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19 Attorneys for Plaintiffs,
20 Masimo Corporation and Cercacor Laboratories, Inc.

21 **IN THE UNITED STATES DISTRICT COURT**
22 **FOR THE CENTRAL DISTRICT OF CALIFORNIA**
23 **SOUTHERN DIVISION**

24 MASIMO CORPORATION,
25 a Delaware corporation; and
26 CERCACOR LABORATORIES, INC.,
27 a Delaware corporation
28 Plaintiffs,
v.
APPLE INC., a California corporation
Defendant.
Case No. 8:20-cv-00048-JVS-JDE
**FOURTH AMENDED
COMPLAINT FOR
(1) PATENT INFRINGEMENT
(2) TRADE SECRET
MISAPPROPRIATION
(3) CORRECTION OF
INVENTORSHIP AND
(4) OWNERSHIP OF PATENTS
DEMAND FOR JURY TRIAL**
Hon. James V. Selna

**REDACTED VERSION OF DOCUMENT
PROPOSED TO BE FILED UNDER SEAL**

1 Plaintiffs MASIMO CORPORATION (“Masimo”) and CERCACOR
2 LABORATIES, INC. (“Cercacor”) hereby complain of Defendant APPLE INC.
3 (“Apple”), and allege as follows:

4 **I. THE PARTIES**

5 1. Plaintiff Masimo is a Delaware corporation having its principal
6 place of business at 52 Discovery, Irvine, California 92618.

7 2. Plaintiff Cercacor is a Delaware corporation having its principal
8 place of business at 15750 Alton Pkwy, Irvine, California 92618.

9 3. Upon information and belief, Defendant Apple is a California
10 corporation having a principal place of business at One Apple Park Way,
11 Cupertino, California, 95014.

12 **II. JURISDICTION AND VENUE**

13 4. This civil action includes claims for patent infringement arising
14 under the patent laws of the United States, 35 U.S.C. §§ 100, *et seq.*, more
15 particularly, 35 U.S.C. §§ 271 and 281. This civil action includes claims for
16 correction of inventorship of certain United States patents arising under the
17 patent law of the United States, more particularly 35 U.S.C. § 256. This
18 Complaint further alleges trade secret misappropriation and seeks a declaration
19 of ownership of certain patents and patent applications.

20 5. This Court has subject matter jurisdiction over claims 1-12 and 14-
21 18 pursuant to at least 28 U.S.C. §§ 1331 and 1338(a), and has at least
22 supplemental jurisdiction over claims 13 and 19-27 pursuant to at least 28
23 U.S.C. §§ 1367(a), including because, as alleged in more detail below, they are
24 sufficiently related to the claims over which this Court has original jurisdiction
25 that they form part of the same case or controversy under Article III of the
26 United States Constitution.

1 of this light is typically accomplished through a sensor that is applied to a body
2 part such as a finger, arm, toe, forehead or ear.

3 11. Before Masimo, non-invasive measurements from the PPG were
4 plagued by unreliability, often when the measurement was needed most, due to
5 the person moving or having low peripheral blood flow (known as “low
6 perfusion”). The industry had essentially given up on solving these problems,
7 concluding they were largely unsolvable. In the medical context, clinicians had
8 to live with the results – patient monitors gave excessive false alarms, froze
9 their measurements for prolonged periods of time despite potential changes in
10 the physiological parameter (e.g., oxygen saturation or pulse rate), delayed
11 notification of alarms due to long averaging times of sensor data, produced
12 inaccurate measurements, or were unable to obtain data on the most critical
13 patients and babies who cannot be instructed to stay still. Masimo’s pioneering
14 technology, known as Masimo Signal Extraction Technology (“Masimo SET”),
15 solved this problem and dramatically improved the reliability of monitoring and
16 reporting physiological signals derived from the PPG.

17 12. Following its initial success with Masimo SET, Masimo invested
18 heavily in developing additional breakthrough measurement technologies, such
19 as non-invasively measuring total hemoglobin, carboxyhemoglobin, and
20 methemoglobin. Masimo has continued to innovate, succeeding where others
21 have consistently failed. Masimo was the first, and remains the only, company
22 delivering these game-changing technologies to hospitals in the United States.
23 Use of Masimo’s technology in the clinical setting has been proven to reduce
24 blindness in premature infants, detect congenital heart disease in infants, save
25 lives on the general care floor and post-surgery, and improve transfusion
26 management, while saving money.

27 13. From its inception, Masimo has continuously developed cutting-
28 edge noninvasive patient monitoring technologies. Masimo sought and received

1 numerous U.S. patents for many of its inventions. Masimo's revolutionary
2 technology was a key to its gaining significant market praise and penetration.
3 After introduction into the market, many competitors, much larger than
4 Masimo, used Masimo's technology without a license, resulting in patent
5 infringement lawsuits that ultimately confirmed the validity of Masimo's
6 innovations. Masimo also maintains some technology as trade secrets. Masimo
7 also closely guards its future product and market plans. Only select employees
8 have knowledge of and access to these guarded secrets.

9 14. Masimo's innovations also include important advances in sensor
10 technologies that work together as part of Masimo's system and algorithms.
11 Masimo's sensors are integral to the success of the revolutionary technologies
12 Masimo has developed.

13 15. In 1998, Masimo spun certain technologies off into a new
14 company, Masimo Laboratories, Inc. or "Masimo Labs," to further research and
15 develop the technologies. The name of the company was later changed to
16 Cercacor Laboratories Inc. or "Cercacor." Cercacor and Masimo have a cross-
17 license agreement to facilitate confidential collaboration between the
18 companies. Cercacor is not owned by Masimo.

19 16. Like Masimo, Cercacor is an innovator of non-invasive monitoring
20 technologies. Cercacor is on the frontline of understanding how measuring,
21 tracking, and analyzing physiological parameters can impact pre-diabetic and
22 diabetic patients, sports training and performance and overall health and
23 wellness principally in the consumer market. Cercacor continued the
24 development that started at Masimo on non-invasive total hemoglobin (SpHb®),
25 methemoglobin (SpMet®), and carboxyhemoglobin (SpCO®) and other non-
26 invasive physiological parameters.

27 17. Leading hospitals around the world use Cercacor technology
28 licensed to Masimo and sold under the name Masimo rainbow SET. Like

1 Masimo, Cercacor also maintains some technology as trade secrets, and
2 Cercacor closely guards its future product and market plans. Only select
3 employees have knowledge of and access to these guarded secrets.

4 18. Plaintiffs carefully guard the secrecy of their confidential
5 information and documents. For example, Plaintiffs have policies regarding
6 labeling confidential information and documents as “CONFIDENTIAL AND
7 PROPRIETARY.” They also restrict these documents and information from
8 disclosure to third parties and employees on a need-to-know basis. Plaintiffs
9 also have policies in place regarding the use of computers and related equipment
10 that govern how their computer systems may be used. Those policies also
11 govern the protection of Plaintiffs’ confidential information. Plaintiffs have
12 document management systems that restrict access to confidential documents to
13 only those employees with proper security credentials and a need for access.
14 Plaintiffs also require employees to sign agreements precluding the employees
15 from disclosing or making use of any confidential information except as
16 authorized by Plaintiffs and as necessary for the performance of the employees’
17 duties. Plaintiffs also require third parties, including customers, to execute
18 confidential non-disclosure agreements. Plaintiffs implemented such policies
19 and procedures to maintain the confidentiality of sensitive information. These
20 policies remain in place today.

21 19. In 2013, Apple contacted Masimo and asked to meet regarding a
22 potential collaboration. Apple told Masimo that Apple would like to understand
23 more about Masimo’s technology to potentially integrate that technology into
24 Apple’s products. Apple and Masimo later entered into a confidentiality
25 agreement, and Masimo’s management met with Apple. The meetings included
26 confidential discussions of Masimo’s technology. After what seemed to
27 Masimo to have been productive meetings, Apple quickly began trying to hire
28 Masimo employees, including engineers and key management.

1 20. Masimo employed Michael O'Reilly as its Chief Medical Officer
2 and Executive Vice President for Medical Affairs beginning in January 2008.
3 As part of the Masimo executive team, O'Reilly was privy to extremely
4 sensitive information, including information about mobile medical products and
5 applications, wellness applications, clinical data gathering and analytics, and
6 other technology of Masimo. Upon information and belief, Apple employed
7 O'Reilly in July 2013, shortly after the meetings with Masimo, to assist in
8 wellness and mobile applications that include non-invasive measurement of
9 physiological parameters. Not long after, by December of 2013, O'Reilly was
10 already meeting with the FDA on behalf of Apple to discuss medical
11 applications and discuss medical products that non-invasively measures blood
12 constituents.

13 21. Apple systematically recruited other key Masimo personnel, such
14 as Marcelo Lamego, who was the former Chief Technical Officer of Cercacor
15 and a former Research Scientist at Masimo. Lamego was a Masimo employee
16 during 2000-2001 and 2003-2006, and the Cercacor Chief Technical Officer
17 during 2006-2014.

18 22. Lamego had unfettered access to Plaintiffs' highly confidential
19 technical information. He was trained and mentored at Masimo by the most
20 skilled engineers and scientists, and was taught about the keys to effective non-
21 invasive monitoring, something he was not involved in prior to Masimo.
22 Masimo engineers and scientists taught Lamego about non-invasive monitoring,
23 including, among others, Ammar Al-Ali, Mohamed Diab, and Walter Weber.
24 The Masimo engineers, including Al-Ali, Diab, and Weber, were Masimo
25 employees at all relevant times. Lamego also had access to and learned
26 guarded secrets regarding Plaintiffs' mobile medical products, including key
27 technology and advance plans for future products.
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1 23. When Lamego left Cercacor, he assured Plaintiffs that he would
2 not violate his agreements with Plaintiffs and volunteered that he would not
3 work on technology similar to Plaintiffs' technology. On January 24, 2014,
4 Plaintiffs sent a letter to Defendant explaining that Lamego possessed Plaintiffs'
5 confidential proprietary information and warning Apple to respect Plaintiffs'
6 rights in such information. The letter stated "we trust that Apple will employ
7 Mr. Lamego in an area that does not involve healthcare technology, including
8 mobile health applications and the measurement of physiological information."
9 The letter also asked that "Apple refrain from inducing Mr. Lamego to take
10 actions that would violate the Agreement while he performs services for Apple"
11 and asked Apple to "direct Mr. Lamego to honor his obligations to all of his
12 prior employers." Based on Plaintiffs' conversations with Lamego, Plaintiffs'
13 letter to Apple, and Plaintiffs' confidentiality agreement with Apple, Plaintiffs
14 reasonably believed that Lamego would not use or disclose Plaintiffs'
15 confidential information and that Defendant would not induce Lamego to do so
16 or itself use Plaintiffs' confidential information.

17 24. Unbeknownst to Plaintiffs at the time, it now appears that, shortly
18 after joining Apple in January 2014, Lamego began pursuing on behalf of Apple
19 numerous patent applications directed toward technologies he worked on at
20 Plaintiffs, and with which he had no prior experience or knowledge.

21 25. Upon information and belief, Apple announced the first version of
22 its watch in September 2014, and began shipping its watch in April 2015. The
23 Apple Watch Series 3 was released on September 22, 2017, and upon
24 information and belief had significant performance issues with the non-invasive
25 physiological measurements. Apple announced the Apple Watch Series 4 on
26 September 12, 2018, and upon information and belief, that watch includes
27 technology that tracks Plaintiffs' technologies to solve some of the performance
28 issues. The Apple Watch Series 5 was announced on September 10, 2019 and

1 released on September 20, 2019. Upon information and belief, the Apple Watch
2 Series 5 also includes Plaintiffs' technologies to solve some of the prior
3 performance issues, including technology as to which Lamego was an inventor
4 while at Plaintiffs. The Apple Watch Series 6 and Series SE were announced on
5 September 15, 2020, and released on September 18, 2020. Upon information
6 and belief, the Apple Watch Series 6 and Series SE also includes Plaintiffs'
7 technologies to solve some of the prior performance issues, including
8 technology as to which Lamego was an inventor while at Plaintiffs.

9 26. As set forth in detail below, and on information and belief, each
10 portion of evidence cited by Plaintiffs, such as the selected portions of Apple
11 patent applications and Apple websites, accurately portrays, in relevant part, the
12 structure, design, function and/or operation of the Apple Watch devices.

13 **V. THE PATENTS-IN-SUIT**

14 27. Masimo is the owner by assignment of U.S. Patent No. 10,258,265
15 entitled "Multi-stream data collection system for noninvasive measurement of
16 blood constituents" ("the '265 patent"), which the United States Patent and
17 Trademark Office lawfully and duly issued on April 16, 2019.

18 28. Masimo is the owner by assignment of U.S. Patent No. 10,292,628
19 entitled "Multi-stream data collection system for noninvasive measurement of
20 blood constituents" ("the '628 patent"), which the United States Patent and
21 Trademark Office lawfully and duly issued on May 21, 2019.

22 29. Masimo is the owner by assignment of U.S. Patent No. 10,588,553
23 entitled "Multi-Stream Data Collection System For Noninvasive Measurement
24 of Blood Constituents" ("the '553 patent"), which the United States Patent and
25 Trademark Office lawfully and duly issued on March 17, 2020.

26 30. Masimo is the owner by assignment of U.S. Patent No. 10,588,554
27 entitled "Multi-Stream Data Collection System For Noninvasive Measurement
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1 of Blood Constituents” (“the ’554 patent”), which the United States Patent and
2 Trademark Office lawfully and duly issued on March 17, 2020.

3 31. Masimo is the owner by assignment of U.S. Patent No. 10,624,564
4 entitled “Multi-Stream Data Collection System For Noninvasive Measurement
5 of Blood Constituents” (“the ’564 patent”), which the United States Patent and
6 Trademark Office lawfully and duly issued on April 21, 2020.

7 32. Masimo is the owner by assignment of U.S. Patent No. 10,631,765
8 entitled “Multi-Stream Data Collection System For Noninvasive Measurement
9 of Blood Constituents” (“the ’765 patent”), which the United States Patent and
10 Trademark Office lawfully and duly issued on April 28, 2020.

11 33. Masimo is the owner by assignment of U.S. Patent No. 10,702,194
12 entitled “Multi-Stream Data Collection System For Noninvasive Measurement
13 of Blood Constituents” (“the ’194 patent”), which the United States Patent and
14 Trademark Office lawfully and duly issued on July 7, 2020.

15 34. Masimo is the owner by assignment of U.S. Patent No. 10,702,195
16 entitled “Multi-Stream Data Collection System For Noninvasive Measurement
17 of Blood Constituents” (“the ’195 patent”), which the United States Patent and
18 Trademark Office lawfully and duly issued on July 7, 2020.

19 35. Masimo is the owner by assignment of U.S. Patent No. 10,709,366
20 entitled “Multi-Stream Data Collection System For Noninvasive Measurement
21 of Blood Constituents” (“the ’366 patent”), which the United States Patent and
22 Trademark Office lawfully and duly issued on July 14, 2020.

23 36. Masimo is the owner by assignment of U.S. Patent No. 6,771,994
24 entitled “Pulse oximeter probe-off detection system” (“the ’994 patent”), which
25 the United States Patent and Trademark Office lawfully and duly issued on
26 August 3, 2004.

