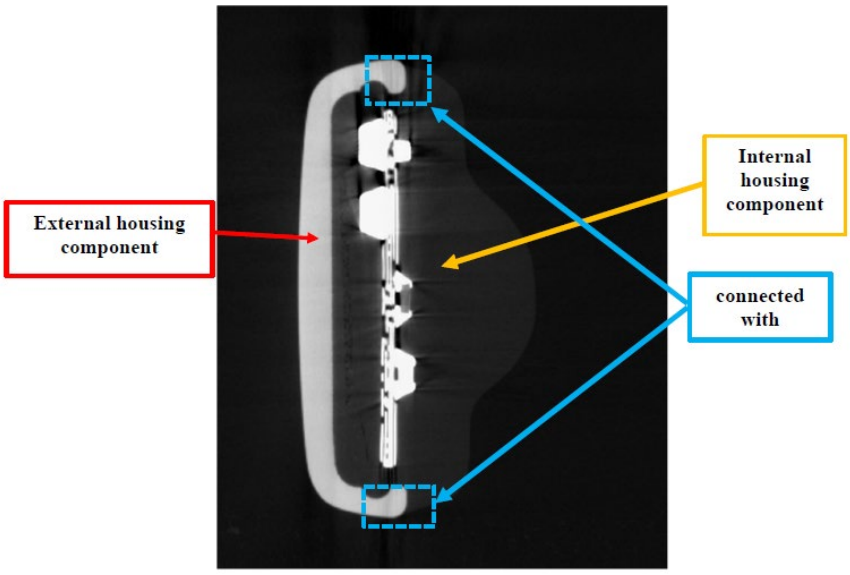
[redacted]

surface of the internal housing component is configured to contact a tissue of a user when the finger-worn wearable ring device is worn by the user. RX-0402C ¶¶ 142-146.

Indeed, as explained by Dr. Sarrafzadeh, the internal housing component (i.e., the inner molded structure) of Oura Ring Gen. 3 is "connected with" the external housing component (i.e., outer metallic structure) because the epoxy resin (i.e., potting) seals and adheres to the outer metallic structure.



CX-0176(Horizon).



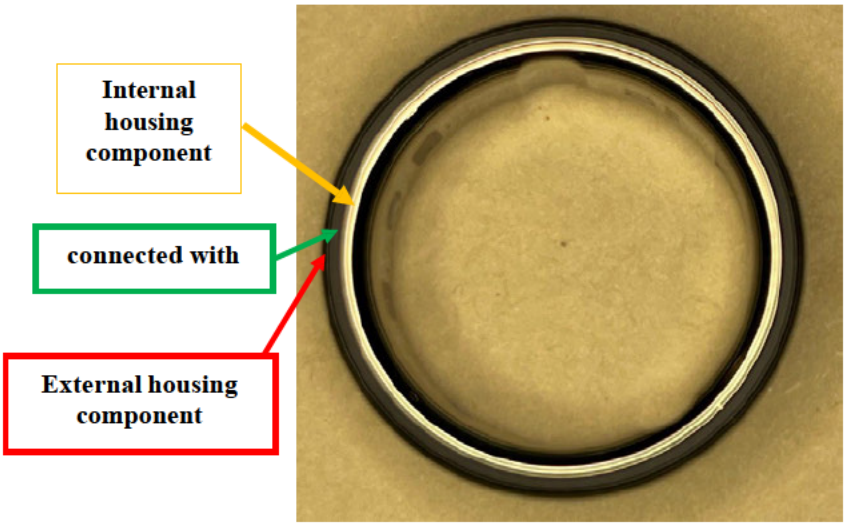
[redacted]

CX-0048.

As with Respondents Accused Products, Mr. Alarcon's only contention that Oura Ring Gen. 3 (either Horizon or Heritage) meets this limitation was limited to an argument that sought to exclude potting material from forming internal housing component. RX-0050C ¶ 156. The *Markman* Order has rejected Respondents' narrow interpretation, and therefore, Oura Ring Gen. 3, satisfies limitation 1[b-ii] of the '178 patent.

(b) Oura Ring Gen. 4

Oura Ring Gen. 4 also includes the internal housing component coupled with (i.e., connected with) the external housing component, wherein at least a portion of the inner circumferential surface of the internal housing component is configured to contact a tissue of a user when the finger-worn wearable ring device is worn by the user. RX-0402C ¶¶ 147-150; CX-0699; *see also* CX-0077C; CX-0076C; CX-0075C; CX-0074C. Indeed, as shown below, the internal housing component (i.e., the inner metallic structure) is "connected with" the external housing component (i.e., outer metallic structure), and the inner circumferential surface is the inside of the ring that contacts the tissue of the user when the ring is worn.



CX-0668.

[redacted]

Respondents do not dispute that Oura Ring Gen. 4 practices limitation 1[b-ii]. *See* RX-0050C ¶¶ 155-157. Therefore for at least the reasons set forth above and in light of Dr. Sarrafzadeh' s testimony, Oura Ring Gen. 4 also independently satisfies limitation 1[b-ii] of the '178 patent.

e. Limitation 1[c]: a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through a first portion of the cavity of the finger-worn wearable ring device

(i) Ultrahuman Accused Product

Ultrahuman Accused Product includes a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device. RX-0402C ¶¶ 152-159.

As an initial matter, Ultrahuman admits that the Ultrahuman Accused Product includes a battery in both its marketing materials and in response to Requests for Admissions in this Investigation. CX-0538 at Oura-ITC 0000581; CX-0671; CX-0690C at Resp. No. 5 (Admits that the Ultrahuman Accused Product includes a battery); *Id.* at Resp. No. 6 ([redacted]; CX-0059; CX-0055.

[redacted]

[redacted]



CX-1069.



CX-1077.

[redacted]



CX-1380C.

[redacted] RX-0402C ¶¶ 155-156; RX-0325C at 111:10-12 [redacted]

[redacted]



CX-0056.

[redacted]. This is exactly what is taught by the '178 patent, which teaches encapsulating the battery and printed circuit board in the space occupied by the those components provided by the external housing component. *See* JX-0001, Summary of the Invention ("[A]n internal housing portion [is] configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the external housing."); 19:10-14 ("The internal potting 1314 can extend between the flanges 1312b-c and can seal the partially enclosed internal space 1320. The components can be encapsulated by the internal potting 1314."); Abstract ("wherein the potting material encapsulates the components and is substantially transparent"); 18:65-67 ("In this example, the WCD 1300 includes a housing 1310 that includes an external housing 1312 and an internal potting or encapsulant 1314."); 19:12-13 ("The components can be encapsulated by the internal potting 1314."); *see also* Fig. 13, Fig. 18B,

[redacted]

Fig. 20A, Fig. 31C. Respondents attempt to exclude this embodiment from the claims should be rejected as an attempt to relitigate its failure to exclude cavities formed by potting material as part of the "internal/external housing component" claim construction.

[redacted]

Finally, even assuming arguendo that this limitation is not literally met, the space occupied by the battery and electrical components also meets by equivalence the "cavity" limitation of the asserted claims because "only 'insubstantial differences' distinguish the missing claim element from the corresponding aspects of the accused device." *Sage Prods.*, 126 F.3d at 1423. Indeed, as Dr. Sarrafzadeh testified, [redacted] RX-0325C at 114:2-22; RX-0402C ¶¶155-156. *See, e.g., Cordis Corp.*, 561 F.3d at 1330 (Fed. Cir. 2009) (affirming denial of noninfringement JMOL motion where patentee's expert testified that the circular arcs and rounded corners of the accused product met by equivalents the "corners" limitation of the claim because "both function as actual and potential reference points for joining adjacent stent rings, fulfill this function through their similar locations, and can or do result in offset connections between stent rings."). Moreover, [redacted]

[redacted]

[redacted] of a finger-worn wearable ring that is comfortable to wear consistent with disclosure of the '178 patent, including for example figure 13. JX-00001 at 18:64–67; 19:6-10, Fig. 13. Indeed, Dr. Sarrafzadeh explained "the point here of the claim is exactly that. Otherwise ,it will be hard to imagine any embodiment that would have other interpretation other than the one that I provided by way of example with the earlier product, earlier figures that I was referring to, for example, paragraph 111 and also what I've referred to in paragraph 156 and beyond." RX-0325C at 114:24-115:6. *Great Northern*, 782 F.2d at 166 (evidence was sufficient to support a finding of infringement under doctrine of equivalents of accused product that had recess in a bar that were located not on surface of indentation but internal thereto where claim required "recess located in the side portions of said indentation" because the recesses in the accused product performed the same function of making the bar flexible, in the same way by adding a cavity of space and achieved the same result a flexible bar); *Voda* 536 F.3d at 1326–27 (same, where "[patentee's] experts testified that the difference in shape between the redesigned curve portion and a straight portion was so insubstantial that cardiologists would have difficulty distinguishing the two during use.").

Thus, the Ultrahuman Accused Product meets limitation 1[c] of the '178 patent.

(ii) RingConn Accused Product

RingConn Accused Product includes a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device. RX-0402C ¶¶ 160-167.

[redacted]

RingConn schematics show that the RingConn Accused Product includes [redacted]

[redacted]

CX-0647C (Translation); *See also id.* at RINGCONN-ITC1398-00012241-42. RingConn [redacted]

Indeed, the teardowns of RingConn Accused Product [redacted]

[redacted]



CX-1081.



CX-1046.

[redacted]

[redacted]

[redacted] *See e.g.,* RX-0402C ¶¶ 110-113 (Explaining the manufacturing process of RingConn Accused Product); *Id.* ¶¶163-64; CX-0032C-CX-0037C; RX-0325C at 111:10-12 [redacted]; [redacted] And as shown in the CT imaging, the RingConn Accused Product shows [redacted]



CX-0065.

[redacted]

[redacted]

[redacted]. RX-0402C ¶¶ 160-167. This is exactly what is taught by the '178 patent, which teaches encapsulating the battery and printed circuit board in the space occupied by the those components provided by the external housing component. *See* JX-0001, Summary of the Invention ("[A]n internal housing portion [is] configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the external housing."); 19:10-14 ("The internal potting 1314 can extend between the flanges 1312b-c and can seal the partially enclosed internal space 1320. The components can be encapsulated by the internal potting 1314."); Abstract ("wherein the potting material encapsulates the components and is substantially transparent"); 18:65-67 ("In this example, the WCD 1300 includes a housing 1310 that includes an external housing 1312 and an internal potting or encapsulant 1314."); 19:12-13 ("The components can be encapsulated by the internal potting 1314."); *see also* Fig. 13, Fig. 18B, Fig. 20A, Fig. 31C. Respondents attempt to again exclude this embodiment from the claims should be rejected as an attempt to relitigate its failure to exclude cavities formed by potting material as part of the "internal/external housing component" claim construction.

[redacted]

Finally, even assuming arguendo that this limitation is not literally met, the space occupied by the battery and electrical components also meets by equivalence the "cavity" limitation of the asserted claims because "only 'insubstantial differences' distinguish the missing claim element

[redacted]

from the corresponding aspects of the accused device." *Sage Prods.*, 126 F.3d at 1423. Indeed, as Dr. Sarrafzadeh testified, [redacted] *See, e.g., Cordis Corp.*, 561 F.3d at 1330 (Fed. Cir. 2009) (affirming denial of noninfringement JMOL motion where patentee's expert testified that the circular arcs and rounded corners of the accused product met by equivalents the "corners" limitation of the claim because "both function as actual and potential reference points for joining adjacent stent rings, fulfill this function through their similar locations, and can or do result in offset connections between stent rings."). [redacted] JX-00001 at 18:64–67; 19:6-10, Fig. 13. [redacted] RX-0325C at 114:24-115:6. *Great Northern*, 782 F.2d at 166 (evidence was sufficient to support a finding of infringement under doctrine of equivalents of accused product that had recess in a bar that were located not on surface of indentation but internal thereto where claim

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[redacted]

required "recess located in the side portions of said indentation" because the recesses in the accused product performed the same function of making the bar flexible, in the same way by adding a cavity of space and achieved the same result a flexible bar); *Voda* 536 F.3d at 1326–27 (same, where "[patentee's] experts testified that the difference in shape between the redesigned curve portion and a straight portion was so insubstantial that cardiologists would have difficulty distinguishing the two during use.").

Thus, the RingConn Accused Product meets limitation 1[c] of the '178 patent.

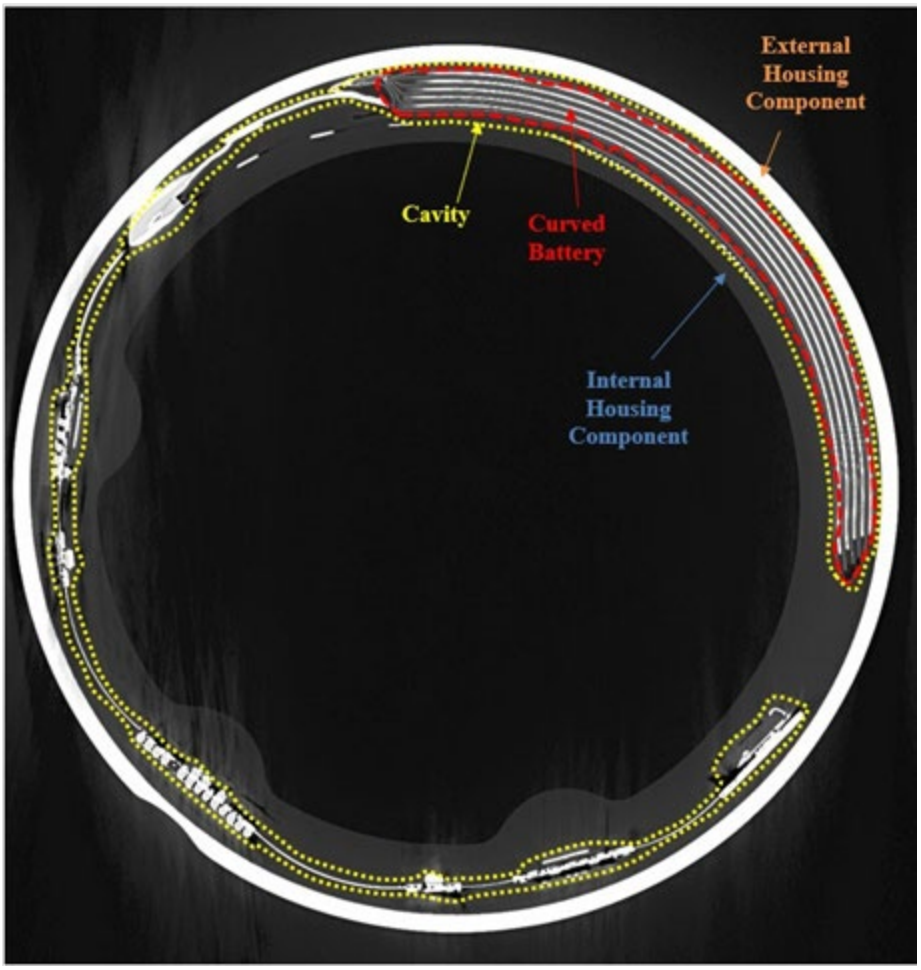
(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

Oura Ring Gen. 3 includes a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device. RX-0402C ¶¶ 168-173.

For example, as shown in the CT imaging, Oura Ring Gen. 3, shows a battery positioned within a cavity formed between the internal housing component and the external housing component:

[redacted]



CX-0046; CX-0054.

The curved battery is positioned in a cavity that is formed between the internal housing component (inner molded structure) and the external housing component (metallic external structure), as seen above. This is exactly what is taught by the '178 patent, which teaches encapsulating the battery and printed circuit board in the space occupied by those components provided by the external housing component. *See* JX-0001, Summary of the Invention ("[A]n internal housing portion [is] configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the external housing."); 19:10-14 ("The internal potting 1314 can extend between the flanges 1312b-c and can seal the partially enclosed internal space 1320. The components can be encapsulated by the internal potting 1314."); Abstract

[redacted]

("wherein the potting material encapsulates the components and is substantially transparent"); 18:65-67 ("In this example, the WCD 1300 includes a housing 1310 that includes an external housing 1312 and an internal potting or encapsulant 1314."); 19:12-13 ("The components can be encapsulated by the internal potting 1314."); *see also* Fig. 13, Fig. 18B, Fig. 20A, Fig. 31C. Respondents attempt to again exclude this embodiment from the claims should be rejected as an attempt to relitigate its failure to exclude cavities formed by potting material as part of the "internal/external housing component" claim construction.

And as shown above, the battery in the Oura Ring Gen. 3 is also a shape and size (curved) to fit between the outer circumferential surface and the inner circumferential surfaces in the portion of the housing where the battery is positioned and extends between the first portion of the cavity. *Id.*

Finally, even assuming arguendo that this limitation is not literally met, the space occupied by the battery and electrical components also meets by equivalence the "cavity" limitation of the asserted claims because "only 'insubstantial differences' distinguish the missing claim element from the corresponding aspects of the accused device." *Sage Prods.*, 126 F.3d at 1423. Indeed, as Dr. Sarrafzadeh testified, "[a] good example might be thoracic cavity . . . . You have a heart and lung in there. So it is all inside a cavity . . . . That is the same thing I'm discussing in paragraph 156 [of expert report] . . . . Wherever the heart is, once you have your heart in there, that space doesn't exist anymore." RX-0325C at 114:2-22; RX-0402C ¶¶155-156. *See, e.g., Cordis Corp.*, 561 F.3d at 1330 (Fed. Cir. 2009) (affirming denial of noninfringement JMOL motion where patentee's expert testified that the circular arcs and rounded corners of the accused product met by equivalents the "corners" limitation of the claim because "both function as actual and potential reference points for joining adjacent stent rings, fulfill this function through their similar locations,

[redacted]

and can or do result in offset connections between stent rings."). Moreover, the space occupied by the battery in the Oura Ring Gen. 3 performed the same function of providing non-overlapping portions of space in which the battery and PCB are configured to fit between the internal and external housing components, in the same way by placing in battery and PCB components between the two components and achieving the same result of enclosing the components within the housing of a finger-worn wearable ring that is comfortable to wear consistent with disclosure of the '178 patent, including for example figure 13. JX-00001 at 18:64–67; 19:6-10, Fig. 13. Indeed, Dr. Sarrafzadeh explained "the point here of the claim is exactly that. Otherwise it will be hard to imagine any embodiment that would have other interpretation other than the one that I provided by way of example with the earlier product, earlier figures that I was referring to, for example, paragraph 111 and also what I've referred to in paragraph 156 and beyond." RX-0325C at 114:24-115:6. *Great Northern*, 782 F.2d at 166 (evidence was sufficient to support a finding of infringement under doctrine of equivalents of accused product that had recess in a bar that were located not on surface of indentation but internal thereto where claim required "recess located in the side portions of said indentation" because the recesses in the accused product performed the same function of making the bar flexible, in the same way by adding a cavity of space and achieved the same result a flexible bar); *Voda* 536 F.3d at 1326–27 (same, where "[patentee's] experts testified that the difference in shape between the redesigned curve portion and a straight portion was so insubstantial that cardiologists would have difficulty distinguishing the two during use.").

Thus, Oura Ring Gen. 3 practices limitation 1[c] of the '178 patent.

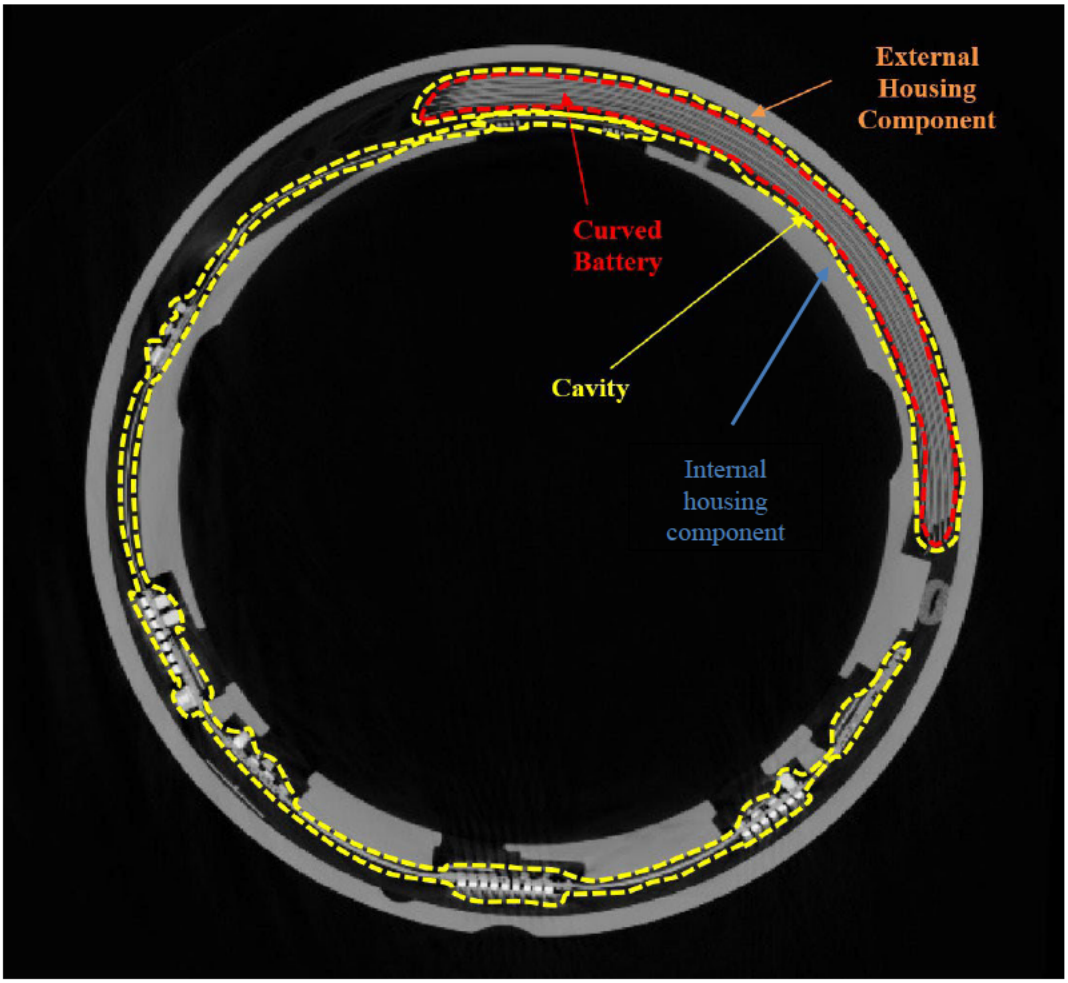
(b) Oura Ring Gen. 4

Oura Ring Gen. 4 also includes a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the

[redacted]

external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device. RX-0402C ¶¶ 174-179.

As shown in the CT imaging, Oura Ring Gen. 4 includes a battery (red) positioned within a first portion of the cavity (yellow) formed between the internal housing component (inner metallic structure) and the external housing component (outer metallic structure):



CX-0074C.

As explained by Dr. Sarrafzadeh, the area between the internal (metallic structure) and external (metallic structure) housing components is sealed with epoxy around the cavity that is occupied by the components, including the battery. RX-0402C ¶¶ 174-179. Thus, the components,

[redacted]

including the battery occupy the first portion of the cavity between the two structures And as shown above, the battery is shape and size to fit within the inner and outer circumferential surfaces.

Thus, Oura Ring Gen. 4, also satisfies limitation 1[c] of the '178 patent.

f. Limitation 1[d]: a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion

(i) Ultrahuman Accused Product

Ultrahuman Accused Product includes a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion. RX-0402C ¶¶ 181-186. Ultrahuman admits that the Ultrahuman Accused Product includes a printed circuit board. *See* CX-0690C at Resp. Nos. 8 and 9.

Indeed, [redacted]

[redacted]

[redacted]

CX-0056; CX-0059.



CX-0058.



CX-0282; CX-0287.

[redacted]

[redacted]

And as shown below, [redacted]

[redacted]



CX-0056.

[redacted]

The PCB, and the portion of the cavity that occupies it, in the Ultrahuman Accused Product is also disposed between the internal housing component and the external housing component and not "within" the internal housing component, as alleged by Respondents' expert, Mr. Alarcon. RX-0050C ¶ 234. Mr. Alarcon is wrong for multiple reasons.

First, as Dr. Sarrafzadeh had explained (and shown below), the internal housing component is "the layer that is closer to inside the ring. So the outer layer of that is the crust and that is your internal housing component as I have shown in a number of places in my report with proof." RX-0325C at 27:10-16. Therefore, as shown below, [redacted]

[redacted]

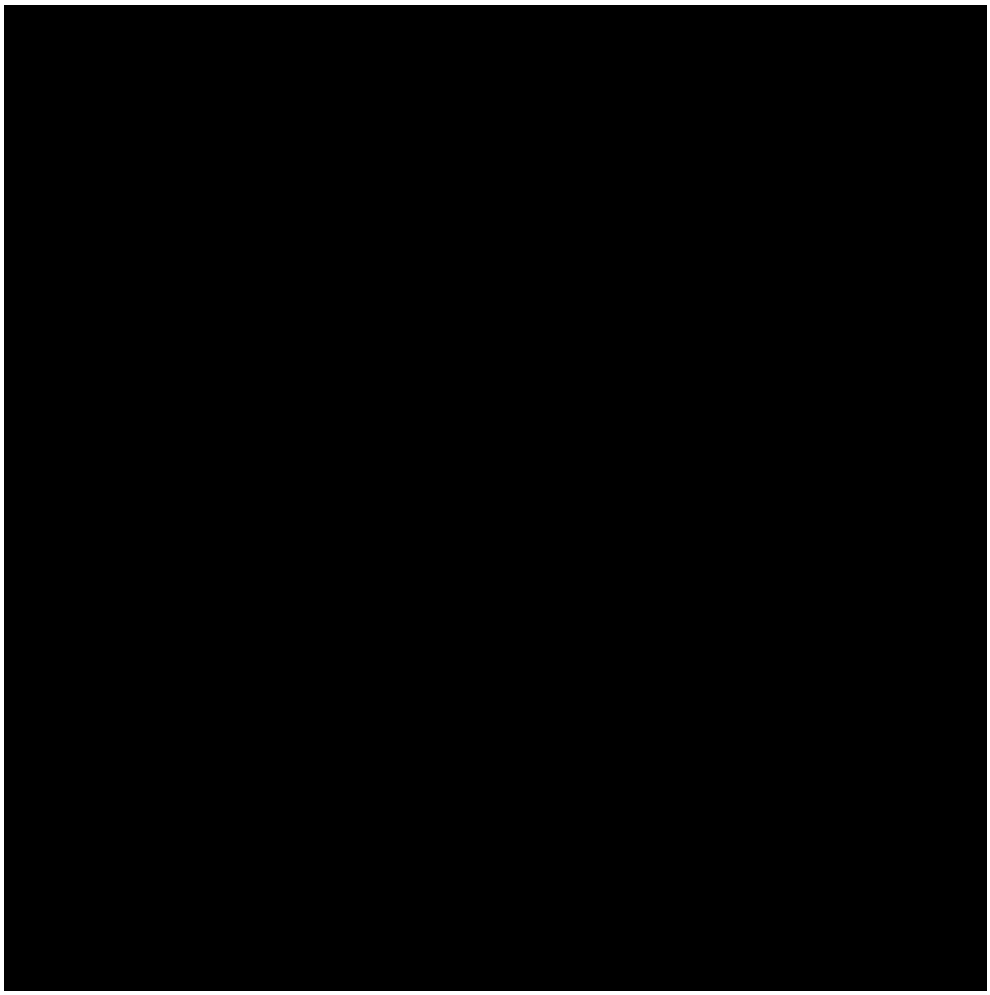
CX-1071.

Second, [redacted]

[redacted]. [redacted]

[redacted]. RX-0325C at 275:11-16

[redacted]



CX-1073.

Third, [redacted]. JX-0001, Fig. 13.

[redacted]

The ’178 patent specifically acknowledges that when using potting material as a housing component, the housing material “encapsulates” the components. *See Id.* at Abstract (“wherein the potting material encapsulates the components and is substantially transparent”); 18:65-67 (“In this example, the WCD 1300 includes a housing 1310 that includes an external housing 1312 and an internal potting or encapsulant 1314.”); 19:12-13 (“The components can be encapsulated by the internal potting 1314.”); see also Fig. 13, Fig. 18B, Fig. 20A, Fig. 31C. Fig. 18B illustrates how the components are encapsulated by potting material (shown by cross hatching) but still between the internal and external housing components:

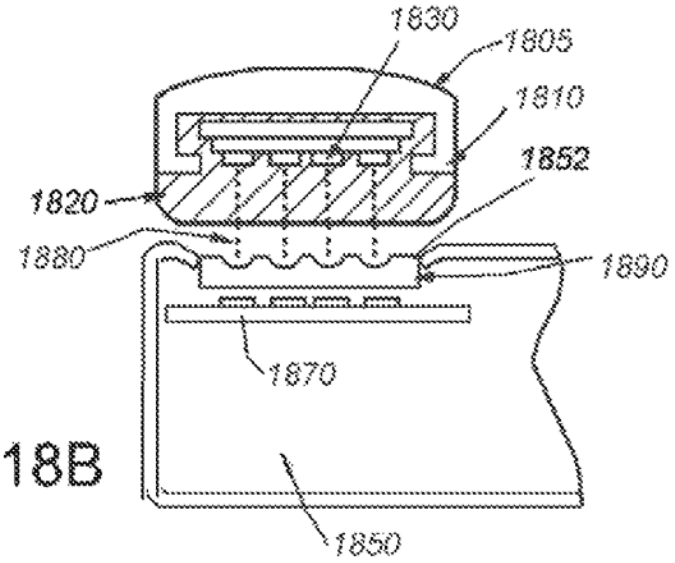


FIG. 18B

And with reference to Figure 13, the ’178 patent specifically acknowledges that “the WCD 1300 includes a housing 1310 that includes an external housing 1312 and an internal potting or encapsulant 1314” and “a battery 1330 . . . which can be at least partially or completely disposed within the partially enclosed internal space 1320.” *Id.* at 18:63-10. The specification further states that “[t]he components can be encapsulated by the internal potting 1314.” *Id.* at 19:13-14. Thus, even if some potting material was included adjacent to the external housing component—and Dr. Sarrafzadeh testified that it would be minimal at best—the cavity would still be formed “between”

[redacted]

the external housing component and the internal housing component—consistent with the specification. RX-0325C at 41:14-19 ("As I mentioned, there could be some potting material that goes on the other side where the foam is, but the majority of the potting material will be on the inside of the PCB. And that's where I have defined the internal housing component and the crust of the system."). As such, Mr. Alarcon's interpretation and requirement that in order to find infringement that no potting material exist between the external housing component and the PCB and battery is contrary to the claim requirements and the disclosed embodiments of the '178 patent. Essentially, since Respondents lost their claim construction argument that potting material cannot be the internal housing component, they seek a revised construction that the internal housing component cannot encapsulate the battery and printed circuit board. In essence, this is a second bite at the same rejected construction as before that the ALJ already rejected. For the same reasons, this late construction should be rejected as contrary to the teachings of the '178 patent, which specifically teaches that 1) potting material can be the internal housing component, and 2) potting material can encapsulate the battery and/or printed circuit board.

Thus, the Ultrahuman Accused Product practices limitation 1[d] of the '178 patent.

(ii) RingConn Accused Product

The RingConn Accused Product includes a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion. RX-0402C ¶¶ 187-192. RingConn also admits that the RingConn Accused Product includes a printed circuit board. *See* CX-0691C at Resp. Nos. 8 and 9.

Indeed, the PCB (and the cavity that it occupies) are shown below through schematics, CT-Scan imaging, and teardowns of the RingConn Accused Product:

[redacted]



CX-0647C.



CX-0065.

[redacted]



CX-0067.



CX-0427.

[redacted]



CX-1040.

The printed circuit board in the RingConn Accused Product also extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion that is occupied by the battery:



CX-0065.

Patent Owner Oura
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[redacted]

Finally, the PCB, and the portion of the cavity that occupies it, [redacted] Mr. Alarcon is wrong for multiple reasons.

First, as Dr. Sarrafzadeh explained (and shown below), [redacted]

[redacted]:



CX-1044; RX-0325C at 271:17-21 (Identifying the metallic structure as the external housing component in the above figure); *Id.* at 271:22-272:3 (identifying the transparent material as the epoxy that forms the internal housing component); 272:4-7 (identifying the PCB).

[redacted]

[redacted]

[redacted]

[redacted]

CX-1044.

[redacted]



CX-1045.



CX-1047.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

CX-1388C at 27:10-25.

[redacted]

Id. at 33:4-9.

[redacted]

[redacted]



CX-0647C.

[redacted]. JX-0001, Fig. 13.

The '178 patent specifically acknowledges that when using potting material as a housing component, the housing material "encapsulates" the components. *See Id.* at Abstract ("wherein the potting material encapsulates the components and is substantially transparent"); 18:65-67 ("In this example, the WCD 1300 includes a housing 1310 that includes an external housing 1312 and an internal potting or encapsulant 1314."); 19:12-13 ("The components can be encapsulated by the internal potting 1314."); see also Fig. 13, Fig. 18B, Fig. 20A, Fig. 31C. Fig. 18B illustrates how the components are encapsulated by potting material (shown by cross hatching) but still between

[redacted]

the internal and external housing components:

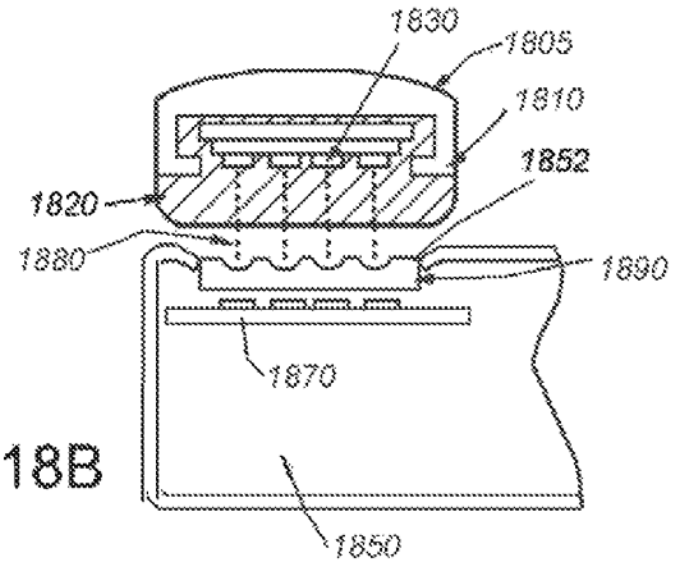


FIG. 18B

And with reference to Figure 13, the '178 patent specifically acknowledges that "the WCD 1300 includes a housing 1310 that includes an external housing 1312 and an internal potting or encapsulant 1314" and "a battery 1330 . . . which can be at least partially or completely disposed within the partially enclosed internal space 1320." *Id.* at 18:63-10. The specification further states that "[t]he components can be encapsulated by the internal potting 1314." *Id.* at 19:13-14. Thus, even if some potting material was included adjacent to the external housing component—and Dr. Sarrafzadeh testified that it would be minimal at best—the cavity would still be formed "between" the external housing component and the internal housing component—consistent with the specification. RX-0325C at 41:14-19 ("As I mentioned, there could be some potting material that goes on the other side where the foam is, but the majority of the potting material will be on the inside of the PCB. And that's where I have defined the internal housing component and the crust of the system."). As such, Mr. Alarcon's interpretation and requirement that in order to find infringement that no potting material exist between the external housing component and the PCB and battery is contrary to the claim requirements and the disclosed embodiments of the '178 patent.

[redacted]

Essentially, since Respondents lost their claim construction argument that potting material cannot be the internal housing component, they seek a revised construction that the internal housing component cannot encapsulate the battery and printed circuit board. In essence, this is another attempt at the same rejected construction as before. For the same reasons, this late construction should be rejected as contrary to the teachings of the '178 patent, which specifically teaches that 1) potting material can be the internal housing component, and 2) potting material can encapsulate the battery and/or printed circuit board.

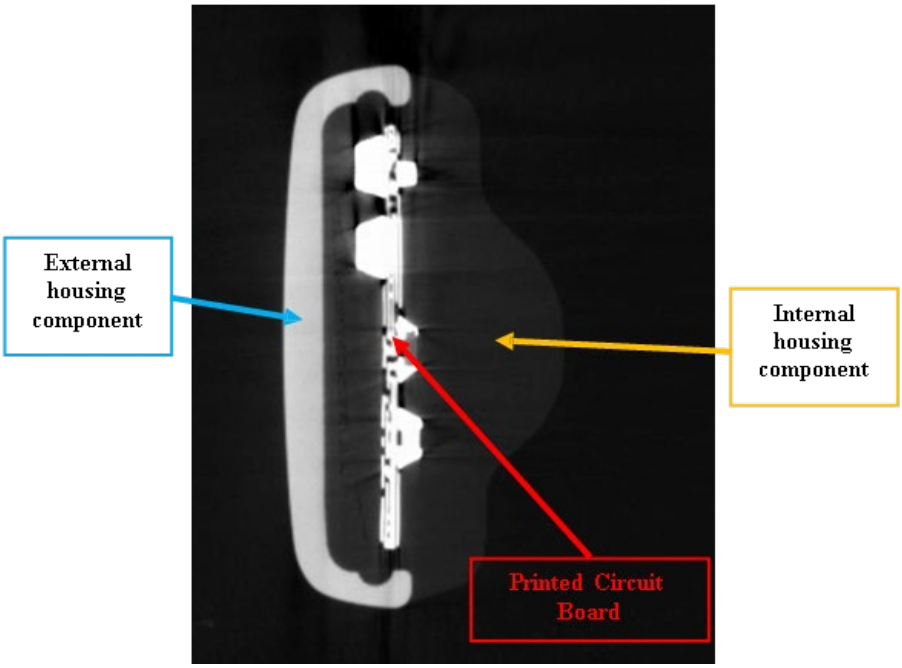
Thus, the RingConn Accused Product practices limitation 1[d] of the '178 patent.

(iii) Oura Domestic Industry Products

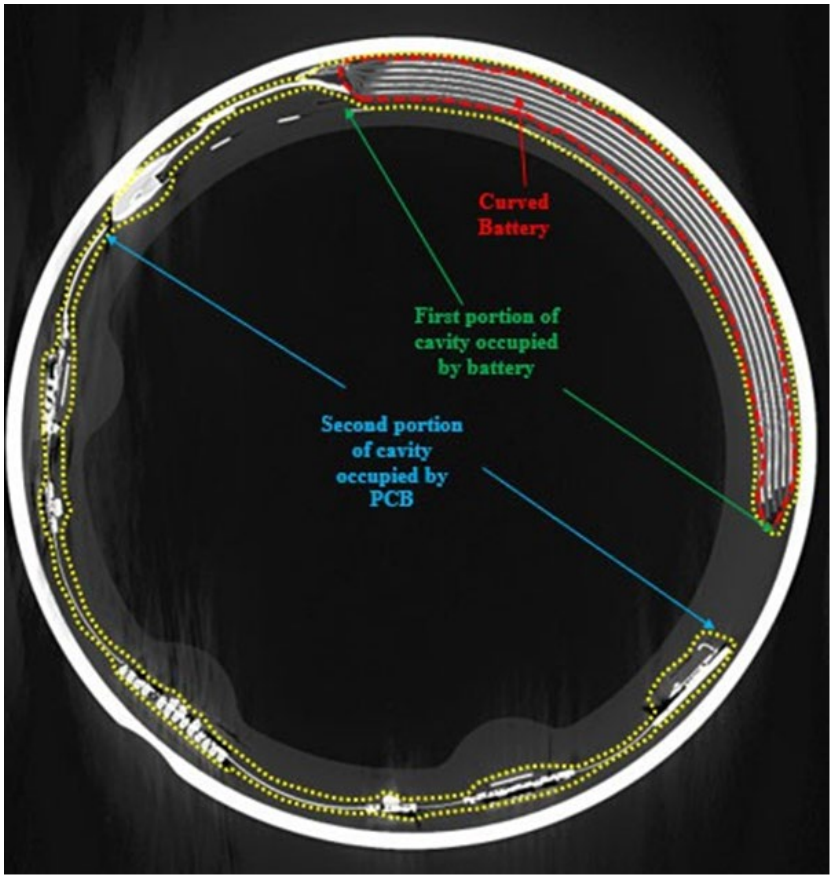
(a) Oura Ring Gen. 3

Oura Ring Gen. 3 includes a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion. RX-0402C ¶¶ 193-197; CX-0151. As shown in below imaging, Oura Ring Gen. 3 has a PCB disposed between the internal and external housing component in a portion of the cavity that is separate from the battery:

[redacted]



CX-0048.



CX-0046.

[redacted]

And similar to the Respondents Accused Products, [redacted] for the same reasons identified above by Dr. Sarrafzadeh. Thus, the PCB board and the cavity that it occupies is also between the internal and external housing component in Oura Ring Gen. 3:

[redacted]

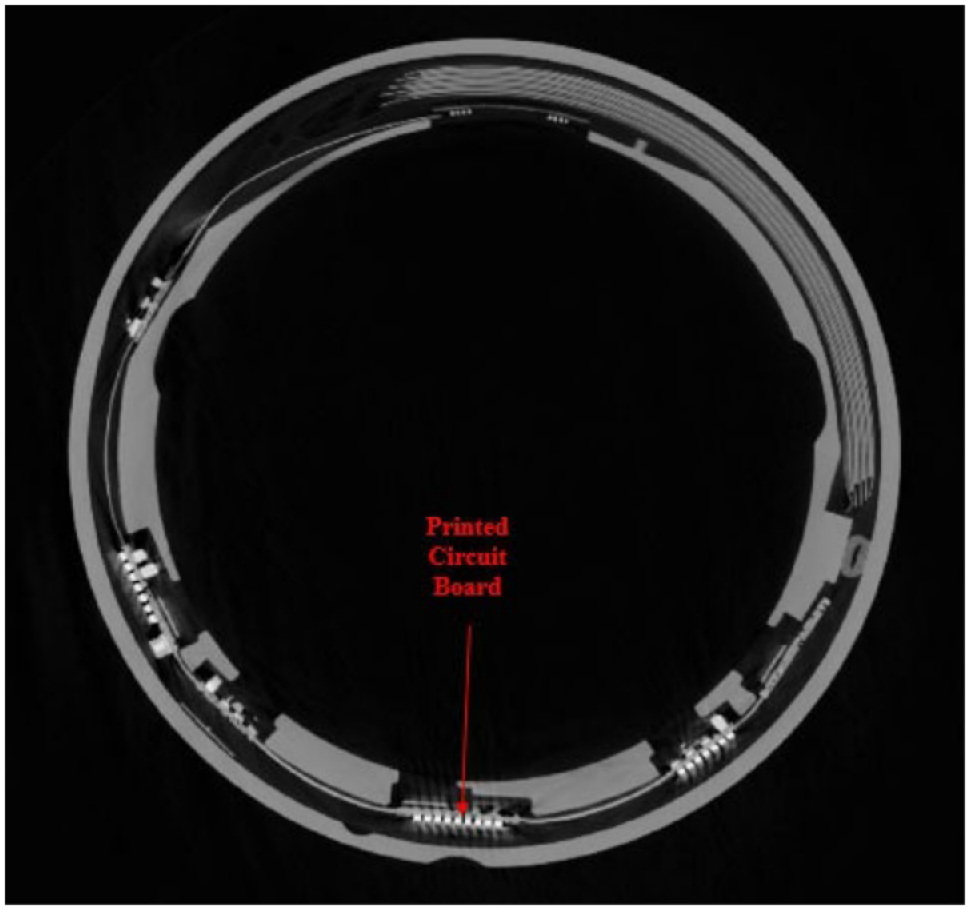
CX-0527C.

Thus, Oura Ring Gen. 3 practices limitation 1[d] of the '178 patent.

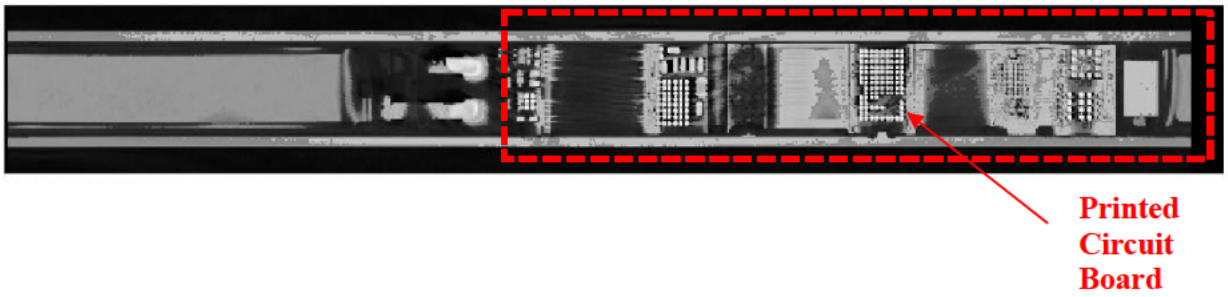
(b) Oura Ring Gen. 4

Oura Ring Gen. 4 also includes a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion. RX-0402C ¶¶ 198-201. Indeed, the CT imaging and schematics show that Oura Ring Gen. 4 includes a printed circuit board disposed between the internal housing component and the external housing component:

[redacted]

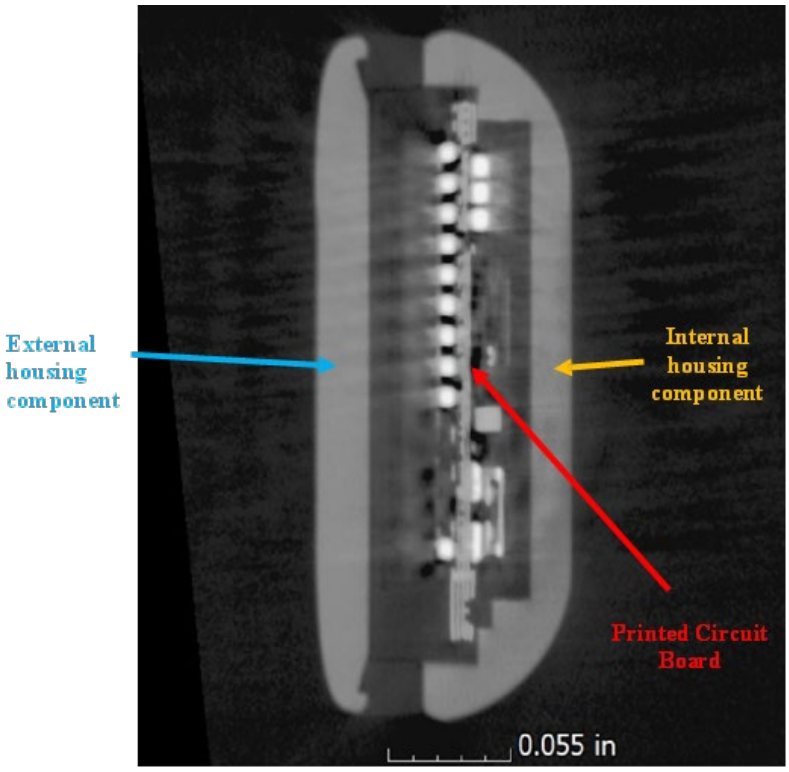


CX-0074C.

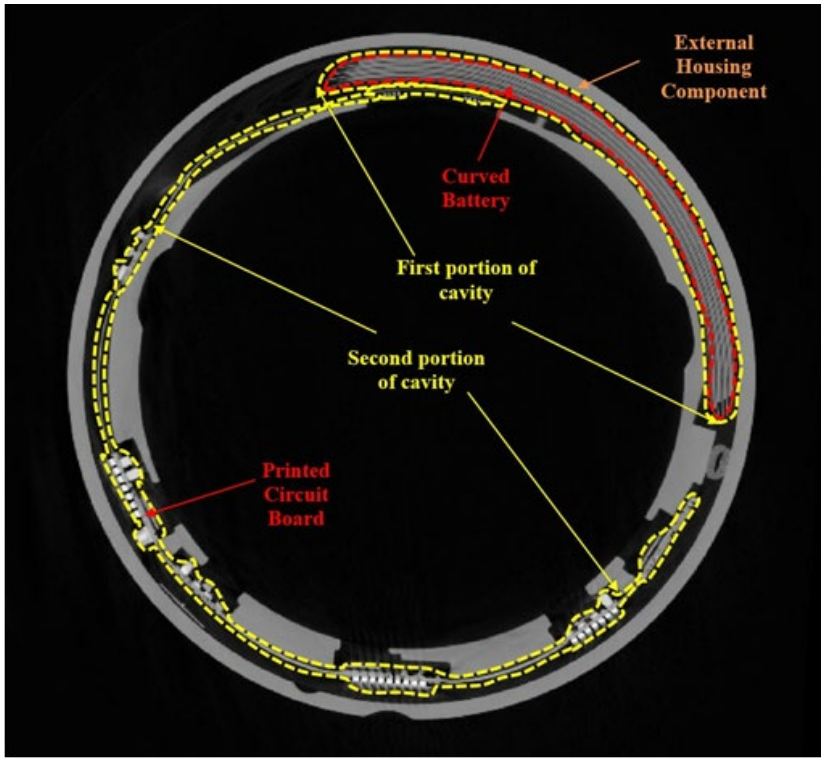


CX-0073C.

[redacted]



CX-0076C.



CX-0074C.

[redacted]

Thus, Oura Ring Gen. 4, also satisfies limitation 1[d] of the '178 patent.

g. Limitation 1[e]: one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component.

Respondents do not appear to dispute that this limitation is practiced by each of the Products-at-issue. Indeed, the only contention that Mr. Alarcon ever raised as for this limitation was pre-*Markman* where he alleged that because potting material cannot form "internal housing component," the sensors are not configured to acquire data through such internal housing component. RX-0050C ¶¶ 249-255. However, in light of the *Markman* Order, Mr. Alarcon cannot offer any credible objection that each Products-at-Issue meets this limitation. Indeed, as discussed below, the evidence shows that each product include one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component.

(i) Ultrahuman Accused Product

The Ultrahuman Accused Product includes one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component. RX-0402C ¶¶ 203-214. Indeed, Ultrahuman admits that the Ultrahuman Accused Product includes one or more sensors. *See* CX-0690C at Resp. No. 11. Ultrahuman also admits that the circuit board includes one or more processors, and that the processor and one or more sensors are connected to the battery. *Id.* at Resp. Nos. 10, 13, and 31. Ultrahuman further admits that "when the [Ultrahuman] Accused Products are used they include one or more sensors that receive light." *Id.* at Resp. Nos. 25 and 26. Ultrahuman also admits that the Ultrahuman Accused Products are capable of making measurements based at least in part on reflection of light. *Id.* at Resp. No. 30; *see also id.* at Resp. Nos. 44-45; *id.* at Resp. Nos. 49, 53,

[redacted]

and 61.

The Ultrahuman Accused Product includes a plurality of sensors configured to acquire data from the user. For example, the Ultrahuman Accused Product includes PPG sensor, a motion sensor, and temperature sensor that each acquire data from the user through the internal housing component. CX-0542; CX-0705C at UH-ITC 056882; CX-0542; CX-0705C at UH-ITC 056883; CX-0990C at UH-ITC 056194; *See also id.* at UH-ITC 056193-249; CX-0705C; CX-0991C; CPX-0140C; CPX-0145C; CPX-0149C-151C; CPX-0153C; CPS-0155-57C;CPX-0161C-CPX-0166C ; CX-0538 at Oura-ITC 0000581; CX-0671; CX-0539 at Oura-ITC 0000534; CX-0672; CX-0539 at Oura-ITC 0000535; CX-0672.

Indeed, the Ultrahuman Accused Product has [redacted]

CX-0287; CX-0314; CX-0312.

Thus, the Ultrahuman Accused Product practices limitation 1[e] of the ’178 patent.

(ii) RingConn Accused Product

The RingConn Accused Product includes one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component. RX-0402C ¶¶ 215-224.

[redacted]

RingConn admits that the RingConn Accused Product includes one or more sensors. *See* CX-0691C at Resp. No. 11. RingConn also admits that the RingConn Accused Products include one or more sensors that receive light. *Id.* at Resp. Nos. 25 and 26. RingConn further admits that the RingConn Accused Product includes one or more processors electrically connected (directly or indirectly) to one or more sensors. *Id.* at Resp. Nos. 31, 48 and 52. Indeed, the RingConn Accused Product include one or more sensors that are configured to acquire various data from the user. For example, the RingConn Accused Product includes [redacted] CX-0568 at Oura-ITC 0000705; CX-0703 at Oura-ITC 0194078; *id.* at Oura-ITC 0194079; *id.* at Oura-ITC 0194080.

The RingConn Accused Product also includes [redacted]:

[redacted]

CX-0417; CX-0403; CX-0404.

[redacted]



CX-0033C; CX-0070; CX-0069; CX-0032C.

The one or more sensors [redacted] And based on the detected light information, the RingConn Accused Product, controlled by processor that configures the sensors, acquires and measures heart rate and SPO2 of the user. *See e.g.,* CPX-0087C [redacted]; CPX-0092C ([redacted]); CPX-0096C ([redacted]). CPX-0097C at RINGCONN-ITC1398-SC-0000100 ([redacted]).

Thus, the RingConn Accused Product satisfies limitation 1[e] of the '178 patent.

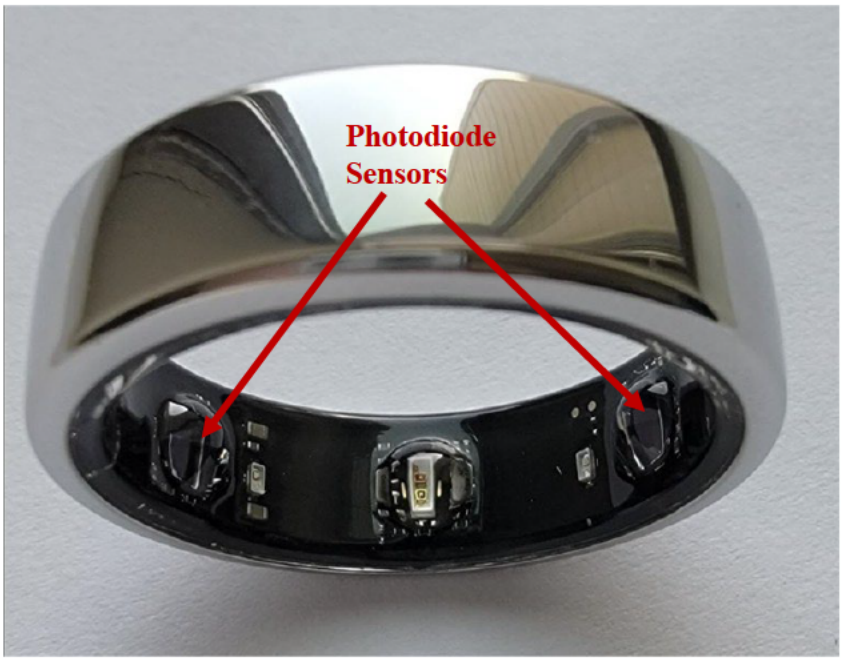
(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

Oura Ring Gen. 3 includes one or more sensors electrically coupled with the printed circuit board and battery and configured to acquire data from the user through the internal housing component. RX-0402C ¶¶ 225-230. For example, the Oura Ring Gen. 3 includes a number of sensors such as optical heart rate sensors, bloody oxygen sensor, skin temperature sensors, photodiodes, and 3D accelerometers that acquire data from the user. CX-0533 at Oura-ITC 0000870; CX-0527C at Oura-ITC 0000953.

[redacted]

The Oura Ring Gen. 3 also includes photodiode sensors coupled with the printed circuit board to acquire data from the user through the internal housing component because the one or more light emitting diodes emit light through the internal molded structure and receive the reflected light through the same molded and transparent internal housing component which is used to acquire data of the user.



CX-0177; CX-0159; CX-0095.

In addition, Oura Ring Gen. 3 includes a processor that controls the functions of the sensors, including LEDs and photodiodes, to acquire heart rate of the user, for example. CPX-0032C; CPX-0035C; CPX-0037C; CPX-0020C-CPX-0021C; CPX-0029C.

Thus, Oura Ring Gen. 3, satisfies limitation 1[e] of the '178 patent.

(b) Oura Gen. 4 DI Product

Oura Ring Gen. 4 also includes one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component. RX-0402C ¶¶ 231-234.

[redacted]

For example, the Oura Ring Gen. 4 includes a number of sensors such as optical heart rate sensors, bloody oxygen sensor, skin temperature sensors, photodiodes, and 3D accelerometers that acquire data from the user. CX-0041C; *see also* CX-0698C; CX-0074C.

Thus, Oura Ring Gen. 4, satisfies limitation 1[e] of the '178 patent.

2. Dependent Claim 2

a. Limitation 2: wherein the first portion of the cavity of the finger-worn wearable ring device is non-overlapping with the second portion of the cavity of the finger-worn wearable ring device.

(i) Ultrahuman Accused Product

The Ultrahuman Accused Product includes the first portion of the cavity of the finger worn wearable ring device that occupies the battery that is non-overlapping with the second portion of the cavity that occupies the printed circuit board and other components as shown below. RX-0402C ¶¶ 236-237.



[redacted]

CX-0056.

Thus, the Ultrahuman Accused Product practices the limitations of dependent claim 2 of the ’178 patent.

(ii) RingConn Accused Product

The RingConn Accused Product includes the first portion of the cavity of the finger-worn wearable ring device that occupies the battery is non-overlapping with the second portion of the cavity that occupies the printed circuit board and other components as shown below. RX-0402C ¶¶ 238-239.



CX-0065.

Thus, the RingConn Accused Product practices the limitations of dependent claim 2 of the

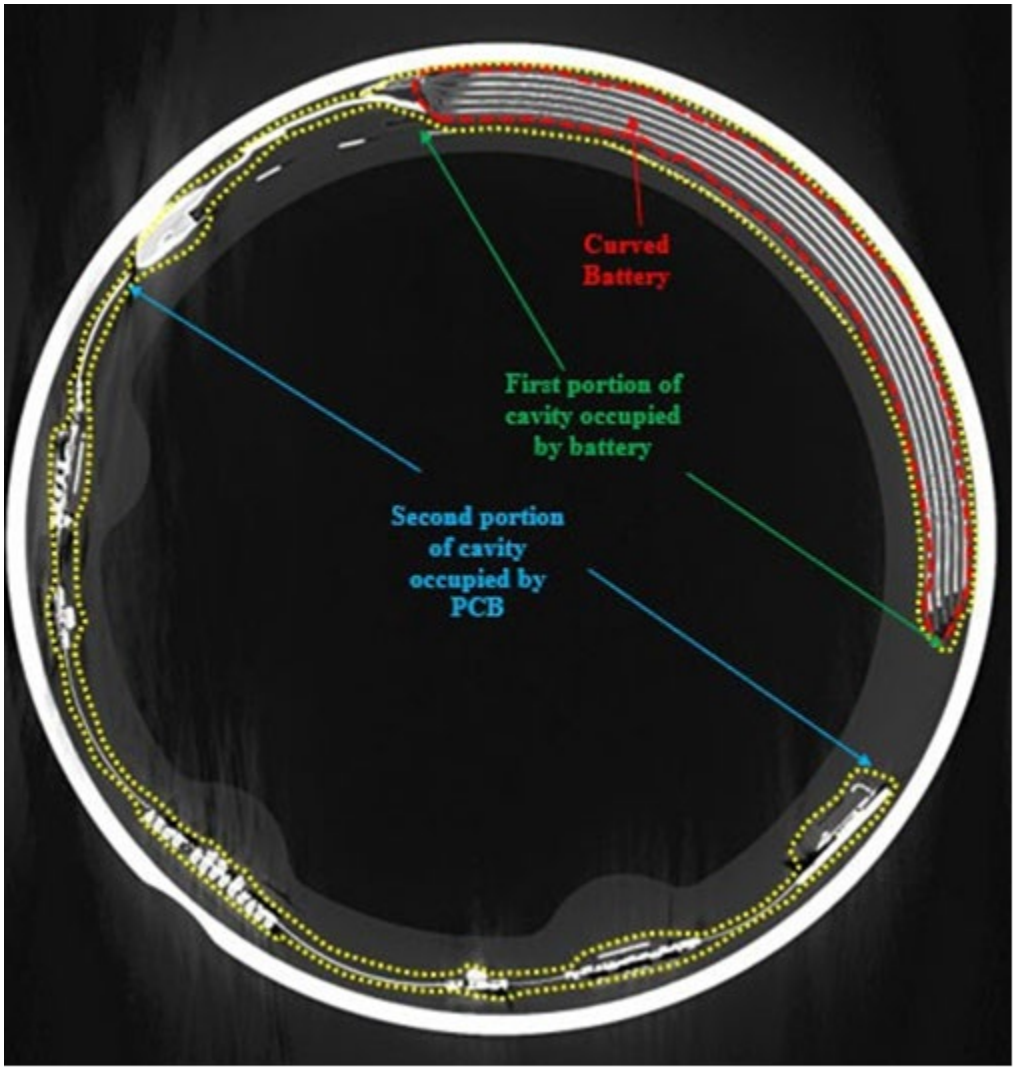
[redacted]

’178 patent.

(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

The Oura Ring Gen. 3 includes a first portion of the cavity of the finger-worn wearable ring device that occupies the battery is non-overlapping with the second portion of the cavity that occupies the printed circuit board and other components as shown below:



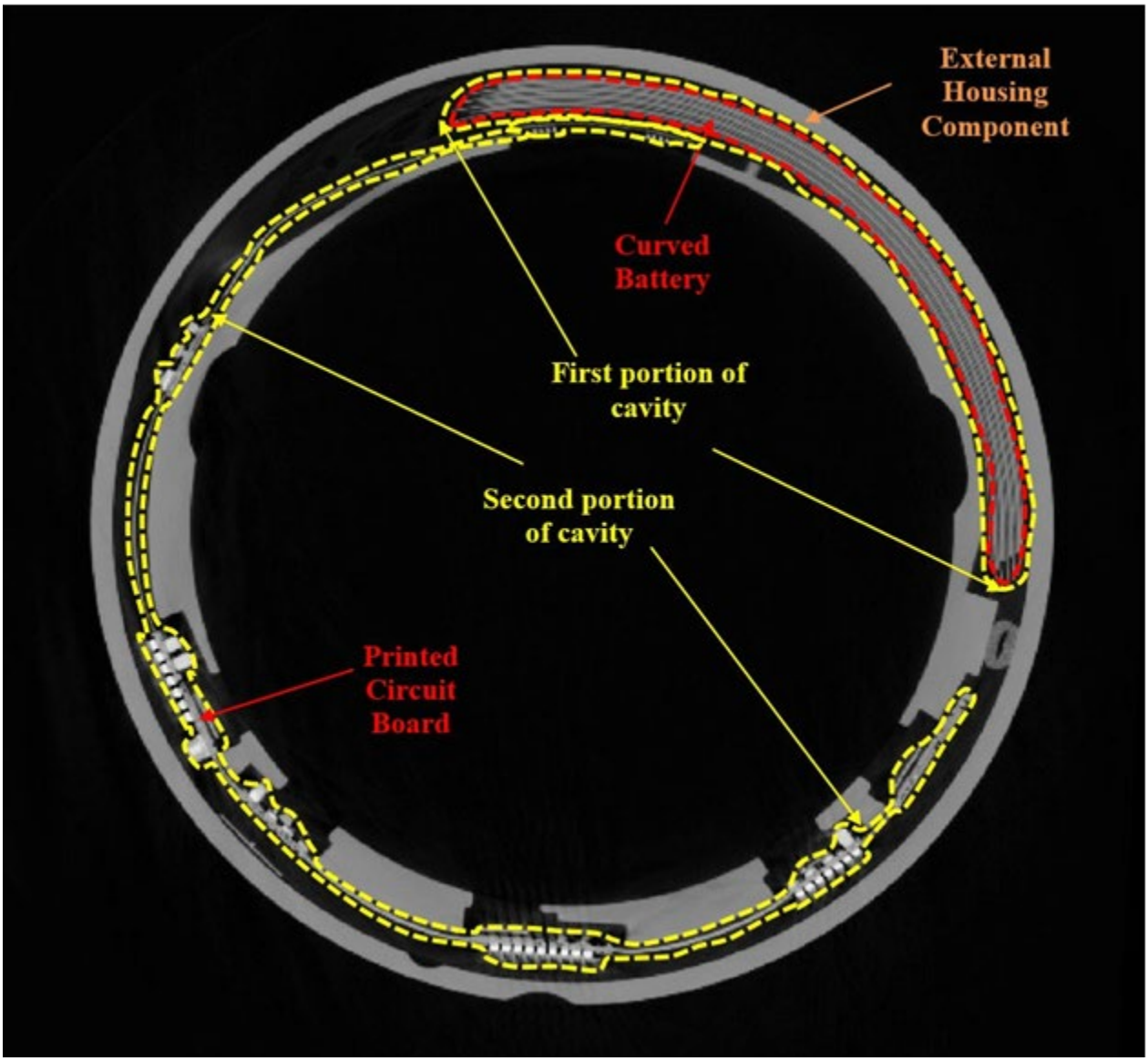
CX-0046; *see also* RX-0402C ¶¶ 240-241.

Thus, Oura Ring Gen. 3 practices the limitations of dependent claim 2 of the ’178 patent.

(b) Oura Ring Gen. 4

[redacted]

The Oura Ring Gen. 4 includes the first portion of the cavity of the finger-worn wearable ring device that occupies the battery is non-overlapping with the second portion of the cavity that occupies the printed circuit board and other components as shown below:



CX-0074C; *see also* RX-0402C ¶¶ 242-244.

Thus, Oura Ring Gen. 4, also practices the limitation of dependent claim 2 of the '178 patent.

3. Dependent Claim 12

[redacted]

a. Limitation 12: wherein the battery comprises a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component.

(i) Ultrahuman Accused Product

The Ultrahuman Accused Product [redacted]. RX-0402C ¶¶ 245-247.

Ultrahuman [redacted] *See* CX-0690C at Resp. No. 6. As shown below, the Ultrahuman Accused Product [redacted]

[redacted]

[redacted]

CX-0056.



CX-0059.

Thus, the Ultrahuman Accused Product practices the limitations of dependent claim 12 of the ’178 patent.

(ii) RingConn Accused Product

The RingConn Accused Product includes [redacted] RX-0402C ¶¶ 248-251.

RingConn [redacted]

[redacted]



CX-0647C.

The [redacted]



Id.

[redacted]



CX-0065.



CX-0070.

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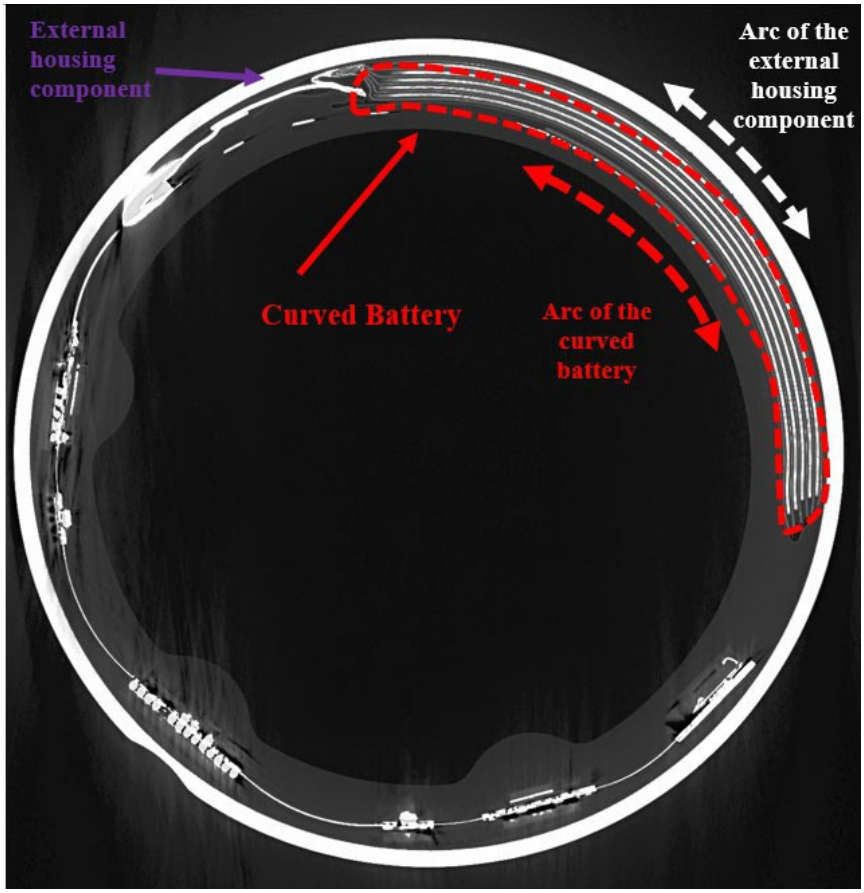
[redacted]

Thus, the RingConn Accused Product practices the limitations of dependent claim 12 of the ’178 patent.

(iii) Oura Domestic Industry Products

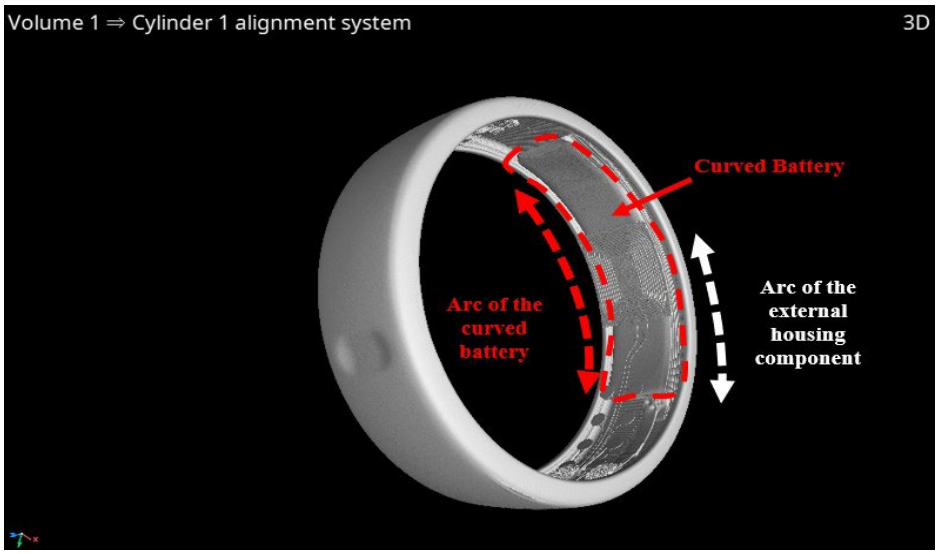
(a) Oura Ring Gen. 3

Oura Ring Gen. 3 has a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component. RX-0402C ¶¶ 252-253.



CX-0046.

[redacted]

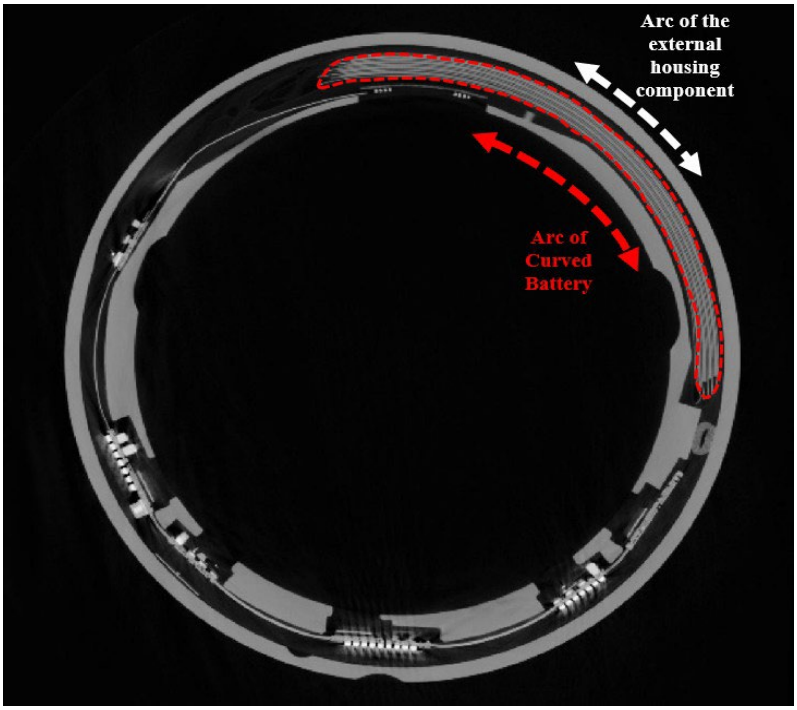


CX-0054; CX-0527C at Oura-ITC 0000953.

Thus, Oura Ring Gen. 3 practices the limitations of dependent claim 12 of the '178 patent.

(b) Oura Ring Gen. 4

Oura Ring Gen. 4 has a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component as shown below. RX-0402C ¶¶ 294-295.



CX-0074C; CX-0041C.