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19 46. The aforementioned information in Paragraphs 40-45 is referred to
20 herein as Plaintiffs’ “Confidential Information.”

21 **VII. THE DISPUTED LAMEGO PATENTS**

22 47. Lamego is named as an inventor on U.S. Provisional Patent
23 Application No. 62/043,294, filed Aug. 28, 2014 and titled “Reflective Surface
24 Treatments for Optical Sensors.” Related applications that also name Lamego
25 as an inventor include U.S Patent Application Nos. 14/740,196 and 16/114,003,
26 which issued as U.S. Patent Nos. 10,078,052 and 10,247,670.

27 48. Lamego is also named as an inventor on U.S. Provisional Patent
28 Application No. 62/047,818, filed Sep. 9, 2014, entitled “Modulation and

1 Demodulation Techniques for a Health Monitoring System.” A related
2 application that names Lamego as the sole inventor includes U.S Patent
3 Application No. 14/621,268, which issued as U.S. Patent No. 10,219,754.

4 49. Lamego is also named as an inventor on U.S. Provisional Patent
5 Application No. 62/056,299, filed on Sep. 26, 2014, and entitled “Electronic
6 Device that Computes Health Data.” Related applications that also name
7 Lamego as the sole inventor include U.S Patent Application Nos. 14/617,422,
8 15/667,832, and 16/700,710. The ’422 Application issued as U.S. Patent No.
9 9,723,997 and the ’832 Application issued as U.S. Patent No. 10,524,671.

10 50. Lamego is also named as an inventor on U.S. Provisional Patent
11 Application No. 62/057,089, filed on Sep. 29, 2014, and entitled “Methods and
12 Systems for Modulation and Demodulation of Optical Signals.” Related
13 applications that also name Lamego as an inventor include U.S Patent
14 Application Nos. 14/618,664 and 15/960,507. The ’664 Application issued as
15 U.S. Patent No. 9,952,095.

16 **VIII. FIRST CAUSE OF ACTION**

17 **(INFRINGEMENT OF U.S. PATENT NO. 10,258,265)**

18 51. Plaintiff Masimo hereby realleges and incorporates by reference
19 the allegations set forth in paragraphs 1 through 50.

20 52. Upon information and belief, Defendant’s products, including at
21 least the Apple Watch Series 4 and later devices, infringe at least Claims 1-3, 6-
22 11, 13, 16-25 of the ’265 patent under at least 35 U.S.C. § 271(a), (b), and (c).

23 53. Upon information and belief, Defendant has directly infringed one
24 or more claims of the ’265 patent through manufacture, use, sale, offer for sale,
25 and/or importation into the United States of physiological monitors, including
26 the Apple Watch Series 4 and later devices.

27 54. For example, upon information and belief, in operation, the Apple
28 Watch Series 4 and later devices include all of the limitations of Claim 1 of the

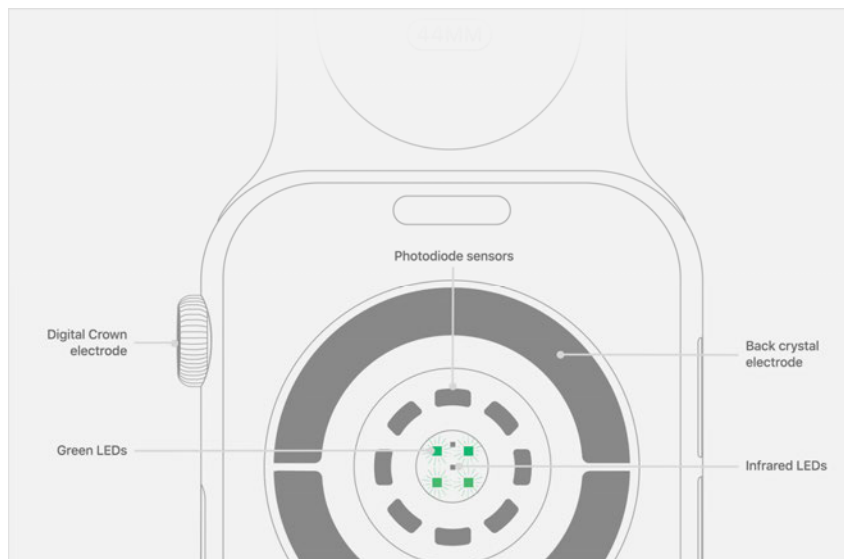
1 '265 patent as set forth herein and further illustrated in the claim chart shown in
2 Exhibit 1. The Apple Watch Series 4 and later devices are adapted to be worn
3 by a wearer and provide an indication of a physiological parameter (for
4 example, heart rate) of the wearer as shown in the image below found on the
5 Apple website at <https://www.apple.com/apple-watch-series-4/health/>:



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15 Upon information and belief, relevant technology in the Apple Watch Series 4
16 and later devices is described in International Application Publication
17 WO 2018/226305 (the '305 publication). For example, the Apple Watch Series
18 4 and later devices provide an indication of a physiological parameter of the
19 wearer as described in the '305 publication at paragraphs [0055]-[0061].

20 55. The Apple Watch Series 4 and later devices include a plurality of
21 emitters of different wavelengths (for example, green and infrared LEDs) and at
22 least four detectors (for example, photodiode sensors) spaced apart from each
23 other as shown in the image below found on the Apple website at
24 <https://support.apple.com/en-us/HT204666>:

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56. The detectors output signals responsive to light from the light emitters attenuated by body tissue. Upon information and belief, the signals are indicative of a physiological parameter (for example, heart rate) of the wearer.

57. Upon information and belief, relevant technology in the Apple Watch Series 4 and later devices is described in the below citation to U.S. Patent Application Publication 2019/0072912 (the '912 publication). The Apple Watch Series 4 and later devices include a housing having a surface and a circular wall protruding from the surface, and a light permeable cover arranged above a portion of the housing and covering the detectors. Fig. 4C and the corresponding text of the '912 publication show, for example, such housing:

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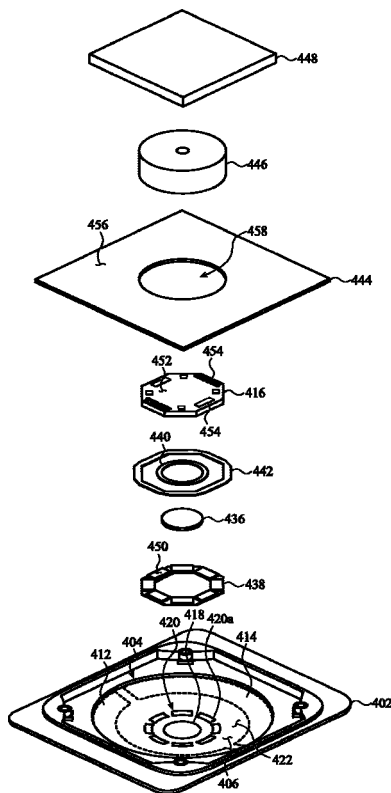


FIG. 4C

58. Upon information and belief, Defendant has knowledge of Masimo's patents, including the '265 patent, at least based on O'Reilly and Lamego's former positions with Plaintiffs. Masimo filed provisional patent applications that led to the '265 patent in August 2008, while O'Reilly and Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of the '265 patent. Defendant had knowledge of the '265 patent no later than the filing of the original Complaint.

59. Upon information and belief, Defendant has actively induced others to infringe the '265 patent by marketing and selling the above Apple Watch Series 4 and later devices, knowing and intending that such systems would be used by customers and end users in a manner that infringes the '265 patent. To that end, Defendant provides instructions and teachings to its customers and end users that such Apple Watch Series 4 and later devices be

1 used to infringe the '265 patent. Defendant's acts constitute infringement of the
2 '265 patent in violation of 35 U.S.C. § 271(b).

3 60. Upon information and belief, Defendant actively induces users to
4 directly infringe the asserted claims of the '265 patent. By way of example
5 only, upon information and belief, Defendant actively induces direct
6 infringement of the '265 patent by providing directions, demonstrations, guides,
7 manuals, training for use, and/or other materials necessary for the use of the
8 Apple Watch Series 4 and later devices, including use with Apple iPhones.
9 Upon information and belief, Defendant knew or should have known that these
10 activities would cause direct infringement.

11 61. Upon information and belief, Defendant's acts constitute
12 contributory infringement of the '265 patent in violation of 35 U.S.C. § 271(c).
13 Upon information and belief, Defendant contributorily infringes because, among
14 other things, Defendant offers to sell and/or sells within the United States,
15 and/or imports into the United States, components of the Apple Watch Series 4
16 and later devices and Apple iPhones that constitute material parts of the
17 invention of the asserted claims of the '265 patent, are not staple articles or
18 commodities of commerce suitable for substantial non-infringing use and are
19 known by Defendant to be especially made or especially adapted for use in an
20 infringement of the '265 patent.

21 62. Defendant's infringement of the '265 patent is willful, deliberate,
22 and intentional by continuing its acts of infringement after becoming aware of
23 the '265 patent and its infringement thereof, thus acting in reckless disregard of
24 Masimo's patent rights.

25 63. Because of Defendant's infringement of the '265 patent, Masimo
26 has suffered and will continue to suffer irreparable harm and injury, including
27 monetary damages in an amount to be determined at trial.
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1 64. Upon information and belief, unless enjoined, Defendant, and/or
2 others acting on behalf of Defendant, will continue their infringing acts, thereby
3 causing additional irreparable injury to Masimo for which there is no adequate
4 remedy at law.

5 **IX. SECOND CAUSE OF ACTION**

6 **(INFRINGEMENT OF U.S. PATENT NO. 10,292,628)**

7 65. Plaintiff Masimo hereby realleges and incorporates by reference
8 the allegations set forth in paragraphs 1 through 50.

9 66. Upon information and belief, Defendant's products, including at
10 least the Apple Watch Series 4 and later devices, infringe at least Claim 1 of the
11 '628 patent under at least 35 U.S.C. § 271(a), (b), and (c).

12 67. Upon information and belief, Defendant has directly infringed one
13 or more claims of the '628 patent through manufacture, use, sale, offer for sale,
14 and/or importation into the United States of physiological monitors, including
15 the Apple Watch Series 4 and later devices.

16 68. For example, upon information and belief, in operation, the Apple
17 Watch Series 4 and later devices include all of the limitations of Claim 1 of the
18 '628 patent as set forth herein and further illustrated in the claim chart shown in
19 Exhibit 1.

20 69. The Apple Watch Series 4 and later devices include a housing
21 configured to house a plurality of detectors. Fig. 4C and the corresponding text
22 of the '912 publication show, for example, such housing:
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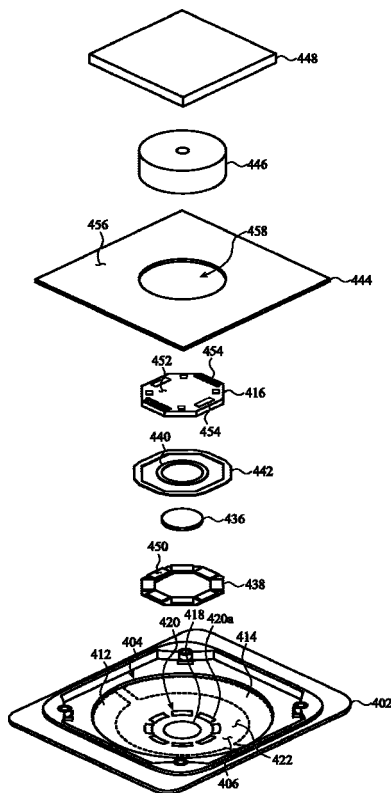
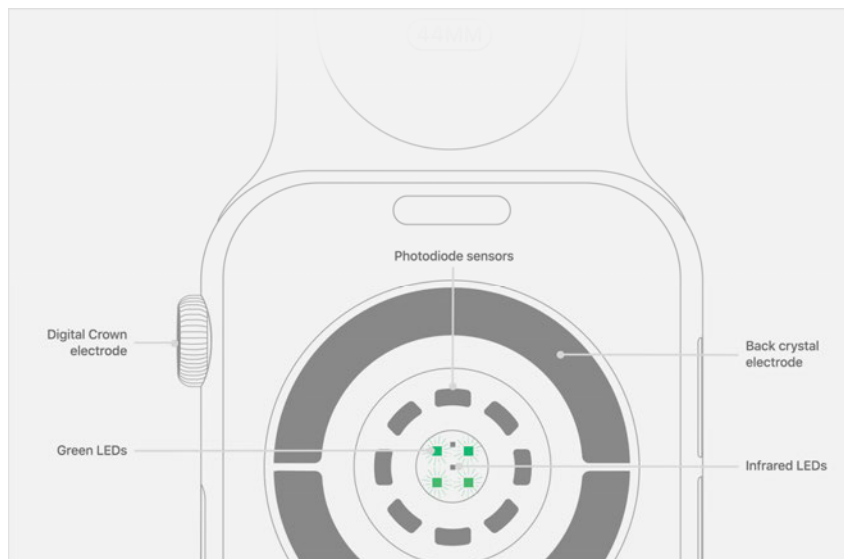


FIG. 4C

70. The Apple Watch Series 4 and later devices include a plurality of emitters that emit light into tissue of a user and a plurality of detectors that detect light that has been attenuated by tissue of the user as shown in the image below found on the Apple website at <https://support.apple.com/en-us/HT204666>:

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71. The Apple Watch Series 4 and later devices include a light permeable cover configured to be located between tissue of the user and the plurality of detectors when the noninvasive optical physiological sensor is worn by the user, wherein the cover comprises an outwardly protruding convex surface configured to cause tissue of the user to conform to at least a portion of the outwardly protruding convex surface when the noninvasive optical physiological sensor is worn by the user and during operation of the noninvasive optical physiological sensor, and wherein the plurality of detectors are configured to receive light passed through the outwardly protruding convex surface after attenuation by tissue of the user. Fig. 4C and the corresponding text of the '912 publication show, for example, such cover:

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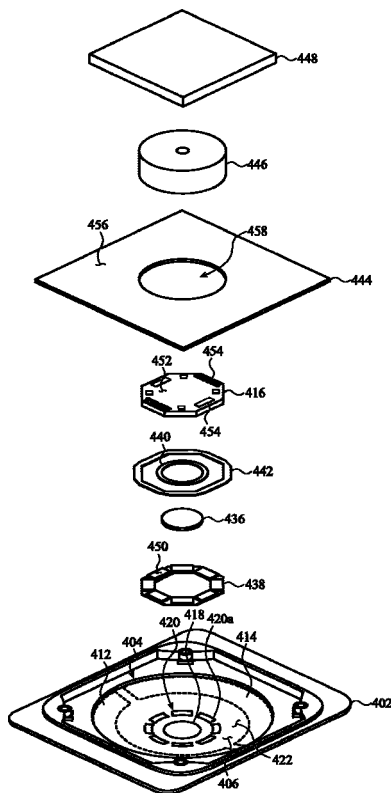


FIG. 4C

72. Upon information and belief, Defendant has knowledge of Masimo's patents, including the '628 patent, at least based on O'Reilly and Lamego's former positions with Plaintiffs. Masimo filed provisional patent applications that led to the '628 patent in August 2008, while O'Reilly and Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of the '628 patent. Defendant had knowledge of the '628 patent no later than the filing of the original Complaint.