[redacted]

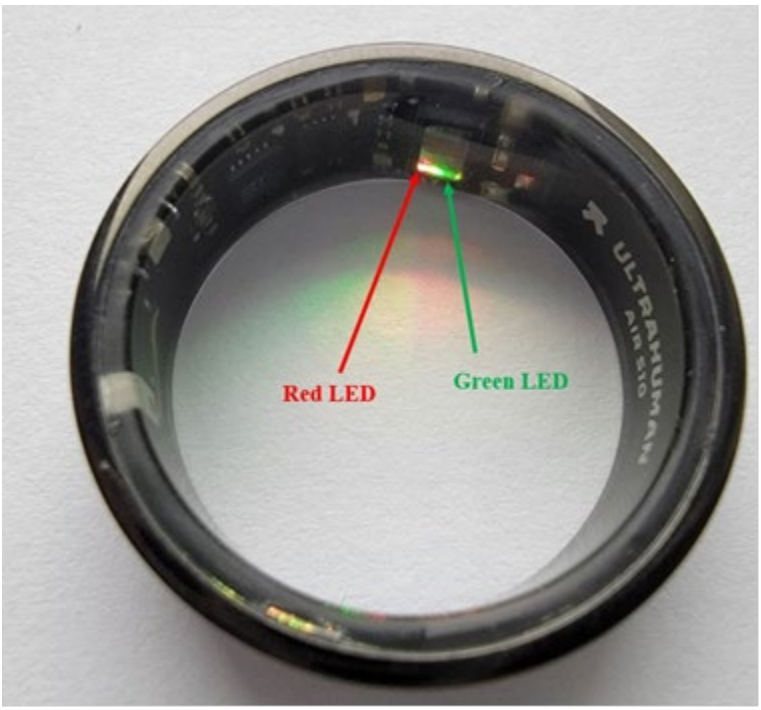
Thus, Oura Ring Gen. 4, practices the limitation of dependent claim 12 of the '178 patent.

4. Dependent Claim 13

a. Limitation 13: wherein the one or more sensors comprise a first light-emitting component configured to emit light associated with a first wavelength, and a second light-emitting component configured to emit light associated with a second wavelength different from the first wavelength.

(i) Ultrahuman Accused Product

The Ultrahuman Accused Product includes one or more sensors that comprise a first light emitting component configured to emit light associated with a first wavelength, and a second light emitting component configured to emit light associated with a second wavelength different from the first wavelength. RX-0402C ¶¶ 257-259; CX-0538 at Oura-ITC 0000581. Indeed, Ultrahuman Accused Product [redacted]

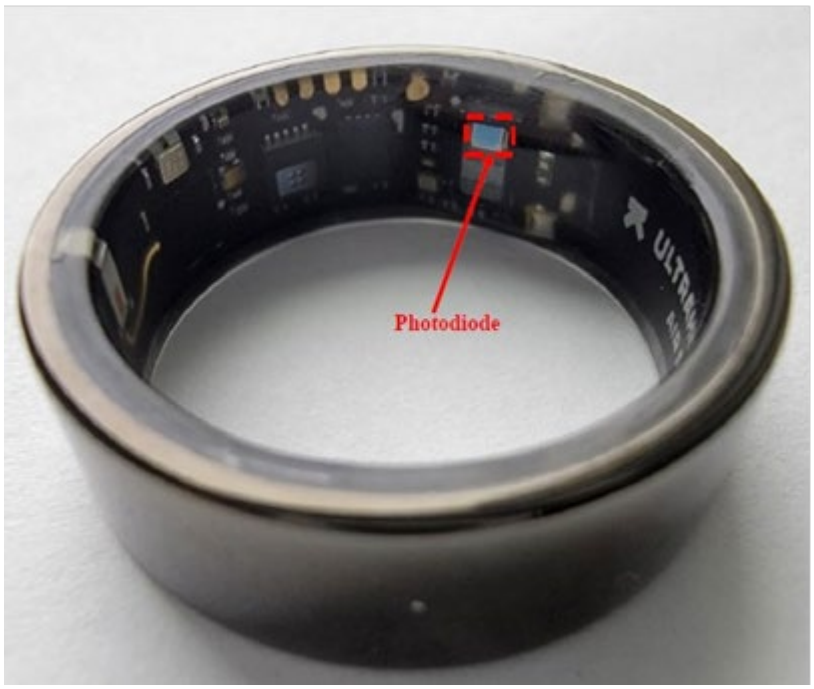


CX-0312.

[redacted]



CX-0313.



CX-0314.

Thus, the Ultrahuman Accused Product practices the limitations of dependent claim 13 of

[redacted]

the ’178 patent.

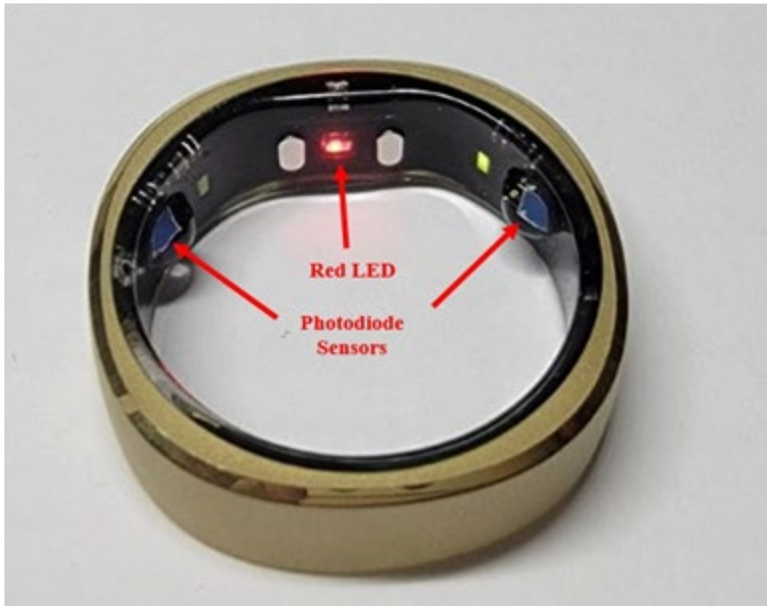
(ii) RingConn Accused Product

The RingConn Accused Product, the one or more sensors comprise a first light emitting component configured to emit light associated with a first wavelength, and a second light emitting component configured to emit light associated with a second wavelength different from the first wavelength. RX-0402C ¶¶ 260-262. Indeed, RingConn Accused Product includes [redacted]



CX-0403.

[redacted]



CX-0404.



CX-0405.

Thus, the RingConn Accused Product practices the limitations of dependent claim 13 of the ’178 patent.

[redacted]

(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

Oura Ring Gen. 3 includes one or more sensors that comprise a first light-emitting component configured to emit light associated with a first wavelength, and a second light-emitting component configured to emit light associated with a second wavelength different from the first wavelength. RX-0402C ¶¶ 263-265. Indeed, Oura Ring Gen. 3 includes a number of sensors, including Red LEDs, Green LEDs, and Infrared LEDs that each emit light at different wavelengths that is subsequently detected by photodiode sensors that are also included in the Oura Ring Gen. 3:



CX-0199.

[redacted]



CX-0177.

Thus, Oura Ring Gen. 3, satisfies the limitations of dependent claim 13 of the '178 patent.

(b) Oura Ring Gen. 4

The Oura Ring Gen. 4 includes one or more sensors that comprise a first light-emitting component configured to emit light associated with a first wavelength, and a second light-emitting component configured to emit light associated with a second wavelength different from the first wavelength that is detected by one or more photodiodes. RX-0402C ¶¶ 266-267. For example, the Oura Ring Gen. 4 includes multiple LED and photodiodes (PDs) to detect red, green, or infrared light:

[redacted]



CX-0697C; CX-0074C; CX-0041C.

Thus, Oura Ring Gen. 4 practices the limitations of dependent claim 13 of the '178 patent.

5. Dependent Claim 14

a. Limitation 14: wherein the first wavelength is associated with visible light, and wherein the second wavelength is associated with the infrared light.

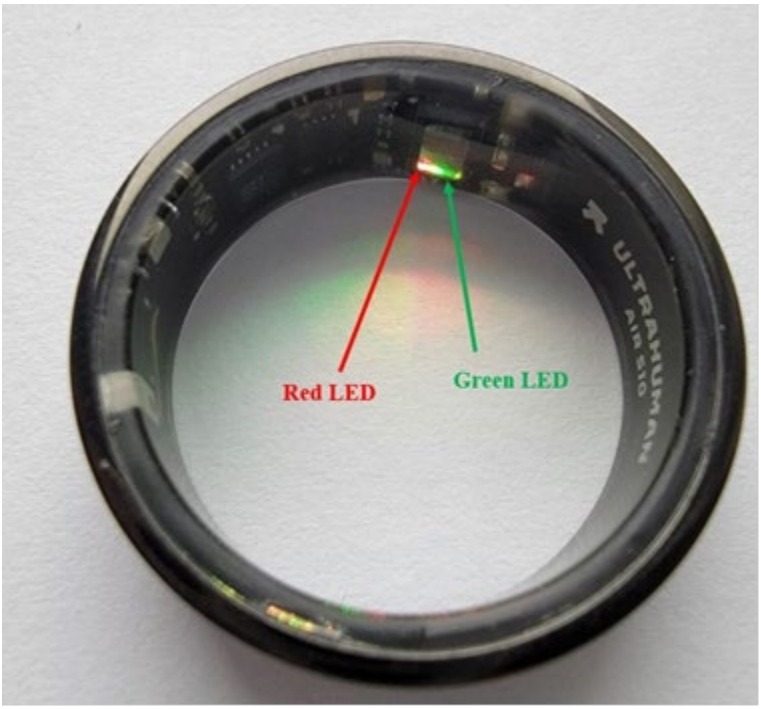
(i) Ultrahuman Accused Product

The Ultrahuman Accused Product includes sensors that detect the first wavelength of the first light emitting component in visible light (i.e., Red or Green), and the second wavelength emitted by the second light emitting component in infrared light. RX-0402C ¶¶ 268-269.

[redacted]

Sensors	Infrared Photoplethysmography (PPG) sensor
	Non-contact medical-grade skin temperature sensor
	6-axis motion sensors
	Red LEDs (heart rate monitoring and oxygen saturation)
	Green LEDs (heart rate monitoring)
	Infrared LEDs (heart rate monitoring)

CX-0538 at Oura-ITC 0000581,



CX-0312.

[redacted]



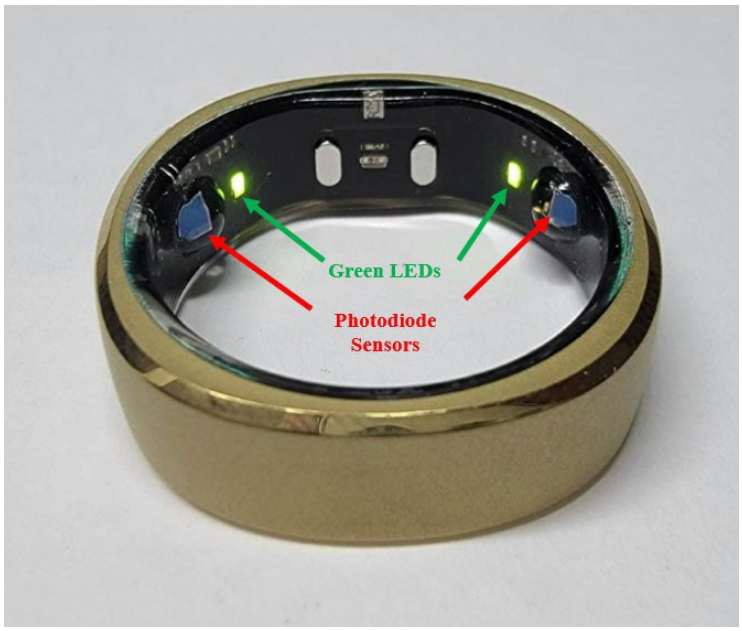
CX-0313.

Thus, the Ultrahuman Accused Product satisfies the limitations of dependent claim 14 of the ’178 patent.

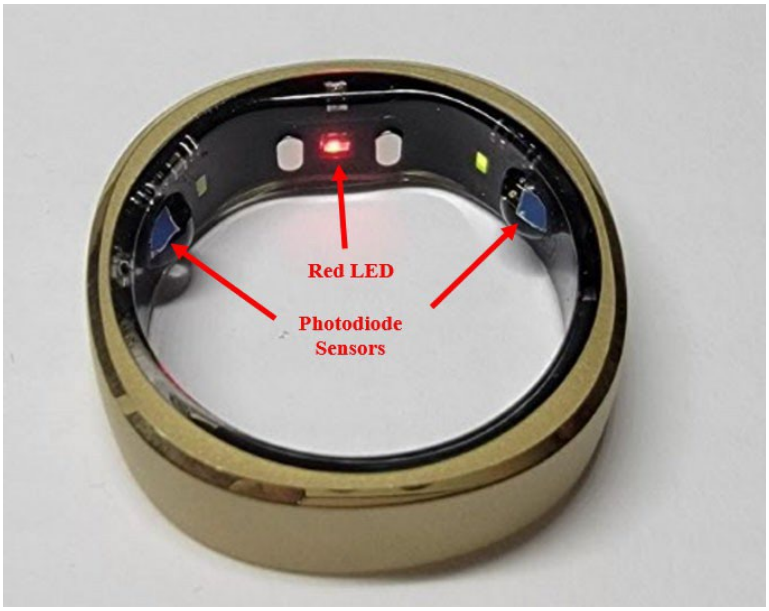
(ii) RingConn Accused Product

The RingConn Accused Product include sensors where the first wavelength emitted by the first light emitting component is visible light (i.e., Red or Green), and the second wavelength emitted by the second light emitting component is infrared light. RX-0402C ¶¶ 270-271.

[redacted]



CX-0403.



CX-0404.

[redacted]



CX-0405.

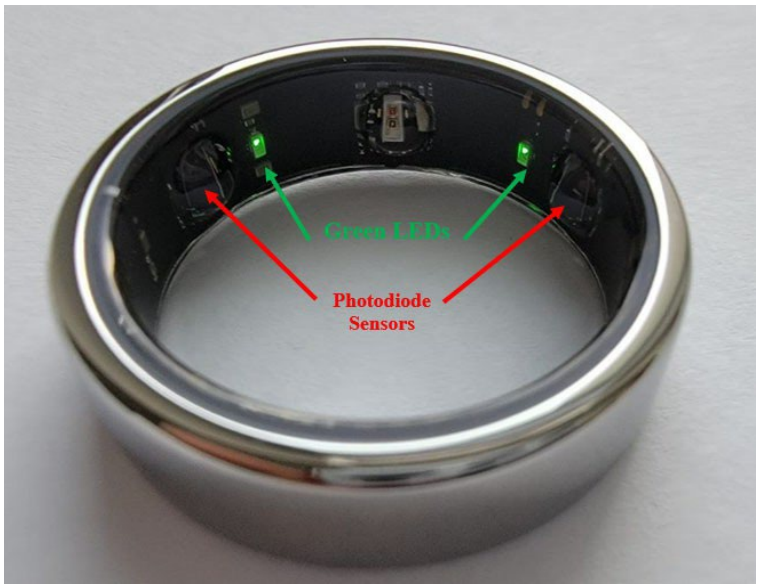
Thus, the RingConn Accused Product satisfies the limitations of dependent claim 14 of the '178 patent.

(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

Oura Ring Gen. 3 includes sensors where the first wavelength of the first light emitting component is visible light (i.e., Red or Green), and the second wavelength emitted by the second light emitting component is infrared light that is detected by plurality of photodiodes. RX-0402C ¶¶ 272-273.

[redacted]



CX-0199.



CX-0177.

Thus, Oura Ring Gen. 3, satisfies the limitations of dependent claim 14 of the '178 patent.

(b) Oura Ring Gen. 4

Oura Ring Gen. 4 includes sensors where the first wavelength of the first light emitting component is visible light (i.e., Red or Green), and the second wavelength emitted by the second

[redacted]

light emitting component is infrared light that is detected by multiple photodiode sensors. RX-0402C ¶¶ 274-275.



CX-0697C; CX-0074C.

Thus, Oura Ring Gen. 4, also satisfies the limitations of dependent claim 14 of the '178 patent.

6. Dependent Claim 17

a. Limitation 17[a]: wherein the external housing component and the internal housing component define the cavity configured to at least partially surround the battery, and the printed circuit board

(i) Ultrahuman Accused Product

In the Ultrahuman Accused Product, [redacted]

[redacted]



CX-0056.



CX-0058.

[redacted]

Thus, the Ultrahuman Accused Product satisfies limitations of dependent claim 17[a] of the ’178 patent.

(ii) RingConn Accused Product

In the RingConn Accused Product, [redacted]



CX-0065, *see also* RX-0402C ¶¶ 279-281.

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[redacted]



CX-0067.

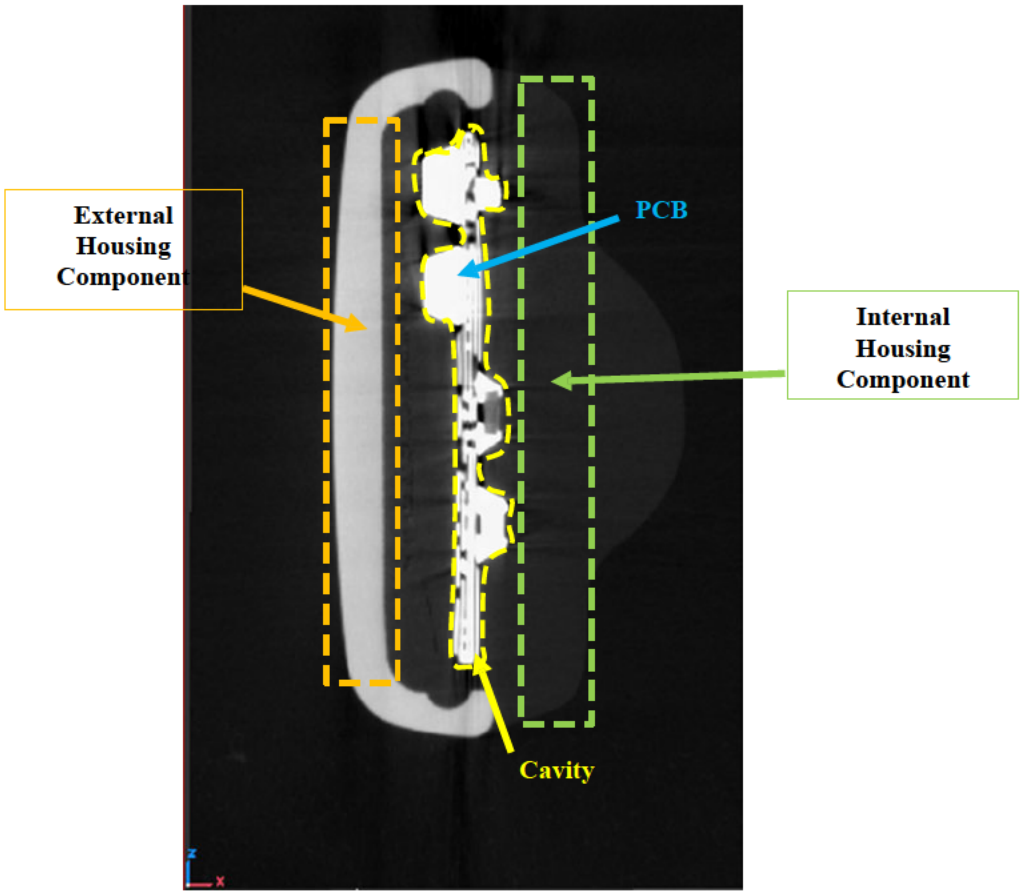
Thus, the RingConn Accused Product satisfies the limitations of dependent claim 17[a] of the ’178 patent.

(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

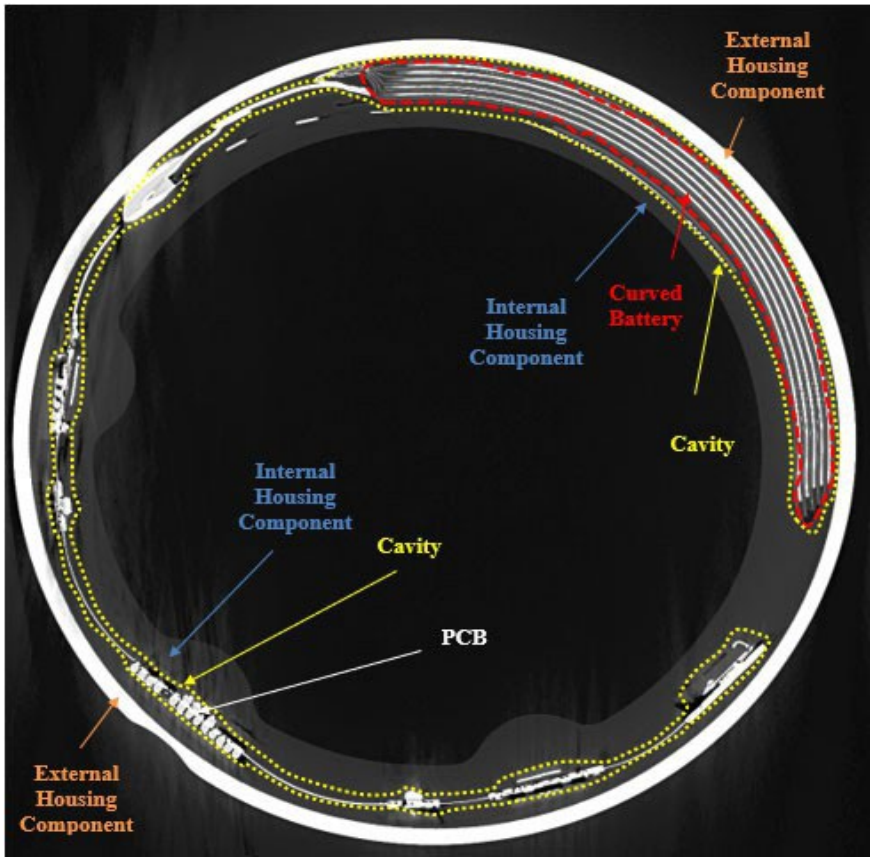
In the Oura Ring Gen. 3 includes the external housing component and the internal housing component that define a cavity configured to at least partially surround the battery, and the printed circuit board:

[redacted]



CX-0048; *see also* RX-0402C ¶¶ 282-283.

[redacted]



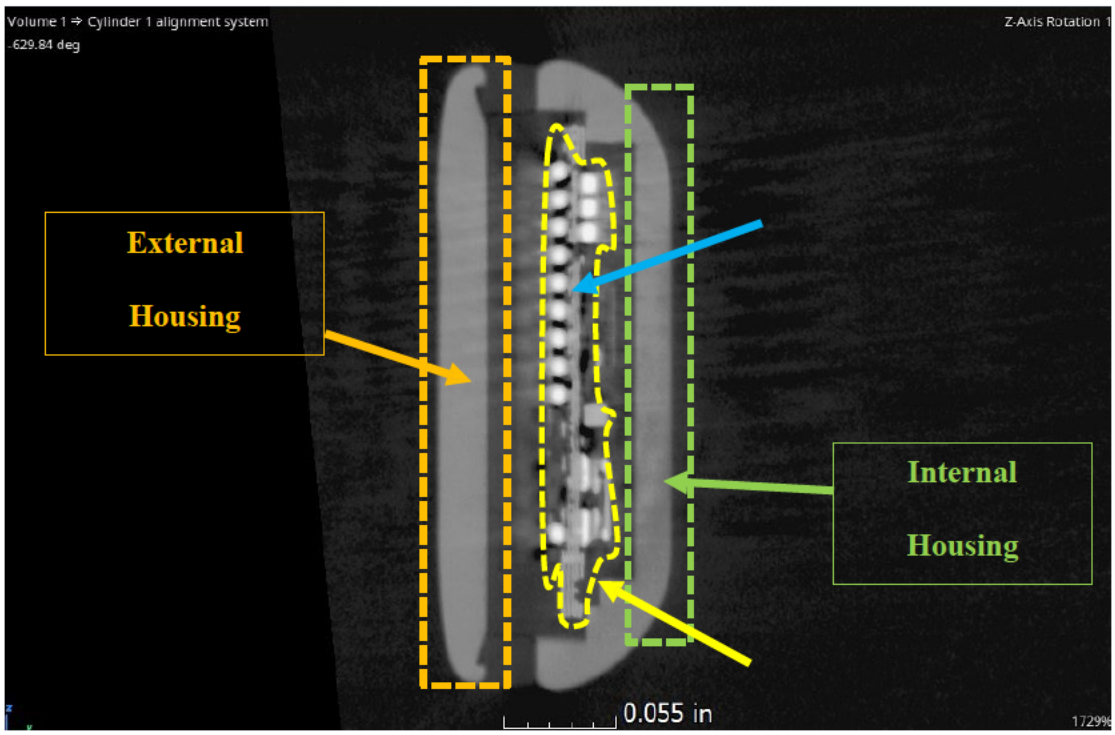
CX-0046.

Thus, Oura Ring Gen. 3 satisfies the limitations of dependent claim 17[a] of the '178 patent.

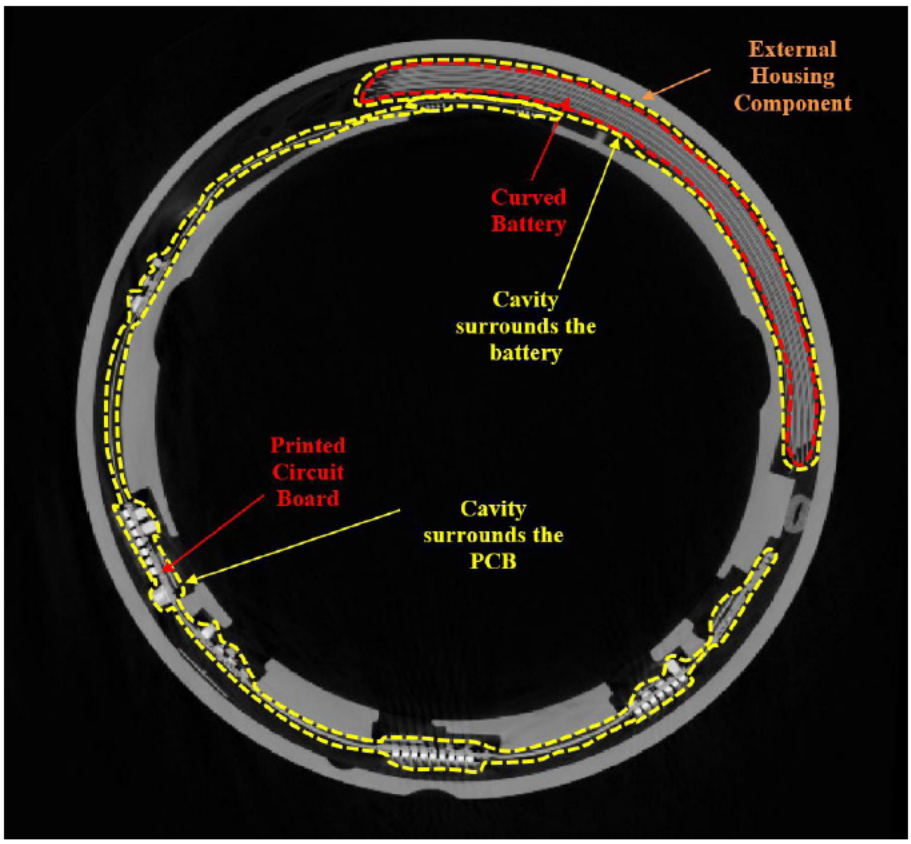
(b) Oura Ring Gen. 4

The Oura Ring Gen. 4, the external housing component and the internal housing component define a cavity configured to at least partially surround the battery, and the printed circuit board. RX-0402C ¶¶ 284-285.

[redacted]



CX-0076C.



[redacted]

CX-0074C.

For at least the reasons set forward in his reports and the above, Oura Ring Gen. 4 also practices the limitation of the dependent claim 17[a] of the '178 patent.

b. Limitation 17[b]: wherein one of the external housing component or the internal housing component comprises: a first side wall and a second side wall that extend between the internal housing component and the external housing component, wherein the cavity is defined at least in part by the outer circumferential surface, the inner circumferential surface, the first side wall, and the second side wall.

(i) Ultrahuman Accused Product

The Ultrahuman Accused Product includes one of the external housing component or the internal housing component that comprises a first side wall and a second side wall that extend between the internal housing component and the external housing component, wherein the cavity is defined at least in part by the outer circumferential surface, the inner circumferential surface, the first side wall, and the second side wall. RX-0402C ¶¶ 286-289.

The Ultrahuman Accused Product's [redacted]

[redacted]

[redacted]

CX-0666C at UH-ITC 059995.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

CX-0058.

Thus, the Ultrahuman Accused Product satisfies the limitations of the dependent claim 17[b] of the '178 patent.

(ii) RingConn Accused Product

The RingConn Accused Product comprises a first side wall and a second side wall that

[redacted]

CX-0067; *see also* RX-0402C ¶¶ 290-291.

Thus, the RingConn Accused Product satisfies the limitations of dependent claim 17[b] of

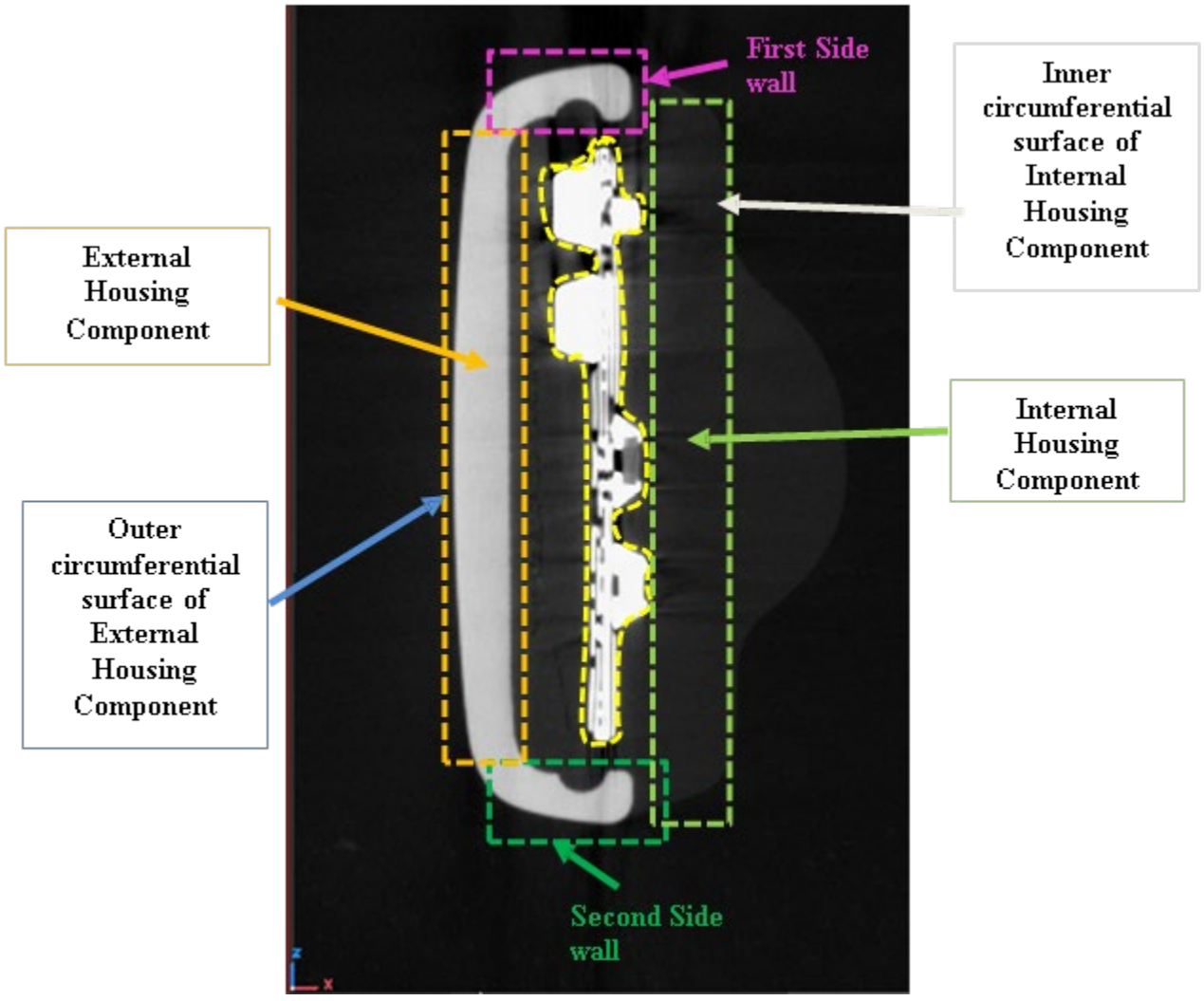
[redacted]

the ’178 patent.

(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

The Oura Ring Gen. 3, includes one of the external housing component or the internal housing component that comprises a first side wall and a second side wall that extend between the internal housing component and the external housing component, wherein the cavity is defined at least in part by the outer circumferential surface, the inner circumferential surface, the first side wall, and the second side wall:



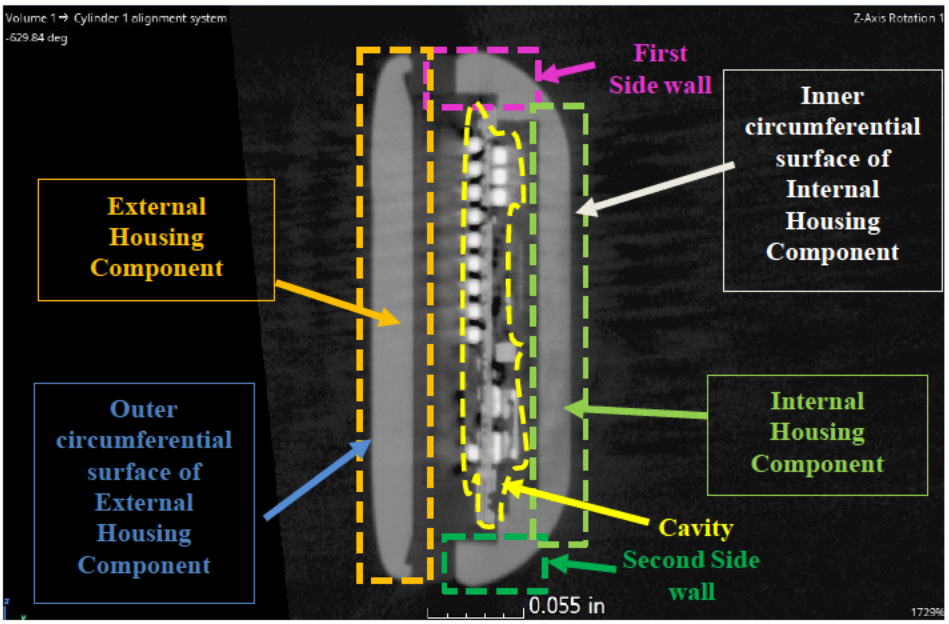
CX-0048; *see also* RX-0402C ¶¶ 292-293.

[redacted]

Thus, Oura Ring Gen. 3 satisfies the limitations of dependent claim 17[b] of the '178 patent.

(b) Oura Ring Gen. 4

The Oura Ring Gen. 4, includes one of the external housing component or the internal housing component that comprises a first side wall and a second side wall that extend between the internal housing component and the external housing component, wherein the cavity is defined at least in part by the outer circumferential surface, the inner circumferential surface, the first side wall, and the second side wall:



CX-0076C; RX-0402C ¶¶ 294-295.

Thus, Oura Ring Gen. 4, practices the limitations of dependent claim 17[b] of the '178 patent.

7. Dependent Claim 18

a. Limitation 18: wherein the first side wall, the second side wall, or both are substantially perpendicular to the inner circumferential surface, the outer circumferential surface, or both.

[redacted]

(i) Ultrahuman Accused Product

In the Ultrahuman Accused Product, the first side wall, the second side wall, or both are substantially perpendicular to the inner circumferential surface, the outer circumferential surface, or both. RX-0402C ¶¶ 296-299. Indeed, the Ultrahuman Accused Product's [redacted]

[redacted]

CX-0666C at UH-ITC 059995.

As shown below, the [redacted]

[redacted]



Thus, the Ultrahuman Accused Product practices the limitations of dependent claim 18 of the ’178 patent.

(ii) RingConn Accused Product

In the RingConn Accused Product, the first side wall, the second side wall, or both are substantially perpendicular to the outer circumferential surface:

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[redacted]



CX-0067; *see also* RX-0402C ¶¶ 300-301.

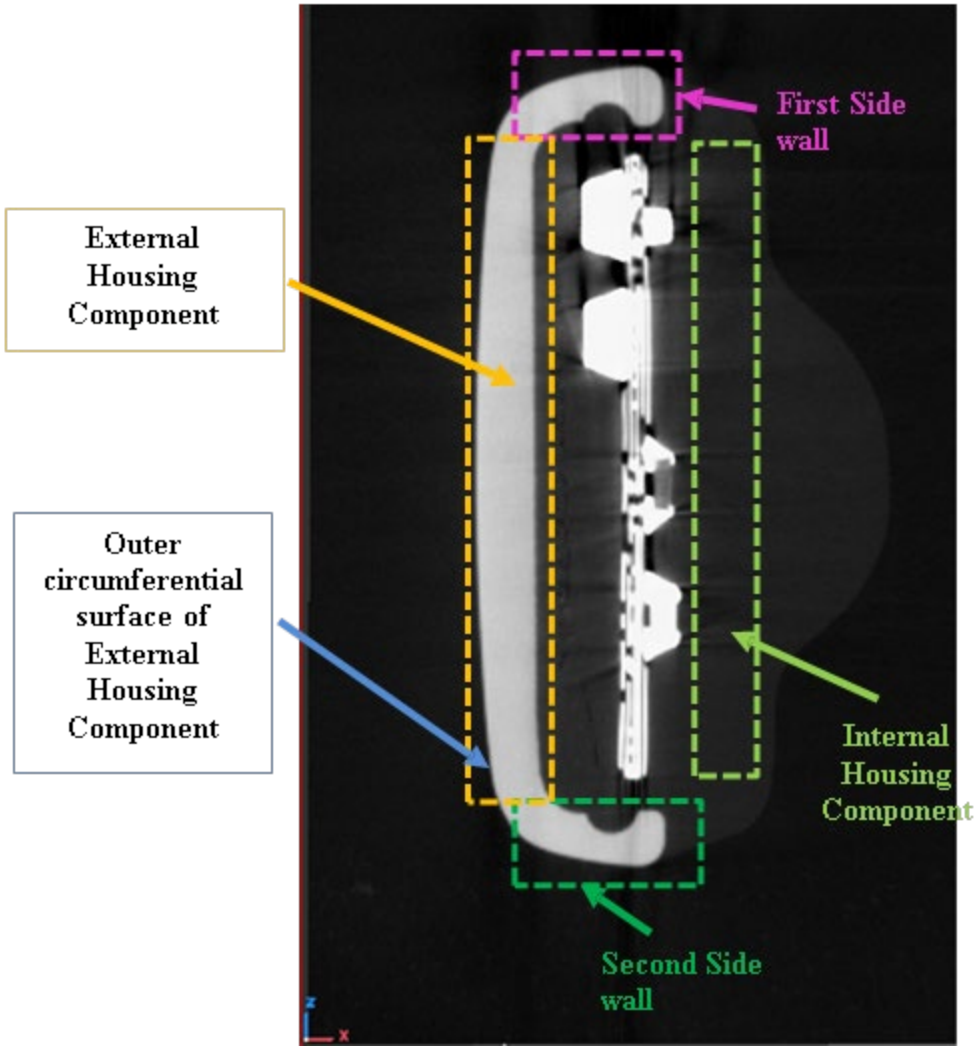
Thus, the RingConn Accused Product satisfies the limitations of dependent claim 18 of the '178 patent.

(iii) Oura Domestic Industry Products

(a) Oura Ring Gen. 3

In Oura Ring Gen. 3, the first side wall, the second side wall, or both are substantially perpendicular to the outer circumferential surface:

[redacted]



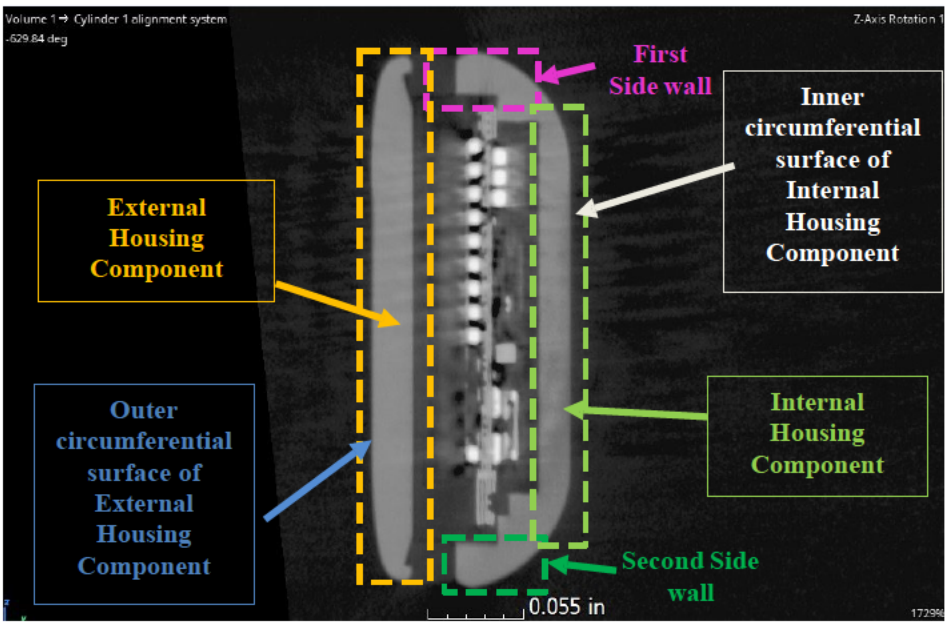
CX-0048; *see also* RX-0402C ¶¶ 302-303.

Thus, Oura Ring Gen. 3 satisfies the limitations of dependent claim 18 of the '178 patent.

(b) Oura Ring Gen. 4

In Oura Ring Gen. 4, the first side wall, the second side wall, or both are substantially perpendicular to the inner circumferential surface, the outer circumferential surface, or both. RX-0402C ¶¶ 254-256.

[redacted]



CX-0076C.

Thus, Oura Ring Gen. 4, also satisfies limitation of dependent claim 18 of the '178 patent.

8. Indirect Infringement under 35 U.S.C § 271

Respondents also violate Section 337 as indirect infringers of the Asserted Claims of the '178 patent.

Induced Infringement by Respondents: As explained in Section IV.B, *supra*, Section 337's prohibition extends to induced infringement under 35 U.S.C. § 271(b). Respondents violate Section 337 and 35 U.S.C. § 271(b) by inducing their customers in the U.S. to use the Respondents Accused Products imported into the U.S. or made in the U.S. with components Respondents import,[5] and as such directly infringe the '178 patent.

As further explained above, Respondents import into the U.S. the Respondents Accused Products, as well as components of the Respondents Accused Products to make or assemble them

[5] The Federal Circuit held that "articles that infringe" under Section 337 in the context of induced infringement encompasses articles that do not directly infringe at the time of importation into the United States and that are used as part of direct infringement after importation. *See Suprema, Inc. v. U.S. Int'l Comm'n*, 796 F.3d 1338, 1340-41 (Fed. Cir. 2015).

[redacted]

in the U.S.[6] The Respondents Accused Products are then sold to Respondents' customers in the U.S.[7]

Respondents purposefully cause, urge, or encourage its customers to use its products in a way that infringes the '178 patent. In particular, Respondents induce the infringing use of the Accused Products in the U.S. by actively and knowingly assisting and directing its customers in installing, maintaining, repair, and using the Respondents Accused Products through offering product documentation. *See e.g.;* CX-0704C; CX-0935. Respondents have known about the '178 patent since at least filing of the Complaint. Based on their knowledge of the '178 patent and the infringement allegations in the Complaint, Respondents should have known that their continuous causing, urging, and encouraging of their U.S. customers to use the Accused Products results in the customers' direct infringement of the '178 patent, especially in light of the fact that the '178 patent is focused on finger-worn wearable ring devices, which is the very core functionality of the Respondents Accused Products.

Contributory Infringement by Respondents: As explained in Section IV.B, *supra*, Section 337's prohibition extends to contributory infringement under 35 U.S.C. § 271(c). Respondents violate Section 337 and 35 U.S.C. § 271(c) by importing components that are incorporated into the Respondents Accused Products, which in turn directly infringe the Asserted Claims of the '178 patent, as discussed above. *Certain Network Devices, Related Software and*

[6] This induced infringement pertains to all components that are imported by Respondent(s) and used in the assembly or manufacturing of the Respondents Accused Products in the United States. *See Cisco Sys., Inc. v. Int'l Trade Comm'n*, 873 F.3d 1354, 1363 (Fed. Cir. 2017).

[7] As discussed above, for example, Ultrahuman has testified that it is opening [redacted] to manufacture the Ultrahuman Accused Products for U.S. sales. CX-1386C at 67:14-69:15. And although Ultrahuman alleges that it will eventually seek to [redacted] (*id.* at 70:12-71:23), all components within the Ultrahuman Accused Products are currently supplied from [redacted]. CX-0027C.

[redacted]

Components Thereof (I), Inv. No. 337-TA-944, Comm'n Op. at 21-23 (July 26, 2016); *Certain Blood Cholestrol Testing Strips and Associated Systems Containing the Same*, Inc. No. 337-TA-1116, Comm'n Op. at 26-33 & nn. 17-22, 25 (May 1, 2020). The exemplary imported components are curved batteries and printed circuit boards specifically adapted for finger-worn wearable ring devices. CX-0027C; CX-0984C at Resp. No. 2; CX-0473C; CX-0474C; CX-0475C.

The components such as curved battery is material parts of the inventions of the '178 patent because it specifically is configured for finger-worn wearable ring device. The infringement analysis of the Respondents Accused Products demonstrates how the battery meets various claim elements of the '178 patent. Indeed, the curved battery is especially designed for use in infringement by the Respondents Accused Products, and are not staple articles or commodities of commerce suitable for substantial non-infringing use. The curved batteries used in Respondents Accused Products are not off-the-shelf generic parts that could be used in a non-infringing way, but rather highly customized components having particular design and functionality that fit the Respondents Accused Products. Respondents are fully aware that these components are especially designed for the infringing products.

Finally, as discussed above, Respondents were aware of the '178 patent since the date of the Complaint, and continued the activities described herein after that.

C. Validity of the '178 Patent

The claims of the '178 are valid and not obvious. The evidence will show, and Dr. Rosing will explain that Respondents have failed to establish by clear and convincing evidence that any of the Asserted Claims of the '178 are invalid. *See Microsoft Corp. v. I4I Ltd. P'ship*, 564 U.S. 91, 954 (2011). RX-0411C ¶¶ 455-471.

Respondents asserts that various combinations of over ten (10) alleged prior-art references render obvious the Asserted Claims of the '178 patent. But none of the references, whether taken

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alone or in combination, disclose or suggest the claimed invention. Respondent's obviousness arguments are made only with the benefit of hindsight, picking and choosing elements from various references without explaining *why* or *how* one having ordinary skill in the art would make such changes. *Rui v. A.B. Chance Co*., 357 F.3d 1270, 1275 (Fed. Cir. 2004) ("This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention."). Additionally, Oura's evidence of secondary considerations rebuts Respondents' case of obviousness.

1. Asada does not render the Asserted Claims obvious in view of a skilled artisan's knowledge and various other references.

a. Asada does not render Claim 1 Obvious

(i) Asada does not disclose element [1a] or [1b]

Asada does not render obvious the limitations [1a] "an external housing component defining an outer circumferential surface of the finger-worn wearable ring device," or [1b], "an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device, the internal housing component coupled with the external housing component" of the '178 patent.

A POSA would read Fig. 1 of Asada, at best, as a conceptual drawing of the electronic components of the disclosed ring without providing any detail regarding how those components are housed. *See* Rosing Rep. ¶¶ 131-132; CX-1134 at 3:27-30 ("A simple finger ring sensor with a wireless transmitter has been designed to demonstrate the concept. As shown in FIG. 1. . .").

[redacted]

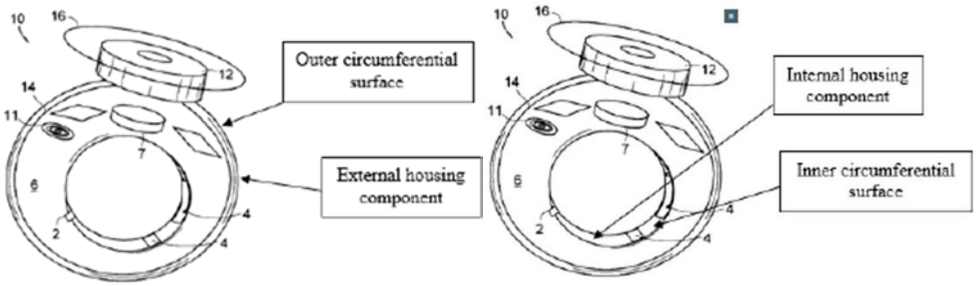


FIG. 1 FIG. 1

RX-0003C ¶¶ 108, 121.

Asada does not teach or suggest a specific structure for holding the ring components. A POSA would read Asada in light of his related research publications, which show the battery and circuit board outside of the ring, rather than internal or external housing components that define inner and outer circumferential surfaces coupled together:

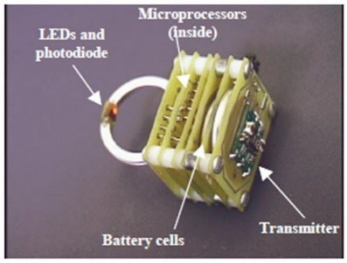
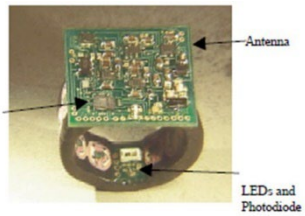


Figure 2: A prototype of the ring sensor



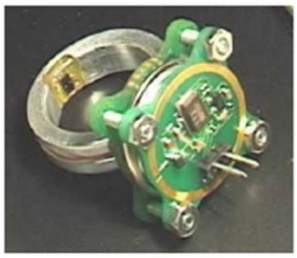


Figure 1 : The photograph of the finger ring sensor. The size of the circuit board on top of the ring is 0.8 by 0.8 inch.

See, e.g., Rosing Rep. ¶¶ 127-145; CX-1122 at 2; CX-1127 at 1; CX-1121 at 274; CX-1123 at 3.

Asada does disclose a structure (rather than a concept) in Fig. 4. However, Fig. 4 in Asada also fails to disclose or suggest internal and external housing components. Rosing Rep. ¶¶ 127-145. Asada identifies Fig. 4 as "an alternate embodiment of the invention" with "signal processing electronics, transmitter, antenna, battery, and MEMs accelerometer contained within sensor module 48." *See* CX-1134 at 4:48-57. The antennae, transmitter, accelerometer, and battery are contained within a module, which Asada locates external to the ring structure. *Id.* at 4:55-57; Rosing Rep. ¶¶ 127-145:

[redacted]

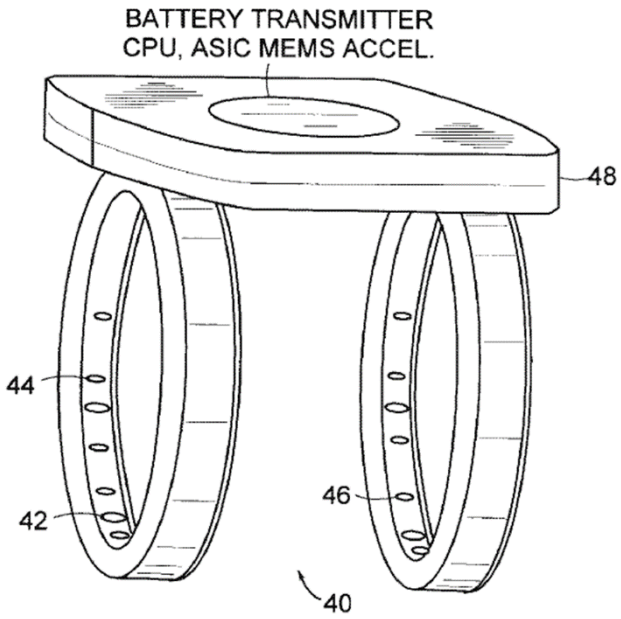


FIG. 4

Thus, the rings made by Asada and his counterparts at MIT actually located the PCB and battery external to the ring and did not include an internal housing or external housing component coupled together to house the battery and printed circuit board. Rosing Rep. ¶¶ 127-145. Indeed, the description of FIG. 4 of Asada would confirm to a POSA that FIG. 1 provides no detail about the housing. *Id*. The Figure 4 "housing" for the various components shown in FIG. 1 (battery, CPU, accelerometer, transmitter, antenna, etc.) is element 48, not the ring itself. *Id*. The evidence will show the disclosure in Asada regarding FIG. 4 indicates that the photodiodes and LEDs are imbedded along the rings (CX-1134 at 4:55-57), which is more consistent with how the LEDs are placed in the prototypes shown in the MIT Ring Papers (i.e., disposed in cavities in a metal ring structure). Rosing Rebuttal ¶¶ 131-132.

[redacted]

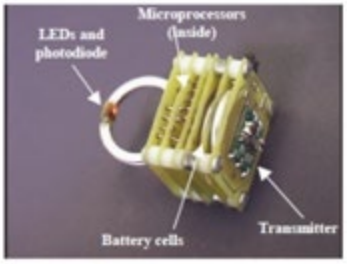


Figure 2: A prototype of the ring sensor

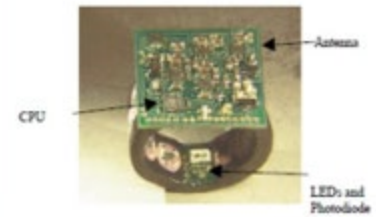
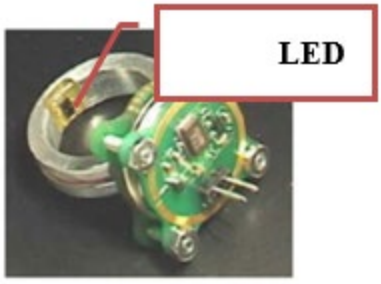


Figure 1 : The photograph of the finger ring sensor. The size of the circuit board on top of the ring is 0.8 by 0.8 inch.



See, e.g.; CX-1122 at 2; CX-1127 at 1; CX-1121 at 274; CX-1123 at 3.

It would require a complete redesign of Asada to move all of the components within a ring housing which a POSA would not be capable of, or motivated, to do. Similarly, a POSA would not be motivated to combine Asada with either Wissmar or Schröder, as applying the housings in those references would also require a complete redesign of Asada, and would not result in the claimed invention in any event. Rosing Rep. ¶¶ 127-145.

Wissmar fails to disclose internal and external housing components as recited in claim 1. Rosing Rep. ¶¶ 127-145. The two toroid halves do not separately define an "inner circumferential surface" and "outer circumferential surface" because both halves are required to define the circumferential surfaces of the ring. *Id*. Further, Schröder similarly discloses affixing together two “ring-halves” in a sandwich-like fashion in FIGS. 4 and 5, similar to the joining of the two toroid halves in Wissmar. *Id*.

Asada teaches a POSA that the battery and certain circuitry should be located external to the ring itself, with the sensors embedded within the ring housing. This teaching is contrary to the teachings of Wissmar or Schröder, and a POSA would not therefore combine the references in the manner suggested by Respondents. Furthermore, a POSA would recognize that moving these components internal to the ring of Asada would make the ring too large or bulky to be of any use. *Id*. The rings disclosed in Asada, Wissmar, and Schröder are for entirely different functions—Wissmar’s ring is one “where an accelerometer steers in 3-dimensional space and a pressure sensor

steers in an additional 4th dimension," (CX-1141 at ¶ [0072]), while Schröder's ring is an "external secure device" primarily used for NFC communications. RX-0018 at 4:64-5:9; 6:37-39; Rosing Rep. ¶¶ 127-145. A POSA would not simply select a housing construction disclosed in the prior art from one ring intended for a first purpose and assume that housing would be appropriate for a second, entirely different purpose. There are various considerations that would go into housing electronic components, and a POSA would not have a reasonable expectation that he or she could locate the components disclosed in Asada within the housings disclosed in Wissmar and Schröder. *Id*.

A POSA reading Asada (particularly in light of the other MIT Ring Papers) would not have selected the housings disclosed in Wissmar or Schröder with a reasonable expectation of success. *Id*. As discussed above with regard to Schröder, a POSA would recognize that the inlay in the rings of Schröder could be simple and thin, because they are designed for NFC-based security applications only; however, a POSA reading Asada (particularly in light of the MIT Ring Papers) would recognize that such components were not thin and simple in the case of Asada's ring. *Id*. Asada's components required large batteries, separate powering of transmitters and computational units, and the like. Fitting those components into a housing such as those disclosed in Schröder would not have been possible, as a simple comparison of Asada and Schröder shows. A POSA would have had no reason to expect he or she could do so to arrive at a finger-wearable ring device. *Id*. And Wissmar discloses a toroidal ring having two metallic shells. Neither Wissmar nor Asada provides any hint as to how a POSA would have altered the ring structure of Wissmar to allow for use of Asada's LED sensors and photodetectors to arrive at the claimed invention. *Id*.

Thus, Asada, in combination with either Wissmar, Schröder, or both, does not disclose or suggest the limitations [1a] and [1b] of claim 1.

[redacted]

(ii) Asada, in view of the POSA's knowledge and/or Webster, Henderson, Wissmar, or GMBPower, does not disclose element [1c].

Asada in view of the POSA's knowledge and/or Webster, Henderson, Wissmar, or GMBPower, fails to disclose or suggest element [1c], "a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device." Rosing Rep. ¶¶ 146-160.

Fig. 1 of Asada shows a battery mounted exterior to a housing. *Id*. As discussed in the prior section, Asada does not disclose a housing in Fig. 1. Section IV.C.1.a.i. A POSITA would not understand, in view of Fig. 1 and Asada's disclosure, that there is a cavity present in Asada because Asada does not disclose any details of a housing, apart from Fig. 4, which shows the components mounted on top of the ring.. Rosing Rep. ¶¶ 146-160. Because a POSA would not discern the presence of a "housing" in FIG. 1 at all, a POSA would not be able to ascertain that the components illustrated in the conceptual diagram of FIG. 1. fit within a cavity of such a housing. *Id*.

As shown in Asada, a POSA would have used a flat battery located external to the ring itself, and this is consistent with what the inventors of Asada did in prototyping their rings, as evidenced by the MIT Ring Papers. *Id*. The *actual* rings built by the authors of Yang II (who are also named inventors on the Asada patent), who are experts in the art, did not include a battery within a cavity in the actual prototypes of rings that they built; rather, like in Asada, they included DL2032 watch batteries, which they placed external to the ring entirely.

[redacted]

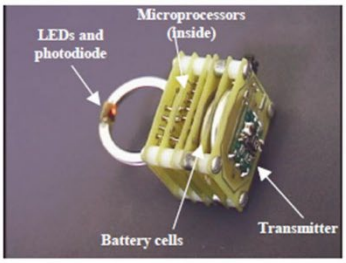


Figure 2: A prototype of the ring sensor

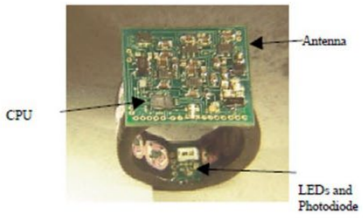


Figure 1 : The photograph of the finger ring sensor. The size of the circuit board on top of the ring is 0.8 by 0.8 inch.



See, e.g.; CX-1122 at 2; CX-1127 at 1; CX-1121 at 274; CX-1123 at 3; Rosing Rep. ¶¶ 146-160.

Even when making improvements to this ring, the MIT group maintained the battery as external to the ring. *See* Rosing Rep. ¶¶ 146-160. And, more importantly, the '690 patent discloses that it was preferred to keep the "button type batteries . . . on the surface of the outer ring." Rosing Rep. ¶¶ 146-160; CX-1128 at 2:21-23; 4:30-36.

A POSA would not have been motivated to combine Wissmar and Asada, nor would a POSA have been motivated to modify Asada by replacing the DL2032 watch battery used in the prototype rings with a curved battery. Rosing Rep. ¶¶ 146-160. The rings disclosed in Asada and Wissmar are for different functions, include different components, and a POSA would not simply select a housing construction disclosed in the prior art from one ring intended for a first purpose and assume that housing would be appropriate for a second, entirely different purpose. *Id*. The components disclosed in the Asada ring were large and bulky and located on top of the ring, rather than within a space inside the ring structure itself, and a POSA would not have had a reasonable expectation of success of modifying Asada to do so. *Id*.

A POSA would not have had a reasonable expectation of success that incorporating those batteries into Asada would work or otherwise not actively degrade the functionality of the Asada device. Further, there is no disclosure, suggestion, or indication whatsoever that the thin film lithium ion or zinc-manganese dioxide batteries disclosed in Webster would "increase the battery capacity and life of the device" compared to the batteries disclosed in Asada or the MIT Ring

[redacted]

Papers, as there is no disclosure in Webster that the flexible thin film battery has more capacity than, for example, the DL2032 battery disclosed in Yang I. Rosing Rep. ¶¶ 146-160.

There is also no reason to believe the battery of Webster would "naturally have fit inside of Asada's housing." *See* CX-1135 at 7:6-8 ("The elastic vaginal ring 100 is ideally between 1 inch and 4 inches for a mature human woman"); *id.* at 3:35-38 ("In one embodiment. the flexible circuit board arrangement 102 can be approximately six inches long and 0.2 inches wide adapted to be accommodated by a two inch diameter vaginal ring 100."); Rosing Rep. ¶¶ 146-160. There is no disclosure in Webster related to the size of the battery that would lead a POSA to conclude it could fit in a finger-worn ring. A POSA would not have a reasonable expectation of success that he or she could take a battery for use in a larger device and use it in a smaller device. *Id*.

A POSA would not have looked to Henderson to understand how to locate a battery within a finger-worn wearable ring device. *Id*. Henderson is a wrist-worn device, has batteries much too big for a finger-worn ring, a circumference significantly greater than a finger-worn ring, and is significantly thicker and wider than a finger-worn ring. There is no teaching in Asada or Henderson as to how a POSA would use the battery of Henderson in Asada with any expectation of success. *Id*.

A POSA would not have used the GMBPower battery in Asada because Asada states a preference for flat, watch-type batteries with larger capacity. Rosing Rep. ¶¶ 120-124, 146-160.The smallest GMBPower battery (2 mm thick, 10 mm wide, and 21 mm long) was not small enough to fit within a finger-worn ring. The evidence, in the form of dimensions provided in the '178 patent, means that a 2 mm thick battery in a ring "1.5 to 3 mm thick" would leave a maximum additional 1 mm for any additional material within the ring. Rosing Rep. ¶¶ 146-160. That battery would have been both too thick and too wide to fit in a finger-worn wearable ring device. *Id*. A

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Ex. 2125, Page 181

[redacted]

POSA would not have had a reasonable expectation of success taking such a battery and placing it in the ring of Asada. *Id*.

(iii) Asada does not disclose element [1d]

Asada does not disclose element "[1d] a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion." Rosing Rep. ¶¶ 161-166

Asada shows a mere conceptual illustration of such an "electronics module" containing the transmitter 11. *See id.*; *see also id.* at 4:24-32; *Id*. A POSA, reading Asada, would thus not discern that "the printed circuit board is in a second portion of the cavity different from the first portion where the curved battery is located" because (1) the "electronics module" is shown only as a vague illustration, and (2) the battery is shown located external to the ring. The evidence will show there is no "first portion" of the ring cavity that is disclosed as being different from "a second portion" containing the printed circuit board. *Id.*

Asada discloses that "[w]ith an appropriate threshold, the sensor detecting the beat produces a pulse train of on-off signals and the pulse-train is sent to a transmitter (not shown) contained within an electronics module 6." A POSA would read this as indicating (and would otherwise know) that signal processing is required prior to sending information via the transmitter in Asada, likely through an intelligent controller on a printed circuit board. Rosing Rep. ¶¶ 161-166; CX-1134 at 4:42-46. The MIT Ring Papers indicate that the transmitter had to be separately powered from signal processing due to interference; this would indicate that locating the transmitter on a PCB inside the ring, proximate to other electronic components such as the LEDs and sensors (which would need to be connected to the signal processing), may be nontrivial. *See* Rosing Rep. ¶¶ 161-166; *see, e.g.*; CX-1121 at 275. A POSA would not have viewed it as a simple

[redacted]

design change to locate the transmitter on a PCB inside the ring housing and would not have had a reasonable expectation of success in so modifying the rings of Asada. Rosing Rep. ¶¶ 161-166.

(iv) Asada does not disclose element [1e].

Dr. Rosing will testify, and the evidence will show, that Asada does not disclose element [1e], "one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component." Rosing Rep. ¶¶ 167-172.

Asada does not disclose an internal housing component, and thus cannot disclose that the sensors acquire data through the internal housing component. *Id*. The disclosure of Asada indicates that the LEDs and photodiodes are "imbedded" within the ring, not located in a housing through which they acquire data from the user. *See* CX-1134 at 3:29-31; Rosing Rep. ¶¶ 167-172. Thus, Asada does not disclose this limitation because the sensors thus do not acquire data *through* any housing component. *Id.*

Recognizing the shortcoming of Asada, Mr. Alarcon again suggests a POSA would have looked at Wissmar to cure Asada's deficiencies. RX-0003C ¶¶ 151-52. But Wissmar discloses a pressure sensor 8 which senses pressure 'through an inlet hole shaped as a horn cone to maximize the pressure compression ratio at the pressure sensor end 11.'" The pressure sensor in Wissmar is different from a LED and photodiode sensor system in Asada, and a POSA would not have been motivated to modify the location of the LED/photodiode sensors of Asada to acquire data through a housing based on the *pressure sensor* of Wissmar. *Id*. The pressure sensor in Wissmar does not acquire data *through* a housing, but rather through an *inlet* in the housing, and as such would not necessarily motivate the POSA to have data acquired *through* a housing. *Id*. Even if the POSA were motivated to locate sensors within the internal housing component a POSA would not look to Wissmar as it makes it clear the disclosed pressure sensor needs to be exposed to contact the

[redacted]

user directly. *Id*.

Asada does not disclose or suggest element [1e].

b. Asada does not render Claim 2 Obvious

Claim 2 recites the additional limitation that "the first portion of the cavity of the finger-worn wearable ring device is non-overlapping with the second portion of the cavity of the finger-worn wearable ring device." JX-0001 at 45:9-13. The first portion of the cavity holds the battery, while the second portion of the cavity holds the printed circuit board; thus, the printed circuit board and battery need to be non-overlapping to meet the limitation of claim 2. Rosing Rep. ¶¶ 167-172.

Asada, in view of the POSA's knowledge, Webster and Wissmar, does not disclose or suggest the additional limitations of claim 2 because Asada disclose the battery and circuit board located on top of the ring.

c. Asada does not render claim 12 obvious

Claim 12 recites the additional limitation that "the battery comprises a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component." JX-0001 at 46:21-24. Asada does not disclose or suggest this limitation as it discloses a flat battery external to the ring. Mr. Alarcon's reliance on Henderson, Wissmar, Webster, or GMBPower to cure the alleged deficiency also fail.

The batteries disclosed in Henderson are much too large and rigid and would not curve to correspond to the arc of the housing component. *See,* Rosing Rep. ¶¶ 179-184; *see, e.g.*; CX-1139 at ¶¶ [0073]-[0075], [0077]. None of the references provide a clue as to how the batteries of Henderson, Wissmar, Webster, or GMBPower could be adapted to the ring in Asada to arrive at the claimed invention.

d. Asada does not render claim 13 obvious

Claim 13 is not obvious for the reasons stated above with respect to claim 1.

[redacted]

e. Asada does not render claim 14 obvious

Claim 14 is not obvious for the reasons stated above with respect to claim 1.

f. Asada does not render claim 17 obvious

Because Asada does not disclose, and there was no reason to modify Asada to use, the recited internal and external housing components and cavity, there is also no disclosure of side walls for those components to define the recited cavity. Rosing Rep. ¶¶ 189-195.

g. Asada does not render claim 18 obvious

Claim 18 recites the additional limitation that "the first side wall, the second side wall, or both, are substantially perpendicular to the inner circumferential surface, the outer circumferential surface, or both." Since Asada does not disclosure or suggest internal and external housing components, or side walls, it does not disclose or suggest the limitations of claim 18. Rosing Rep. ¶¶ 166-167, 196-200.

2. Babashan does not anticipate or render the Asserted Claims obvious in view of a skilled artisan's knowledge and various other references.

a. Babashan does not anticipate claim 1 or render it obvious

(i) Babashan does not disclose element [1-pre]

Babashan does not disclose element [1-pre], "A finger-worn wearable ring device." Babashan does not specifically state that one of its designs is as a ring. Rosing Rep. ¶¶ 203-205. Babashan only discloses that a heart-rate monitor may be put in a casing that can fit on a finger. *See* CX-1137 at ¶ [0086] ("The casing 621 of the heart rate monitor may have many different designs. It may be designed to be worn on different body parts, such as wrists, fingers, ears, neck, chest or ankles."); Rosing Rep. ¶¶ 203-205. A POSA reading Babashan would not recognize that it discloses a finger-worn ring device, but instead that a device may be worn on a finger, and further that clip-style heart rate monitors for placement on fingers were well- known at the time Babashan

[redacted]

was published; as noted in Babashan, pulse oximiters are often worn on a fingertip, and these oximeters frequently are designed as clips, rather than rings. CX-1137 at ¶ [0002]; Rosing Rep. ¶¶ 203-205.

It would not have been obvious to modify the wrist-worn bracelet of Babashan into a finger-worn wearable ring device based upon the disclosure of Babashan. *Id*. As described in IV.C.2.a.1, wrist- and ankle-worn devices have several design constraints not present in rings, and rings have several design constraints that are not applicable in wrist- and ankle-worn devices. Rosing Rep. ¶¶ 203-205. For example, wrist- and ankle-worn devices, relative to rings, can have larger, flat areas in which it is possible to locate batteries, circuitry, and electronic components, as the wrist and ankle both have spaces that are generally flat that are significantly larger in area than, say, the back of one's middle finger. *Id*.

A POSA would understand that the size of a finger-worn ring is limited, longitudinally, by the distance between a wearer's knuckles, as a POSA would only be motivated to design a finger-worn ring that would not impede the wearer's ability to move his or her fingers. *Id*.

(ii) Babashan does not disclose element [1a]

Babashan does not disclose element [1a], "an external housing component defining an outer circumferential surface of the finger-worn wearable ring device," or element [1b], "an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device."

Babashan and its related disclosure, at most, relate to a casing with inner and outer surfaces, but the specification does not define the construction of that casing, nor that there is an internal component and an external component defining respective inner and outer circumferential surfaces, or that the casing is made from coupling any structures. Rosing Rep. ¶¶ 206-212.

A POSA would not have modified the disclosures of Babashan with either Schröder or

[redacted]

Wissmar, for substantially the same reasons as for Asada, as discussed above in IV.C.2.a. None of the references provide any hint as to how a POSA would modify Babashan with the teachings of Schröder or Wissmar to arrive at the claimed invention.

Further, the evidence will show a POSA reading Babashan would not have selected the housings disclosed in Wissmar or Schröder with a reasonable expectation of success. Rosing Rep. ¶¶ 206-212.

A POSA would recognize that the inlay in the rings of Schröder is incredibly simple and thin, and that further, that there is no teaching in either Babashan or Schröder as to how a POSA would apply the teachings of Schröder to Babashan. *Id*. Fitting the components of Babashan into a housing such as those disclosed in Schröder is not taught by the references or the product of ordinary skill, and a POSA would have had no reason to expect he or she could do so to arrive at a finger-wearable ring device. *Id*.

(iii) Babashan does not disclose element [1c]

Babashan does not disclose element [1c], "a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device."

Babashan does not disclose an internal housing component or external housing component, and therefore cannot disclose a cavity formed between the internal housing component and the external housing component, or a battery sized and shaped to fit in such a cavity. Rosing Rep. ¶¶ 213-217.

A POSA reading Babashan is not provided with any guidance or direction on placing a

[redacted]

battery in a finger-worn ring. *See id*. Wissmar also does not disclose internal and external housing components as recited in claim 1, and thus does not cure the deficiencies of Babashan in this regard. *See* Rosing Rep. ¶¶ 101, 141, 213-217.

(iv) Babashan, either alone or in view of the POSA's knowledge, does not disclose or render obvious element [1d]

Babashan, either alone or in view of the POSA's knowledge, does not disclose or render obvious element [1d], "a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion."

Babashan does not explicitly identify "circuit 900" as a printed circuit board, and simply states it "connects the heart rate sensor assembly 901 to microcontroller." Babashan, ¶ [0103]; Rosing Rep. ¶¶ 218-228.

Babashan does not disclose or suggest the location of the circuit within a housing, or that it should be disposed in the cavity between an internal and external housing component. *Id*. Dr. There is no basis to conclude from the disclosure of Babashan circuit 900 is located between an internal and external housing component. *Id*. Rather, the purpose of the circuit as disclosed in Babashan is to provide a connection through which "detected data, such as base heart rate, may be communicated from the heart rate sensor assembly 901 to the microcontroller 20 for processing and shown to the user through the illumination color light source 906." CX-1137 at ¶ [0103]; Rosing Rep. ¶¶ 218-228. As the circuit includes some elements for displaying information to the user, at least some portion of the circuit 900 is visible to the user and not within internal and external housing components, and Babashan also indicates the circuit contains optional color light sources 903 and 904, which a POSA would recognize as being visible outside of the device. *Id.*

[redacted]

Babashan also offers no guidance or direction as to how or where to place the battery 627 and circuit 900 relative to one another, particularly when modifying the bracelet into a ring. Rosing Rep. ¶¶ 218-228.

A POSA would not have been motivated to combine Babashan with Asada, Niwa, or Armstrong to arrive at the claimed finger-worn wearable ring device, and even if combined the references do not disclose or suggest the claimed invention. *Id*.