73. Upon information and belief, Defendant has actively induced others to infringe the '628 patent by marketing and selling the above Apple Watch Series 4 and later devices, knowing and intending that such systems would be used by customers and end users in a manner that infringes the '628 patent. To that end, Defendant provides instructions and teachings to its customers and end users that such Apple Watch Series 4 and later devices be

1 used to infringe the '628 patent. Defendant's acts constitute infringement of the
2 '628 patent in violation of 35 U.S.C. § 271(b).

3 74. Upon information and belief, Defendant actively induces users to
4 directly infringe the asserted claims of the '628 patent. By way of example
5 only, upon information and belief, Defendant actively induces direct
6 infringement of the '628 patent by providing directions, demonstrations, guides,
7 manuals, training for use, and/or other materials necessary for the use of the
8 Apple Watch Series 4 and later devices, including use with Apple iPhones.
9 Upon information and belief, Defendant knew or should have known that these
10 activities would cause direct infringement.

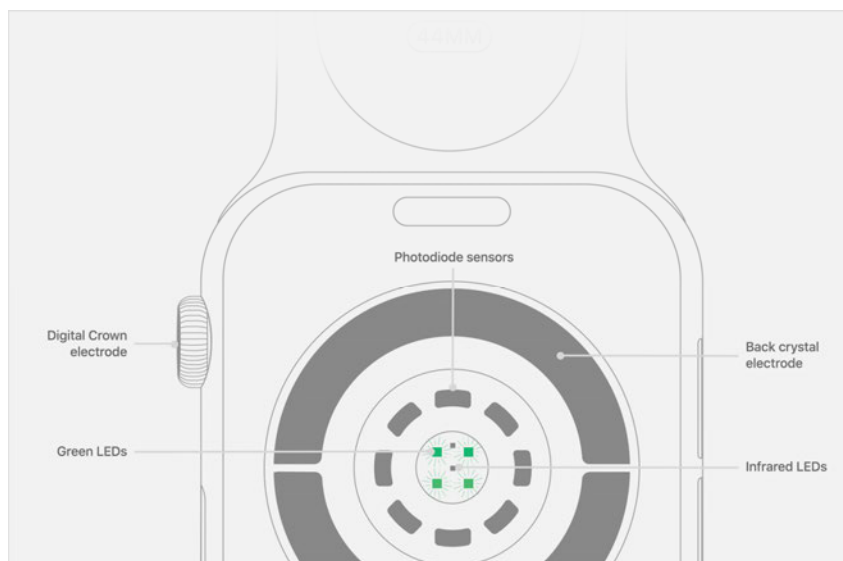
11 75. Upon information and belief, Defendant's acts constitute
12 contributory infringement of the '628 patent in violation of 35 U.S.C. § 271(c).
13 Upon information and belief, Defendant contributorily infringes because, among
14 other things, Defendant offers to sell and/or sells within the United States,
15 and/or imports into the United States, components of the Apple Watch Series 4
16 and later devices and Apple iPhones that constitute material parts of the
17 invention of the asserted claims of the '628 patent, are not staple articles or
18 commodities of commerce suitable for substantial non-infringing use, and are
19 known by Defendant to be especially made or especially adapted for use in an
20 infringement of the '628 patent.

21 76. Defendant's infringement of the '628 patent is willful, deliberate,
22 and intentional by continuing its acts of infringement after becoming aware of
23 the '628 patent and its infringement thereof, thus acting in reckless disregard of
24 Masimo's patent rights.

25 77. Because of Defendant's infringement of the '628 patent, Masimo
26 has suffered and will continue to suffer irreparable harm and injury, including
27 monetary damages in an amount to be determined at trial.
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83. The Apple Watch Series 4 and later devices include a plurality of emitters configured to emit light into tissue of a user, and at least four detectors, wherein at least one of the at least four detectors is configured to detect light that has been attenuated by tissue of the user, and wherein the at least four detectors are arranged on a substrate as shown in the image below found on the Apple website at <https://support.apple.com/en-us/HT204666>:



84. The detectors output signals responsive to light from the light emitters attenuated by body tissue. Upon information and belief, the signals are indicative of a physiological parameter (for example, heart rate) of the wearer.

1 85. Upon information and belief, relevant technology in the Apple
2 Watch Series 4 and later devices is described in the below citation to U.S. Patent
3 Application Publication 2019/0072912 (the '912 publication). The Apple
4 Watch Series 4 and later devices include a wall configured to circumscribe at
5 least the at least four detectors and a cover configured to be located between
6 tissue of the user and the at least four detectors when the noninvasive optical
7 physiological sensor is worn by the user, wherein the cover comprises a single
8 protruding convex surface operable to conform tissue of the user to at least a
9 portion of the single protruding convex surface when the noninvasive optical
10 physiological sensor is worn by the user, and wherein the wall operably
11 connects to the substrate and the cover. Fig. 4C and the corresponding text of
12 the '912 publication show, for example, such wall and cover:

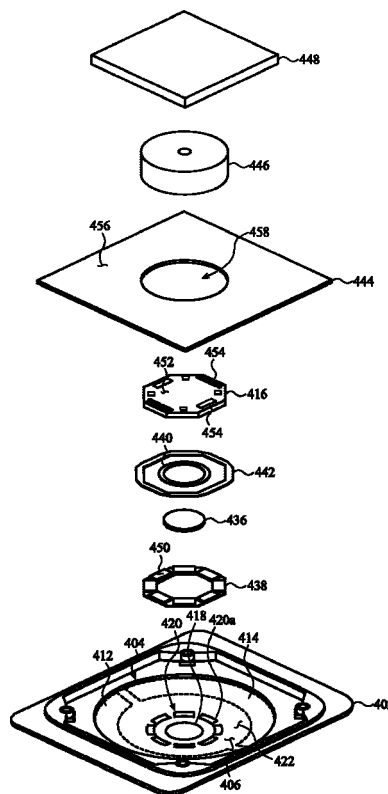


FIG. 4C

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1 86. Upon information and belief, Defendant has knowledge of
2 Masimo's patents, including the '553 patent, at least based on O'Reilly and
3 Lamego's former positions with Plaintiffs. Masimo filed provisional patent
4 applications that led to the '553 patent in August 2008, while O'Reilly and
5 Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of
6 the '553 patent. Defendant had knowledge of the '553 patent no later than the
7 filing of the First Amended Complaint.

8 87. Upon information and belief, Defendant has actively induced
9 others to infringe the '553 patent by marketing and selling the above Apple
10 Watch Series 4 and later devices, knowing and intending that such systems
11 would be used by customers and end users in a manner that infringes the
12 '553 patent. To that end, Defendant provides instructions and teachings to its
13 customers and end users that such Apple Watch Series 4 and later devices be
14 used to infringe the '553 patent. Defendant's acts constitute infringement of the
15 '553 patent in violation of 35 U.S.C. § 271(b).

16 88. Upon information and belief, Defendant actively induces users to
17 directly infringe the asserted claims of the '553 patent. By way of example
18 only, upon information and belief, Defendant actively induces direct
19 infringement of the '553 patent by providing directions, demonstrations, guides,
20 manuals, training for use, and/or other materials necessary for the use of the
21 Apple Watch Series 4 and later devices, including use with Apple iPhones.
22 Upon information and belief, Defendant knew or should have known that these
23 activities would cause direct infringement.

24 89. Upon information and belief, Defendant's acts constitute
25 contributory infringement of the '553 patent in violation of 35 U.S.C. § 271(c).
26 Upon information and belief, Defendant contributorily infringes because, among
27 other things, Defendant offers to sell and/or sells within the United States,
28 and/or imports into the United States, components of the Apple Watch Series 4

1 and later devices and Apple iPhones that constitute material parts of the
2 invention of the asserted claims of the '553 patent, are not staple articles or
3 commodities of commerce suitable for substantial non-infringing use and are
4 known by Defendant to be especially made or especially adapted for use in an
5 infringement of the '553 patent.

6 90. Defendant's infringement of the '553 patent is willful, deliberate,
7 and intentional by continuing its acts of infringement after becoming aware of
8 the '553 patent and its infringement thereof, thus acting in reckless disregard of
9 Masimo's patent rights.

10 91. Because of Defendant's infringement of the '553 patent, Masimo
11 has suffered and will continue to suffer irreparable harm and injury, including
12 monetary damages in an amount to be determined at trial.

13 92. Upon information and belief, unless enjoined, Defendant, and/or
14 others acting on behalf of Defendant, will continue their infringing acts, thereby
15 causing additional irreparable injury to Masimo for which there is no adequate
16 remedy at law.

17 **XI. FOURTH CAUSE OF ACTION**

18 **(INFRINGEMENT OF U.S. PATENT NO. 10,588,554)**

19 93. Plaintiff Masimo hereby realleges and incorporates by reference
20 the allegations set forth in paragraphs 1 through 50.

21 94. Upon information and belief, Defendant's products, including at
22 least the Apple Watch Series 4 and later devices, infringe at least Claim 20 of
23 the '554 patent under at least 35 U.S.C. § 271(a), (b), and (c).

24 95. Upon information and belief, Defendant has directly infringed one
25 or more claims of the '554 patent through manufacture, use, sale, offer for sale,
26 and/or importation into the United States of physiological monitors, including
27 the Apple Watch Series 4 and later devices.

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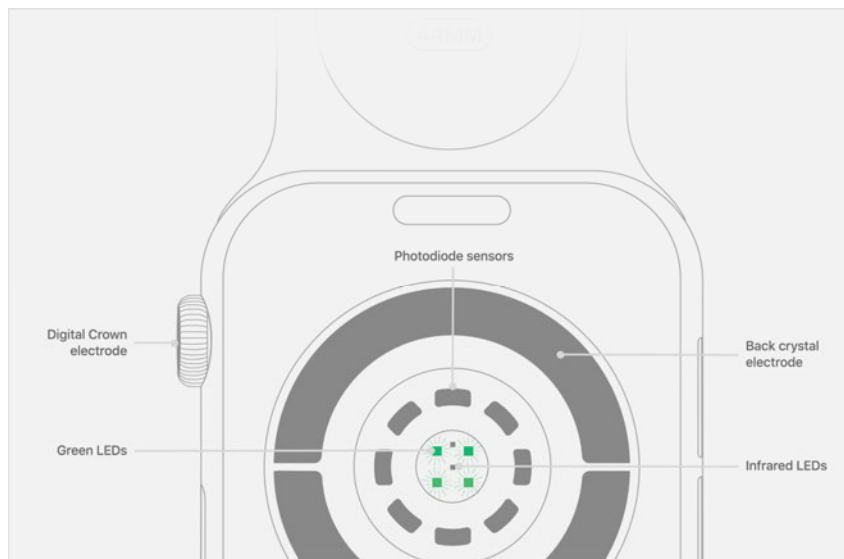
1 96. For example, upon information and belief, in operation, the Apple
2 Watch Series 4 and later devices in combination with iPhone devices include all
3 of the limitations of Claim 20 of the '554 patent as set forth herein and further
4 illustrated in the claim chart shown in Exhibit 1. The Apple Watch Series 4 and
5 later devices combined with Apple iPhones are physiological measurement
6 systems with physiological sensors as shown in the image below found on the
7 Apple website at <https://www.apple.com/apple-watch-series-4/health/>:



17 97. The Apple Watch Series 4 and later devices include a plurality of
18 emitters configured to emit light into tissue of a user, and at least four detectors,
19 wherein each of the at least four detectors has a corresponding window that
20 allows light to pass through to the detector as shown in the image below found
21 on the Apple website at <https://support.apple.com/en-us/HT204666>:

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98. The detectors output signals responsive to light from the light emitters attenuated by body tissue. Upon information and belief, the signals are indicative of a physiological parameter (for example, heart rate) of the wearer. Upon information and belief, relevant technology in the Apple Watch Series 4 and later devices is described in International Application Publication WO 2018/226305 (the '305 publication), for example, at paragraphs [0055]-[0061].

99. Upon information and belief, relevant technology in the Apple Watch Series 4 and later devices is described in the below citation to U.S. Patent Application Publication 2019/0072912 (the '912 publication). The Apple Watch Series 4 and later devices include a wall that surrounds at least the at least four detectors, a cover comprising a single protruding convex surface, wherein the single protruding convex surface is configured to be located between tissue of the user and the at least four detectors when the physiological sensor device is worn by the user, wherein at least a portion of the single protruding convex surface is sufficiently rigid to cause tissue of the user to conform to at least a portion of a shape of the single protruding convex surface when the physiological sensor device is worn by the user, and wherein the cover

1 operably connects to the wall. Fig. 4C and the corresponding text of the '912
2 publication show, for example, such wall and cover:

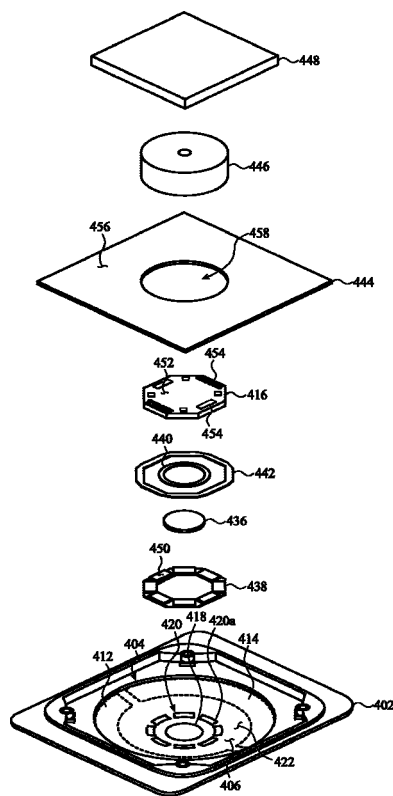
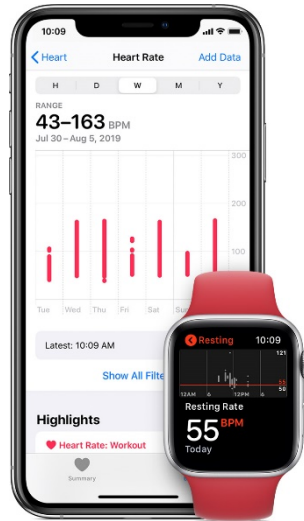


FIG. 4C

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18 100. The Apple Watch Series 4 and later devices communicate
19 wirelessly with handheld computing devices as shown in the image below found
20 on the Apple website at <https://support.apple.com/en-us/HT204666> and as
21 further described at <https://support.apple.com/en-us/HT204505>:
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101. Upon information and belief, Defendant has knowledge of Masimo’s patents, including the ’554 patent, at least based on O’Reilly and Lamego’s former positions with Plaintiffs. Masimo filed provisional patent applications that led to the ’554 patent in August 2008, while O’Reilly and Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of the ’554 patent. Defendant had knowledge of the ’554 patent no later than the filing of the First Amended Complaint.

102. Upon information and belief, Defendant has actively induced others to infringe the ’554 patent by marketing and selling the above Apple Watch Series 4 and later devices, knowing and intending that such systems would be used by customers and end users in a manner that infringes the ’554 patent. To that end, Defendant provides instructions and teachings to its customers and end users that such Apple Watch Series 4 and later devices be used to infringe the ’554 patent. Defendant’s acts constitute infringement of the ’554 patent in violation of 35 U.S.C. § 271(b).