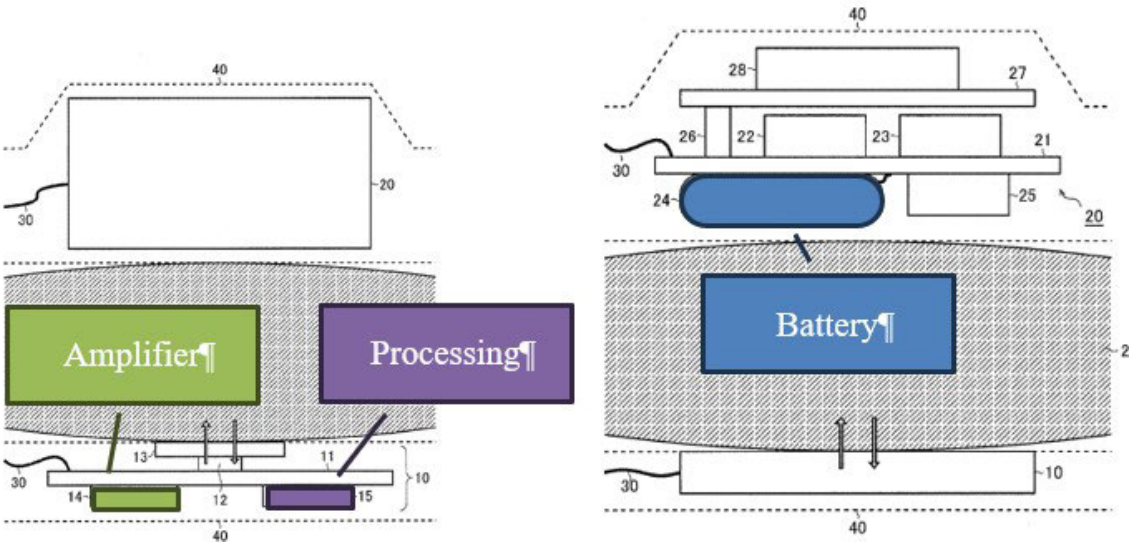
Asada does not disclose housing components as recited in the claim and does not disclose that the printed circuit board is located within a housing. *See* CX-1134 at 3:28-47; *supra* sections IV.C.2.a(i), IV.C.2.a(ii), and IV.C.2.a(iii); *Id*. Asada's flexible printed circuit board is not in a second portion of a cavity inside of its housing different from the battery, but as discussed above, Asada discloses the battery and PCB are located *on top* of the ring, as reinforced by the related MIT Ring. *Id*. To the extent a POSA was modifying Babashan using the disclosures of Asada to design a finger-worn ring, the POSA would have been taught to locate the battery and printed circuit board outside the ring.

Niwa discloses that the first unit is located as far away as possible from the "power source circuit 22" as that circuit "can be a noise source for the first unit." CX-1133 at ¶¶ [0208], [0213], [0215], Figs. 24-28; *see also* RX-0003C ¶ 201; Rosing Rep. ¶¶ 218-228. Niwa discloses placing the processing circuit 15 and amplifier circuit 14 as far apart from battery 24 as possible, by locating them across the finger from one another. Thus, even if combined, Babashan and Niwa do not disclose or suggest element 1[d].

[redacted]

FIG.28

FIG.27



Armstrong discloses a wristband (100) that incorporates a separate electronic capsule (200), which capsule comprises a logic circuit and casing that encloses the logic circuits 240 and battery 230.

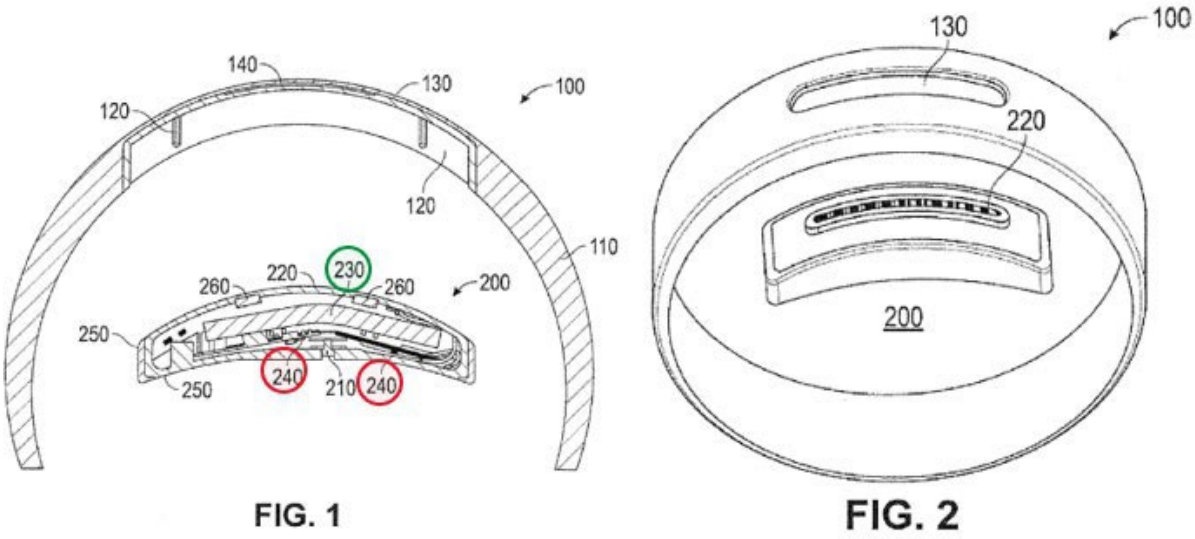


FIG. 1 FIG. 2

See, e.g., RX-0017 at ¶ [0025], FIG. 1 and 2; Rosing Rep. ¶¶ 218-228. The capsule lacks an internal housing component and external housing component defining respective inner and outer circumferential surfaces, and the logic circuits 240 are entirely overlapped with the battery 230,

[redacted]

such that they do not extend through any portion of the capsule that the battery does not extend through. Rosing Rep. ¶¶ 218-228. Thus, even if combined, Armstrong and Babashan do not disclose or suggest element 1[c].

(v) Babashan, alone or in view of the POSA's knowledge, does not disclose element [1e].

Babashan, either alone or in view of the POSA's knowledge, does not disclose or render obvious element [1e], "one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component."

Babashan does not disclose that a sensor assembly acquires data "through the internal housing component." Babashan discloses that sensor assemblies 603 and 603A

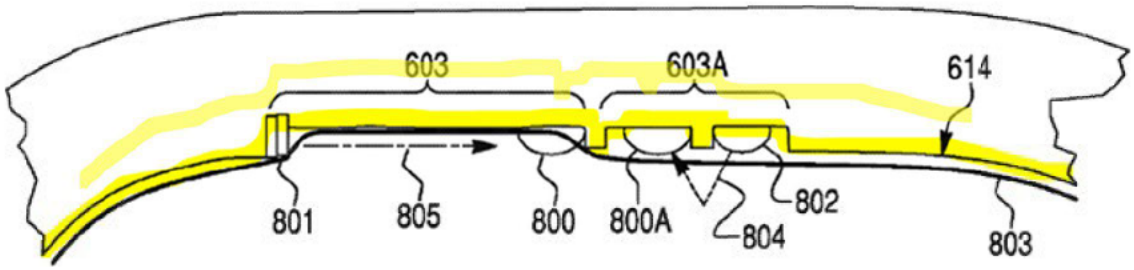
> in combination may include two photodetectors 800 and 800A, an emitter 801, such as an edge emitter LED, and an emitter 802, such as a surface emitter LED. The emitter 801 may function in transmission mode and transmit light 805 through an anatomical structure to the photo detector 800. The emitter 802 may function in reflectance mode and transmit light 804 to a photo detector 800A by reflecting the light 804 through the tissue of an anatomical structure, such as a wrist 803. The data received by the photo detectors 800 and 800A is also communicated to the microcontroller 20 (illustrated in FIG. 1) where it is processed and subsequently displayed on the display units 601 (illustrated in FIG. 6A). The emitters 801 and 802 may each emit light in different wavelengths.

CX-1137 at ¶ [0095]; Rosing Rep. ¶¶ 229-234.

Babashan discloses that the "sensor assembly 603" is "***positioned on*** the bottom surface 614 of the heart rate monitor 600"—not interior to it. CX-1137 at ¶ [0087]; Rosing Rep. ¶¶ 229-234. Thus, a POSA would understand that the sensors were designed to be in direct contact with the wrist and not acquiring data through a housing component. Babashan does not disclose that the sensors are "configured to acquire data through the internal housing component. *Id*.

[redacted]

Fig. 8B



A POSA would not be motivated to modify Babashan in a way that frustrates the ability of the device to acquire data from the user by moving the wrist tissue out from between the LEDs 801/802 and sensor 800. CX-1137 at ¶ [0087].

Accordingly, Babashan fails to disclose or suggest the limitations of claim [1e].

b. Babashan does not render claim 2 obvious

Claim 2 recites the additional limitation that "the first portion of the cavity of the finger-worn wearable ring device is non-overlapping with the second portion of the cavity of the finger-worn wearable ring device." None of the references disclose or suggest this limitation. Moreover, many design options taught by these references are counter to the "non-overlapping" limitation, such as (1) locating the PCB in a completely different compartment on the wristband, (2) locating the PCB within the wristband and locating the battery on top of the wristband, (3) locating the PCB and batteries both on top of the wristband (as in the prototypes in the MIT Ring Papers). Rosing Rep. ¶¶ 236-240.

c. Babashan does not render claim 12 obvious

Claim 12 recites the additional limitation that "the battery comprises a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component. There is no disclosure in Babashan that indicates the battery is curved to approximate an arc of a housing component. For the reasons stated above with respect to Asada, it would not

[redacted]

have been obvious to use the curved batteries of Webster, GMBPower, and Henderson in a ring for substantially the same reasons as discussed above. Rosing Rep. ¶¶ 152-159, 241-246.

Further, a POSA would not, and could not, both *expand* the battery compartment of Babashan's bracelet as such a modification would result in a larger bracelet, not a finger ring. Rosing Rep. ¶¶ 241-246. A POSA would also have recognized that using some of these batteries would result in a significant *decrease* in battery life. *Id*.

d. Babashan does not render claim 13 obvious

Babashan does not disclose or suggest the limitations of claim 13 for the same reasons stated above with respect to claim 1.

e. Babashan does not render claim 14 obvious

Babashan does not disclose or suggest the limitations of claim 14 for the same reasons stated above with respect to claim 1.

f. Babashan does not render claim 17 obvious

Babashan does not disclose or suggest the limitations of claim 14 for the same reasons stated above with respect to claim 1.

g. Babashan does not render claim 18 obvious

Babashan does not disclose or suggest the limitations of claim 14 for the same reasons stated above with respect to claim 1.

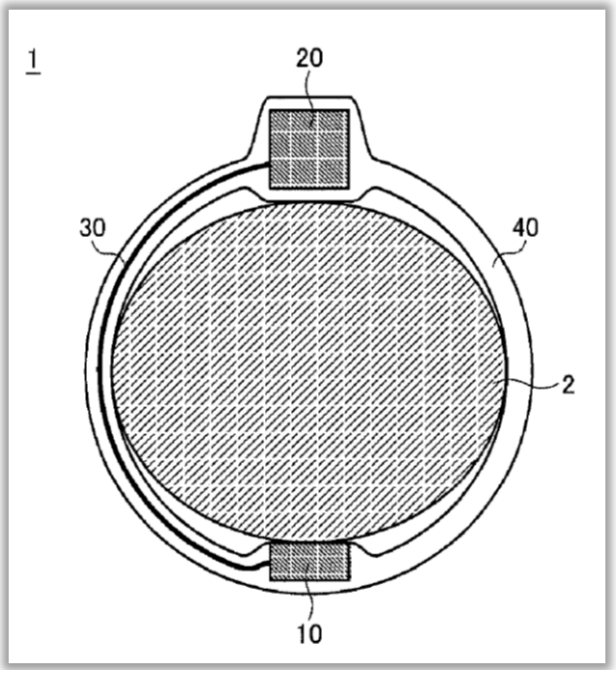
3. Niwa does not render the Asserted Claims obvious in view of a skilled artisan's knowledge and various other references.

a. Niwa does not anticipate claim 1 or render it obvious.

(i) Niwa does not disclose element [1a] and [1b].

[redacted]

Niwa does not disclose or suggest internal and external housing components, as claimed. Rather, Niwa discloses a unitary, component-less housing 40, shown in Fig. 23 below, and fails to disclose how the housing is constructed.



CX-1133, at Fig. 23; Rosing Rep. ¶¶ 257-270.

Thus, Niwa fails to disclose the "particularly claimed structure," which is the reason the claims were allowed.

Similar to Asada, Niwa discloses the concept of a housing without any detail as to how it would be constructed. Also similar to Asada, Niwa discloses the advantages of "stacking" the battery and PCB at the top of the ring, and placing the sensors at the bottom of the ring:

> In this way, according to an adoption of the **stack layer** construction formed with several Substrates, **compared to mounting all circuit elements on one substrate**, each area of the first Substrate 21 and the second substrate 22 is decreased. Therefore, the largeness of the second unit 20 can be restrained not to protrude from the third joint of the finger 2. Furthermore, a consciousness of the examinee for wearing the plethysmogram sensor 1 can be reduced. In addition, because the second unit 20 located at the back side of the finger 2 can be designed thicker than the first unit 10 located at the ball side of the finger 2, **it is possible to adopt the**

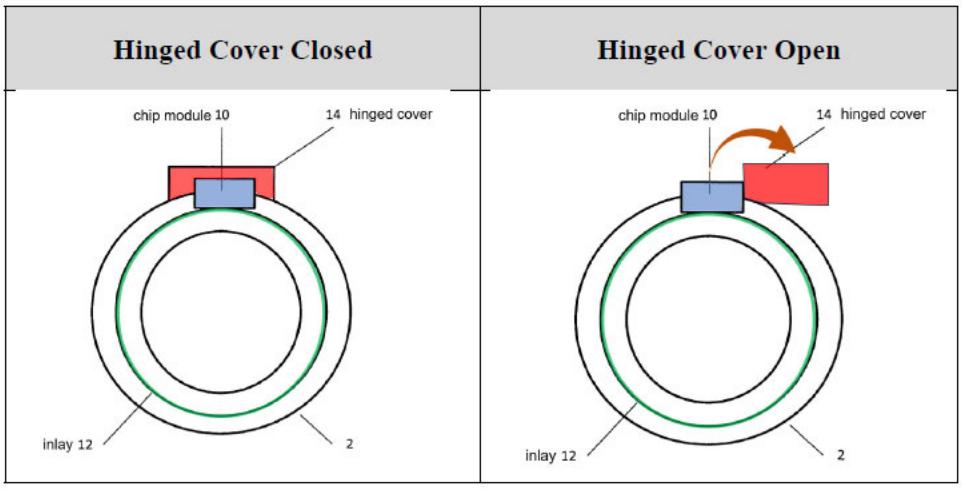
[redacted]

stack layer construction formed with several substrates without any problem.

CX-1133, at ¶ [0219].

The other references do not teach how or why one would redesign Niwa to use internal and external housing components. For example, Niwa and Schröder are for entirely different functions—Schröder's ring is an "external secure device" primarily used for NFC applications. RX-0018 at 4:64-5:9; 6:37-39; Rosing Rep. ¶¶ 263-270. Niwa's ring, by contrast, is a PPG sensor. CX-1133, Abstract; Rosing Rep. ¶¶ 257-270. A POSA would not simply select a housing construction disclosed in the prior art from one ring intended for a first purpose and assume that housing would be appropriate for a second, entirely different purpose. *Id*. There is also no teaching as to how a POSA would marry the teachings of Niwa with Schröder, and, even if combined these references do not teach the claimed invention. *Id*.

Schröder also fails to disclose components within internal and external housing components. Schröder's disclosure of a ring structure is rudimentary, nonspecific, and completely lacks any tangible tie to the "particularly claimed structure" and disclosure of the '178 patent. The only component shown in the figures is chip module 10, which protrudes beyond the surface of the ring housing, making it accessible via hinged cover 14. RX-0018 at Fig. 3; *Id.*, 9:1-3 ("The chip module 10 is arranged in particular replaceably in the finger-ring 2.").



[redacted]

Id., at Fig. 3.

Significantly, none of the embodiments depicted in the figures of Schröder include a battery or a sensor because its focus is an improved antenna for an RFID system. *Id.*, 5:12-14. Schröder's specification does suggest that a "further embodiment example" has a battery, which is "connected to" a chip module 10. *Id.*, 11:48-49. However, Schröder does not disclose that the chip module is mounted to a printed circuit board. Rather, Schröder discloses that the chip module 10 is connected to an antenna coil 8 that is located on the inlay 12. *Id.*, 8:57-58 ("The inlay 12 serves as a carrier for at least one antenna coil 8."); *id*., 8:63-66 ("The chip module 10 is electroconductively connected by means of electroconductive contacts to the at least one antenna coil 8 which is located on inlay 12.").

The thin inlay 12 disclosed in Schröder for carrying antenna coil 8 is completely unsuitable for accommodating the stacked components of Niwa. Niwa taught that it was necessary to fit a number of electronic components within a small space, and that it was desirable to stack these on top of one another such that the ring was not too wide to extend past the first joint of the wearer's finger. CX-1133 at ¶[0219]. In addition, Niwa taught that it was necessary to locate the second unit "as far as possible" from the first unit 10" because the wireless communication unit and power source circuit can be a source of noise for the first unit. CX-1133 at ¶ [0220]. Recognizing all of those considerations, combining Niwa and Schröder would at most arrive at a construction shown in Fig. 3 of Schröder, which locates the chip module and battery external to the housing of Schröder. Rosing Rep. ¶¶ 257-270.

Niwa also discloses that it is desirable to have the portion of the ring worn on the back of the hand to be thicker than the portion worn on the palm of the hand, to provide for proper

[redacted]

orientation of the PPG sensor. *See, e.g.*¸ CX-1133 at ¶ [0199] ("the thickness of the second unit 20 can be constructed thicker than the first unit 10, to be more prefer, it is desirable to construct the thickness of the second unit 20 twice as large as the thickness of the first unit 10. To be more concrete, the thickness of the first unit 10 can be designed as 1 mm to 5 mm. and the thickness of the second unit 20 is designed as 4 mm to 20 mm."); *see id.* at ¶ [0203] (disclosing that making the second unit thicker than the first unit makes the pulse sensor "difficult to turn around on the finger" such that "incorrect wearing . . . can be reduced."). Thus, Niwa teaches directly away from placing the components of Niwa into the uniform ring housings disclosed in Schröder, rather than stacking the components at the top and bottom of the ring.

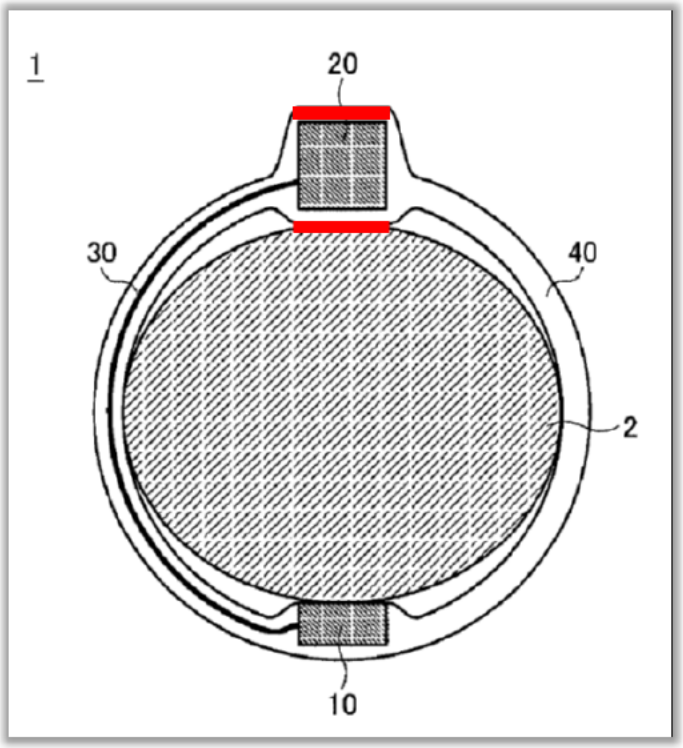
(ii) Niwa does not disclose element [1c].

Niwa does not disclose or suggest element [1c], "a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device."

Niwa (either alone or in combination with Schröder) does not disclose the internal and external housing components as claimed. Dr. Rosing will further explain, for this reason, Niwa cannot disclose a battery disposed in a cavity between internal and external housing components. Rosing Rep. ¶¶ 271-274.

[redacted]

Further, as shown in Fig. 22 of Niwa, unit 20 contains battery 24. But the unit is not disposed "between" outer and inner circumferential surfaces of Niwa. Rather, the battery is located between two planar surfaces of the housing protrusion, as shown below in red:



Since no portion of battery extends into a cavity between two circumferential surfaces, Niwa does not disclose or suggest "wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device." A POSA would also not modify Niwa in this respect as Niwa discloses it is advantageous to make the battery flat such that it enhances "an affinity of the plethysmogram sensor 1 when the pulse sensor 1 is worn on the finger 2," CX-1133 at ¶ [0217] ("the ***battery 24 formed as highly flat*** is located right above the finger 2"); Rosing Rep. ¶¶ 271-274. Thus, if the surface between second unit 20 and the finger were a curved surface, one would lose any advantage from the battery being flat that, according to Niwa, is needed to enhance affinity of the plethysmogram sensor. Rosing Rep. ¶¶ 271-274.

[redacted]

(iii) Niwa, in view of the POSA's knowledge, does not disclose element [1e].

As discussed in section IV.C.3.a(i) above, Niwa (either alone or in combination with Schröder) does not disclose the internal and external housing components as claimed. Thus, Niwa cannot disclose sensors "configured to acquire data from the user through the internal housing component."

b. Niwa does not render claim 2 obvious

Niwa does not disclose or suggest the limitations of claim 2 for the same reasons stated above with respect to claim 1. Rosing Rep. ¶¶ 282-283.

c. Niwa does not render claim 12 obvious

Claim 12 recites the additional limitation that "the battery comprises a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component." Niwa does not disclose and actually teaches directly away from a curved battery, stating that the battery is "highly flat." *See, e.g.*; CX-1133 at ¶ [0217] ("In addition, according to this construction, ***the battery 24 formed as highly flat*** is located right above the finger 2, it is possible to enhance an affinity of the plethysmogram sensor 1 when the pulse sensor 1 is worn on the finger 2"); Rosing Rep. ¶¶ 284-294.

Because Niwa teaches the advantages of a flat battery, a POSA would not have been motivated to look to the curved batteries in Henderson, Webster, or GMBPower that Mr. Alarcon identifies, but instead would have looked to incorporate flat batteries. Rosing Rep. ¶¶ 284-294. Moreover, as stated above, it would not have been obvious to use the curved batteries of Webster, GMBPower, and Henderson in a finger worn ring, nor would a POSA be motivated to do so with a reasonable expectation of success, because there was no reasonable expectation of success that one could use batteries suited for vaginal implant or wrist- worn wearables inside a finger-ring, or

[redacted]

that the curved batteries of the prior art were small enough to fit into finger rings. Rosing Rep. ¶¶ 154-159, 284-294.

Thus, Niwa, alone or in combination with other references, fails to disclose or suggest the limitations of claim 12.

d. Niwa does not render claim 13 obvious

Claim 13 depends from claim 1, and thus incorporates all limitations of claim 1. Niwa does not disclose or suggest the limitations of claim 13 for the same reasons stated above with respect to claim 1.

e. Niwa does not render claim 14 obvious

Claim 14 depends from claim 1, and thus incorporates all limitations of claim 1. Niwa does not disclose or suggest the limitations of claim 14 for the same reasons stated above with respect to claim 1.

f. Niwa does not render claim 17 obvious

Claim 17 depends from claim 1, and thus incorporates all limitations of claim 1. Niwa does not disclose or suggest the limitations of claim 17 for the same reasons stated above with respect to claim 1. Rosing Rep. ¶¶ 257-280, 299-304.

g. Niwa does not render claim 18 obvious

Claim 18 depends from claim 17, and thus incorporates all limitations of claim 1. Niwa does not disclose or suggest the limitations of claim 18 for the same reasons stated above with respect to claim 17.

4. Schröder does not anticipate or render the Asserted Claims obvious in view of a skilled artisan's knowledge and various other references.

Schröder does not disclose each and every limitation of the Asserted Claims. Nor does Schröder render obvious the Asserted Claims in view of the POSA's knowledge and/or other

[redacted]

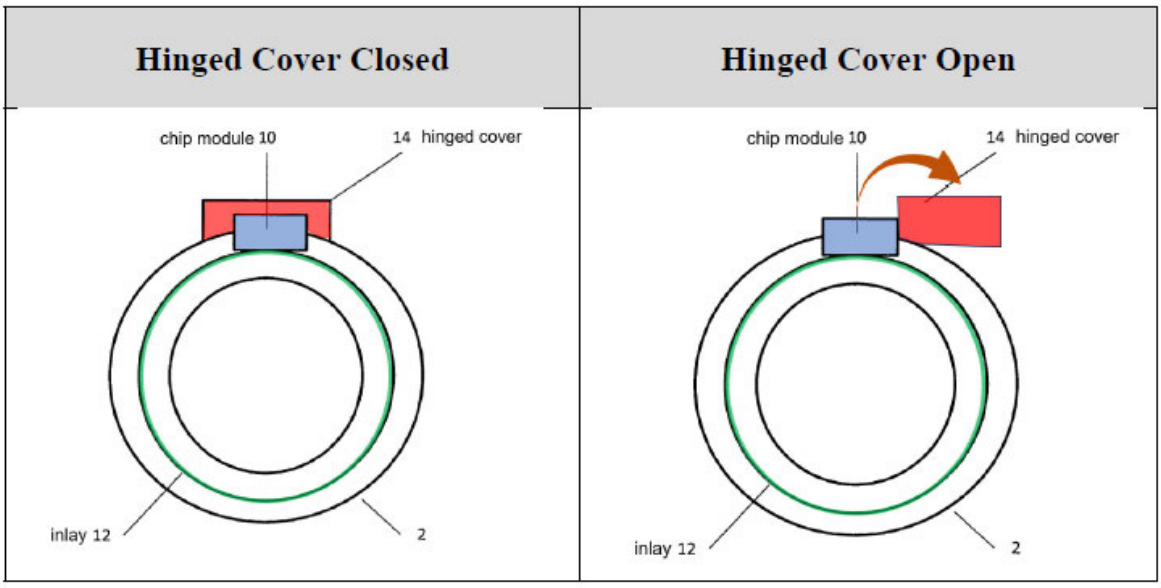
references. Rosing Rep. ¶¶ 313-438.

a. Schröder does not anticipate claim 1 or render it obvious

(i) Schröder's disclosure of housing components

Schröder, shows "a longitudinal section through a finger ring," and that "FIG. 5 shows a cross-section, corresponding to FIG. 4 of the finger ring." RX-0018 at 3:47-50; Rosing Rep. ¶¶ 313-316. The ring-halves, as shown in Fig. 5, are joined together in a seam that runs around the outer circumferential surface and inner circumferential surface of the ring (illustrated in green), thus not forming an "internal housing component" and an "external housing component." Rosing Rep. ¶¶ 313-316.

Schröder does not otherwise disclose other components or materials disposed on inlay 12 other than antenna coil 8. *Id*. In some embodiments, Schröder discloses that chip module 3 is located in a "recess" of the finger ring, such as is shown in FIG. 3. *See, e.g.*, RX-0018 at 8:57-59. This recess can be "protected against external influences by a cover 14." *Id.* at 8:60-61; Rosing Rep. ¶¶ 313-316.



RX-0018, Fig. 3.

[redacted]

(ii) Schröder, either alone or in view of the POSA's knowledge, does not disclose element [1c].

Schröder does not disclose or suggest element [1c], "a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device."

Schröder does not disclose **any** position of a battery, and thus cannot meet any of the structural limitations set forth in limitation 1[c]. Indeed, a battery is not shown in any figure of Schröder, nor does Schröder describe the position in describing one "unshown" embodiment that refers to a battery. Consequently, Schröder does not disclose or suggest that a battery is "positioned within a cavity formed between the internal housing component and the external housing component" as claimed. Schröder also does not disclose any "shape and size" of a battery, and therefore does not disclose a battery having "a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component." Finally, since Schröder discloses neither a shape, size, nor position of a battery, it cannot disclose that "the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device."

Rather, Schröder discloses an unshown ***optional*** battery:

> In a further embodiment example, the external secure unit 2 has an energy storage device, e.g. an accumulator or a battery. The energy storage device is connected to the chip module 10 in order to supply the chip module 10 with energy . . . . The energy storage device can, for charging, be connected directly to the antenna coil 8 via a rectifier circuit, with the chip module 10 connecting the energy storage device to the antenna coil 8 accordingly by means of a suitable connection device.

RX-0018 at 11:46-67. This cursory description of a battery is not surprising, as Schröder relates to

[redacted]

RFIDs, which can be passive, requiring no battery at all. *Id.* at 4:65-5:9; 18:45-46 ("The application on the finger-ring 2 simulates e.g., an RFID tag.").

Fig. 3, the only figure that shows the position of the chip module 10 to which the battery is connected, explicitly shows that the chip module 10 is located ***outside*** of the recess occupied by inlay 12. *Id.* at 8:64-66 ("The chip module 10 is electroconductively connected by means of electroconductive contacts to the at least one antenna coil 8 which is located on the inlay 12.").

Schröder teaches and shows that the chip module is located "on" the carrier, which is located "in" the recess: "The chip module 10 and the antenna coil 8 and possibly further electronic devices are arranged on a carrier as described above. The carrier is preferably inserted into a recess in the second component." *Id.* at 15:19-22. Locating the chip outside of the recess serves a function, as Schröder teaches that the chip is replaceable using hinged window 14. *Id.* at 8:60-63 ("The chip module 10 is protected against external influences by a cover 14. The cover 14 is e.g., a hinged cover or a cover that is connected e.g., by means of a thread to the finger-ring 2.").

Thus, Schröder expressly teaches (and shows) that the chip module is located ***outside the recess*** occupied by inlay 12. Since the chip module is located outside the recess, there is no suggestion that the battery to which it is "connected" is located *in* the recess. And the thin inlay shown in Schröder is only capable to carrying an antenna wire between the ring halves, not a chip module and battery.

Schröder never discloses *why* the chip module 10 is powered outside the field of a reader, as Schröder relates to a ring for near-field communication. RX-0018 at 4:65-5:9; 18:45-46 ("The application on the finger-ring 2 simulates e.g., an RFID tag."); Rosing Rep. ¶¶ 317-328. Such devices can be made in passive configurations that do not require an external power source, and Schröder does not point to or disclose active configurations. *See, e.g.*; CX-0947 at 235 ("NFC

[redacted]

allows a contactless reader to access data in the nonvolatile memory of battery-less tags and cards."); *Id*. A POSA would recognize that even in embodiments including an energy storage device, the energy storage device is charged by the means of a reader's electromagnetic field, indicating that such an energy storage device needs to provide or store very little power, which is unsuitable for the constant monitoring of a wearable device. *See* RX-0018 at 11:50-53; Rosing Rep. ¶¶ 317-328.

As is apparent from the figures in Schröder, the inclusion of a battery would involve *thickening* the ring of Schröder to account for the battery and PCB which would result in a ring that would be too wide to have any utility. *See, e.g.,* Rosing Rep. ¶¶ 317-328. The intended use of the Schröder ring does not require the addition of a battery, and thus a POSA would not be motivated to add one since it would require a complete redesign of Schröder. *Id*.

A POSA would be motivated to make the ring more compact, thinner, and more comfortable by reducing the volume of the cavity, not by increasing it to accommodate large unnecessary components. Given Schröder's teachings, the natural battery location would be in the same recess and protected by the same cover as the chip module 10. *Id*.

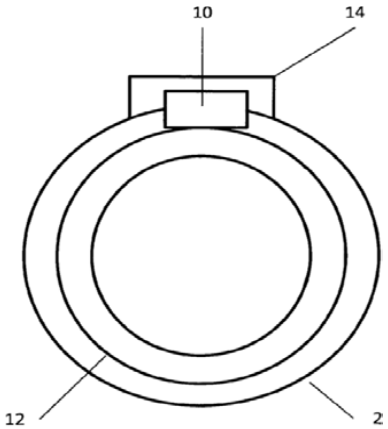


Fig. 3

A POSA, reading Schröder, would easily have been motivated to locate any energy storage

[redacted]

device in an openable compartment such as that in FIG 3, especially given such an energy storage device would be proximate to the chip module 10.

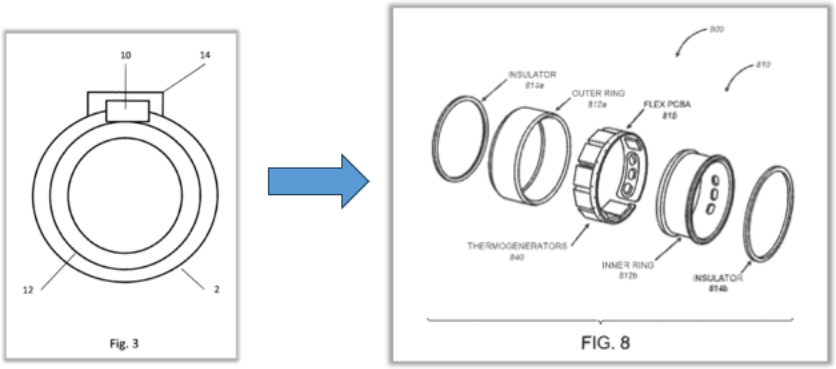
Adding batteries taught by other references would not change the foregoing teachings of Schröder. These batteries would require adding considerable thickness to the ring of Schröder. For instance, the smallest disclosed battery in the references relied on by Respondents—the one disclosed in GMBPower, is 2 mm thick, 10 mm wide, and 21 mm long. By contrast, the antennas needed for NFC applications are on the order of 200 μm thick—approximately 10 times thinner. CX-0947 at 236. Dr. Rosing will testify that, given that Schröder's rings do not require a battery or energy storage device at all, a POSA would not have a specific motivation to add a curved battery, such as the ones identified, with a reasonable expectation of success, as such a modification would completely redesign the structure of Schröder and result in a ring that is not useful.

Further, a POSA would not have been motivated to add a battery to the ring of Schröder, as Schröder teaches that the purpose of the energy storage device is to "increase the range of the antenna coil 8 upon transmission," to "operate alternative communication channels, such as wireless LAN, infrared, etc., which are likewise supported by the chip module 10, outside the reader's field," or "operating electronic components, such as display units or display elements, and supplying them with energy." RX-0018 at 11:50-61; Rosing Rep. ¶¶ 317-328. But none of these applications would have motivated a POSA to include a battery into a ring that does not require one. Rosing Rep. ¶¶ 317-328. Further, a POSA reading Schröder would have recognized that including a battery would increase manufacturing costs and the size of the ring. *Id.* Adding a battery to increase the range of the ring or to operate alternative communication channels would make the ring less secure, as the short distances required for communication with NFC are ideal

[redacted]

for security applications simply because they require proximity. *Id.* By contrast, if the ring were to communicate via Bluetooth or WiFi, which can communicate over tens of meters, an unauthorized person may open a secure device (e.g., a safe) or operate a secure device (e.g., a smartphone) simply by virtue of the ring wearer being within the same building or close outside. *Id.* Thus, a POSA would recognize that adding a battery to operate these communication protocols would be less than ideal for the purposes disclosed in Schröder.

Furthermore, no teachings in Schröder would have enabled a POSA to make the claimed ring without undue experimentation. Schröder's rudimentary disclosure does not provide the "particularly claimed structure" that resulted in allowance of the '178 patent claims.



Compare FIG. 3 of RX-0018 (left) to FIG. 8 of JX-0001 (right); Rosing Rep. ¶ 319-322.

Thus, Schröder fails to disclose or suggest the limitation [1c].

(iii) Schröder, in view of the POSA's knowledge, does not disclose element [1d].

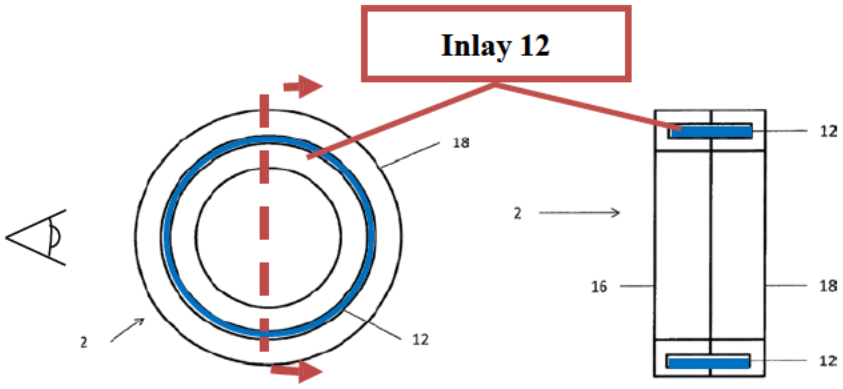
Schröder, either alone or in view of the POSA's knowledge, does not disclose or suggest element [1d], "a printed circuit board disposed between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion." Rosing Rep. ¶¶ 329-332.

[redacted]

Schröder discloses an inlay 12 for carry an antenna, but an inlay is not a printed circuit board. Schröder specifically refers to a printed circuit board where appropriate, and never calls inlay a PCB.

Moreover, as stated above, Schröder is silent with respect to the location of a battery, and a POSA would not have been motivated to locate a battery within a ring cavity for the reasons discussed in the prior section. *Id*. Because Schröder does not suggest or disclose the location of the battery, it fails to disclose the relative position of a printed circuit board. *Id*. To the extent the chip module is a PCB, a POSA would not move the chip module into the ring given Schröder's express disclosure that the chip module be replaceable on top of the ring. Rosing Rep. ¶¶ 329-332.

FIGS. 4 and 5 of Schröder shows that the inlay 12 occupies the entirety of the circumference of the ring (FIG. 4) and the entirety of the space between the ring halves 16 and 18 (FIG. 5). FIG. 5 shows the cross section of the ring of FIG. 4, when the ring is sliced in the vertical plane running into the page, represented by the dashed line, and then rotated 90 degrees such that one can see the ends of one half of the sliced ring. As is shown in blue here, inlay 12 is displayed in FIGS. 4 and 5 as running in a complete circle through the ring, and is shown as being as wide as the space it occupies between ring halves 16 and 18. *Id*. Therefore, a POSA would not be place any component in inlay 12 other than the antenna coil taught by Schröder. *Id*.



[redacted]

Schröder fails to disclose or suggest the limitation [1d].

(iv) Schröder, in view of the POSA's knowledge, does not disclose or suggest element [1e].

Schröder, either alone or in view of the POSA's knowledge, does not disclose or suggest element [1e], "one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component." Rosing Rep. ¶¶ 333-339.

Schröder does not disclose a sensor, nor the location of such a sensor. *Id*. No figure of Schröder shows the sensor or its location relative to the ring, or that it acquires data through an internal housing component. *Id.* Further, Schröder discloses nothing about the placement of the biometric sensor. *Id.* The sensor could be disposed on the ring surface, or could acquire data through a gap between two ring halves (e.g., 16 and 18 as shown in FIG. 5), or any other applicable structure. *Id*.

Wissmar fails to fill the gaps in Schröder's disclosure. Wissmar discloses using a pressure sensor to acquire data from a user, and for a different purpose: to allow a user "to steer in a 4th dimension" by either bending a finger or by applying pressure with another finger, e.g., "using the thumb of the hand on which the ring is carried." *See, e.g.*; CX-1141 at ¶ [0083]; Rosing Rep. ¶¶ 333-339. The Wissmar reference does not use this sensor for biometric identification as disclosed in Schröder, and thus there is no reason why a POSA would look to Wissmar to modify Schröder. Rosing Rep. ¶¶ 333-339; CX-1141 at ¶¶ [0082]-[0083]. Wissmar teaches how to acquire data from within an "inlet hole," not through an "internal housing component." CX-1141 at ¶ [0082]. A POSA would recognize the pressure sensor of Wissmar had an inlet hole formed in the housing through which it would have access to the environment around it, such that it could mechanically

deform in response to changes in pressure and provide a pressure signal in response to the bending of the finger. *See, e.g.*; CX-0948; Rosing Rep. ¶¶ 333-339. Thus, regardless of whether Wissmar discloses an internal housing component, it does not teach a POSA to place a sensor to acquire data through an internal housing component. *Id*.

Schröder thus does not disclose or suggest limitation [1e].

b. Schröder does not render claim 2 obvious

Schröder, in view of the POSA's knowledge and other references, does not render claim 2 obvious. Rosing Rep. ¶¶ 341-348.

Claim 2 recites the additional limitation that "the first portion of the cavity of the finger-worn wearable ring device is non-overlapping with the second portion of the cavity of the finger-worn wearable ring device." The first portion of the cavity holds the battery, while the second portion of the cavity holds the printed circuit board; thus, the printed circuit board and battery need to be non-overlapping to meet the limitation of claim 2. *Id*.

Schröder does not disclose or suggest this to a POSA, because the position of the battery is unknown, and if the inlay 12 is considered a PCB, it is disposed throughout the entire circumference of the ring. *Id*. No reference or disclosure in the art illustrates locating the PCB and battery in non-overlapping portions of a cavity within a finger-worn ring. *Id*. In fact, Niwa teaches away from locating the battery in a separate portion of a ring-worn cavity because it teaches stacking components. *Id*.

For instance, Niwa discloses that "second unit 20" is located distant from first unit 10 to reduce noise that might be generated by the power source, not to make the ring thinner, more compact, or to save on material costs. CX-1133 at ¶ [0193]; Rosing Rep. ¶¶ 341-348. In addition, Niwa teaches overlapping the battery and substrate on the back of the hand to make the ring *less* thin to make the "pulse sensor 1 difficult to turn around on the finger" such that the sensor is

[redacted]

located at the proper portion of the finger. *Id*. Niwa also teaches overlapping the "power source circuit 22 and the memory 23 are equipped to the surface of the first substrate 21 directly, and the battery 24 and charging circuit 25 are equipped to the back side of the first substrate 11 [sic] directly. Rosing Rep. ¶¶ 341-348. In this way, by means of utilizing both side of the first substrate 21 efficiently, the area of the first substrate 21 can be reduced. *Id*. Therefore, the largeness of the second unit 20 can be restrained not to protrude from the third joint of the finger 2." CX-1133 at ¶ [0214]. Niwa's disclosures would have suggested it was desirable to stack (and therefore overlap) the battery and other power generation and transmission circuits together on the back of the finger to avoid misorienting the ring. Rosing Rep. ¶¶ 341-348.

Schröder does not disclose or suggest the limitations of claim 2.

c. Schröder does not render claim 12 obvious

Claim 12 would not have been obvious over Schröder in view of the POSA's knowledge, Wissmar, Webster, Henderson, and/or GMBPower.

Schröder does not disclose a curved battery. Rosing Rep. ¶¶ 349-352; RX-0003C ¶ 376. None of the references relied on by Respondents would be appropriate to incorporate in the thin inlay of Schröder. The batteries of these references are not needed for the RFID applications of Schröder, and would result in a complete redesign of Schröder that would render it too large to be useful. Thus, Schröder and the foregoing references fail to disclose or suggest the limitations of claim 12.

d. Schröder does not render claim 13 obvious.

Claim 13 recites the additional limitation that "the one or more sensors comprise a first light-emitting component configured to emit light associated with a first wavelength, and a second light-emitting component configured to emit light associated with a second wavelength different from the first wavelength." Schröder does not disclose or suggest light-emitting components that

[redacted]

are configured to emit light associated with two different wavelengths, but instead discloses "at least one infrared diode and at least one infrared sensor" for capturing "at least a partial vein image in the finger[.]" *See* RX-0018 at 9:54-10:4; Rosing Rep. ¶¶ 353-358.

Niwa does not cure this deficiency. The evidence will show the ring of Schröder is an "external secure unit" that is designed for the purposes of communicating with NFC devices, not measuring pulse rate or pulse oximetry, and the infrared LED and detector are included for biometric identification, not measurement of biosignals. Rosing Rep. ¶¶ 353-358. A POSA would have no motivation to add this sensor to Schröder because it would not serve the overall purpose of the device in Schröder--i.e., secure identification, add complexity and cost, and generally result in a complete redesign of Schröder. *Id*.

A POSA would also not have a reasonable expectation of success in modifying the ring of Schröder to include multiple LEDs. *Id*. It would not have been clear to a POSA that he or she could (a) include eight LEDs and a photodetector, along with the necessary electronics to transmit data from the photodetector[5] to an external source for display, and (b) a battery with sufficient capacity and power to operate all of the above, in the finger-worn ring of Schröder.

FIG.3

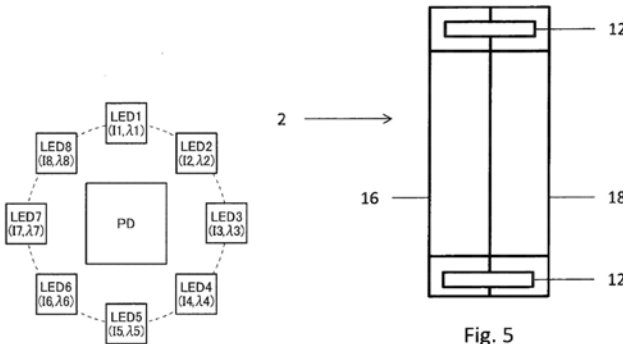


Fig. 5

Compare FIG. 3 of CX-1133 *with* FIG. 5 of RX-0018; Rosing Rep. ¶¶ 353-358. Thus, Schröder

[redacted]

does not disclose or suggest the limitations of claim 13.

e. Schröder does not render claim 14 obvious

Claim 14 depends from claim 1, and thus incorporates all limitations of claim 1. Schröder does not disclose or suggest the limitations of claim 14 for the same reasons stated above with respect to claim 1.

f. Schröder does not render claim 17 obvious

Claim 17 depends from claim 1, and thus incorporates all limitations of claim 1. Schröder does not disclose or suggest the limitations of claim 17 for the same reasons stated above with respect to claim 1.

g. Schröder does not render claim 18 obvious

Claim 18 depends from claim 1, and thus incorporates all limitations of claim 1. Schröder does not disclose or suggest the limitations of claim 18 for the same reasons stated above with respect to claim 1.

5. Wissmar does not anticipate or render the Asserted Claims obvious in view of a skilled artisan's knowledge and various other references.

Wissmar does not anticipate the Asserted Claims, or render them obvious either alone or in view of the POSA's knowledge and/or other references. Rosing Rep. ¶¶ 367-382.

a. Wissmar does not anticipate or render claim 1 obvious.

(i) Wissmar does not disclose element [1a].

Wissmar does not disclose or suggest element [1a], "an external housing component defining an outer circumferential surface of the finger-worn wearable ring device," or element [1b], "an internal housing component defining an inner circumferential surface of the finger-worn wearable ring device." *Id*.

Wissmar discloses that the housing for the disclosed toroidal ring is constructed from two

[redacted]

mirror-image toroid halves. Rosing Rep. ¶¶ 99-102, 367-382. Wissmar does not disclose limitations [1a] and [1b]. *Id*. Rather, Wissmar identifies FIGS. 1 and 4 as "schematic profile view[s]" of the finger ring. CX-1141 at ¶¶ [0051], [0054]; Rosing Rep. ¶¶ 367-382. FIGS. 1 and 4 fail to show how any of the elements are connected, but instead mere illustrations that show certain "black box" components are present within a ring. Rosing Rep. ¶¶ 367-382.

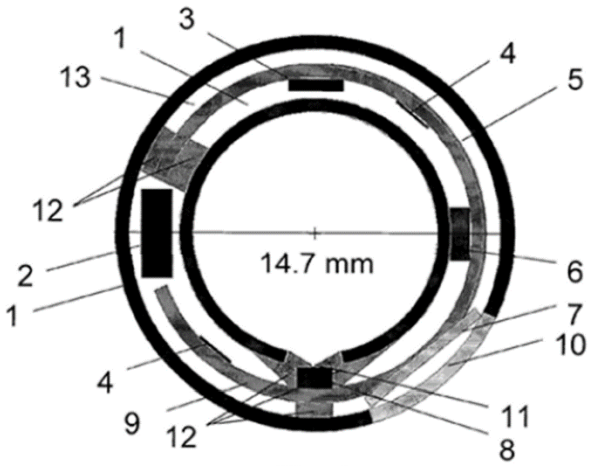


Fig. 1

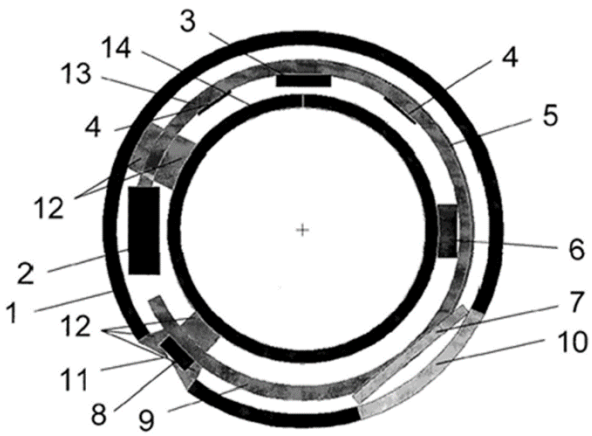


Fig. 4

Additionally, FIGS. 1 and 4 do not show the two metallic shells 1*a* and 1*b*, just the toroid surface 1. *Id*.

FIG. 9 of Wissmar is an "illustration of the top and bottom halves of the ring toroidal shell where the interface (as well as inner surface) is a titanium compound in accordance with another embodiment of the present invention." CX-1141 at ¶ [0059]; Rosing Rep. ¶¶ 367-382. Wissmar describes "two toroidal complementing halves . . . [that] are welded together along an interface between the two halves," and the interface between the toroidal halves runs along the outermost latitude and innermost latitude of the toroid, such that the two identical toroid halves are identical and sandwiched together, in the same manner as a sliced bagel:

[redacted]

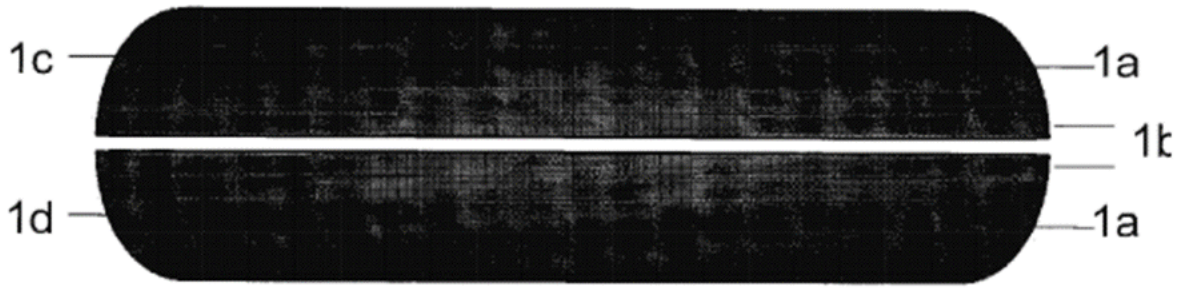


Fig. 9

Rosing Rep. ¶¶ 367-382.

Wissmar discloses that FIG. 8 illustrates "the cross section of the inner and outer toroidal shells showing how the different metal layers are deposited in accordance with another embodiment of the present invention." CX-1141 at ¶ [0058]. Further still, Wissmar indicates that FIG. 8 illustrates "interfaces of the toroidal halves." *Id.* at ¶ [0084]; Rosing Rep. ¶¶ 367-382.

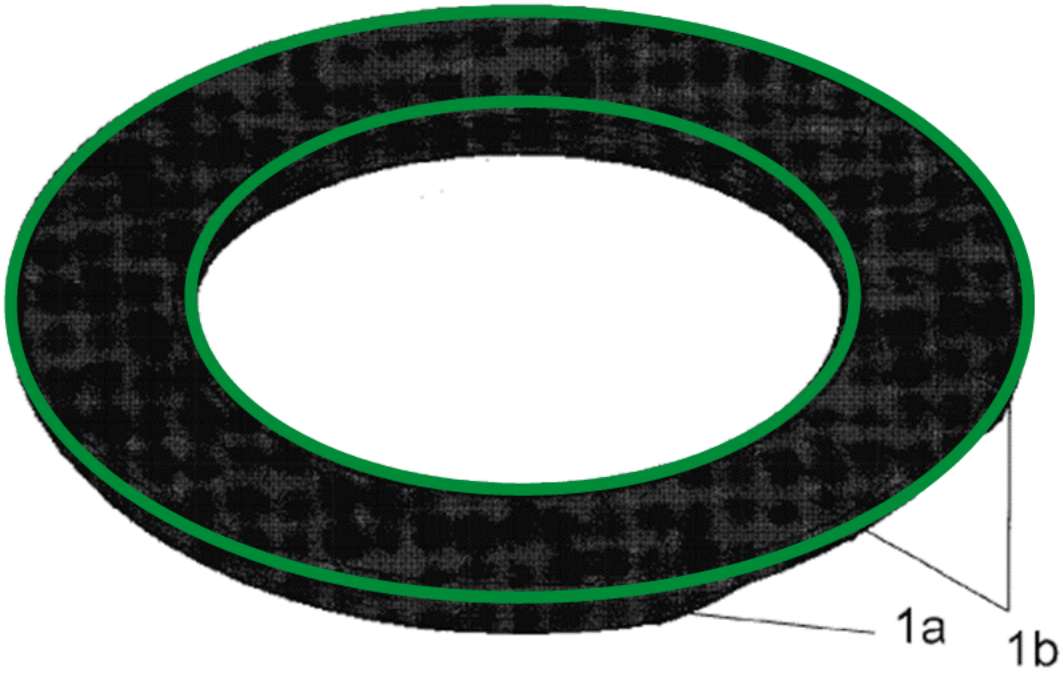


Fig. 8

[redacted]

CX-1141 at FIG. 8; *id.* at ¶ [0084] (green circles added to illustrate interfaces of toroid half). Rosing Rep. ¶¶ 367-382.

Wissmar only supports a sliced "bagel" construction of the ring. *Id.* A POSA would have no motivation to completely redesign the housing of Wissmar to include internal and external housing components. For example, Wissmar, in FIGS. 1 and 4, discloses that the printed circuit board is held into place by fixtures 12 running between the inner and outer circumference of the ring, and fails to detail how a POSA would construct those fixtures when the housing was separated into inner and outer circumferences:

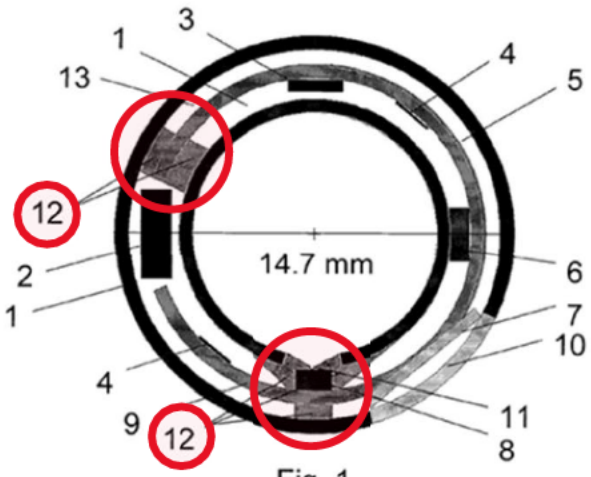


Fig. 1

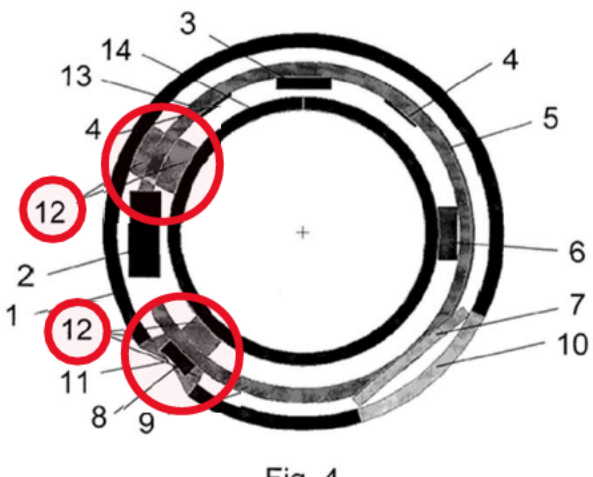


Fig. 4

There is no reason a POSA would have a reasonable expectation of success in modifying Wissmar in this way, or why this would not otherwise render Wissmar insufficient for its disclosed purpose. *Id.* Wissmar discloses that the toroid is composed of "two different metallic shells," with one shell "enclosing the major parts of the finger ring structure geometrically described as radially furthest away from the toroid's center," and the other "being the metal enclosing facing the inner parts of the finger ring structure." CX-1141 at ¶ [0073].

A torus is a surface of revolution generated by revolving a circle in three- dimensional space one full revolution about an axis that is coplanar with a circle, the discussion of FIGS. 11-

[redacted]

13 indicate that the "toroid's center" here refers not to the central point or axis defining the toroid, but rather the center of the circle whose revolution forms the torus (e.g., the green and red circles illustrated on the torus below).

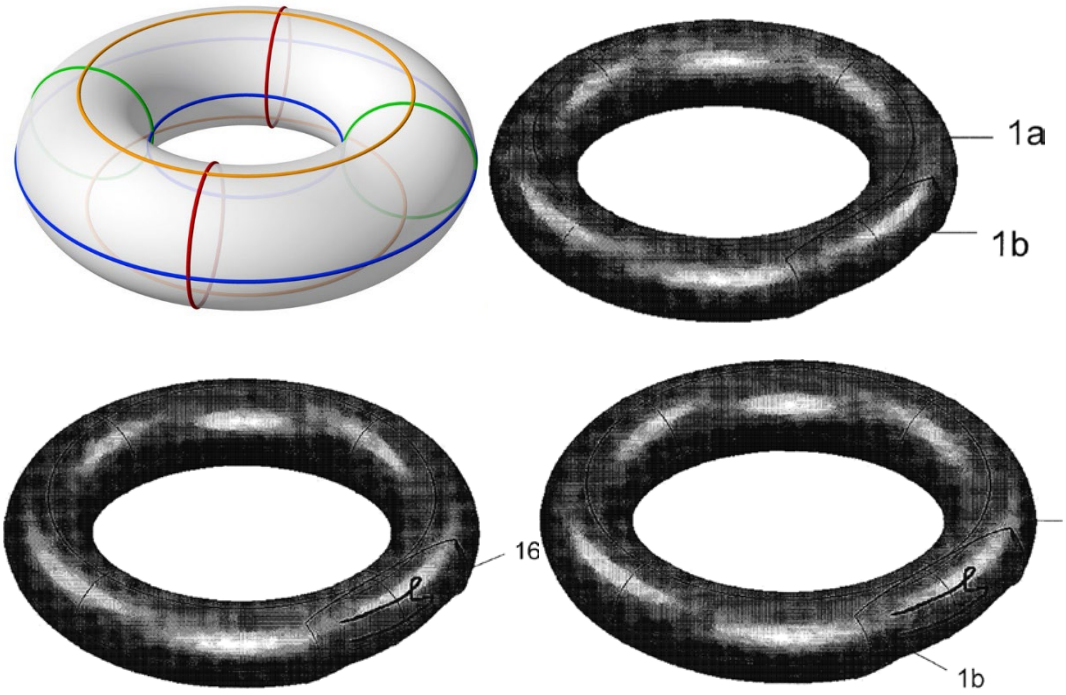


Fig. 13 Fig. 14

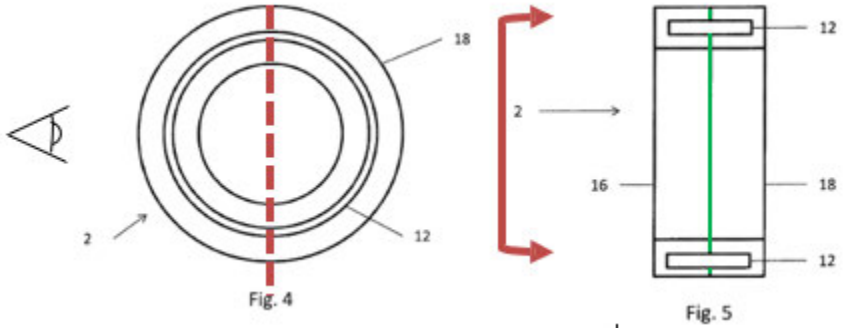
See, e.g., *id.* at ¶¶ [0061]-[0064] (identifying that these schematics show the "outer shell opened;" *see also* FIGs. 11-14 (identifying outer shell 1*a* and inner shell 1*b*). The toroid halves are a key design feature of the ring in Wissmar and a POSA would not know how or why it would completely redesign the housing Wissmar. Rosing Rep. ¶¶ 367-382.

Schröder does not cure the deficiencies of Wissmar, and that a POSA would have no reason to combine the disclosure of Wissmar with Schröder. *Id*. The purpose of the ring in Wissmar is to function "as a 4-dimensional steering device where an accelerometer steers in 3- dimensional space and a pressure sensor steers in an additional 4th dimension, i.e., a novel steering device." CX-1141 at ¶ [0072]; Rosing Rep. ¶¶ 367-382. The ring in Schröder, by contrast, is designed for NFC

[redacted]

applications, and contains only an antenna and miniaturized electronics for NFC applications, not the additional electronic components present in Wissmar, and a POSA would not have had a reasonable expectation of success in using the ring housings disclosed in Schröder to encapsulate the various components Wissmar discloses. Rosing Rep. ¶¶ 108, 367-382.

Moreover, the housing geometry disclosed in Wissmar is also disclosed in Schröder—namely, two mirror-image ring halves connected along an interface (here, shown in green) between the two halves.



See RX-0018 at FIGS. 4 and 5; Rosing Rep. ¶¶ 367-382. A POSA would not see a reason to alter the construction of the ring halves in Wissmar as Schröder teaches the same "bagel"-type of ring housing. Rosing Rep. ¶¶ 367-382.

The toroidal outer shell of the ring in Wissmar is disclosed as functioning as an "external antenna, to obtain coarse tuning to the operational frequency, which is connected to the internal antenna and RF transceiver located inside the ring." CX-1141 at ¶ [0071]; Rosing Rep. ¶¶ 367-382. In contrast, the external housing in Schröder is not disclosed as having any particular function. Rosing Rep. ¶¶ 367-382. Thus, a POSA would not recognize substitution of the outer metallic toroidal shell for a different geometry to be simple substitution of one element for another, and that a POSA would not be motivated to alter the shape of this toroidal shell, as it could have a detrimental effect on the antenna function disclosed in Wissmar. *Id*.

[redacted]

The ring disclosed in Wissmar has a disruption in the surface of the ring to present an "inlet hole shaped as a horn cone to maximize the pressure compression ratio at the pressure sensor end 11." Thus, a POSA would not consider the inner surface of Wissmar an inner circumferential surface even if the halves were joined differently. *Id*.

Wissmar does not disclose or suggest limitations [1a] and [1b].

(ii) Wissmar, in view of the POSA's knowledge and/or Webster, Henderson, Wissmar, or GMBPower, does not disclose element [1c].

Wissmar does not disclose or suggest element [1c], "a battery positioned within a cavity formed between the internal housing component and the external housing component, wherein the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component, and wherein the battery extends through at least a first portion of the cavity of the finger-worn wearable ring device." Rosing Rep. ¶¶ 383-384.

As discussed in the prior section, Wissmar does not disclose internal and external housing components as recited in the claim. *Id*. Wissmar therefore does not disclose a battery positioned within a cavity formed between the internal housing component and the external housing component, as the phrase would be understood by a POSA in view of the specification and the claims, nor does Wissmar disclose that the battery comprises a shape and size configured to fit within the cavity between the outer circumferential surface of the external housing component and the inner circumferential surface of the internal housing component. *Id*.

Wissmar thus does not disclose or suggest limitation [1c].

(iii) Wissmar, in view of the POSA's knowledge, does not disclose element [1d].

Wissmar does not disclose or suggest element [1d], "a printed circuit board disposed

between the internal housing component and the external housing component, wherein the printed circuit board extends through at least a second portion of the cavity of the finger-worn wearable ring device different from the first portion." Rosing Rep. ¶¶ 385-388.

Fig. 1 is merely an illustration of the components in Wissmar and does not disclose how the ring is actually constructed. *Id*. Wissmar explicitly discloses that the battery in FIG. 1 is mounted on the printed circuit board: it says that "[t]he toroidal shaped finger ring structure 1 is comprised of different electronic components: battery 2, RF transceiver 3 and a microprocessor 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." CX-1141 at ¶ [0073] (emphasis added); Rosing Rep. ¶¶ 385-388. If the battery is mounted on the printed circuit board as suggested by Wissmar, the printed circuit board and the battery are not in non-overlapping portions of the cavity. *Id*.

Thus, Wissmar does not disclose or suggest limitation [1d].

(iv) Wissmar, in view of the POSA's knowledge, does not disclose element [1e].

Wissmar does not disclose or suggest element [1e], "one or more sensors electrically coupled with the printed circuit board and the battery and configured to acquire data from the user through the internal housing component." Rosing Rep. ¶¶ 389-391.

Wissmar's sensor is disclosed as being in a "cavity" that "faces the inner circumference of the toroidal shaped finger ring structure 1." CX-1141 at [0083]. As discussed above, the pressure sensor in Wissmar acquires data through an inlet hole formed as a horn cone in the toroidal ring, not through the housing. *See, e.g.*; CX-1141 at FIG. 3; *id.* at ¶¶ [0082], [0083]; Rosing Rep. ¶¶ 389-391.

Thus, Wissmar does not disclose or suggest limitation [1e].

b. Wissmar does not render claim 2 obvious

[redacted]

Wissmar in view of the POSA's knowledge and other references does render claim 2 obvious. Rosing Rep. ¶¶ 393-401.

Claim 2 recites the additional limitation that "the first portion of the cavity of the finger-worn wearable ring device is non-overlapping with the second portion of the cavity of the finger-worn wearable ring device." *Id*. The first portion of the cavity holds the battery, while the second portion of the cavity holds the printed circuit board; thus, the printed circuit board and battery need to be non-overlapping to meet the limitation of claim 2. *Id*.

Wissmar does not disclose that the battery and printed circuit board are non- overlapping. *Id*. Rather, Wissmar discloses that the battery is disposed on the printed circuit board. *See* CX-1141 at ¶ [0073]; *see also* Rosing Rep. ¶¶ 386-387, 393-401.

Wissmar discloses that the battery is mounted on the printed circuit board, and there is no identified problem with that arrangement that a POSA would be seeking to solve. CX-1141 at ¶ [0073]; Rosing Rep. ¶¶ 393-401. Rather, a POSA reading Wissmar would recognize that the battery was placed on the circuit board to facilitate its electrical connection to the other components on the printed circuit board, and would have no reason to change that arrangement. *See* CX-1141 at ¶¶ [0074]-[0075] ("All the aforementioned electronic components are mounted on a flexible printed circuit board (FPCB) where conductor lines electrically connect the individual components. . . To supply power to the components a battery 2 is connected. These aforementioned components comprise the internal electronic circuit of the electronic finger ring."); Rosing Rep. ¶¶ 393-401.

Placing the battery in a portion of the ring that does not overlap the printed circuit board does not solve any identified problem. Wissmar discloses that the battery is placed on the printed circuit board, and that it powers the other components on the printed circuit board; a POSA would

[redacted]

have no motivation to alter the location of the battery such that it does not overlap the printed circuit board, as they would have to connect it otherwise to the printed circuit board to power the components. *Id*.

Thus, Wissmar fails to disclose or suggest the limitations of claim 2.

c. Wissmar does not render claim 12 obvious

Claim 12 recites the additional limitation that "the battery comprises a curved battery, wherein an arc of the curved battery approximates a corresponding arc of the external housing component." Wissmar does not disclose a curved battery, and it would not have been obvious to modify Wissmar to use a curved battery taught by any of the references. Rosing Rep. ¶¶ 402-416.

Wissmar discloses a toroidal structure, which is a shape defined by rotating a circle around an axis. A toroidal structure thus has a circular cross-section when cut along a plane that includes that axis. In order to include a curved battery from Henderson, Webster, or GMBPower, in the toroidal structure of Wissmar, such that it "approximated a corresponding arc of the external housing component," it would require either bending the battery along two axes such that it conformed to the inner surface of the torus, or making the dimensions of the torus cross-section wide enough to accommodate the width of the curved battery. *Id*. Moreover, the size of these batteries would not fit in Wissmar and would result in a device that has no utility.

Wissmar discloses that the battery is disposed on the printed circuit board, and not located elsewhere in the cavity. *See* section IV.C.6.a.iii above; Rosing Rep. ¶¶ 286-387; 402-416. A POSA reading Wissmar would recognize that including a long, curved battery would take up space along that printed circuit board and may interfere with the placement of other components. Rosing Rep. ¶¶ 402-416.

A POSA reading Wissmar and Webster would recognize that the applications of the two devices are distinct and that the power requirements for the device in Wissmar would be

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[redacted]

significantly greater than those for the device in Webster. *Id*. A POSA, reading Wissmar, would recognize that it is for a "4- dimensional steering device where an accelerometer steers in 3-dimensional space and a pressure sensor steers in an additional 4th dimension. i.e. a novel steering device design." CX-1141 at ¶ [0072]; Rosing Rep. ¶¶ 402-416. Such a device would need to transmit information constantly to whatever it was steering through the disclosed RF antenna in the ring, as well as information related to changes in the pressure sensor, which would consume a large amount of power. Rosing Rep. ¶¶ 402-416. The vaginal ring in Webster, by contrast, is disclosed as transmitting intermittently, such as "once every five minutes," or "when a temperature change beyond a set threshold occurs." *See, e.g.*; CX-1135 at 9:58-10:19; Rosing Rep. ¶¶ 402-416. The power requirements and battery capacity required for the device in Webster would thus be significantly less than the power requirements for the device in Wissmar, which needs to be transmitting near constantly. A POSA, in turn, would recognize that incorporating the battery from Webster into Wissmar would likely *harm* the battery capacity and life of the device, as the power and capacity of the battery in Webster is insufficient compared to the battery in Wissmar. Rosing Rep. ¶¶ 402-416.

Henderson device is a wrist-worn device, not a ring, and Henderson does not disclose or suggest that the batteries can be resized to fit within a ring-based form factor *along with* a printed circuit board and sensors. *Id*. Further, a POSA would recognize, in fact, that the curved batteries disclosed in Henderson are relatively large in comparison to the size of a finger. *See id*. ¶¶ 91, 402-416. A POSA would not recognize that batteries for use in a wrist-worn device would be usable in a finger-worn wearable ring device, as finger-worn rings have several design constraints not present in wrist- worn devices. *Id.* ¶¶ 402-416.

There is no reason to expect that the batteries of Henderson could be used to "increase the

[redacted]

battery capacity and life of the device" disclosed in Wissmar. *Id*. In fact, Henderson discloses that "the overall size of the batteries 142 . . . may vary such being larger to increase battery capacity and life of the device before recharging." CX-1139 at ¶ [0078]; Rosing Rep. ¶¶ 402-416. A battery's physical size corresponds to its capacity. Rosing Rep. ¶¶ 402-416. Thus, decreasing the physical size of the wrist-worn battery to fit it into the ring of Wissmar would *decrease* battery capacity and device life relative to the batteries in Henderson. *Id*. Of note, also, Henderson includes *two* different batteries to provide sufficient power to its components, which would also indicate that using *one* battery would adversely affect power and battery capacity. *See, e.g.*; CX-1139 at ¶ [0077] ("[T]he power supply 142 utilizes a pair of batteries 142."); Rosing Rep. ¶¶ 402-416.

The power requirements for a device like the band in Henderson are lower than those for a device like Wissmar. Rosing Rep. ¶¶ 402-416. The batteries in Henderson's device power are a display, indicator system, controllers for both, sensors, and wireless communication modules. *See, e.g.*; CX-1139 at ¶¶ [0073]-[0076]; Rosing Rep. ¶¶ 402-416. Further, Henderson dedicates several paragraphs to describing management of the battery power and charging, along with intermittent transmission, to avoid consuming battery life. *See* CX-1139 at ¶¶ [0090]-[0150]; Rosing Rep. ¶¶ 402-416. Neither Wissmar nor Henderson provides any teaching as to how the battery of Henderson could be adapted to work in the device of Wissmar with a reasonable expectation of success in powering the steering device of Wissmar, which (again) requires near constant transmission of information. Rosing Rep. ¶¶ 402-416.

Further still, Henderson discloses that its batteries are substantially rigid, not flexible, and define "curved planar surfaces." CX-1139 at ¶ [0077]; Rosing Rep. ¶¶ 402-416. The evidence will show that a POSA would not fit such batteries into the toroidal structure disclosed in Wissmar, which lacks planar surfaces. Rosing Rep. ¶¶ 402-416. Rather, the POSA would have to modify the

[redacted]

battery in a way that is not obvious or taught by any reference. *Id*.

Even the smallest of the GMBPower batteries disclosed was 2 mm thick, wide (i.e., 1 cm), and 21 mm long with a capacity of only 25 mAh. *Id.* ¶¶ 120, 402-416. Such a battery of that size would not fit in a finger-worn ring device. *Id.* ¶¶ 159, 402-416. Also, the 25 mAh battery disclosed in GMBPower would not "increase the battery life of Wissmar's ring," as a POSA would recognize the power needs of the Wissmar ring were significant and that using a small battery would not necessarily provide enough power for the disclosed function (i.e., "steering."). *Id.* ¶¶ 402-416.

Thus, Wissmar fails to disclose or suggest the limitations of claim 12.

d. Wissmar does not render claim 13 obvious

Claim 13 recites the additional limitation that "the one or more sensors comprise a first light-emitting component configured to emit light associated with a first wavelength, and a second light-emitting component configured to emit light associated with a second wavelength different from the first wavelength."