103. Upon information and belief, Defendant actively induces users to directly infringe the asserted claims of the ’554 patent. By way of example only, upon information and belief, Defendant actively induces direct infringement of the ’554 patent by providing directions, demonstrations, guides, manuals, training for use, and/or other materials necessary for the use of the

1 Apple Watch Series 4 and later devices, including use with Apple iPhones.
2 Upon information and belief, Defendant knew or should have known that these
3 activities would cause direct infringement.

4 104. Upon information and belief, Defendant's acts constitute
5 contributory infringement of the '554 patent in violation of 35 U.S.C. § 271(c).
6 Upon information and belief, Defendant contributorily infringes because, among
7 other things, Defendant offers to sell and/or sells within the United States,
8 and/or imports into the United States, components of the Apple Watch Series 4
9 and later devices and Apple iPhones that constitute material parts of the
10 invention of the asserted claims of the '554 patent, are not staple articles or
11 commodities of commerce suitable for substantial non-infringing use and are
12 known by Defendant to be especially made or especially adapted for use in an
13 infringement of the '554 patent.

14 105. Defendant's infringement of the '554 patent is willful, deliberate,
15 and intentional by continuing its acts of infringement after becoming aware of
16 the '554 patent and its infringement thereof, thus acting in reckless disregard of
17 Masimo's patent rights.

18 106. Because of Defendant's infringement of the '554 patent, Masimo
19 has suffered and will continue to suffer irreparable harm and injury, including
20 monetary damages in an amount to be determined at trial.

21 107. Upon information and belief, unless enjoined, Defendant, and/or
22 others acting on behalf of Defendant, will continue their infringing acts, thereby
23 causing additional irreparable injury to Masimo for which there is no adequate
24 remedy at law.

25 **XII. FIFTH CAUSE OF ACTION**

26 **(INFRINGEMENT OF U.S. PATENT NO. 10,624,564)**

27 108. Plaintiff Masimo hereby realleges and incorporates by reference
28 the allegations set forth in paragraphs 1 through 50.

1 109. Upon information and belief, Defendant’s products, including at
2 least the Apple Watch Series 4 and later devices, infringe at least Claim 1 of the
3 ’564 patent under at least 35 U.S.C. § 271(a), (b), and (c).

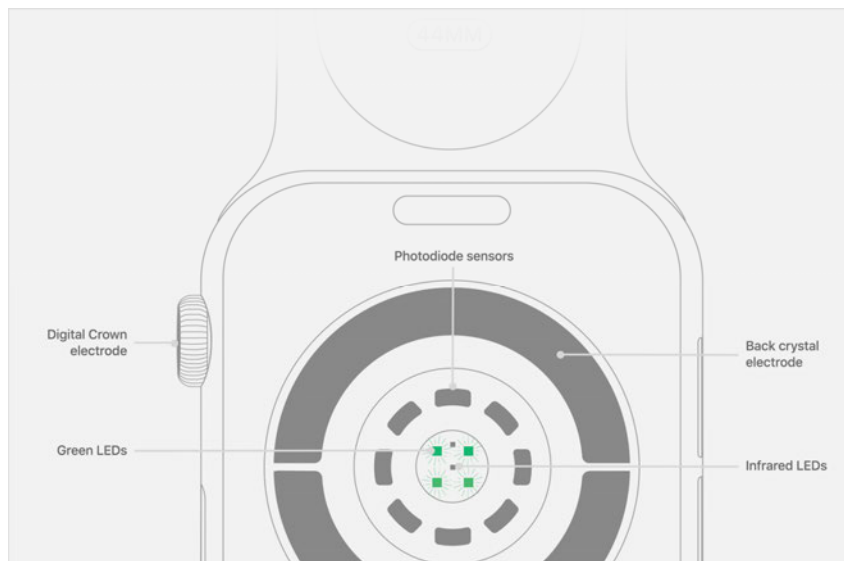
4 110. Upon information and belief, Defendant has directly infringed one
5 or more claims of the ’564 patent through manufacture, use, sale, offer for sale,
6 and/or importation into the United States of physiological monitors, including
7 the Apple Watch Series 4 and later devices and the iPhone devices.

8 111. For example, upon information and belief, in operation, the Apple
9 Watch Series 4 and later devices in combination with iPhone devices include all
10 of the limitations of Claim 1 of the ’564 patent as set forth herein and further
11 illustrated in the claim chart shown in Exhibit 1. The Apple Watch Series 4 and
12 later devices are user-worn physiological measurement devices as shown in the
13 image below found on the Apple website at [https://www.apple.com/apple-](https://www.apple.com/apple-watch-series-4/health/)
14 [watch-series-4/health/](https://www.apple.com/apple-watch-series-4/health/):



24 112. The Apple Watch Series 4 and later devices include one or more
25 emitters configured to emit light into tissue of a user and at least four detectors
26 arranged on a substrate as shown in the image below found on the Apple
27 website at <https://support.apple.com/en-us/HT204666>:
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113. The detectors output signals responsive to light from the light emitters attenuated by body tissue. Upon information and belief, the signals are indicative of a physiological parameter (for example, heart rate) of the wearer.

114. Upon information and belief, relevant technology in the Apple Watch Series 4 and later devices is described in the below citation to U.S. Patent Application Publication 2019/0072912 (the '912 publication). The Apple Watch Series 4 and later devices include a wall that surrounds at least the at least four detectors and that operably connects to the substrate and a cover comprising a protruding convex surface, wherein the protruding convex surface extends over all of the at least four detectors arranged on the substrate, wherein at least a portion of the protruding convex surface is rigid. Fig. 4C and the corresponding text of the '912 publication show, for example, such wall and cover:

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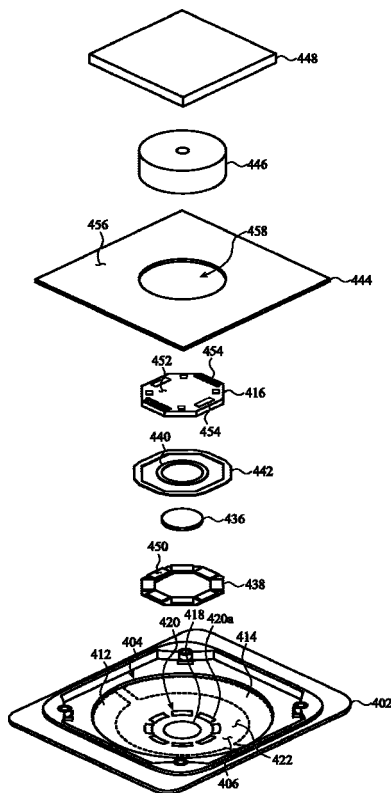


FIG. 4C

115. The Apple Watch Series 4 and later devices include one or more processors configured to receive one or more signals from at least one of the at least four detectors, the one or more signals responsive to at least a physiological parameter of the user; and process the one or more signals to determine measurements of the physiological parameter. Further, the Apple Watch Series 4 and later devices include a network interface configured to communicate with a mobile phone and a touch-screen display configured to provide a user interface where the user interface is configured to display indicia responsive to the measurements of the physiological parameter, a storage device configured to at least temporarily store at least the measurements of the physiological parameter, and a strap configured to position the physiological measurement device on the user as shown in the image below found on the

1 Apple website at <https://support.apple.com/en-us/HT204666> and as further
2 described at <https://support.apple.com/en-us/HT204505>:



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11 116. The Apple Watch Series 4 and later devices have an orientation of
12 the user interface that is configurable responsive to a user input as described on
13 the Apple website at <https://support.apple.com/guide/watch/change-language-orientation-apple-watch-apd0bfl8f46b/watches>.

15 117. Upon information and belief, Defendant has knowledge of
16 Masimo's patents, including the '564 patent, at least based on O'Reilly and
17 Lamego's former positions with Plaintiffs. Masimo filed provisional patent
18 applications that led to the '564 patent in August 2008, while O'Reilly and
19 Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of
20 the '564 patent. Defendant had knowledge of the '564 patent no later than the
21 filing of this Second Amended Complaint.

22 118. Upon information and belief, Defendant has actively induced
23 others to infringe the '564 patent by marketing and selling the above Apple
24 Watch Series 4 and later devices, knowing and intending that such systems
25 would be used by customers and end users in a manner that infringes the
26 '564 patent. To that end, Defendant provides instructions and teachings to its
27 customers and end users that such Apple Watch Series 4 and later devices be
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1 used to infringe the '564 patent. Defendant's acts constitute infringement of the
2 '564 patent in violation of 35 U.S.C. § 271(b).

3 119. Upon information and belief, Defendant actively induces users to
4 directly infringe the asserted claims of the '564 patent. By way of example
5 only, upon information and belief, Defendant actively induces direct
6 infringement of the '564 patent by providing directions, demonstrations, guides,
7 manuals, training for use, and/or other materials necessary for the use of the
8 Apple Watch Series 4 and later devices, including use with Apple iPhones.
9 Upon information and belief, Defendant knew or should have known that these
10 activities would cause direct infringement.

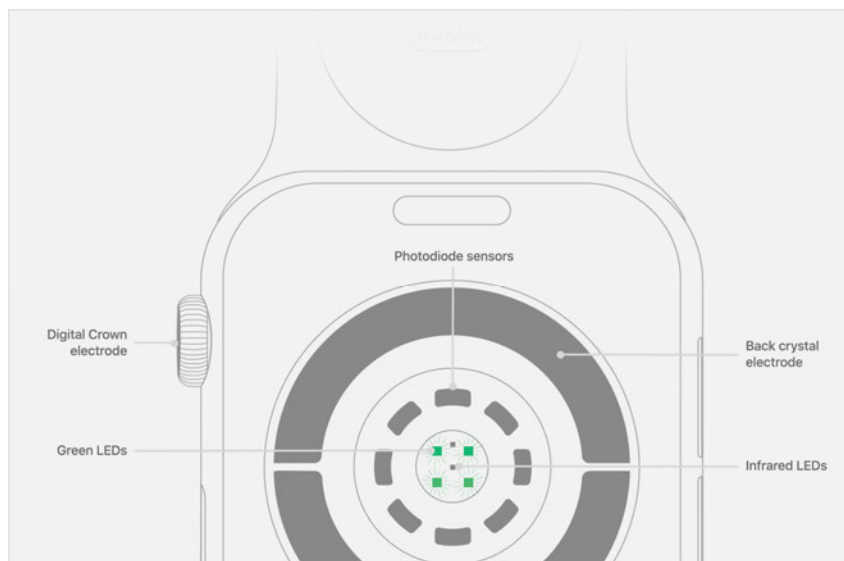
11 120. Upon information and belief, Defendant's acts constitute
12 contributory infringement of the '564 patent in violation of 35 U.S.C. § 271(c).
13 Upon information and belief, Defendant contributorily infringes because, among
14 other things, Defendant offers to sell and/or sells within the United States,
15 and/or imports into the United States, components of the Apple Watch Series 4
16 and later devices and Apple iPhones that constitute material parts of the
17 invention of the asserted claims of the '564 patent, are not staple articles or
18 commodities of commerce suitable for substantial non-infringing use and are
19 known by Defendant to be especially made or especially adapted for use in an
20 infringement of the '564 patent.

21 121. Defendant's infringement of the '564 patent is willful, deliberate,
22 and intentional by continuing its acts of infringement after becoming aware of
23 the '564 patent and its infringement thereof, thus acting in reckless disregard of
24 Masimo's patent rights.

25 122. Because of Defendant's infringement of the '564 patent, Masimo
26 has suffered and will continue to suffer irreparable harm and injury, including
27 monetary damages in an amount to be determined at trial.
28



128. The Apple Watch Series 4 and later devices include one or more emitters configured to emit light into tissue of a user, and at least four detectors, wherein each of the at least four detectors has a corresponding window that allows light to pass through to the detector as shown in the image below found on the Apple website at <https://support.apple.com/en-us/HT204666>:



129. The detectors output signals responsive to light from the light emitters attenuated by body tissue. Upon information and belief, the signals are indicative of a physiological parameter (for example, heart rate) of the wearer.

1 130. Upon information and belief, relevant technology in the Apple
2 Watch Series 4 and later devices is described in the below citation to U.S. Patent
3 Application Publication 2019/0072912 (the '912 publication). The Apple
4 Watch Series 4 and later devices include a wall that surrounds at least the at
5 least four detectors, a cover comprising a protruding convex surface above the
6 detectors that is sufficiently rigid and operably connects to the wall. Fig. 4C
7 and the corresponding text of the '912 publication show, for example, such wall
8 and cover:

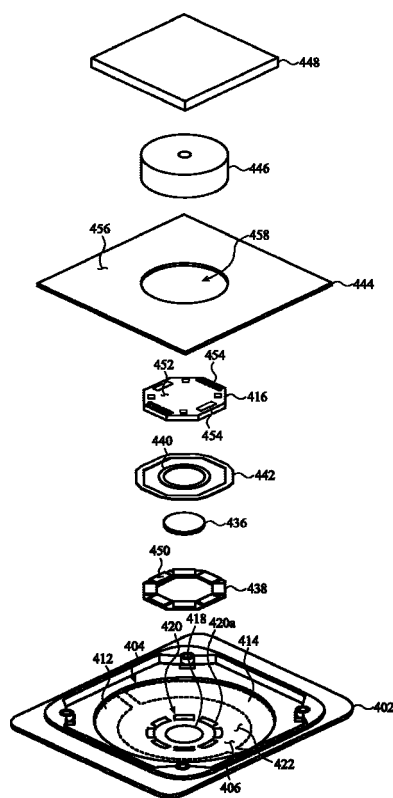


FIG. 4C

23 131. The Apple Watch Series 4 and later devices include a storage
24 device configured to at least temporarily store at least the measurements of the
25 physiological parameter and communicate wirelessly with iPhone devices that
26 include a touch-screen display configured to provide a user interface to display
27 indicia responsive to measurements of the physiological parameter and one or
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1 more processors configured to wirelessly receive one or more signals from the
2 physiological sensor device, the one or more signals responsive to at least a
3 physiological parameter of the user, and an orientation of the user interface is
4 configurable responsive to a user input as shown in the image below found on
5 the Apple website at <https://support.apple.com/en-us/HT204666> and as further
6 described at <https://support.apple.com/en-us/HT204505>:



15 132. Upon information and belief, Defendant has knowledge of
16 Masimo's patents, including the '765 patent, at least based on O'Reilly and
17 Lamego's former positions with Plaintiffs. Masimo filed provisional patent
18 applications that led to the '765 patent in August 2008, while O'Reilly and
19 Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of
20 the '765 patent. Defendant had knowledge of the '765 patent no later than the
21 filing of this Second Amended Complaint.

22 133. Upon information and belief, Defendant has actively induced
23 others to infringe the '765 patent by marketing and selling the above Apple
24 Watch Series 4 and later devices, knowing and intending that such systems
25 would be used by customers and end users in a manner that infringes the
26 '765 patent. To that end, Defendant provides instructions and teachings to its
27 customers and end users that such Apple Watch Series 4 and later devices be
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1 used to infringe the '765 patent. Defendant's acts constitute infringement of the
2 '765 patent in violation of 35 U.S.C. § 271(b).

3 134. Upon information and belief, Defendant actively induces users to
4 directly infringe the asserted claims of the '765 patent. By way of example
5 only, upon information and belief, Defendant actively induces direct
6 infringement of the '765 patent by providing directions, demonstrations, guides,
7 manuals, training for use, and/or other materials necessary for the use of the
8 Apple Watch Series 4 and later devices, including use with Apple iPhones.
9 Upon information and belief, Defendant knew or should have known that these
10 activities would cause direct infringement.