Wissmar does not disclose light-emitting components that are configured to emit light associated with two different wavelengths. *Id.* Further, Wissmar does not disclose including light-emitting components as sensors at all. Rather, Wissmar uses a pressure sensor. *See, e.g.* CX-1141 at ¶¶ [0019], [0073]; Rosing Rep. ¶¶ 417-426.

A POSA would not have had any motivation to combine Wissmar with Yuen. Rosing Rep. ¶¶ 417-426. Wissmar is primarily disclosed as a "steering device," and the pressure sensor in Wissmar has the primary function of sensing changes in a user's finger position to provide a fourth dimension of steering. CX-1141 at ¶¶ [0018], [0072]; Rosing Rep. ¶¶ 417-426. While Wissmar discloses that the pressure sensor may *also* function as a plethysmograph (*see, e.g.*; CX-1141 at ¶ [0103]), a POSA would not be motivated to replace it with the LED system in Yuen, as that system could *only* function as a plethysmograph and not detect the bending of the user's finger or applied

[redacted]

pressure and that doing so would simply render the device of Wissmar unusable for its primary purpose. Rosing Rep. ¶¶ 417-426.

Thus, Wissmar does not disclose or suggest the limitations of claim 13.

e. Wissmar does not render claim 14 obvious

Claim 14 depends from claim 1, and thus incorporates all limitations of claim 1. Wissmar does not disclose or suggest the limitations of claim 14 for the same reasons stated above with respect to claim 1. *Id*. ¶¶ 427-428.

f. Wissmar does not render claim 17 obvious

As stated above, a POSA would have had no motivation to modify the ring of Wissmar with Schröder, and certainly would not have had a reasonable expectation of success in doing so. *Id*. ¶¶ 429-435.

Thus, Wissmar does not disclose or suggest the limitations of claim 13.

g. Wissmar does not render claim 18 obvious

Claim 18 depends from claim 1, and thus incorporates all limitations of claim 1. For the reasons stated above with respect to claim 1, Wissmar in view of the POSA's knowledge, Schröder, or any other reference, claim 18 is not obvious for at least the same reasons. *Id*. ¶¶ 436-438.

Claim 18 recites the additional limitation that "the first side wall, the second side wall, or both, are substantially perpendicular to the inner circumferential surface, the outer circumferential surface, or both." Dr. Rosing will explain, and the evidence will show, Respondents have failed to prove by clear and convincing evidence that Wissmar discloses or suggests the limitations of claim 18. *Id.*

6. The Asserted Claims have sufficient written description and enablement.

The Asserted Claims comply with the requirements of section 112 for written description

and enablement. *Id*. ¶¶ 459-471.

Mr. Alarcon argues that the testimony of the inventors of the '178 patent and a co-founder of Motiv Inc., shows they were not in possession of the internal housing component made of potting material resin at the time of the invention. RX-0003C ¶¶ 457-465. Mr. Alarcon is incorrect, as Dr. Rosing will testify, and the evidence will show, that the testimony Mr. Alarcon cites establishes, at most, that Motiv encountered problems in *mass producing* rings using a housing and internal potting material. *See, e.g.* RX-0323C at 38:7-39:1; RX-0322C at 42:14-43:8, 45:5-46:7; Rosing Rep. ¶¶ 459-466. Mr. Alarcon's allegations of non-enablement merely point to issues as mass production problems that impacted the accuracy of the sensors, and do not show rings having external housing members and internal potting require undue experimentation. *See, e.g.,* RX-0321C at 156:23-157:3, 160:6-9, 164:12-16; Rosing Rep. ¶¶ 459-466.

There is ample evidence that the problems identified by Mr. Alarcon, namely formation of bubbles, were a problem that arose during mass production of the rings that could be solved, as the inventors here did. RX-0003C ¶¶ 460; RX-0323C at 40:15-17; RX-0322C at 49:16-22; *see, e.g.*; CX-0952. Dr. Rosing will testify the same literature also identifies ways to avoid such forming bubbles in potting material, such as reducing the flow rate of the potting material and carrying out the potting process in a vacuum. *See, e.g.*; CX-0952 at 73.

The '178 patent discloses that the wearable computing device disclosed can be sealed using potting epoxy, which can be transparent to light, and that doing so makes the device waterproof and increases its structural rigidity. JX-0001 at 16:22-42. Further, the patent provides detailed disclosure regarding how to make embodiments using an internal housing and internal potting (*see, e.g.*, *id.* at 18:17-20:26) and using "inner/outer bands." *See, e.g.*, *id.* at 20:27-21:10. The '178 patent also discloses several figures showing rings having internal and external potting, along with

[redacted]

disclosures of the respective ring structures to receive such potting materials. *See, e.g.*, *id.* at FIGS. 12A-F, 13, 14A, 14D, 14E, 16C.

Mr. Alarcon also opines that the '178 patent is not enabled "because the patent does not describe the technology to make or use the curved battery." RX-0003C ¶ 466. Dr. Rosing will explain that POSA would not have had to engage in undue experimentation in order to use a curved battery within the rings described in the '178 patent. Rosing Rep. ¶¶ 459-471.

Rather, the '178 patent provides detailed description of the dimensions of the wearable computing device, as well as several figures showing how the battery and PCB are to be loaded into the internal/external housing. *See, e.g.*, JX-0001 at 16:61- 17:19; *see also* FIGS. 4, 6, 12F, 13, 14A, 20A. Furthermore, the '178 patent discloses potentially useful battery capacities (e.g., 10 mAh—*see id.* at FIG. 4), power management strategies (*see, e.g.*, *id.* at 12:36-62, 13:45-52, 13:55-67) and the selection of low-power components to optimize power management (*see, e.g.*, *id.* at 14:52-60.

Mr. Alarcon opines that the Asserted Claims of the '178 patent are invalid for lacking enablement or written description because the specification fails to describe, or to disclose how to make and use, embodiments where both the internal and external housing components are made of potting material. RX-0003C ¶¶ 468-470.

The '178 patent specification provides detailed disclosure regarding how to make embodiments using an internal housing/external potting (*see, e.g.,* JX-0001 at 16:43-18:61), as well as using an external housing and internal potting (*see, e.g.*, *id.* at 18:17-20:26), and using "inner/outer bands." *See, e.g.*, *id.* at 20:27-21:10. The '178 patent also discloses several figures showing rings having internal and external potting, along with disclosures of the respective ring structures to receive such potting materials. *See, e.g.*, *id.* at FIGS. 12A-F, 13, 14A, 14D, 14E, 16C.

[redacted]

Dr. Rosing will explain, and the evidence will show, Respondents have failed to prove by clear and convincing evidence that a POSA would have to engage in undue experimentation to practice the Asserted Claims of the '178 patent, and thus they are enabled. Rosing Rep. ¶¶ 459-471. Further, Dr. Rosing will testify the specification includes a written description of the invention that would inform a POSA that the applicants were in possession of the invention, and thus has adequate written description. *Id*.

7. Secondary Considerations

a. Nexus

The Oura Ring Gen 3 and Oura Ring Gen 4 (collectively, the "Oura Ring") are commercial embodiments of the Asserted Claims of the '178 patent and practice claims 1, 2, 12-14, 17, and 18 of the '178 patent. *See* RX-0402C ¶¶ 55-60, 81-93, 119-130, 142-150, 168-179, 193-201, 225-234, 240-243, 252-256, 263-267, 272-275, 282-295, 302-305; RX-0403C ¶¶ 20-27.

b. Commercial Success

(i) Sales Revenue and Units

The inventions of the '178 patent have achieved marketplace success DI Product. Specifically, Oura's worldwide total revenue grew from [redacted] in fiscal year ("FY") 2021 to [redacted] million in FY 2022, and [redacted] million in FY 2023. RX-0413C ¶ 11; CX-0955C. Over the same period, worldwide Oura Ring unit sales increased from [redacted] in FY 2021 to [redacted] in FY 2023, a CAGR of [redacted] percent over that time period. *Id*.

The market success is evidenced by Oura's by U.S. total sales (which accounts for approximately [redacted] of Oura's sales) of approximately [redacted] units of the Oura Ring over the period FY 2022 through Q2 FY 2024. RX-0412C ¶ 96; CX-0958C; RX-0413C; CX-0956; CX-0042C; RX-0320C. The commercial success is due to the innovative features of the Oura DI Product. *See* RX-0402C ¶¶ 55-60, 81-93, 119-130, 142-150, 168-179, 193-201, 225-234, 240-243,

[redacted]

252-256, 263-267, 272-275, 282-295, 302-305; RX-0403C ¶¶ 20-27; RX-0413C ¶ 11-13.

(ii) Contribution to Oura

The DI Product is critical to Oura's existence as a company as the Oura Ring and its corresponding application is Oura's only product offering. CX-0038C at 1, RX-0412C ¶ 17. Oura's overall revenue is attributable to the DI Product. RX-0413C ¶¶ 14-16; CX-0955C. Further, the contribution of the DI Product to Oura is evidenced by Oura's successful capital fundraising efforts and overall increase in company valuation. *Id.*; CX-0588; CX-0974; CX-0972. *See also,* CX-0967; CX-0969.

Further confirming Oura's marketplace success is the breadth of its network of partnerships related to improving wellness for its customer base. RX-0413C ¶ 14-16; CX-0955C; CX-0973; CX-0970; CX-0971.

(iii) Performance Relative to Competing Products

Oura's development and commercialization of the Oura Ring resulted in the creation of a new market segment within the wearables marketplace. RX-0413C ¶ 17-18. Despite new entrants to the market, Oura is and remains one of the key creators of the smart ring market segment, with one publication characterizing Oura as "one of the market pioneers." and "long been synonymous with 'smart ring.'" *Id*; CX-0583; CX-0591; CX-0869; CX-0870; CX-0584; CX-0585; CX-0861; CX-0862.

Further, reviews from third-parties and technology experts demonstrate, Oura is considered a "smart ring industry mainstay," the "best smart ring" in the industry, and the "smart ring market leader." RX-0413C ¶ 17-18; CX-0981.

c. Copying

Respondents' Accused Products copied the structural design of Oura Ring Gen. 3,

[redacted]

including the claimed "an external housing component" and "internal housing component" aspects of the '178 patent where the battery and the printed circuit board are disposed between the external and internal housing components of the finger-worn wearable ring device. RX-0403C ¶ 28.

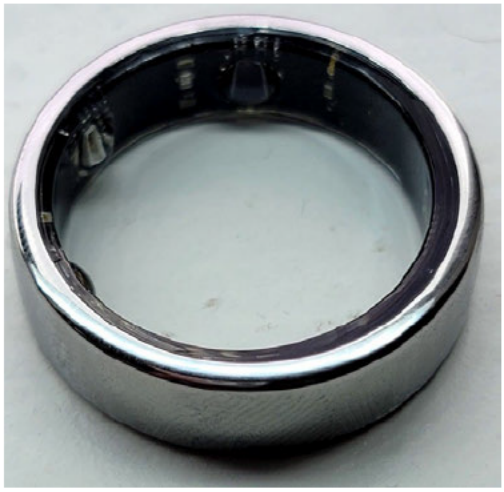
(i) Ultrahuman Accused Products

The structural design of the Ultrahuman Accused Product is nearly identical to that of Oura Ring Gen. 3, as [redacted]

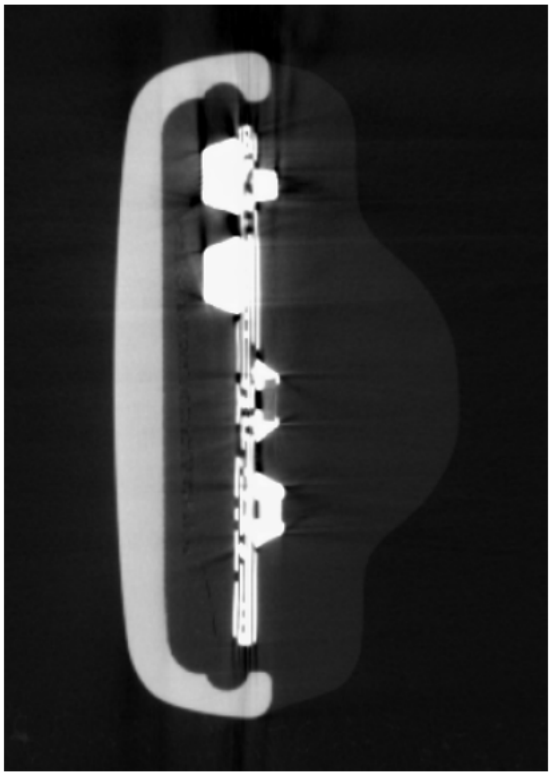
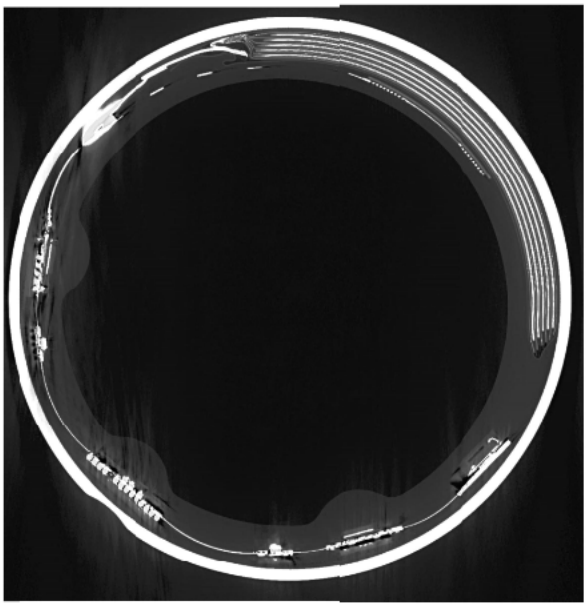
RX-0403C ¶ 29; CX-0538 at Oura-ITC 0000581; CX-0671; CX-0533 at Oura-ITC 0000867.

Oura Ring Gen. 3	Ultrahuman Accused Product
 CX-0702	 CX-0538

[redacted]

Oura Ring Gen. 3	Ultrahuman Accused Product
 CX-0944	 CX-0537
 CX-0173	 CX-0311

[redacted]

Oura Ring Gen. 3	Ultrahuman Accused Product
 CX-0048	[redacted] CX-0058
 CX-0046	[redacted] CX-0056

The [redacted]

[redacted]

Gen. 3[redacted]

[redacted] *See* RX-0403C ¶¶ 29-30; RX-0320C at 181:12-14; CX-0027C ([redacted]

[redacted] f Oura Rings. RX-0403C ¶ 31; *See* CX-1386C at 55:19-56:7; 120:14-122:24.

Mr. Alarcon may argue that Ultrahuman independently developed the Ultrahuman Accused Product based on his understanding that [redacted] *See* RX-0003C ¶ 493. But the clear evidence is that there is virtually no similarity between the Ultrahuman Accused Product and Aina Ring:

Lazy Co.'s Aina Ring	Ultrahuman Accused Product
 CX-0945	 CX-0538

RX-0403C ¶¶ 32-33.

The evidence will show copying by Ultrahuman, and any suggestion that Ultrahuman independently developed the Ultrahuman Accused Product fails to withstand the slightest unbiased scrutiny. RX-0403C ¶34.

[redacted]

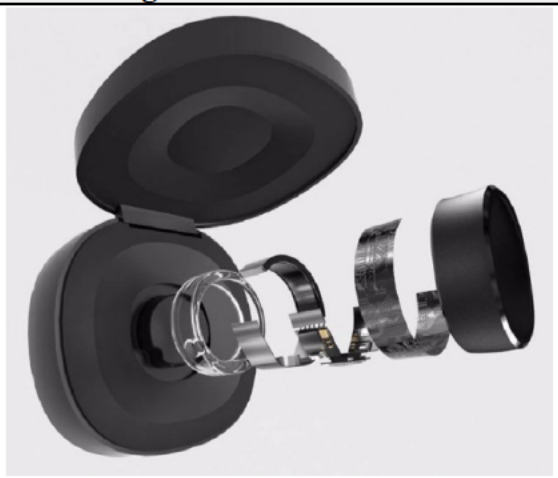
(ii) RingConn Accused Products

The structural design of the RingConn Accused Product is also identical to that of Oura Ring Gen. 3, as the RingConn Accused Product uses [redacted]

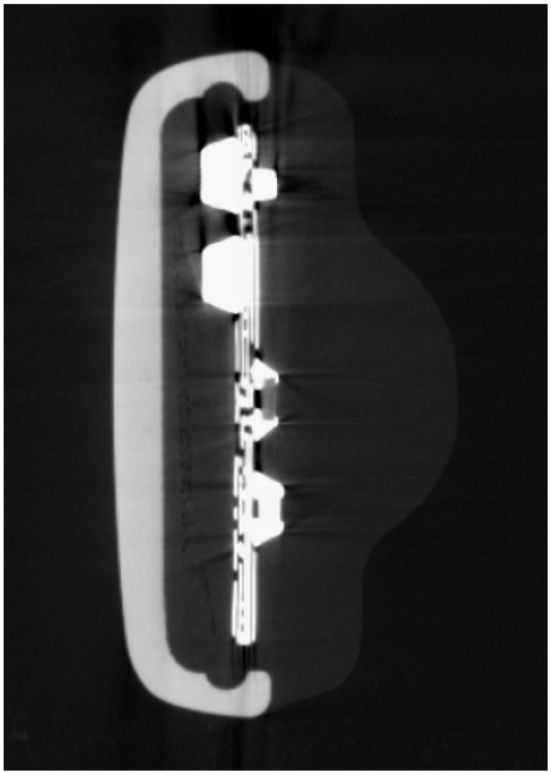
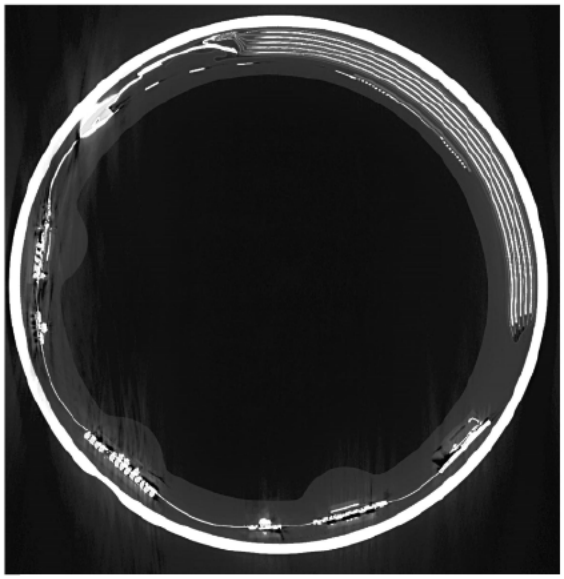
RX-0403C ¶ 35; CX-0647C; CX-0533.

Oura Ring Gen. 3	RingConn Accused Product
 CX-0701	 CX-0843

[redacted]

Oura Ring Gen. 3	RingConn Accused Product
 CX-0040C (0:04-0:05 seconds); CX-0528	 CX-0567
 CX-0174	 CX-0405

[redacted]

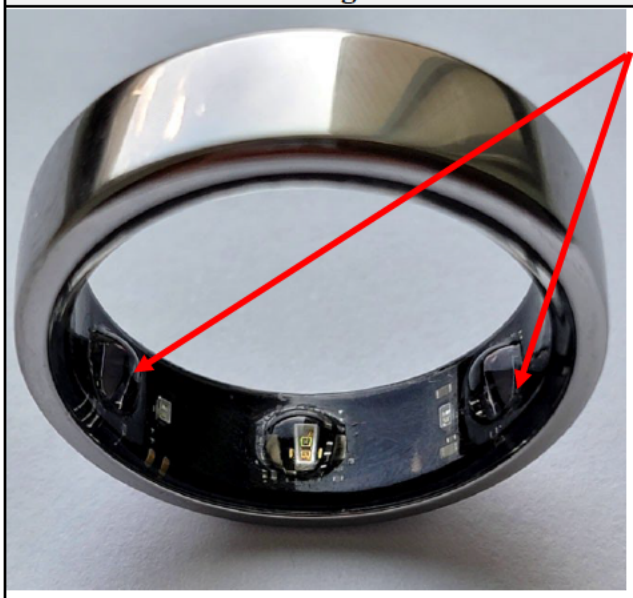
Oura Ring Gen. 3	RingConn Accused Product
 CX-0048	[redacted]
 CX-0046	[redacted] CX-0065

As shown above, [redacted]

[redacted]

as [redacted]

[redacted], as seen below. RX-0403C ¶¶ 36-37.

Oura Ring Gen. 3	RingConn Accused Product
	
CX-0174	CX-0405

RingConn's corporate representative, [redacted]

[redacted] RX-0403C ¶¶ 37-38; CX-0843.

[redacted]

RX-0403C ¶¶ 39-40.

[redacted]

[redacted]

[redacted] RX-0003C ¶ 490; RX-0403C ¶¶ 41.

d. Long-felt but unmet need

The '178 patent resolved a long-felt need. At the time of the invention, wearable electronics available were bulky, not particularly comfortable, distracting (e.g., with screens), and could interfere with a user's daily life. Rosing Rep. ¶¶ 441-442; JX-0001 at 1:39-46. Further, there was a need for compact, wearable monitoring systems that permitted continuous, 24-hour monitoring of health conditions, including tracking sleep. Rosing Rep. ¶¶ 441-442; CX-1122 at 2; CX-1127 at 11; CX-1121 at 274; CX-1123 at 3; CX-0607 at Oura-ITC 0032545.

The Oura Ring has filled both needs, as it has been noted as unobtrusive enough to wear while engaging in daily activities or sleeping, and as an improvement over smartwatches in that it can be worn while sleeping. Rosing Rep. ¶¶ 443-444; CX-0598 at Oura-ITC 0032567; CX-0599 at Oura-ITC 0032577; CX-0600 at Oura-ITC 0032597; CX-0603 at Oura-ITC 0032643.

There were also needs for fashionable and attractive wearables that did not immediately identifying itself as a fitness tracker. *See, e.g.* Rosing Rep. ¶ 445; CX-0594; CX-0600 at Oura-ITC 0032597; CX-0601. Further, there were needs for such devices to have extended battery life that could last beyond 24 hours without charging, and the Oura Ring met this need. Rosing Rep. ¶ 446; CX-0596 at Oura-ITC 0032559; CX-0598 at Oura-ITC 0032572; CX-0600 at Oura-ITC 0032598; CX-0601 at Oura-ITC 0032616.

e. Failure of others

The record will show that many others failed in achieving the results of the '178 patent. Rosing Rep. ¶¶ 455-458. For example, the authors of Asada and the MIT Ring Papers conceptualized the idea of having a PPG sensor, accelerometer, signal processing, and transmission capability within a single ring form factor, but placed these components, by necessity,

[redacted]

on the outside due to power requirements and available battery technology, as seen below:

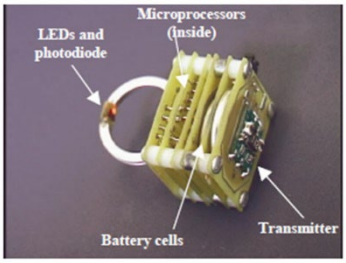


Figure 2: A prototype of the ring sensor

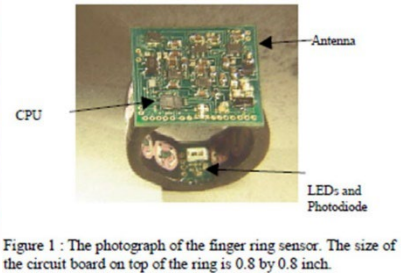


Figure 1 : The photograph of the finger ring sensor. The size of the circuit board on top of the ring is 0.8 by 0.8 inch.



Id.; CX-1122 at 2; CX-1127 at 1; CX-1121 at 274; CX-1123 at 3; *see also,* CX-1133 at ¶[0219].

f. Industry Praise

The invention of the '178 patent has been the subject of extensive praise from others in the industry. Rosing Rep. ¶¶ 450-453; CX-0621. The Oura Ring has been praised in the form of the following awards:

- "Wearable of the Year" in 2022 by Wareable. CX-0618.
- "Best Product" in the Forbes Women Awards 2020. *See* CX-0619 at Oura-ITC 0032949.
- One of "People's Products Worth the Hype in 2021," CX-0623 ("smart (and stylish!) device");
- Women's Health's 2021 Fit Tech Winner; CX-0624 at Oura-ITC 0033189228 ("the sleekest and most beautiful fitness tracker on the market. This minimalist ring—seriously, you'll forget it's even a tracker")
- A GQ Fitness Award 2022. CX-0625 at Oura-ITC 0033268. ("But the thing we came to appreciate most about the Oura is a little simpler: Unlike the competitors that rely on straps and bands—and invariably feel gross after a run on a hot day— the sleek metal of the Ours is a cinch to keep clean.").
- Recipient of "Best Wearable Tech" Award in the 2022 Esquire Gadget Awards; CX-0626 at Oura-ITC 0033362 ("The Oura is easily the most comfortable, advanced and slickest way I've found to track your health.");
- Recipient of a Good Housekeeping's 2023 Fitness Award; CX-0628 ("an easy way to get a better overview of your overall

[redacted]

health and well-being, without wearing a bulky device that needs charging every day.");

- Recipient of a Health Sleep Award 2022; CX-0629 ("At first glance, the Oura Ring looks just like a regular ring. Dr. Porter, who recommends Oura, says he uses it because it's comfortable to sleep with and convenient.")

- Recipient of a 2024 Real Simple Smart Sleep award; CX-0631 ("Even the most stylish sleep trackers still look a bit utilitarian. Oura, however, is pretty! In fact, I received compliments from people who thought it was just a coot ring.")

- Recipient of Self Home Fitness Award, 2022; CX-0612 ("the Oura ring is perhaps the most stylish (and subtle) wearable we've seen.");

- Recipient of a 2023 Men's Health Sleep Award; CX-0632 ("It's all the health and wellness tracking features of a smartwatch *on your finger*.");

- Recipient of a 2023 Merit Award by Digital Health Awards for Personal Digital Health Device / Wearables / Sleep Tracking; CX-0634 at Oura-ITC 0033610;

- Recipient of Holistic Health Tracker award, "The 2024 Good Housekeeping Best Fitness Awards; CX-0617 at Oura-ITC 0033648 ("This discreet smart ring from Oura is now available in six tunning shades and has tiny built-in sensors to track personalized health metrics");

- 2019 MUSE Design award. *See* CX-0615 [Oura-ITC 0032802];

- Silicon Valley UX Award, 2023, "Best Wearable Experience." *See* CX-0616.

Rosing Rep. ¶¶ 450-454.

This praise specifically relates to the design and form factor of the Oura Ring, which are claimed features within the Asserted Claims of the '178 patent. *Id*.

V. DOMESTIC INDUSTRY – ECONOMIC PRONG

A. Oura Satisfies the Economic Prong under Section 337(a)(3)(A) and (B)

1. Oura's DI Activities

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[redacted]

Oura engages in a variety of activities and investments within the U.S. in support of its DI Product, has significant U.S. investments in plant, equipment, labor, and capital associated with Oura's research and development ("R&D") and technical support activities in support of the DI Product. RX-0412C ¶¶ 4-5, 60-108. In fact, the Oura Ring (with its application) is Oura's *only* product, all of the company's investments are in support of the DI Product, and all of Oura's revenues are related to the DI Product. *Id.* ¶ 60.

A domestic industry exists with respect to the Asserted Patent under subsections (A) and (B) through Oura's activities and U.S. investments related to the DI Product. Respondents have no expert to rebut Oura's domestic industry.

a. R&D

The core functionalities of Oura's R&D efforts are based in the U.S. *Id.* ¶¶ 61-67; CX-0731C; CX-0506C. The R&D team is responsible for building new capabilities and improving existing capabilities of the DI Product, as well as continuously improving the customer experience. RX-0412C ¶¶ 61-67. All R&D activities at Oura relate to the DI Products. *Id.*

Oura's R&D function is supported by the following departments: [redacted] More specifically, the employees' activities in these departments include the following:

- [redacted]

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[redacted]

[redacted]. *Id.*; CX-0731C.

- [redacted] *Id.*; CX-0731C.
- [redacted] *Id.*; CX-0731C.
- [redacted] RX-0412C ¶¶ 61-67. [redacted]
- [redacted] *Id.* ¶¶ 61-67; CX-0731C.

[redacted]

- [redacted] *Id.*; CX-0731C.
- [redacted] *Id.*; CX-0731C.
- [redacted] *Id.*
- [redacted] *Id.*; CX-0731C.
- [redacted]

[redacted]

[redacted] *Id.*; CX-0731C.

- [redacted] *Id.*; CX-0731C.
- [redacted] RX-0412C ¶¶ 61-67; CX-0731C.
- [redacted] *Id.*; CX-0731C.
- [redacted]

[redacted]

Id.; CX-0731C.

- [redacted] *Id*.; CX-0731C.
- [redacted] *Id*.; CX-0731C.

Through its R&D efforts and investments, Oura's U.S. R&D personnel are actively involved in the development of new features for the Oura Ring and Oura Application. *Id.* ¶¶ 61-67; CX-0891.These R&D personnel support both existing and future products and are continuously developing and innovating. RX-0412C ¶¶ 61-67. Through continuous R&D, Oura will develop and refine its products. *Id*.

Example features that have been developed or are currently under development include [redacted] *Id*. ¶ 64.

In 2024 alone, Oura has launched [redacted]

[redacted]

[redacted] *Id.*; CX-0890; CX-0892; CX-0885.

[redacted] RX-0412C ¶ 64-66.

Oura has recently launched the fourth generation of the Oura Ring. The fourth-generation Oura Ring introduces new software features, including proactive health monitoring and improved health sensors for sleep monitoring, heart rate, activity, and more.

b. Technical Support

Oura also has employees in the U.S. in the "Member Experience" (also known as "MX") department who "work with customers to address their technical questions. CX-0805C at Resp. No. 38. Specifically, MX employees address customer issues and questions about the Oura Membership and Oura Application.

In the U.S. since FY 2022, Oura's technical support function is supported by the following departments, collectively referred to as [redacted] RX-0412C ¶ 69; CX-0506C.

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[redacted]

More specifically, the employees' activities in these departments include the following:

- [redacted] RX-0412C ¶ 69; CX-0826; CX-0891. As of April 30, 2024, Oura employed [redacted] individuals in this department in the U.S. RX-0412C; CX-0731C.
- [redacted]

Id.

2. U.S. Investment in Plant and Equipment

a. Plant

(i) Overall Investments

Oura maintains facilities in several locations in the U.S. in which some employees are based, including R&D employees.

Specifically, in San Francisco, Oura leases a facility of approximately [redacted] square feet that, as of April 2024, is home to [redacted] employees working in operations, sales and marketing, R&D, business operations, technical support, leadership, and administrative activities. RX-0412C ¶ 70; CX-0733C; CX-0791C at Oura-ITC 0031950. In San Diego, Oura leases a facility of approximately [redacted] square feet that, as of April 2024, houses a total of [redacted] employees engaged in R&D, operations, sales and marketing, technical support, and administrative activities. RX-

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[redacted]

0412C ¶ 70; CX-0732C; CX-0769C at Oura-ITC 0031490. Additionally, Oura also maintains coworking spaces in Boston and New York for their remote employees in those locations. RX-0412C ¶ 70; CX-0506C.

Oura has made considerable investments in its U.S.-based facilities in support of the DI Product. Specifically, between Q2 FY 2022 and Q2 FY 2024, Oura invested [redacted] in U.S. facilities-related investments (*i.e.,* rent, utilities, and common area maintenance) to San Diego and San Francisco, respectively. RX-0412C ¶ 71; CX-0727C; CX-0574C.

(ii) Allocation to DI Activities

In the detailed data regarding the number of U.S. employees by department for FY 2022, FY 2023, and FY 2024, all departments with a numerical code starting with a [redacted] are appropriately considered R&D departments. RX-0412C ¶¶ 72-73; CX-0731C; CX-0506C. Similarly, department codes [redacted] relate to Oura's member experience ("MX") or technical support activities. The estimated cost of the of the San Diego and San Francisco facilities independently, of employees in the R&D and technical support functions to the total number of employees based at each facility. *Id*. ¶¶ 72-73; CX-0728C; CX-0574C; CX-506C.

(a) R&D

Specifically, at the San Diego facility, total headcount between FY 2022 and FY 2024 ranged from [redacted], of which a range of [redacted] percent to [redacted] percent were dedicated to R&D activities. *Id*. ¶ 74; CX-0732C; CX-506C. The San Francisco facility, with a total headcount between FY 2022 and FY 2024 ranging from [redacted], of which a range of [redacted] percent to [redacted] percent were dedicated to R&D activities. *Id*. ¶ 74; CX-0733C; CX-506C. Approximately [redacted] in Oura's U.S. facilities investments associated with R&D activities over the period FY 2022 to Q2 FY 2024. *Id*. ¶ 74; CX-0728C; CX-0574C; CX-506C.

[redacted]

(b) Technical Support

Of the total headcount between FY 2022 and FY 2024 at the San Diego facility, [redacted] percent were dedicated to technical support activities. *Id*. ¶ 75; CX-0732C; CX-506C. Of the total headcount between FY 2022 and Q2 FY 2024 at the San Francisco facility, [redacted] percent were dedicated to technical support activities *Id*. ¶ 75; CX-0733C; CX-506C. Approximately [redacted] in Oura's U.S. facilities investments associated with technical support activities. RX-0412C ¶ 75; CX-0506C at tabs Copy of HC global Dec 31 2021, Copy of HC global Dec 31 2022, and Global HC April 30 2024.

b. Equipment

In addition to facilities, Oura invests in equipment to support its U.S.-based R&D and technical support activities related to the DI Product. For non-capitalized equipment and software, such expenses are tracked by department. RX-0412C ¶ 76; CX-0505C. In addition, Oura invests in other R&D materials used, for example, in the development of prototypes, which are also tracked by department. RX-0412C ¶ 76; CX-0729C; CX-0505C.

(i) R&D

Oura's R&D equipment investments in the U.S. are: [redacted] related to non- capitalized equipment; [redacted] related to software, and [redacted] in other R&D materials expenses, or a total of [redacted] from Q2 FY 2022 through Q2 FY 2024. *Id*. ¶ 77; CX-0729C; CX-0505C [Oura-ITC 0032052].

(ii) Technical Support

Oura's technical support investments in the U.S. are: [redacted] in non-capitalized equipment and [redacted] in software, or a total of [redacted] from Q2 FY 2022 through Q2 FY 2024.[2] *Id*. ¶ 78; CX-0729C; CX-0505C.

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[redacted]

c. Summary of Plant and Equipment Investments

Over the period FY 2022 and Q2 FY 2024, Oura's U.S. investments in plant and equipment allocable to DI Activities total [redacted] as shown below: *Id.* ¶ 79; CX-0730C ; CX-0574C; CX-506C; CX-0505C.

[redacted]

3. U.S. Investment in Labor and Capital

a. Labor

(i) Overall Investments

Oura employed [redacted] individuals in the U.S. *Id.* ¶ 80; CX-0731C; CX-0506C. Oura's total compensation for all U.S. employees supporting the DI Product totaled [redacted] *Id.* ¶ 80; CX-0734C-CX-0736C; CX-0575C; CX-0576C.

(ii) Investments in DI Activities

Oura employed a total of [redacted] and [redacted] individuals in the U.S. responsible for R&D and technical support DI activities, respectively. *Id.* ¶ 81; CX-0731C and CX-0736C; CX-0506C; CX-0575C; CX-0576C. As discussed below, Oura's investments in each of the DI activities can be identified based on this labor investment data by department. *Id.* ¶ 81; CX-0736C; CX-0575C; CX-0576C.

(a) R&D

Oura employs a total of [redacted] personnel in R&D activities in the U.S. as of April 30, 2024. *Id.* ¶ 82; CX-0731C; CX-0506C. This total includes individuals in the following departments: [redacted]

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[redacted] The DI Product is Oura's only product; therefore, all of Oura's U.S. investments in R&D labor are allocable to the DI Product.