11 135. Upon information and belief, Defendant's acts constitute
12 contributory infringement of the '765 patent in violation of 35 U.S.C. § 271(c).
13 Upon information and belief, Defendant contributorily infringes because, among
14 other things, Defendant offers to sell and/or sells within the United States,
15 and/or imports into the United States, components of the Apple Watch Series 4
16 and later devices and Apple iPhones that constitute material parts of the
17 invention of the asserted claims of the '765 patent, are not staple articles or
18 commodities of commerce suitable for substantial non-infringing use and are
19 known by Defendant to be especially made or especially adapted for use in an
20 infringement of the '765 patent.

21 136. Defendant's infringement of the '765 patent is willful, deliberate,
22 and intentional by continuing its acts of infringement after becoming aware of
23 the '765 patent and its infringement thereof, thus acting in reckless disregard of
24 Masimo's patent rights.

25 137. Because of Defendant's infringement of the '765 patent, Masimo
26 has suffered and will continue to suffer irreparable harm and injury, including
27 monetary damages in an amount to be determined at trial.
28

1 138. Upon information and belief, unless enjoined, Defendant, and/or
2 others acting on behalf of Defendant, will continue their infringing acts, thereby
3 causing additional irreparable injury to Masimo for which there is no adequate
4 remedy at law.

5 **XIV. SEVENTH CAUSE OF ACTION**

6 **(INFRINGEMENT OF U.S. PATENT NO. 10,702,194)**

7 139. Plaintiff Masimo hereby realleges and incorporates by reference
8 the allegations set forth in paragraphs 1 through 50.

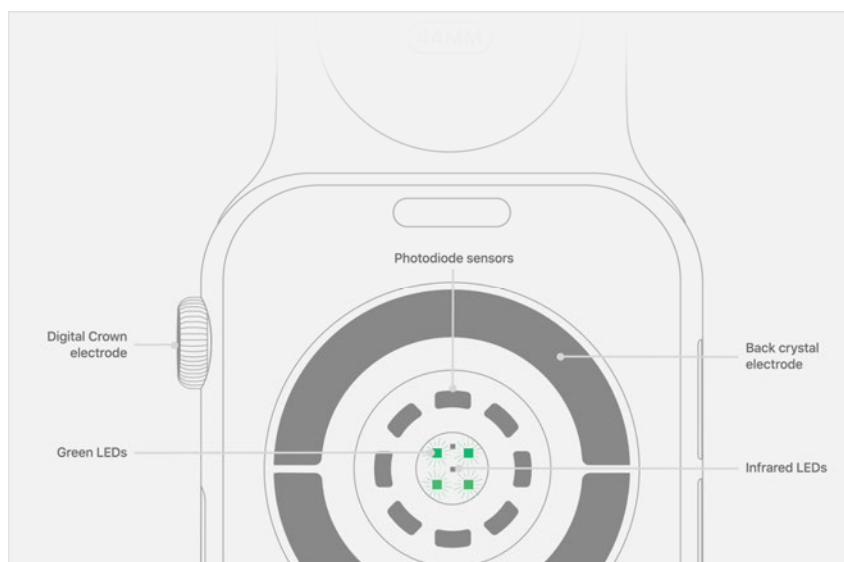
9 140. Upon information and belief, Defendant's products, including at
10 least the Apple Watch Series 4 and later devices, infringe at least Claim 1 of the
11 '194 patent under at least 35 U.S.C. § 271(a), (b), and (c).

12 141. Upon information and belief, Defendant has directly infringed one
13 or more claims of the '194 patent through manufacture, use, sale, offer for sale,
14 and/or importation into the United States of physiological monitors, including
15 the Apple Watch Series 4 and later devices.

16 142. For example, upon information and belief, in operation, the Apple
17 Watch Series 4 and later devices in combination with iPhone devices include all
18 of the limitations of Claim 1 of the '194 patent as set forth herein and further
19 illustrated in the claim chart shown in Exhibit 1. The Apple Watch Series 4 and
20 later devices in combination with iPhone devices are physiological measurement
21 systems with physiological sensors as shown in the image below found on the
22 Apple website at <https://www.apple.com/apple-watch-series-4/health/>:



143. The Apple Watch Series 4 and later devices include one or more emitters configured to emit light into tissue of a user, and first and second sets of four photodiodes, wherein upon information and belief the photodiodes in each set are connected to one another in parallel to provide a two signal streams each of the at least photodiodes has a corresponding window that allows light to pass through to the photodiode as shown in the image below found on the Apple website at <https://support.apple.com/en-us/HT204666>:



144. The photodiodes output signals responsive to light from the light emitters attenuated by body tissue. Upon information and belief, the signals are

1 indicative of a physiological parameter (for example, heart rate) of the wearer.

2 145. Upon information and belief, relevant technology in the Apple
3 Watch Series 4 and later devices is described in the below citation to U.S. Patent
4 Application Publication 2019/0072912 (the '912 publication). The Apple
5 Watch Series 4 and later devices include a wall that surrounds at least the
6 photodiodes, a cover comprising a rigid protruding convex surface above the
7 photodiodes and wall. Fig. 4C and the corresponding text of the '912
8 publication show, for example, such wall and cover:

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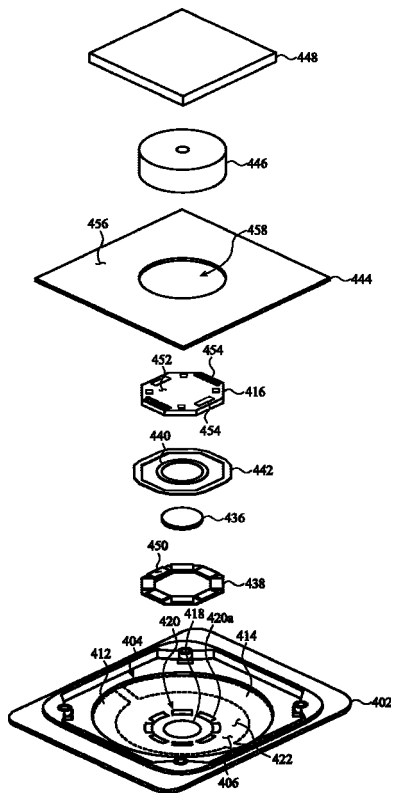


FIG. 4C

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146. The Apple Watch Series 4 and later devices include a storage device configured to at least temporarily store at least the measurements of the physiological parameter and communicate wirelessly with iPhone devices that include one or more processors configured to wirelessly receive one or more signals from the physiological sensor device, the one or more signals responsive

1 to at least a physiological parameter of the user, and a touch-screen display
2 configured to provide a user interface to display indicia responsive to
3 measurements of the physiological parameter with an orientation of the user
4 interface configurable as shown in the image below found on the Apple website
5 at <https://support.apple.com/en-us/HT204666> and as further described at
6 <https://support.apple.com/en-us/HT204505>:



15 147. Upon information and belief, Defendant has knowledge of
16 Masimo's patents, including the '194 patent, at least based on O'Reilly and
17 Lamego's former positions with Plaintiffs. Masimo filed provisional patent
18 applications that led to the '194 patent in August 2008, while O'Reilly and
19 Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of
20 the '194 patent. Defendant had knowledge of the '194 patent no later than the
21 filing of this Second Amended Complaint.

22 148. Upon information and belief, Defendant has actively induced
23 others to infringe the '194 patent by marketing and selling the above Apple
24 Watch Series 4 and later devices, knowing and intending that such systems
25 would be used by customers and end users in a manner that infringes the
26 '194 patent. To that end, Defendant provides instructions and teachings to its
27 customers and end users that such Apple Watch Series 4 and later devices be
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1 used to infringe the '194 patent. Defendant's acts constitute infringement of the
2 '194 patent in violation of 35 U.S.C. § 271(b).

3 149. Upon information and belief, Defendant actively induces users to
4 directly infringe the asserted claims of the '194 patent. By way of example
5 only, upon information and belief, Defendant actively induces direct
6 infringement of the '194 patent by providing directions, demonstrations, guides,
7 manuals, training for use, and/or other materials necessary for the use of the
8 Apple Watch Series 4 and later devices, including use with Apple iPhones.
9 Upon information and belief, Defendant knew or should have known that these
10 activities would cause direct infringement.

11 150. Upon information and belief, Defendant's acts constitute
12 contributory infringement of the '194 patent in violation of 35 U.S.C. § 271(c).
13 Upon information and belief, Defendant contributorily infringes because, among
14 other things, Defendant offers to sell and/or sells within the United States,
15 and/or imports into the United States, components of the Apple Watch Series 4
16 and later devices and Apple iPhones that constitute material parts of the
17 invention of the asserted claims of the '194 patent, are not staple articles or
18 commodities of commerce suitable for substantial non-infringing use and are
19 known by Defendant to be especially made or especially adapted for use in an
20 infringement of the '194 patent.

21 151. Defendant's infringement of the '194 patent is willful, deliberate,
22 and intentional by continuing its acts of infringement after becoming aware of
23 the '194 patent and its infringement thereof, thus acting in reckless disregard of
24 Masimo's patent rights.

25 152. Because of Defendant's infringement of the '194 patent, Masimo
26 has suffered and will continue to suffer irreparable harm and injury, including
27 monetary damages in an amount to be determined at trial.
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1 153. Upon information and belief, unless enjoined, Defendant, and/or
2 others acting on behalf of Defendant, will continue their infringing acts, thereby
3 causing additional irreparable injury to Masimo for which there is no adequate
4 remedy at law.

5 **XV. EIGHTH CAUSE OF ACTION**

6 **(INFRINGEMENT OF U.S. PATENT NO. 10,702,195)**

7 154. Plaintiff Masimo hereby realleges and incorporates by reference
8 the allegations set forth in paragraphs 1 through 50.

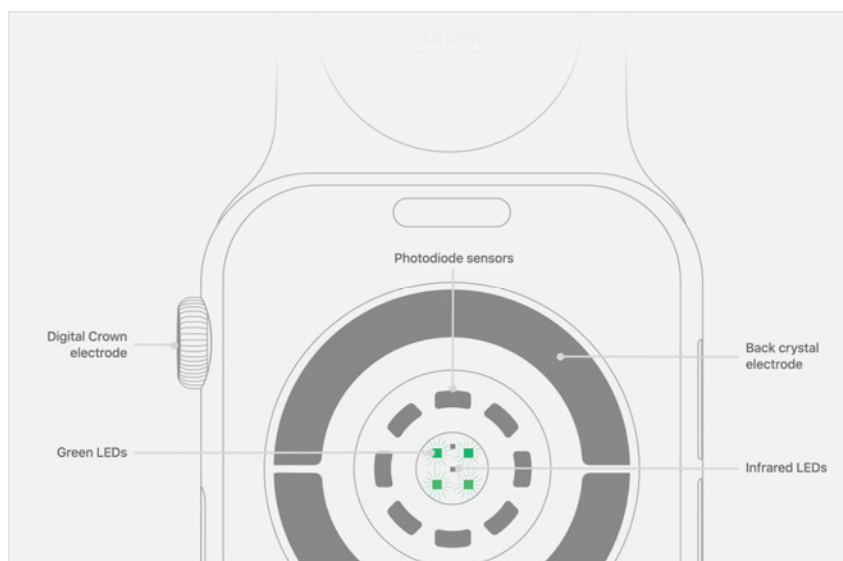
9 155. Upon information and belief, Defendant's products, including at
10 least the Apple Watch Series 4 and later devices, infringe at least Claim 1 of the
11 '195 patent under at least 35 U.S.C. § 271(a), (b), and (c).

12 156. Upon information and belief, Defendant has directly infringed one
13 or more claims of the '195 patent through manufacture, use, sale, offer for sale,
14 and/or importation into the United States of physiological monitors, including
15 the Apple Watch Series 4 and later devices.

16 157. For example, upon information and belief, in operation, the Apple
17 Watch Series 4 and later devices in combination with iPhone devices include all
18 of the limitations of Claim 1 of the '195 patent as set forth herein and further
19 illustrated in the claim chart shown in Exhibit 1. The Apple Watch Series 4 and
20 later devices are user-worn physiological measurement devices as shown in
21 the image below found on the Apple website at [https://www.apple.com/apple-
22 watch-series-4/health/](https://www.apple.com/apple-watch-series-4/health/):



158. The Apple Watch Series 4 and later devices include one or more emitters configured to emit light into tissue of a user, a first set of four photodiodes connected to one another in parallel to provide a first signal stream and a second set of four photodiodes connected to one another in parallel to provide a second signal stream and positioned on a first surface and surrounded by a wall that is operably connected to the first surface, as shown in the image below found on the Apple website at <https://support.apple.com/en-us/HT204666>:



1 159. Upon information and belief, relevant technology in the Apple
2 Watch Series 4 and later devices is described in the below citation to U.S. Patent
3 Application Publication 2019/0072912 (the '912 publication). The Apple
4 Watch Series 4 and later devices include a wall that surrounds the photodiodes,
5 a cover located above the wall and comprising a single protruding convex
6 surface configured to be located between tissue of the user and the photodiodes
7 when the physiological measurement device is worn by the user, wherein the
8 physiological measurement device provides a plurality of optical paths, wherein
9 each of the optical paths exits an emitter of the one or more emitters, passes
10 through tissue of the user, passes through the single protruding convex surface,
11 and arrives at a corresponding photodiode of the at least one of the first or
12 second sets of photodiodes, the corresponding photodiode configured to receive
13 light emitted by the emitter after traversal by the light of a corresponding optical
14 path of the plurality of optical paths and after attenuation of the light by tissue
15 of the user. Fig. 4C and the corresponding text of the '912 publication show, for
16 example, such wall and cover:

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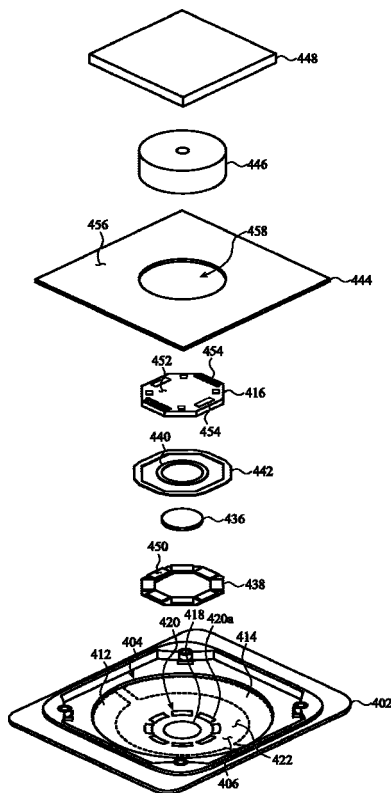


FIG. 4C

160. Upon information and belief, Defendant has knowledge of Masimo's patents, including the '195 patent, at least based on O'Reilly and Lamego's former positions with Plaintiffs. Masimo filed provisional patent applications that led to the '195 patent in August 2008, while O'Reilly and Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of the '195 patent. Defendant had knowledge of the '195 patent no later than the filing of this Second Amended Complaint.