(b) Technical Support

As previously mentioned, Oura employs a total of [redacted] personnel in technical support activities in the U.S. as of April 30, 2024. *Id*. ¶ 83; CX-0731C; CX-0506C. The [redacted] personnel include individuals in the following departments: [redacted] Because the DI Product is Oura's only product, all of Oura's U.S. investments in technical support labor are allocable to the DI Product.

b. Capital

(i) Third-Party Study Investments

Oura has engaged in a number of studies with third parties as part of their R&D activities supporting the DI Product in the U.S. Specifically, Oura conducts and publishes scientific studies it has conducted with experts on topics such as sleep, heart health, and reproductive health, among others. *Id.* ¶ 84; CX-0643; CX-0925. These include payments made to a variety of universities,

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[redacted]

medical facilities, and other consultants, including the [redacted]. RX-0412C ¶ 84; CX-0738C; CX-0515C. Overall, between FY 2022 and Q2 FY 2024, Oura's investments in these third-party vendors supporting scientific studies total approximately [redacted]. *Id.*

(ii) Medical Advisory Board

As previously discussed, Oura also has an external interdisciplinary science team, referred to as the Medical Advisory Board (MAB), who "contribute their expertise to Oura's content for [its] members, conduct research, and advise in development of features." *Id*. ¶ 85; CX-0925. Between 2022 and July 2024, Oura has invested approximately [redacted] in compensation for the members of its Medical Advisory Board in the form of cash and equity worldwide. *Id*. ¶ 85; CX-0737C. The Medical Advisory Board is not considered in her DI Economic Prong numbers. *Id*. ¶ 85; CX-0811C; CX-0506C. This exclusion is because members of the MAB are responsible for a variety of activities, including those that relate to R&D as well as promotional and marketing activities, and that it cannot be reliably determined what portion of each individual's time that is devoted to science and R&D versus marketing and other social activities. *Id.*

c. Summary of Labor and Capital Investments

In sum, as shown below, Oura's U.S. investments in labor for personnel allocable to DI Activities total approximately [redacted] over the period FY 2022 and Q2 FY 2024, comprised of [redacted] for R&D and [redacted] for technical support. *Id.* ¶ 86; CX-0739C; CX-0515C; CX-0575C; CX-0576C. Moreover, Oura's investments in external third-party R&D services associated total approximately [redacted] over this same period. *Id.*

[redacted]

[redacted]

4. Quantitative and Qualitative Significance of Oura's Activities and Investments

Oura's investments in its DI Products are qualitatively and quantitatively significant, as discussed below. RX-0412C ¶¶ 87-108.

a. Qualitative Significance

(i) R&D

Because the majority of the DI Product sales are associated with U.S. consumers, Oura's U.S. R&D activities are critical to Oura's ability to meet the needs of the U.S. marketplace. *Id.* ¶ 89. Further, Oura has greater access to top scientific and medical research institutions in the U.S. and the majority of Oura's research operations and collaboration with research partners are conducted in the U.S. *Id.* Similarly, the majority of activities surrounding the development of new algorithms and health sensing capabilities occur in the U.S. *Id.*

Oura's development efforts associated with the Oura Ring resulted in the creation of a new market segment within the fitness tracker device marketplace. For example, CNBC credited Oura as one of key creators of the smart ring market segment, with one publication attributing Oura as "one of the market pioneers." RX-0412C ¶ 90; CX-0583. Although there have been new entrants into the smart ring market segment, Oura has "long been synonymous with 'smart ring.'" CX-0591. According to Athletech News, which provides media coverage on the fitness and wellness sector, "[f]or years, entering the space proved difficult for many potential competitors [to Oura]

[redacted]

due to the technological challenges of creating small and stylish enough hardware components for heart rate and blood oxygen tracking." RX-0412C ¶ 90; CX-0869; CX-0870. These reviews from third- parties and technology experts demonstrate Oura is considered as a "smart ring industry mainstay," the "best smart ring" in the industry, and the "smart ring market leader." RX-0412C ¶ 90; CX-0584; CX-0585. See also, CX-0591.

Since its launch, Oura's continued R&D investments have resulted in numerous awards in the marketplace for both design and function.

For example, in 2018, Oura received the Red Dot award for its design, which is "established internationally as one of the most sought-after seals of quality for good design." RX-0412C ¶ 90; CX-0621. More recently, in 2023, Oura received the Silicon Valley UX Award for the Oura Ring's "exceptional user experience in wearable technology." RX-0412C ¶ 90; CX-0616. As part of this award, the Oura Ring was commended for how it has "redefined the user experience within the realm of wearables. Its elegant design, personalized insights, and innovative features align perfectly with the evolving demands of health-conscious individuals seeking a holistic approach to well-being." RX-0412C ¶ 90; CX-0616. Similarly, for its contributions to health and fitness, the Oura Ring has received awards from Health website as a "top-tier product" RX-0412C ¶ 90; CX-0636; CX-0883. Oura further was described by the Good Housekeeping Institute Wellness Lab as one of the "best home fitness equipment and wellness wonders for all lifestyles and fitness levels." RX-0412C ¶ 90; CX-0628.

(ii) Technical Support

Although Oura also uses third-party providers of customer support services based outside the U.S. to support the Oura Ring user experience, Oura's investments in U.S. technical support activities are significant in the context of its worldwide activities from a qualitative perspective.

Although basic user support questions (*i.e.*, Tier 1 or Tier 2 level customer support) are

[redacted]

typically addressed by third-party contractors outside of the U.S., more complex technical support questions are handled by Oura U.S. personnel.

Moreover, as described in section IV.C.8.b, from FY 2022 through Q2 FY 2024 approximately [redacted] of the DI Product sales were based in the U.S. RX-0412C ¶ 94; CX-0723C; CX-0581C. The large portion of DI Product sales in the U.S. means that U.S. investments in technical support play an important role in ensuring a positive user experience with the Oura Ring and corresponding Oura Application. Given that most of Oura's customer base is in the U.S., having domestic technical support in U.S. time zones and the ability to communicate effectively regarding technical issues is critical to Oura's ability to respond to requests and address concerns in a timely manner.

Oura's U.S. technical support personnel play an important role in providing Oura's customers with the company's desired exemplary level of customer service. *Id.* ¶ 94.

b. Quantitative Significance

Oura's U.S. investments in the DI Product are significant from a quantitative perspective based on a variety of metrics as described further below.

As a preliminary matter, as explained above, the DI Product is Oura's only product; thus, the Oura Ring and associated revenue represents 100 percent of Oura's worldwide sales. *Id.* ¶ 96; CX-0720C; CX-0573C. Moreover, as explained in section IV.C.8.b, the U.S. [redacted] representing approximately [redacted] of Oura's total sales between FY 2022 and Q2 FY 2024. *Id.* ¶ 96; CX-0723C; CX-0581C.

Furthermore, a significant share of Oura's overall workforce is based in the U.S. Altogether, as of FY 2024, [redacted] worldwide employees, or [redacted], are based in the U.S. (either at one of the two facilities in California or working remotely). RX-0412C ¶ 97; CX-0746C; CX-0506C; CX-0573C; CX-0575C; CX-0576C. In terms of compensation, from FY

[redacted]

2022 through Q2 FY 2024, approximately [redacted] of Oura's total labor investments in the form of salary, bonuses, and benefits are associated with Oura's employees based in the U.S. *Id.*

(i) R&D

There are several quantitative comparisons that indicate that Oura's claimed U.S. investments in R&D are significant in the context of its worldwide investments, accounting for approximately [redacted] of its overall U.S. labor investments (across all activities) over this same period, thereby confirming the importance of the R&D function within Oura's U.S. operations. RX-0412C ¶ 99; CX-0736C; CX-0575C; CX-0576C.

(a) Plant and Equipment Investments

Oura's U.S. R&D investments in plant and equipment, as a share of worldwide plant and equipment investments, is significant. Together, U.S. R&D plant and equipment investments are [redacted] of Oura's worldwide R&D plant and equipment investments. RX-0412C ¶ 100; CX-0744C; CX-0574C; CX-0506C; CX-0819C; CX-0820C; CX-0505C. More specifically, the U.S. plant investments allocated to the R&D function represent [redacted] of the analogous worldwide plant investments between Q2 FY 2022 and Q2 FY 2024. *Id.* U.S. R&D equipment investments constituted approximately [redacted] of those made worldwide during this period. *Id.*

(b) Labor and Capital

A significant share of Oura personnel responsible for the R&D of the DI Product are based in the U.S., thereby confirming the importance of Oura's U.S. R&D activities in the context of its worldwide R&D activities. On a headcount basis, as of FY 2024, [redacted] of Oura's R&D employees are based in the U.S., up from [redacted] in FY 2022. RX-0412C ¶ 101; CX-0747C; CX-0506C.

Similarly, Oura's U.S. investments in R&D labor are significant in the context of worldwide investments in such activities. Specifically, between FY 2022 and Q2 FY 2024, the

[redacted]

U.S. labor investments allocated to the DI Product are [redacted] of the analogous worldwide total. RX-0412C ¶ 102; CX-0751C; CX-0575C; CX-0576C; CX-0800C.

Furthermore, Oura has engaged in a number of studies with third parties as part of their R&D activities supporting the DI Product both in the U.S. and outside the U.S. As discussed in section V.A.3.b, those investments in the U.S. total approximately [redacted]. RX-0412C ¶ 103; CX-0755C; CX-0515C. Worldwide, those investments from FY 2022 to Q2 FY 2024 total [redacted]. *Id.* Thus, Oura's U.S.-based investments in third-party R&D activities are approximately [redacted] of the worldwide total. *Id.*

(ii) Technical Support

There are several quantitative indicators that Oura's U.S. technical support investments are significant in the context of its worldwide technical support activities.

(a) Plant and Equipment Investments

Oura's U.S. technical support investments in plant as a share of worldwide plant investments in those same departments is significant. Together, U.S. technical support plant and equipment investments are [redacted] of Oura's worldwide technical support plant and equipment investments. RX-0412C ¶ 105; CX-0744C; CX-0574C; CX-0506C; CX-0819C; CX-0820C; CX-0505C. More specifically, U.S. plant investments allocated to the technical support function represent [redacted] of the analogous worldwide plant investments between Q2 FY 2022 and Q2 FY 2024. *Id.* Between Q2 FY 2022 and Q2 FY 2024, technical support equipment investments made in the U.S. constituted approximately [redacted] of those made worldwide during this period. *Id.*

(b) Labor

On a headcount basis, a significant share of Oura personnel responsible for the technical support of the DI Product are based in the U.S. As of FY 2024, for employees identified in

[redacted]

departments supporting Oura's technical support function, [redacted] of technical support employees are based in the U.S. *Id*. ¶ 106; CX-0747C; CX-0506C. Similarly, Oura's U.S. investments in technical support labor are significant in the context of worldwide investments in such activities. Specifically, the U.S. labor investments allocated to the DI Product are [redacted] of the analogous worldwide total between FY 2022 and Q2 FY 2024. *Id*. ¶ 107; CX-0751C; CX-0575C; CX-0576C; CX-0800C.

In addition to its in-house technical support personnel, Oura also relies on third- party providers of customer support services. *Id*. ¶ 108; CX-0747C; CX-0506C. These third-party providers are primarily based outside of the U.S., including in the Philippines. From Q2 FY 2022 to Q2 FY 2024, Oura invested a total of approximately [redacted] in these O.U.S. third-party providers. *Id*.¶ 108; CX-0752C. Considering the third-party investment, the U.S.-based technical support labor investments represent [redacted] of Oura's worldwide technical support labor and capital investment total. *Id*. ¶ 108; CX-0753C

VI. REMEDY AND BONDING

The appropriate remedies in this investigation are a limited exclusion order against each Respondent, a cease-and-desist order against each Respondent, and the imposition of a bond. [redacted] There is no basis for any exemptions, carveouts, or delays in these remedial orders. Mulhern Supplemental Exhibit 43.

A. Limited Exclusion Order ("LEO")

The economic factors support the issuance of a limited exclusion order, as explained in Section VII below.

There are a number of alternatives available to U.S. consumers in the event of a remedy,

[redacted]

including not only the Oura Ring, but also other smart rings and more generally, other fitness tracking devices. *See, e.g.*; CX-0523C at tab 'Total,'; CX-0881; CX-0882. The availability of these products suggests that the proposed remedy would not have a material adverse impact on U.S. consumers or competitive conditions in the U.S. marketplace.

B. Cease & Desist Orders Are Warranted

1. Ultrahuman

[redacted]

2. RingConn

[redacted]

[redacted]

C. A Bond is Warranted

1. Nature of Competition

There is direct competition between Complainants' DI Product and Respondents' Accused Products. As a result, the evidence suggests that there is a likelihood of injury to Complainants in the form of displaced sales and/or price undercutting during the PRP.

[redacted] RX-0412C ¶ 118; CX-1387C at 22, 89; CX-1386C at 12, 39-40; *See also,* CX-0933C at UH-ITC 060069.

[redacted]

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[redacted]

[redacted]

[redacted].

Furthermore, third-party reviewers and technology experts have recognized and described the Complainants' DI Product and the Respondents' Accused Products as direct competitors. For example, WIRED, a magazine about emerging technologies, wrote in its review of the Ultrahuman Ring AIR: "Clearly positioned as a competitor for the third-generation Oura, the Ultrahuman Ring Air is technically very similar. It can track your sleep, recovery, and movement to offer insights and tips via an app on your smartphone." RX-0412C ¶ 120; CX-0867. As further evidence, Tom's Guide, a source for technology reviews, directly compared the Oura Ring and Ultrahuman Ring AIR along several dimensions including price, distribution availability, design and fit, health and fitness tracking, sleep tracking, battery life, and their respective corresponding mobile applications. RX-0412C ¶ 120; CX-0866; CX-0922.

Industry coverage has similarly compared RingConn and Oura as competitors. As one example, in its review of the RingConn Smart Ring, WIRED noted: "Right now, the RingConn Ring is the most affordable option with a broadly similar feature set to the Oura." RX-0412C ¶ 121; CX-0859. Further, Digital Trends, a provider of technology news, described the RingConn Smart Ring as a "challenger" to the Oura Ring. RX-0412C ¶ 121; CX-0864; CX-0851. Digital Trends added that the RingConn Smart Ring is "the same basic concept as the Oura Ring, but there are some key differences. The RingConn Smart Ring is not only cheaper, but it also doesn't have a monthly subscription attached to it, making it more financially tempting." RX-0412C ¶ 121; CX-0851. Digital Trends further compared the Oura Ring and RingConn Smart Ring along several attributes, including comfort, sleep tracking, fitness tracking, battery life, and price. RX-0412C ¶ 121; CX-0851 .

[redacted]

In addition to these individual comparisons, ZDNet, a global technology news site, featured the Oura Ring, Ultrahuman Ring AIR, and RingConn Smart Ring in its list of the best smart rings. RX-0412C ¶ 122; CX-0861 . In that list, ZDNet named the Oura Ring as the "[b]est smart ring overall," but described the Ultrahuman Ring AIR as the "[b]est subscription-free smart ring" and the RingConn Smart Ring as the "[b]est Oura Ring alternative." RX-0412C ¶ 122; CX-0571 .

[redacted]

RX-0412C ¶ 123; CX-0850.

2. Price Differential

There is systematic price undercutting of the Oura Ring and Application by the Respondents' Accused Products, based on average pricing data provided by the parties. This price undercutting becomes even more pronounced when taking into account the different business models of the Complainant and Respondents.

Specifically, although the Oura Ring, Ultrahuman Ring R1, Ultrahuman Ring AIR, and RingConn Smart Ring all function in conjunction with an application that displays the data and insights retrieved by the smart ring, only the Accused Products include full access to this application and data as part of the purchase price of the ring. RX-0412C ¶ 126; CX-1386C at 72; CX-0545; CX-0703; CX-0915. Oura requires an additional monthly payment for an Oura Membership for access to all the functionality, which provides access to a member's data as well

[redacted]

as insights and recommendations on the Oura Application. RX-0412C ¶ 126; CX-0572. Without the Oura Membership, users are unable to access insights based on data collected from the Oura Ring through the Oura Application or certain features such as women's health tracking. RX-0412C ¶ 126; CX-0572. Because the Oura Membership is "the only way to unlock access to all of your daily health insights," the Oura Membership is important for the product to operate and for users to get the full benefits of the Oura Ring. RX-0412C ¶ 126; CX-0572.

The subscription – or lack thereof – is a competitive differentiator in the marketplace. For example, Digital Trends described the RingConn Smart Ring as being not only less expensive than the Oura Ring, "but it also doesn't have a monthly subscription attached to it, making it more financially tempting." RX-0412C ¶ 127; CX-0851.

Similarly, ZDNet described the Ultrahuman Ring AIR as the "[b]est subscription-free smart ring." RX-0412C ¶ 127; CX-0880. Consistent with this, a 2024 Ultrahuman presentation analyzing competing product offerings differentiated products based on whether they required a "mandatory subscription" and included price comparisons based on "3 year cost of ownership", including both the cost of the device and subscription fees where applicable. RX-0412C ¶ 127; CX-0933C at UH-ITC 060069.

In conducting a price differential analysis for the DI Product and the Accused Products, the relative price of the ring devices, as well as a price comparison based on the total cost of ownership, which for the Oura Ring includes the cost of the Oura Membership. To calculate the impact of the Oura Membership fee on the overall price of the DI Product, it is notable that more than half of Oura consumers remain subscribers to the Oura Membership after three years. RX-0412C ¶ 128; CX-0724C; CX-0581C. [redacted]

[redacted]

[redacted]

[redacted] *Id*. ¶ 128; CX-0933C at UH-ITC 060069. The cost of the Oura Membership is either $5.99 per month or $69.99 per year. RX-0412C ¶ 128; CX-0572. Accounting for the average subscription length and the less-expensive annual cost option, the effective price of Oura Membership is approximately [redacted]. RX-0412C ¶ 128; CX-0760C at CX-0760C.00001; CX-1146; and CX-0760C at CX-0760C.00002 with Gen4 pricing.

a. Average Selling Prices

Based on the sales data produced by the parties, the calculated the average selling price ("ASP") of the Oura Ring, Ultrahuman Ring AIR, and RingConn Smart Ring and that the ASPs of the Accused products are consistently lower than the DI Product. *Id*. ¶ 130; CX-0762C; CX-0581C. [redacted]

These comparisons, however, understate the true amount of price undercutting as they fail to account for the cost of the Oura Membership, estimated at an additional [redacted] per user. Inclusion of these fees results in an overall cost of ownership of the Oura ring of approximately [redacted]. *Id*. ¶ 131; CX-0762C. [redacted]

b. Public Retail Prices

Given that the DI Product and Accused Products are sold through a variety of distribution channels, including through distributors as well as direct-to-consumers, an analysis of ASPs could

potentially be affected by differences in the proportion of total sales made through these different channels. *Id*. ¶ 132; CX-0762C; CX-1386C at 60-61; CX-1387C at 29-30, 47. Each of the parties sells their products through their respective online stores and their online storefronts on Amazon. RX-0412C ¶ 132; CX-0559; CX-0545; CX-0703; CX-0887; CX-0889; CX-0888.

This evidence shows substantial price undercutting both when comparing the rings alone as well as taking into consideration the effective cost of the Oura membership.

Depending on the model, size, and finish of the Oura Ring, the price of the Oura Ring on Oura's website ranges from $299 to $549. RX-0412C ¶ 133; CX-0760C-CX-0761C; *see also* CX-0760C at CX-0760C.0002. For example, the Oura Ring in the Heritage style with a silver finish is priced at $299, and the Oura Ring in the Horizon style with rose gold finish is priced at $549. RX-0412C ¶ 133; CX-0559; CX-0901. In contrast, there is only a single price for the Ultrahuman Ring AIR on its website, of $349, regardless of finish. RX-0412C ¶ 133; CX-0760C-CX-0761C; CX-0816C at Resp. No. 4; and CX-0760C at CX-0760C.0002. Similarly, there is only a single price for the RingConn Smart Ring on RingConn's website, of $279. RX-0412C ¶ 133; CX-0760C-CX-0761C; CX-0792C at Resp. No. 7; and CX-0760C.0002. Further, Ms. Mulhern will explain there is some evidence of discounting of the Accused Products. For example, on July 8, 2024, RingConn offered a $50 discount such that the RingConn Smart Ring was priced at $229. RX-0412C ¶ 133; CX-0703. Similarly, Ultrahuman offers discounts ranging from $25 to $85 if a user trades in certain models of Oura Ring or Ultrahuman R1 or Ring AIR. RX-0412C ¶ 133; CX-0545.

Even setting aside these discounts and ignoring the cost of the Oura Membership, these data suggest that Respondents' Accused Products are generally priced lower than the Oura Ring, although the Ultrahuman Ring can be priced higher, depending on the specific finish of the Oura Ring. RX-0412C ¶ 134; CX-0760C; CX-0559; CX-0901. Ms. Mulhern will further testify and

[redacted]

explain that a comparison of the ring prices alone suggests a price differential between the [redacted] *Id.*

Taking into account the total cost of ownership, which for the Accused Products is the same, but for the Oura Ring requires consideration of the additional fees associated with the Oura Membership, the range of price differentials for the DI Product relative to the Ultrahuman Accused Product [redacted] RX-0412C ¶ 135; CX-0760C-CX-0761C. Similarly, for the DI Product relative to the RingConn Accused Product, the [redacted]. *Id.* Ms. Mulhern also updated her calculations in Updated Ex. 43 after the launch of the Gen 4 Oura Ring and the Gen 2 RingConn ring:

[redacted]

RX-0412C; CX-0760C at CX-0760C.00002.

3. Summary

The above detailed comparison suggests a range of price differentials for the DI Product

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[redacted]

VII. PUBLIC INTEREST

A. U.S. Customers and Competitive Conditions

There are a number of alternatives available to U.S. consumers in the event of a LEO remedy, including not only the Oura Ring, but also other smart rings and more generally, other fitness tracking devices. The availability of these products suggests that the proposed remedy would not have a material adverse impact on U.S. consumers or competitive conditions in the U.S. marketplace.

1. Alternatives Provided by Oura

As noted previously, there is direct competition between the DI Product and the Accused Products. The Oura Ring would be an alternative product available to U.S. consumers in the event of the requested remedy. Further, Oura has sufficient capacity to enable it to satisfy any increase in demand resulting from an exclusion order in this Investigation, as described further below.

The sales data produced by the parties indicates that sales of the Accused Products by both Respondents together account for only a fraction of Oura's sales of the DI Product. More specifically, for the six months ending May 2024, Ultrahuman's sales of the Accused Products totaled [redacted] and for the six months ending June 2024, RingConn's Accused Product sales totaled [redacted], and together they total approximately [redacted] units. *Id.* ¶ 145; CX-0763C; CX-0581C; CX-0028C; CX-0773C. Over the most recent six-month period for which Oura sales data were

[redacted]

available (Q1 through Q2 FY 2024), Oura's U.S. sales total [redacted] units, or more than 18 times the combined sales of Ultrahuman and RingConn Accused Products. *Id.* The gulf in sales numbers clearly show Oura has the manufacturing capacity to replace RingConn and Ultrahuman's Accused Products.

Oura currently has "[redacted]" and is continuing to build and add to its capacity levels. *Id.* ¶ 146. Oura currently works with [redacted]. *Id.*; CX-0806C at Resp. No. 17. [redacted]. RX-0412C ¶ 146; CX-0764C. [redacted]. *Id.* By scaling the U.S. capacity against the global number, the U.S. capacity is approximately [redacted] third-generation Oura Rings each month out of the worldwide capacity of [redacted], or approximately [redacted] third-generation Oura Rings each year. *Id.* This manufacturing capacity is [redacted] the current U.S. sales of the Oura Ring, and [redacted] the cumulative sales of the Ultrahuman and RingConn Accused Products. *Id.* ¶ 146; CX-0723C; CX-0725C, and CX-0764C.

Moreover, Oura has increased its production capabilities with the launch of the fourth-generation Oura Ring by adding a third manufacturing facility. *Id.* ¶ 147. Specifically, Oura brought its Mexico facility online in the second half of 2024 to manufacture the next generation of the Oura Ring. RX-0412C ¶ 147; CX-0806C at Resp. No. 17. Oura's manufacturer [redacted] or

[redacted] Oura has the option to further increase capacity for its fourth-generation Oura Rings to [redacted]. RX-0412C ¶ 147; CX-0806C at Resp. No. 28.

To the extent Respondents argue Oura has capacity constraints that would undermine its ability to satisfy demand in the even an exclusion order issues, because "[a]s of at least March 2024, Oura was unable to meet demand for its own product, despite allegedly having significant quantities of inventory," those "delays" were an isolated incident in which Oura experienced an unexpected increase in demand of selected Oura Ring sizes. RX-0412C ¶ 148. Specifically, in March 2024, Oura launched Pregnancy Insights, which supports women throughout their pregnancy with guidance and education. *Id.*; CX-0886. *See also,* CX-0885. The introduction of this feature resulted in a sudden increase in demand of smaller ring sizes and Oura experienced temporary [redacted]

Production was shifted quickly to manufacture [redacted] compensate for the unexpected demand and [redacted] of orders were filled within [redacted]. *Id.* More generally, the media coverage of potential an Oura Ring shortage can be misleading as it focused inappropriately on a particular size or finish and fail to account for inventory available at one of Oura's distributors such as Amazon on or Best Buy. *Id.*

2. Third-Party Alternative Smart Rings

There are several other suppliers of smart rings, other than Oura, RingConn, and Ultrahuman, available in the U.S. marketplace that similarly would provide U.S. consumers with alternatives in the event a remedy issues. These include the recent launch of the first smart ring from one of the world's largest consumer electronics companies, Samsung. *Id.* ¶ 150.

[redacted]

In July 2024, Samsung entered the smart ring marketplace with its launch of the Galaxy Ring. *Id.*; CX-0583. The Galaxy Ring is a "lightweight ring equipped with sensors designed for health monitoring 24 hours a day." *Id.* Specifically, the Galaxy Ring is equipped with three sensors, allowing the ring to monitor different health and fitness capabilities including sleep, menstrual cycle, heart rate, and exercise. *Id.*; CX-0879. Similar to the products-at-issue in this Investigation, The Galaxy Ring records health data and communicates information to the user through the Samsung Health application. RX-0412C ¶ 150; CX-0876; CX-0879. The Samsung Health application offers a dashboard whereby the user can track performance including through an Energy Score and a Sleep Score. RX-0412C ¶ 150; CX-0879. The Galaxy Ring is available for purchase at $399.99 with no additional subscription fee for the Samsung Health application. RX-0412C ¶ 150; CX-0919; CX-0879.

Industry experts predict that Samsung "will be able to establish the smart ring market on a larger scale than other competitors." RX-0412C ¶ 151; CX-0583. Samsung is has "global reach and significant marketing budget which will raise awareness of a new product category that most consumers will not have even heard of." *Id*. Further, an analyst at IDC explained that with the introduction of the Galaxy Ring, Samsung "helps expand the wearables portfolio and opens the door to new services in the future[.]" *Id*. Since its release of the Galaxy Ring, Samsung has experienced unexpected demand and has told its suppliers to increase production by 150 percent due to "huge consumer interest." RX-0412C ¶ 151; CX-0902. Based on consumer demand for pre-orders of the Galaxy Ring, Samsung announced it would expand capacity to more than 600,000 units in the remainder of 2024. *Id*. This evidence suggests that Samsung *alone* would have sufficient capacity to cover any increase in demand for smart rings following the issuance of a remedy in this Investigation.

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[redacted]

In addition to the Galaxy Ring, numerous third parties also offer alternative smart rings that also would be available in the event of an exclusion order. This includes, for example, Circular, a Respondent in this Investigation prior to reaching a settlement and license agreement with Oura. RX-0412C ¶ 152; Initial Determination Granting Joint Motion for Partial Termination of the Investigation as to Circular SAS Based Settlement and Limiting Service, July 9, 2024 (Order No. 12).

Circular describes the Circular Ring as being the "slimmest and most powerful tracker." RX-0412C ¶ 152; CX-0985. Others consider Circular one of the "best smart rings[,]" and identify a number of alternative rings including the Amazfit Helop Ring and Evie Ring. RX-0412C ¶ 152; CX-0571; CX-0877; CX-0878.

3. Third-Party Alternative Fitness Trackers

In addition to smart rings offered by Oura and alternative suppliers, smartwatches and fitness tracking devices would represent alternatives available to U.S. consumers in the event of a remedy in this Investigation.

a. Smartwatches

There are numerous suppliers of smartwatches to the U.S. market and that these suppliers account for substantial sales.

Between Q2 2021 and Q1 2023, the total U.S. smartwatch market segment consisted of [redacted], many of which offer multiple product models. RX-0412C ¶ 154; CX-0524C at tab 'Total.' In particular, the evidence shows Samsung, Fitbit, and Garmin collectively represent approximately [redacted] percent of the smartwatch market segment, based on reported data on the smartwatch market segment that excludes the Apple Watch. RX-0412C ¶ 154; CX-0765C; CX-0524C. In total, U.S. smartwatches suppliers reported nearly [redacted] in revenue from Q2 2021 to Q1 2023, excluding revenue from the Apple Watch. *Id*.

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[redacted]

For example, the Samsung Galaxy Watch4 is one of Samsung's leading smartwatch products. *Id.* ¶ 155; CX-0524C at tab 'Total.' Samsung launched the Galaxy Watch4 in August 2021, which was promoted as the "best tool" for users to "manage their wellness." RX-0412C ¶ 155; CX-0917.

Similar to the DI Product, the Galaxy Watch4 is equipped with sensors such that a user can monitor various health and wellness metrics such as blood pressure, AFib irregular heartbeat, blood oxygen level, and body composition. *Id.* The Galaxy Watch4 is compatible with a user's smartphone where the user can track this data through metrics such as the Sleep Score, similar to the DI Product. *Id.* Further, the Galaxy Watch4, as a smartwatch, is also equipped with additional functionalities such as receiving phone calls. *Id.*

The vívoactive 4 GPS is one of Garmin's leading smartwatch products. *Id*. ¶ 156; CX-0524C at tab 'Total.' Garmin introduced the vívoactive 4 GPS in September 2019 as a smartwatch with "enhanced health monitoring and new animated on-screen workouts." [486] RX-0412C ¶ 156; CX-0905. Similar to the Accused Products, the vívoactive 4 GPS smartwatch offers a variety of features including respiration tracking, energy monitoring, abnormal heartrate alerts, menstrual cycle tracking, stress tracking, and hydration tracking. *Id.* Similar to the Samsung Watch 4, and unlike the Accused Products, the vívoactive 4 GPS smartwatch includes a screen allowing the user to be notified of incoming calls, text messages, social media updates, and calendar reminders; and offers a contactless payment solution through Garmin Pay. *Id.*

The smartwatch market segment data produced in this case does not reflect sales of the Apple Watch, which is one of the most popular smartwatch brands in the U.S. RX-0412C ¶ 157; CX-0912. Apple introduced the Apple Watch Series 9 in September 2023 launched the Apple Watch Series 10 in September 2024. RX-0412C ¶ 157; CX-0908; CX-0911. Similar to the Accused

[redacted]

Products, the Apple Watch Series 9 tracks a user's health and wellness metrics including daily activity, fitness, heart rhythms, sleep schedule, and menstrual cycles. RX-0412C ¶ 157; CX-0909. Similar to the Garmin and Samsung watches, the Apple Watch Series 9 also includes a variety of other features such as the ability to make phone calls, find other Apple devices, and keep track of daily tasks. *Id.*; CX-0914. Although Apple does not provide data on sales of individual products, analysts estimate Apple's 2022 Apple Watch revenue to be approximately $20 billion. RX-0412C ¶ 157; CX-0926.

b. Fitness Trackers

Between Q2 2021 and Q1 2023, the total U.S. fitness tracker market segment consisted of over 50 suppliers, many of which offer multiple product models. RX-0412C ¶ 158; CX-0523C at tab 'Total.' In particular, as of Q1 2023, Fitbit and Garmin collectively represented nearly 90 percent of the total fitness tracker segment, and, as was the case with smartwatches, each offers numerous models of fitness trackers, with different features designed to meet the specific needs of different consumers. *Id.* In total, U.S. fitness tracker suppliers reported over [redacted] million in revenue from Q2 2021 to Q1 2023. RX-0412C ¶ 158; CX-0766C.

For example, the Fitbit Charge 5 Advance Wireless Fitness Tracker is one of Fitbit's leading fitness tracker products, and that, similar to the Oura Ring, the Fitbit Charge 5 monitors a user's health and fitness through sensors including heart rate tracker, skin temperature tracker, and electrodermal activity sensor. *Id.* ¶ 159; CX-0523C at tab 'Total'; CX-0881; CX-0882. With a subscription to the Fitbit application, a user can view personalized scores and gain insights into their exercise, sleep, heart rate variability, and stress levels, among other insights. RX-0412C ¶ 159; CX-0881; CX-0882; CX-0910.

B. Domestic Production of Like or Similar Articles

Because none of the products-at-issue currently are manufactured in the U.S., the

[redacted]

imposition of an exclusion order in this Investigation would have no impact on U.S. production activities.

Specifically, the Oura Ring is manufactured in Estonia, Finland, and in Mexico. RX-0412C ¶ 161; CX-0806C at Resp. Nos. 17-18, 28. The Ultrahuman Ring AIR is manufactured in India and the RingConn Smart Ring is manufactured in China. RX-0412C ¶ 161; CX-0772C at Resp. Nos. 5, 10. Ultrahuman no longer manufactures or sells the Ultrahuman Ring R1. *See* CX-0816C at Resp. No. 4; CX-0792C at. Resp. No. 6. *See also*, SAC at 20.

Exclusion of the Accused Products from the U.S., with or without a corresponding shift in demand to the DI Product, would have no impact on U.S. production activities associated with these products.

The requested remedy may increase domestic production activities associated with Respondents' Accused Products. Specifically, in April 2024, Ultrahuman announced plans to open a manufacturing facility in the U.S., with capacity to manufacture 200,000 rings annually. RX-0412C ¶ 162; CX-0526. *See also*, CX-1386C at 67-69. Mr. Mohit Kumar testified that this factory will be capable of manufacturing the Ultrahuman Ring AIR starting as early as [redacted] RX-0412C ¶ 162; CX-1386C at 12. Thus, in the event that Ultrahuman responds to an exclusion order by shifting production of the Accused Products to the U.S., the proposed remedy would lead to an increase in U.S. production activities.

C. Public Health and Welfare

Oura would have sufficient capacity to meet any additional demand for smart ring products and that there would be a variety of alternative fitness tracking devices available to U.S. consumers including rings offered by third parties as well as smartwatches and other fitness trackers.

To the extent Respondents assert that exclusion of the Accused Products raises concerns of public health and welfare, neither the DI Product nor the Accused Products are approved by the

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U.S. Food and Drug Administration as medical devices. RX-0412C ¶ 163; CX-0899; CX-0793 at Resp. Nos. 30, 38.

Furthermore, the DI Product and Accused Products have similar capabilities, and there is unlikely to be an impact on public health and welfare as a result of any shift in demand from the Accused Products to the DI Product. RX-0412C ¶ 164. For example, when comparing the Oura Ring and Ultrahuman Ring AIR, both rings track a user's sleep, heart rate, skin temperature, and movement, among other metrics. *Id.*; CX-0922. The Ultrahuman Ring AIR, as stated by WIRED, is "Clearly positioned as a competitor for the third-generation Oura, the Ultrahuman Ring Air is technically very similar. It can track your sleep, recovery, and movement to offer insights and tips via an app on your smartphone." *Id.*; CX-0867. Similarly, as noted by Digital Trends, the RingConn Smart Ring is "the same basic concept as the Oura Ring, but there are some key differences. The RingConn Smart Ring is not only cheaper, but it also doesn't have a monthly subscription attached to it, making it more financially tempting." RX-0412C ¶ 164; CX-0864; CX-0851; CX-1387C at 22, 73-75.

Further, both Oura Ring and RingConn Smart Ring are able to monitor and collect data about a user's sleep patterns. RX-0412C ¶ 165; CX-0851. When tracking sleep, both the Oura Ring and RingConn Smart Ring monitor sleep time, sleep stage data, heart rate, blood oxygen levels, and skin temperature, among other features. *Id.* Both the Oura Ring and RingConn Smart Ring communicate the tracked data on their respective applications, and, as is the case with Ultrahuman Application, third-party reviewers find the Oura Application to be better designed than the RingConn Application. CX-0916; CX-0851.

Respondents may argue that an exclusion order affecting their products will have an adverse effect on health and welfare because the rings are currently being used in medical research.

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[redacted]

RX-0412C ¶ 166; CX-1023C at Resp. Nos. 35-36, 39, 43-44, 47. But Ultrahuman's rings are involved in two ongoing medical studies in the U.S., both of which are expected to conclude in the next two quarters. RX-0412C ¶ 166; CX-1386C at 12, 86-87. An exclusion order would not be expected to affect product availability for these soon to be concluded studies. RX-0412C ¶ 166. Mr. Kumar also testified that there may be a potential new study with the Mayo Clinic, though this study is in the "early days of analysis" (*e.g.*, the scope and parameters of the study are still in development and the exact topic of the study has yet to be defined) and has "yet to happen completely." *Id.*; CX-1386C at 95-97. Similarly, according to Mr. Hao Wu, RingConn "has not conducted any relevant studies in the United States" but has provided the University of Pittsburgh with about 100 smart rings for a clinical study. RX-0412C ¶ 166; CX-1387C at 87-88.

The exclusion of the Accused Products would not adversely impact future medical research due to the overlapping functionality of the Accused Products, the Oura Ring, and the other smart rings and fitness tracking devices available in the marketplace. RX-0412C ¶ 166.

VIII. CONCLUSION

Oura looks forward to presenting evidence regarding the issues above at the evidentiary hearing. The evidence will prove a violation of Section 337.

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Dated: November 12, 2024

Respectfully submitted,

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Certain Smart Wearable Devices, Systems, and Components Thereof

Inv. No.: 337-TA-1398

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing COMPLAINANTS' PREHEARING BRIEF was served upon the following as indicated below on November 12, 2024:

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