161. Upon information and belief, Defendant has actively induced others to infringe the '195 patent by marketing and selling the above Apple Watch Series 4 and later devices, knowing and intending that such systems would be used by customers and end users in a manner that infringes the '195 patent. To that end, Defendant provides instructions and teachings to its customers and end users that such Apple Watch Series 4 and later devices be

1 used to infringe the '195 patent. Defendant's acts constitute infringement of the
2 '195 patent in violation of 35 U.S.C. § 271(b).

3 162. Upon information and belief, Defendant actively induces users to
4 directly infringe the asserted claims of the '195 patent. By way of example
5 only, upon information and belief, Defendant actively induces direct
6 infringement of the '195 patent by providing directions, demonstrations, guides,
7 manuals, training for use, and/or other materials necessary for the use of the
8 Apple Watch Series 4 and later devices, including use with Apple iPhones.
9 Upon information and belief, Defendant knew or should have known that these
10 activities would cause direct infringement.

11 163. Upon information and belief, Defendant's acts constitute
12 contributory infringement of the '195 patent in violation of 35 U.S.C. § 271(c).
13 Upon information and belief, Defendant contributorily infringes because, among
14 other things, Defendant offers to sell and/or sells within the United States,
15 and/or imports into the United States, components of the Apple Watch Series 4
16 and later devices and Apple iPhones that constitute material parts of the
17 invention of the asserted claims of the '195 patent, are not staple articles or
18 commodities of commerce suitable for substantial non-infringing use and are
19 known by Defendant to be especially made or especially adapted for use in an
20 infringement of the '195 patent.

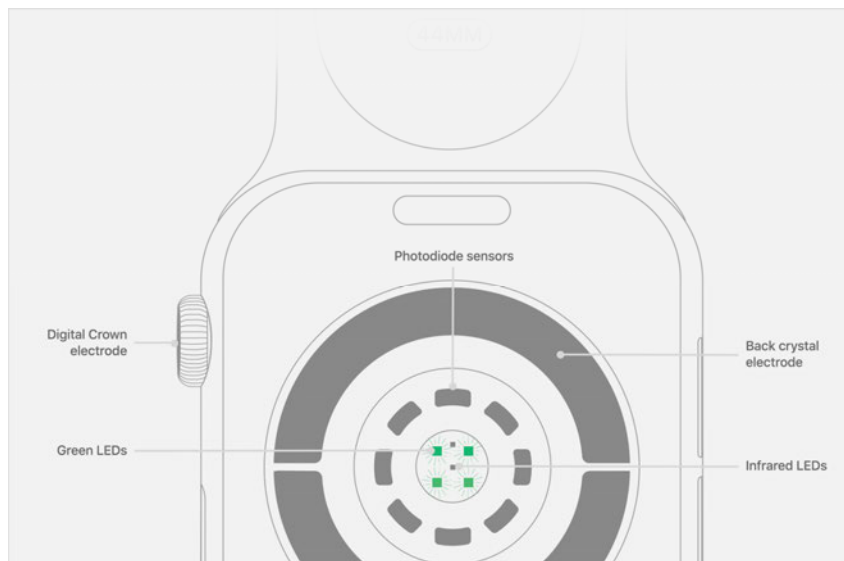
21 164. Defendant's infringement of the '195 patent is willful, deliberate,
22 and intentional by continuing its acts of infringement after becoming aware of
23 the '195 patent and its infringement thereof, thus acting in reckless disregard of
24 Masimo's patent rights.

25 165. Because of Defendant's infringement of the '195 patent, Masimo
26 has suffered and will continue to suffer irreparable harm and injury, including
27 monetary damages in an amount to be determined at trial.
28



171. The Apple Watch Series 4 and later devices include upon information and belief one or more emitters, a substrate having a surface, a first set of four photodiodes arranged on the surface and spaced apart from each other and connected to one another in parallel to provide a first signal stream responsive to light from at least one of the one or more light emitters attenuated by body tissue, a second set of four photodiodes arranged on the surface and spaced apart from each other and connected to one another in parallel to provide a second signal stream responsive to light from at least one of the one or more light emitters attenuated by body tissue, at least one of the first signal stream or the second signal stream includes information usable to determine a physiological parameter of a wearer of the noninvasive physiological parameter measurement device as shown in the image below found on the Apple website at <https://support.apple.com/en-us/HT204666>:

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172. Upon information and belief, relevant technology in the Apple Watch Series 4 and later devices is described in the below citation to U.S. Patent Application Publication 2019/0072912 (the '912 publication). The Apple Watch Series 4 and later devices include a wall extending from the surface and configured to surround at least the first and second sets of photodiodes; and a cover arranged to cover at least a portion of the surface of the substrate, wherein the cover comprises a protrusion that extends over all of the photodiodes of the first and second sets of photodiodes arranged on the surface, and wherein the cover is further configured to cover the wall. Fig. 4C and the corresponding text of the '912 publication show, for example, such wall and cover:

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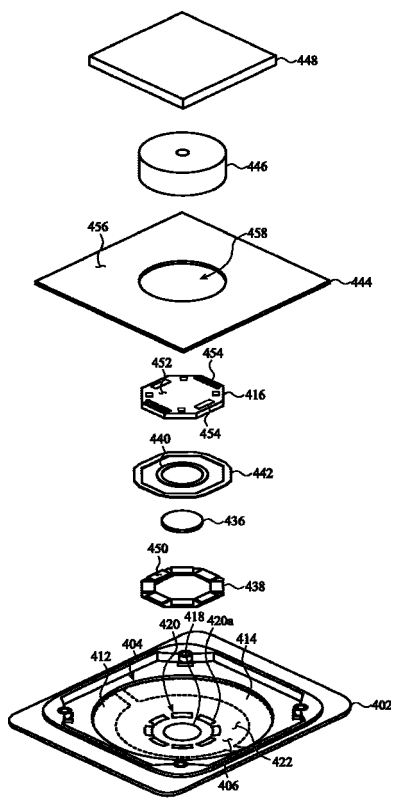


FIG. 4C

173. Upon information and belief, Defendant has knowledge of Masimo's patents, including the '366 patent, at least based on O'Reilly and Lamego's former positions with Plaintiffs. Masimo filed provisional patent applications that led to the '366 patent in August 2008, while O'Reilly and Lamego were with Masimo and/or Cercacor. Lamego is a named inventor of the '366 patent. Defendant had knowledge of the '366 patent no later than the filing of this Second Amended Complaint.

174. Upon information and belief, Defendant has actively induced others to infringe the '366 patent by marketing and selling the above Apple Watch Series 4 and later devices, knowing and intending that such systems would be used by customers and end users in a manner that infringes the '366 patent. To that end, Defendant provides instructions and teachings to its customers and end users that such Apple Watch Series 4 and later devices be

1 used to infringe the '366 patent. Defendant's acts constitute infringement of the
2 '366 patent in violation of 35 U.S.C. § 271(b).

3 175. Upon information and belief, Defendant actively induces users to
4 directly infringe the asserted claims of the '366 patent. By way of example
5 only, upon information and belief, Defendant actively induces direct
6 infringement of the '366 patent by providing directions, demonstrations, guides,
7 manuals, training for use, and/or other materials necessary for the use of the
8 Apple Watch Series 4 and later devices, including use with Apple iPhones.
9 Upon information and belief, Defendant knew or should have known that these
10 activities would cause direct infringement.

11 176. Upon information and belief, Defendant's acts constitute
12 contributory infringement of the '366 patent in violation of 35 U.S.C. § 271(c).
13 Upon information and belief, Defendant contributorily infringes because, among
14 other things, Defendant offers to sell and/or sells within the United States,
15 and/or imports into the United States, components of the Apple Watch Series 4
16 and later devices and Apple iPhones that constitute material parts of the
17 invention of the asserted claims of the '366 patent, are not staple articles or
18 commodities of commerce suitable for substantial non-infringing use and are
19 known by Defendant to be especially made or especially adapted for use in an
20 infringement of the '366 patent.

21 177. Defendant's infringement of the '366 patent is willful, deliberate,
22 and intentional by continuing its acts of infringement after becoming aware of
23 the '366 patent and its infringement thereof, thus acting in reckless disregard of
24 Masimo's patent rights.

25 178. Because of Defendant's infringement of the '366 patent, Masimo
26 has suffered and will continue to suffer irreparable harm and injury, including
27 monetary damages in an amount to be determined at trial.
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1 179. Upon information and belief, unless enjoined, Defendant, and/or
2 others acting on behalf of Defendant, will continue their infringing acts, thereby
3 causing additional irreparable injury to Masimo for which there is no adequate
4 remedy at law.

5 **XVII. TENTH CAUSE OF ACTION**

6 **(INFRINGEMENT OF U.S. PATENT NO. 6,771,994)**

7 180. Plaintiff Masimo hereby realleges and incorporates by reference
8 the allegations set forth in paragraphs 1 through 50.

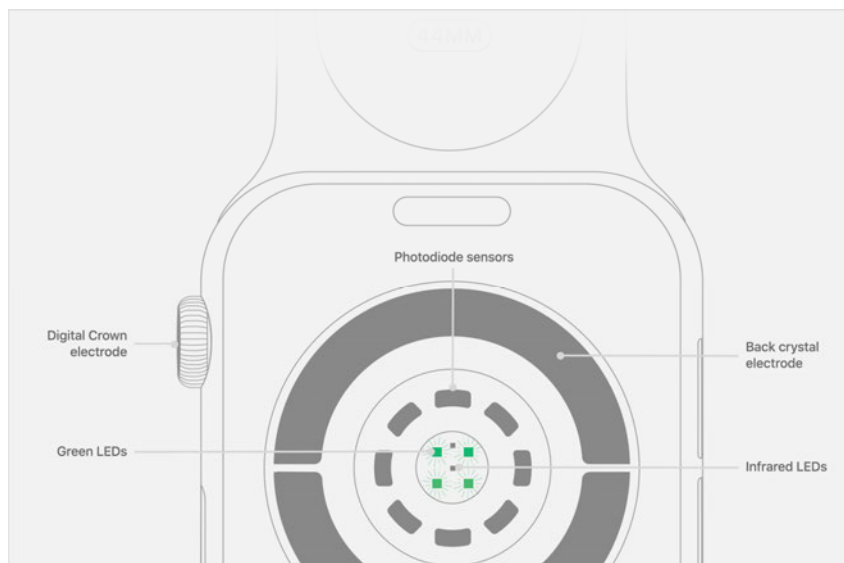
9 181. Upon information and belief, Defendant's products, including at
10 least the Apple Watch Series 4 and later devices, infringe at least Claim 15 of
11 the '994 patent under at least 35 U.S.C. § 271(a), (b), and (c).

12 182. Upon information and belief, Defendant has directly infringed one
13 or more claims of the '994 patent through manufacture, use, sale, offer for sale,
14 and/or importation into the United States of physiological monitors, including
15 the Apple Watch Series 4 and later devices.

16 183. For example, upon information and belief, in operation, the Apple
17 Watch Series 4 and later devices include all of the limitations of Claim 15 of the
18 '994 patent as set forth herein and further illustrated in the claim chart shown in
19 Exhibit 1. Upon information and belief, the Apple Watch Series 4 and later
20 devices detect light transmitted through body tissue carrying pulsing blood to
21 determine heart rate as shown in the image below found on the Apple website at
22 <https://www.apple.com/apple-watch-series-4/health/>



184. The Apple Watch Series 4 and later devices include at least one light emission device and a light sensitive detector as shown in the image below found on the Apple website at <https://support.apple.com/en-us/HT204666>:



185. The detectors output signals responsive to light from the light emitters attenuated by body tissue. Upon information and belief, the signals are indicative of a physiological parameter (for example, heart rate) of the wearer.

186. Upon information and belief, relevant technology in the Apple Watch Series 4 and later devices is described in the below citation to U.S. Patent Application Publication 2019/0090806 (the '806 publication). The Apple

1 Watch Series 4 and later devices include a plurality of louvers positioned over
2 the light sensitive detector to accept light from the at least one light emission
3 device originating from a general direction of the at least one light emission
4 device and then transmitting through body tissue carrying pulsing blood,
5 wherein the louvers accept the light when the sensor is properly applied to tissue
6 of a patient. Upon information and belief, this technology is described, for
7 example, in Fig. 7 and the corresponding text of the '806 publication:

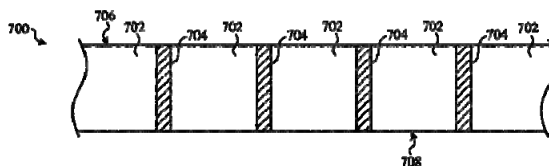


FIG. 7

11 187. Upon information and belief, Defendant has knowledge of
12 Masimo's patents, including the '994 patent, at least based on O'Reilly and
13 Lamego's former positions with Plaintiffs. Masimo filed a patent application
14 that led to the '994 patent on June 16, 2000. The '994 patent issued on August
15 3, 2004, and Masimo has maintained the patent while O'Reilly and Lamego
16 were with Masimo and/or Cercacor. Defendant had knowledge of the
17 '994 patent no later than the filing of the original Complaint.

18 188. Upon information and belief, Defendant has actively induced
19 others to infringe the '994 patent by marketing and selling the above Apple
20 Watch Series 4 and later devices, knowing and intending that such systems
21 would be used by customers and end users in a manner that infringes the
22 '994 patent. To that end, Defendant provides instructions and teachings to its
23 customers and end users that such Apple Watch Series 4 and later devices be
24 used to infringe the '994 patent. Defendant's acts constitute infringement of the
25 '994 patent in violation of 35 U.S.C. § 271(b).

26 189. Upon information and belief, Defendant actively induces users to
27 directly infringe the asserted claims of the '994 patent. By way of example
28 only, upon information and belief, Defendant actively induces direct

1 infringement of the '994 patent by providing directions, demonstrations, guides,
2 manuals, training for use, and/or other materials necessary for the use of the
3 Apple Watch Series 4 and later devices. Upon information and belief,
4 Defendant knew or should have known that these activities would cause direct
5 infringement.

6 190. Upon information and belief, Defendant's acts constitute
7 contributory infringement of the '994 patent in violation of 35 U.S.C. § 271(c).
8 Upon information and belief, Defendant contributorily infringes because, among
9 other things, Defendant offers to sell and/or sells within the United States,
10 and/or imports into the United States, components of the Apple Watch Series 4
11 and later devices that constitute material parts of the invention of the asserted
12 claims of the '994 patent, are not staple articles or commodities of commerce
13 suitable for substantial non-infringing use, and are known by Defendant to be
14 especially made or especially adapted for use in an infringement of the
15 '994 patent.

16 191. Defendant's infringement of the '994 patent is willful, deliberate,
17 and intentional by continuing its acts of infringement after becoming aware of
18 the '994 patent and its infringement thereof, thus acting in reckless disregard of
19 Masimo's patent rights.

20 192. Because of Defendant's infringement of the '994 patent, Masimo
21 has suffered and will continue to suffer irreparable harm and injury, including
22 monetary damages in an amount to be determined at trial.

23 193. Upon information and belief, unless enjoined, Defendant, and/or
24 others acting on behalf of Defendant, will continue their infringing acts, thereby
25 causing additional irreparable injury to Masimo for which there is no adequate
26 remedy at law.

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XVIII. ELEVENTH CAUSE OF ACTION
(INFRINGEMENT OF U.S. PATENT NO. 8,457,703)

194. Plaintiff Masimo hereby realleges and incorporates by reference the allegations set forth in paragraphs 1 through 50.

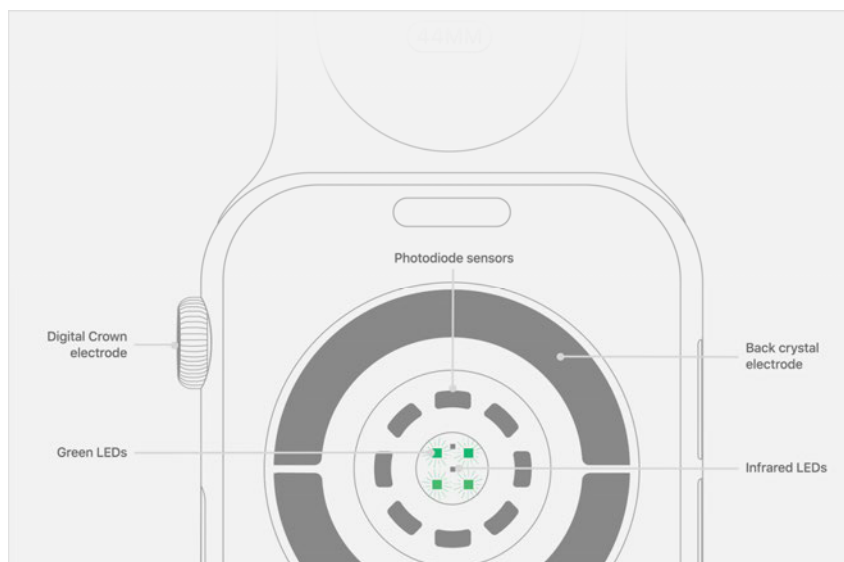
195. Upon information and belief, Defendant’s products, including at least the Apple Watch Series 3 and later devices, infringe at least Claim 1 of the ’703 patent under at least 35 U.S.C. § 271(a), (b), and (c).

196. Upon information and belief, Defendant has directly infringed one or more claims of the ’703 patent through manufacture, use, sale, offer for sale, and/or importation into the United States of physiological monitors, including the Apple Watch Series 3 and later devices.

197. For example, upon information and belief, in operation, the Apple Watch Series 3 and later devices include all of the limitations of Claim 1 of the ’703 patent as set forth herein and further illustrated in the claim chart shown in Exhibit 1. The Apple Watch Series 3 and later devices provide an indication of a physiological parameter (for example, heart rate) of the wearer as shown in the image below found on the Apple website at <https://www.apple.com/apple-watch-series-4/health/>:



1 198. The Apple Watch Series 3 and later devices drive one or more light
2 sources configured to emit light into tissue and receives one or more signals
3 from one or more detectors configured to detect light after attenuation by tissue
4 as shown in the image below found on the Apple website at
5 <https://support.apple.com/en-us/HT204666>:



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16 199. The detectors output signals responsive to light from the light
17 emitters attenuated by body tissue. Upon information and belief, the signals are
18 indicative of a physiological parameter (for example, heart rate) of the wearer.

19 200. Upon information and belief, the Apple Watch Series 3 and later
20 devices continuously operate at a lower power consumption level to determine
21 measurement values for heart rate, as described at [https://support.apple.com/en-](https://support.apple.com/en-us/HT204666)
22 [us/HT204666](https://support.apple.com/en-us/HT204666):

23 The optical heart sensor in Apple Watch uses what is known as
24 photoplethysmography. This technology, while difficult to
25 pronounce, is based on a very simple fact: Blood is red because it
26 reflects red light and absorbs green light. Apple Watch uses green
27 LED lights paired with light-sensitive photodiodes to detect the
28 amount of blood flowing through your wrist at any given moment.

1 When your heart beats, the blood flow in your wrist — and the
2 green light absorption — is greater. Between beats, it's less. By
3 flashing its LED lights hundreds of times per second, Apple Watch
4 can calculate the number of times the heart beats each minute —
5 your heart rate. The optical heart sensor supports a range of 30–210
6 beats per minute. In addition, the optical heart sensor is designed to
7 compensate for low signal levels by increasing both LED
8 brightness and sampling rate.

9 201. Upon information and belief, the Apple Watch Series 3 and later
10 devices as described above compare processing characteristics to a
11 predetermined threshold, and when the processing characteristics pass the
12 threshold, the Apple Watch Series 3 and later devices transition to continuously
13 operating at a higher power consumption level, wherein the continuously
14 operating at the lower power consumption level comprises reducing activation
15 of an attached sensor, the sensor positioning the light sources and the detectors
16 proximate to the tissue. Upon information and belief, relevant technology in the
17 Apple Watch Series 3 and later devices is described in International Application
18 Publication WO 2018/226305 (the '305 publication), for example, at paragraphs
19 [0055]-[0061].

20 202. Upon information and belief, Defendant has knowledge of
21 Masimo's patents, including the '703 patent, at least based on O'Reilly and
22 Lamego's former positions with Plaintiffs. Masimo filed a provisional patent
23 application that led to the '703 patent on July 2, 2001. The '703 patent issued
24 on June 4, 2013, while O'Reilly and Lamego were with Masimo and/or
25 Cercacor. Defendant had knowledge of the '703 patent no later than the filing
26 of the original Complaint.

27 203. Upon information and belief, Defendant has actively induced
28 others to infringe the '703 patent by marketing and selling the above Apple

1 Watch Series 3 and later devices, knowing and intending that such systems
2 would be used by customers and end users in a manner that infringes the
3 '703 patent. To that end, Defendant provides instructions and teachings to its
4 customers and end users that such Apple Watch Series 3 and later devices be
5 used to infringe the '703 patent. Defendant's acts constitute infringement of the
6 '703 patent in violation of 35 U.S.C. § 271(b).

7 204. Upon information and belief, Defendant actively induces users to
8 directly infringe the asserted claims of the '703 patent. By way of example
9 only, upon information and belief, Defendant actively induces direct
10 infringement of the '703 patent by providing directions, demonstrations, guides,
11 manuals, training for use, and/or other materials necessary for the use of the
12 Apple Watch Series 3 and later devices. Upon information and belief,
13 Defendant knew or should have known that these activities would cause direct
14 infringement.

15 205. Upon information and belief, Defendant's acts constitute
16 contributory infringement of the '703 patent in violation of 35 U.S.C. § 271(c).
17 Upon information and belief, Defendant contributorily infringes because, among
18 other things, Defendant offers to sell and/or sells within the United States,
19 and/or imports into the United States, components of the Apple Watch Series 3
20 and later devices that constitute material parts of the invention of the asserted
21 claims of the '703 patent, are not staple articles or commodities of commerce
22 suitable for substantial non-infringing use, and are known by Defendant to be
23 especially made or especially adapted for use in an infringement of the
24 '703 patent.

25 206. Defendant's infringement of the '703 patent is willful, deliberate,
26 and intentional by continuing its acts of infringement after becoming aware of
27 the '703 patent and its infringement thereof, thus acting in reckless disregard of
28 Masimo's patent rights.

1 207. Because of Defendant's infringement of the '703 patent, Masimo
2 has suffered and will continue to suffer irreparable harm and injury, including
3 monetary damages in an amount to be determined at trial.

4 208. Upon information and belief, unless enjoined, Defendant, and/or
5 others acting on behalf of Defendant, will continue their infringing acts, thereby
6 causing additional irreparable injury to Masimo for which there is no adequate
7 remedy at law.

8 **XIX. TWELFTH CAUSE OF ACTION**

9 **(INFRINGEMENT OF U.S. PATENT NO. 10,433,776)**

10 209. Plaintiff Masimo hereby realleges and incorporates by reference
11 the allegations set forth in paragraphs 1 through 50.

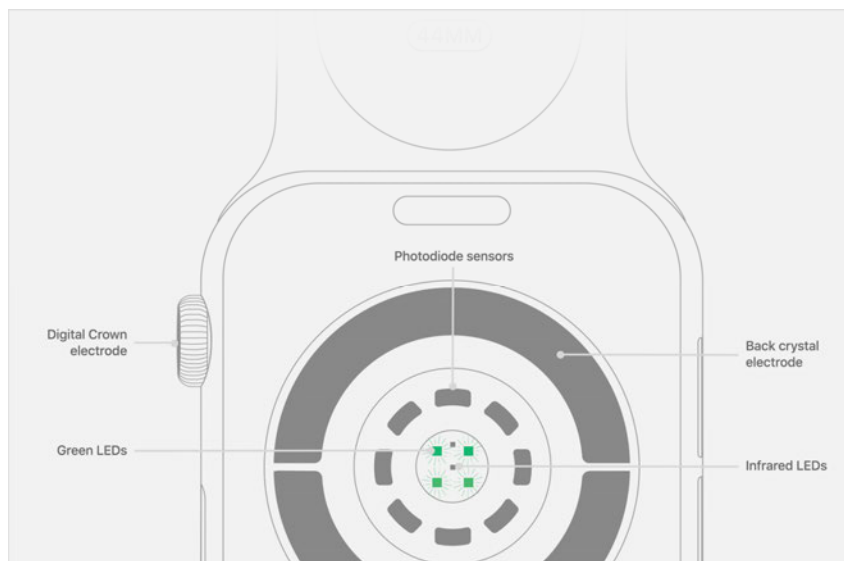
12 210. Upon information and belief, Defendant's products, including at
13 least the Apple Watch Series 3 and later devices, infringe at least Claim 1 of the
14 '776 patent under at least 35 U.S.C. § 271(a), (b), and (c).

15 211. Upon information and belief, Defendant has directly infringed one
16 or more claims of the '776 patent through manufacture, use, sale, offer for sale,
17 and/or importation into the United States of physiological monitors, including
18 the Apple Watch Series 3 and later devices.

19 212. For example, upon information and belief, in operation, the Apple
20 Watch Series 3 and later devices include all of the limitations of Claim 1 of the
21 '776 patent as set forth herein and further illustrated in the claim chart shown in
22 Exhibit 1. The Apple Watch Series 3 and later devices are configured to
23 monitor at least a pulse rate of a patient by processing signals responsive to light
24 attenuated by body tissue of the wearer as shown in the image below found on
25 the Apple website at <https://www.apple.com/apple-watch-series-4/health/>:



213. The Apple Watch Series 3 and later devices drive one or more light sources configured to emit light into tissue and receives one or more signals from one or more detectors configured to detect light after attenuation by tissue as shown in the image below found on the Apple website at <https://support.apple.com/en-us/HT204666>:



214. Upon information and belief, the Apple Watch Series 3 and later devices operate according to a first control protocol, wherein said operating includes activating a first control protocol light source in accordance with the

1 first control protocol, the first control protocol light source including one or
2 more of a plurality of light sources, and when operating according to the first
3 control protocol, calculating, by the patient monitor, measurement values of the
4 pulse rate, the measurement values responsive to light from the first control
5 protocol light source, detected by a detector of an optical sensor after
6 attenuation by body tissue of the patient using the patient monitor as explained,
7 for example, on the Apple website at [https://support.apple.com/en-](https://support.apple.com/en-us/HT204666)
8 [us/HT204666](https://support.apple.com/en-us/HT204666). That webpage explains the optical heart sensor uses
9 photoplethysmography. “Apple Watch uses green LED lights paired with
10 light-sensitive photodiodes to detect the amount of blood flowing through your
11 wrist at any given moment. When your heart beats, the blood flow in your wrist
12 — and the green light absorption — is greater. Between beats, it’s less. By
13 flashing its LED lights hundreds of times per second, Apple Watch can calculate
14 the number of times the heart beats each minute — your heart rate. The optical
15 heart sensor supports a range of 30–210 beats per minute. In addition, the
16 optical heart sensor is designed to compensate for low signal levels by
17 increasing both LED brightness and sampling rate.” That webpage further
18 explains that the “optical heart sensor can also use infrared light. This mode is
19 what Apple Watch uses when it measures your heart rate in the background, and
20 for heart rate notifications. Apple Watch uses green LED lights to measure your
21 heart rate during workouts and Breathe sessions, and to calculate walking
22 average and Heart Rate Variability (HRV).”

23 215. Upon information and belief, the Apple Watch Series 3 and later
24 devices generate a trigger signal, wherein generating said trigger signal is
25 responsive to at least one of: a comparison of processing characteristics to a
26 predetermined threshold, a physiological event, or signal quality characteristics
27 of signals received from the detector, and in response to receiving the trigger
28 signal, operating the patient monitor according to a second control protocol

1 different from the first control protocol, wherein said operating includes
2 activating a second control protocol light source in accordance with the second
3 control protocol, the second control protocol light source including one or more
4 of the plurality of light sources, and when operating the patient monitor
5 according to the second control protocol, calculating the measurement values of
6 the pulse rate, the measurement values responsive to light from the second
7 control protocol light source, detected by the detector after attenuation by the
8 body tissue of the patient using the patient monitor, wherein said operating of
9 the patient monitor according to the first control protocol operates the first
10 control protocol light source according to a first duty cycle and said operating of
11 the patient monitor according to the second control protocol operates the second
12 control protocol light source according to a second duty cycle, wherein power
13 consumption of the first control protocol light source according to the first duty
14 cycle is different than power consumption of the second control protocol light
15 source according to the second duty cycle. Upon information and belief,
16 relevant technology in the Apple Watch Series 3 and later devices is described
17 in International Application Publication WO 2018/226305 (the '305
18 publication), for example, at paragraphs [0055]-[0061].

19 216. Upon information and belief, Defendant has knowledge of
20 Masimo's patents, including the '776 patent, at least based on O'Reilly and
21 Lamego's former positions with Plaintiffs. Masimo filed a provisional patent
22 application that led to the '776 patent on July 2, 2001. The '776 patent issued
23 on June 4, 2013, while O'Reilly and Lamego were with Masimo and/or
24 Cercacor. Defendant had knowledge of the '776 patent no later than the filing
25 of the original Complaint.

26 217. Upon information and belief, Defendant has actively induced
27 others to infringe the '776 patent by marketing and selling the above Apple
28 Watch Series 3 and later devices, knowing and intending that such systems

1 would be used by customers and end users in a manner that infringes the
2 '776 patent. To that end, Defendant provides instructions and teachings to its
3 customers and end users that such Apple Watch Series 3 and later devices be
4 used to infringe the '776 patent. Defendant's acts constitute infringement of the
5 '776 patent in violation of 35 U.S.C. § 271(b).

6 218. Upon information and belief, Defendant actively induces users to
7 directly infringe the asserted claims of the '776 patent. By way of example
8 only, upon information and belief, Defendant actively induces direct
9 infringement of the '776 patent by providing directions, demonstrations, guides,
10 manuals, training for use, and/or other materials necessary for the use of the
11 Apple Watch Series 3 and later devices. Upon information and belief,
12 Defendant knew or should have known that these activities would cause direct
13 infringement.

14 219. Upon information and belief, Defendant's acts constitute
15 contributory infringement of the '776 patent in violation of 35 U.S.C. § 271(c).
16 Upon information and belief, Defendant contributorily infringes because, among
17 other things, Defendant offers to sell and/or sells within the United States,
18 and/or imports into the United States, components of the Apple Watch Series 3
19 and later devices that constitute material parts of the invention of the asserted
20 claims of the '776 patent, are not staple articles or commodities of commerce
21 suitable for substantial non-infringing use, and are known by Defendant to be
22 especially made or especially adapted for use in an infringement of the
23 '776 patent.

24 220. Defendant's infringement of the '776 patent is willful, deliberate,
25 and intentional by continuing its acts of infringement after becoming aware of
26 the '776 patent and its infringement thereof, thus acting in reckless disregard of
27 Masimo's patent rights.

28

1 221. Because of Defendant’s infringement of the ’776 patent, Masimo
2 has suffered and will continue to suffer irreparable harm and injury, including
3 monetary damages in an amount to be determined at trial.

4 222. Upon information and belief, unless enjoined, Defendant, and/or
5 others acting on behalf of Defendant, will continue their infringing acts, thereby
6 causing additional irreparable injury to Masimo for which there is no adequate
7 remedy at law.

8 **XX. THIRTEENTH CAUSE OF ACTION**
9 **(TRADE SECRET MISAPPROPRIATION UNDER**
10 **CALIFORNIA’S UNIFORM TRADE SECRET ACT)**

11 223. Plaintiffs hereby reallege and incorporate by reference the
12 allegations set forth in paragraphs 1 through 50.

13 224. This is a cause of action for Misappropriation of Trade Secrets under
14 California’s Uniform Trade Secrets Act, Cal. Civ. Code §§ 3426 *et seq.*, based
15 upon Defendant’s and its employees’ wrongful and improper acquisition, use, and
16 disclosure of confidential and proprietary trade secret information of Plaintiffs.

17 225. Plaintiffs own the Confidential Information. Plaintiffs’ Confidential
18 Information is currently or was, at least at the time of Defendant’s and its
19 employees’ misappropriation, not generally known to the public or to other
20 persons who can obtain economic value from its disclosure or use. All individuals
21 with access to Plaintiffs’ Confidential Information were instructed to keep it
22 confidential, and they were subject to obligations to keep Plaintiffs’ Confidential
23 Information secret. For example, Plaintiffs marked documents confidential, and
24 instructed those individuals with access to the information to treat it as
25 confidential, restricted access to the information, and required individuals and
26 companies to enter into confidentiality agreements with Plaintiffs in order to
27 receive Plaintiffs’ Confidential Information.

28

1 226. Plaintiffs' Confidential Information derives independent economic
2 value, actual and potential, because it is, or was at the time of Defendant's and its
3 employees' misappropriation, not generally known to the public or to other
4 persons who can obtain economic value from its disclosure or use. The actual and
5 potential independent economic value of Plaintiffs' Confidential Information is
6 derived from not being generally known because it gives or gave Plaintiffs an
7 actual and potential business advantage over others who do not know the
8 information and who could obtain economic value from its disclosure or use. If
9 others obtained access to Plaintiffs' Confidential Information, they could use the
10 information to deprive Plaintiffs of the business advantage it has over others, as
11 well as to themselves obtain a business advantage over others.

12 227. Plaintiffs made reasonable efforts under the circumstances to keep
13 Plaintiffs' Confidential Information from becoming generally known. For
14 example, Plaintiffs' efforts included marking documents confidential, instructing
15 individuals with access to the information to treat it as confidential, restricting
16 access to the information, and requiring individuals and companies to enter into
17 confidentiality agreements with Plaintiffs in order to receive Plaintiffs'
18 Confidential Information. Accordingly, Plaintiffs' Confidential Information
19 constitutes a "trade secret" pursuant to Cal. Civ. Code § 3426.1.

20 228. Plaintiffs are informed and believe, and thereon allege, that
21 Defendant misappropriated Plaintiffs' Confidential Information by acquisition at
22 least from Plaintiffs' former employees who left Plaintiffs to work for Defendant.
23 For example, upon information and belief, O'Reilly and Lamego disclosed
24 Plaintiffs' Confidential Information, without Plaintiffs' consent, to Defendant. At
25 the time of disclosure, O'Reilly and Lamego knew, or had reason to know, that
26 their knowledge of Plaintiffs' Confidential Information was acquired by an
27 employer-employee relationship, fiduciary relationship, and employment
28 agreements, which created a duty for them to keep Plaintiffs' Confidential

1 Information secret. O'Reilly and Lamego also knew, or had reason to know, that
2 disclosing Plaintiffs' Confidential Information to Defendant constituted a breach
3 of those obligations.

4 229. At the time of acquisition, Defendant also knew, or had reason to
5 know, that its employees obtained Plaintiffs' Confidential Information pursuant to
6 a duty or obligation to keep Plaintiffs' Confidential Information secret. This duty
7 or obligation arose from an employer-employee relationship, fiduciary
8 relationship, and employment agreements. For example, among other things,
9 Defendant knew O'Reilly was the Chief Medical Officer at Masimo. Defendant
10 knew O'Reilly was in charge of Masimo's data collection efforts at hospitals and
11 was involved in strategic plans for the company. Defendant also knew Lamego
12 was the Chief Technical Officer of Cercacor and a Research Scientist at
13 Masimo. Defendant knew Lamego and O'Reilly were each under a duty to
14 maintain the secrecy of the information they obtained from Plaintiffs. Defendant
15 knew Plaintiffs considered the information confidential by virtue of its prior
16 relationship with Plaintiffs. Defendant had also received a letter dated January
17 24, 2014, from Plaintiffs explaining that Lamego possessed Plaintiffs'
18 Confidential Information, asking Defendant not to use such information, and
19 attaching a copy of Lamego's Employee Confidentiality Agreement with
20 Cercacor. The Employee Confidentiality Agreement stated, among other things,
21 "[a]fter my employment with [Cercacor] has terminated, I will not disclose or
22 make use of any Confidential Information for any purpose, either on my own or
23 on behalf of another business." Lamego also worked at Apple for less than one
24 year, but quickly disclosed information to Apple that took many years to develop
25 at Plaintiffs. Apple knew or at least should have known that Lamego could not
26 develop the detailed trade secrets described herein in such a short amount of time.
27 On information and belief, Apple targeted and recruited Plaintiffs' employees,
28

1 including O'Reilly and Lamego, because of their knowledge of Plaintiffs'
2 Confidential Information.

3 230. Nevertheless, on information and belief, Defendant induced its
4 employees, including Lamego and O'Reilly, to use and/or disclose Plaintiffs'
5 Confidential Information and the employees used and/or disclosed Plaintiffs'
6 Confidential Information for the benefit of Defendant while employed by
7 Defendant. Defendant met with Plaintiffs because Defendant wanted Plaintiffs'
8 technology and wanted to integrate it into Defendant's products. After learning
9 more about the capability of Plaintiffs' technology at the meetings, Defendant
10 began systematically hiring Plaintiffs' employees, including Masimo's Chief
11 Medical Officer, Michael O'Reilly, and many others. Apple's Chief Executive
12 Officer, Tim Cook, interviewed O'Reilly. Tim Cook has publicly stated that he
13 sees healthcare as central to Apple's future. Defendant hired O'Reilly to oversee
14 Apple's strategic objective in healthcare and gave him the title of Apple's Vice
15 President of Medical Technology.

16 231. [REDACTED]
17 [REDACTED]
18 [REDACTED]

19 After Defendant hired Lamego, Plaintiffs informed Apple by letter that Lamego
20 possessed Plaintiffs' Confidential Information and asked Apple to respect
21 Plaintiffs' Confidential Information. Defendant ignored these warnings and
22 sought out and obtained extensive patent disclosures from Lamego in the short
23 time he worked at Apple and selectively requested non-publication of those
24 applications containing Plaintiffs' Confidential Information. [REDACTED]
25 [REDACTED]
26 [REDACTED]
27 [REDACTED]
28 [REDACTED]

1 [REDACTED] Apple had Lamego work on the Apple
2 Watch project and tasked him with producing key intellectual property related to
3 bio-sensing, defining required resources for current and future bio-sensing
4 functionalities, proposing and reviewing hardware and algorithm architectures,
5 and advising Apple's team regarding bio-sensing functionalities.

6 232. Apple provided substantial financial incentives, which had the effect
7 of enticing O'Reilly, Lamego, and others to use and/or disclose Plaintiffs'
8 Confidential Information to help Apple in its strategic objective in healthcare.
9 O'Reilly later informed Plaintiffs that, although he viewed Masimo as his family,
10 Apple had offered him so much money that he simply could not refuse.
11 Defendant knew or should have known that those incentives would cause
12 O'Reilly, Lamego, and others to use and disclosure of Plaintiffs' Confidential
13 Information. Apple thereby induced Plaintiffs' former employees to use and
14 disclose Plaintiffs' Confidential Information while employed by Apple and for
15 Apple's benefit. Thus, Defendant acquired Plaintiffs' Confidential Information
16 through the improper means of its employees breaching a duty to maintain secrecy
17 owed to Plaintiffs, as well as inducing its employees to breach a duty to maintain
18 secrecy owed to Plaintiffs.

19 233. On information and belief, Defendant and its employees used and
20 disclosed Plaintiffs' Confidential Information it obtained from Plaintiffs and their
21 former employees without Plaintiffs' express or implied consent. Defendant and
22 its employees used and disclosed Plaintiffs' Confidential Information at least by
23 incorporating it into Defendant's products, by filing patent applications containing
24 Plaintiffs' Confidential Information, and using Plaintiffs' business and sales
25 strategies without Plaintiffs' express or implied consent, as discussed in more
26 detail in paragraphs 234-256 below.

27 [REDACTED]
28 [REDACTED]

1 Lamego work on the Apple Watch project and tasked him with producing key
2 intellectual property related to bio-sensing, defining required resources for current
3 and future bio-sensing functionalities, proposing and reviewing hardware and
4 algorithm architectures, and advising Apple's team regarding bio-sensing
5 functionalities. [REDACTED]

6 [REDACTED]
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[REDACTED] Apple had

Lamego work on the Apple Watch project and tasked him with producing key intellectual property related to bio-sensing, defining required resources for current and future bio-sensing functionalities, proposing and reviewing hardware and algorithm architectures, and advising Apple's team regarding bio-sensing functionalities. [REDACTED]

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Apple had Lamego work on the Apple Watch project and tasked him with producing key intellectual property related to bio-sensing, defining required resources for current and future bio-sensing functionalities, proposing and reviewing hardware and algorithm architectures, and advising Apple's team regarding bio-sensing functionalities. [REDACTED]

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247. [REDACTED]

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[REDACTED] Apple's

Chief Executive Officer, Tim Cook, interviewed O'Reilly. Tim Cook has publicly stated that he sees healthcare as central to Apple's future. Defendant hired O'Reilly to oversee Apple's strategic objective in healthcare and gave him the title of Apple's Vice President of Medical Technology. O'Reilly represents Apple before the FDA and hospitals about Apple's healthcare projects, including the Apple Watch. [REDACTED]

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12 Apple's Chief Executive Officer, Tim Cook, interviewed O'Reilly. Tim Cook has
13 publicly stated that he sees healthcare as central to Apple's future. Apple hired
14 O'Reilly to oversee Apple's strategic objective in healthcare and gave him the title
15 of Apple's Vice President of Medical Technology. O'Reilly represents Apple
16 before the FDA and hospitals about Apple's healthcare projects, including the
17 Apple Watch. [REDACTED]

18 [REDACTED]
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256. [REDACTED]

[REDACTED]

[REDACTED] Apple had Lamego work on the Apple Watch project and tasked him with producing key intellectual property related to bio-sensing, defining required resources for current and future bio-sensing functionalities, proposing and reviewing hardware and algorithm architectures, and advising Apple's team regarding bio-sensing functionalities. [REDACTED]

[REDACTED]

257. As discussed above, Defendant knew or had reason to know that its knowledge of Plaintiffs' Confidential Information came from Plaintiffs, that its employees' knowledge of Plaintiffs' Confidential Information came from Plaintiffs, and that its employees had previously acquired Plaintiffs' Confidential Information by virtue of employer-employee and fiduciary relationships and employment agreements, all of which created a duty to keep Plaintiffs' Confidential Information secret. Thus, Apple is directly liable for its use and disclosure of Plaintiffs' Confidential Information.

1 258. Upon information and belief, Plaintiffs’ former employees
2 misappropriated Plaintiffs’ Confidential Information by use and disclosure. ■

3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]

15 259. Lamego and O’Reilly used and disclosed Plaintiffs’ Confidential
16 Information without Plaintiffs’ consent. At the time of the use and disclosure,
17 Lamego and O’Reilly knew, or had reason to know, that their knowledge of
18 Plaintiffs’ Confidential Information was acquired by an employer-employee
19 relationship, fiduciary relationship, and employment agreements, which created a
20 duty for them to keep Plaintiffs’ Confidential Information secret. Lamego and
21 O’Reilly also knew, or had reason to know, that using and disclosing Plaintiffs’
22 Confidential Information to Defendant constituted a breach of those obligations.
23 Accordingly, Lamego and O’Reilly each misappropriated Plaintiffs’ Confidential
24 Information through use and disclosure while employed by Apple.

25 260. Upon information and belief, Defendant is liable for its employees’
26 use and disclosure of Plaintiffs’ Confidential Information under the doctrine of
27 respondeat superior because its employees acted within the scope of their
28 employment, for the benefit of Defendant, and in a manner that was generally

1 foreseeable as part of their duties. For example, Defendant hired O'Reilly and
2 assigned him to help develop Defendant's relationships with clinicians and
3 strategic plans for clinical monitoring. Apple's Chief Executive Officer, Tim
4 Cook, interviewed O'Reilly. Defendant hired O'Reilly to oversee Apple's
5 strategic objective in healthcare and gave him the title of Apple's Vice President
6 of Medical Technology. In this position, O'Reilly inquired whether Cercacor was
7 for sale. When O'Reilly was informed that Cercacor was not for sale, Defendant
8 recruited Cercacor's Chief Technical Officer, Marcelo Lamego. Defendant
9 assigned Lamego to help develop Defendant's non-invasive monitoring
10 technology, quickly obtained patent disclosures from him, and then applied for
11 numerous patents listing Lamego as an inventor. [REDACTED]

12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]

17 Apple had Lamego work on the Apple Watch project
18 and tasked him with producing key intellectual property related to bio-sensing,
19 defining required resources for current and future bio-sensing functionalities,
20 proposing and reviewing hardware and algorithm architectures, and advising
21 Apple's team regarding bio-sensing functionalities. Because Plaintiffs' have
22 leading technology, Apple provided substantial financial incentives to entice
23 O'Reilly, Lamego, and others to help Apple in its strategic objective in healthcare,
24 expecting them to use the specialized knowledge obtained from Plaintiffs.
25 O'Reilly later informed Plaintiffs that, although he viewed Masimo as his family,
26 Apple had offered him so much money that he simply could not refuse.
27 Defendant knew or should have known that those incentives, as well as the
28 expectations that they had specialized knowledge from Plaintiffs, would cause

1 O'Reilly, Lamego, and others to use and disclosure of Plaintiffs' Confidential
2 Information.

3 261. Accordingly, the former employees used and disclosed Plaintiffs'
4 Confidential Information within the scope of their employment for Defendant and
5 for the benefit of Defendant. As discussed above, the former employees knew or
6 had reason to know that their knowledge of Plaintiffs' Confidential Information
7 was acquired under circumstances giving rise to a duty to maintain its secrecy and
8 limit its use. O'Reilly's actions were an outgrowth of his employment and
9 inherent in the working environment because Defendant assigned O'Reilly to
10 develop Defendant's relationships with clinicians and strategic plans for clinical
11 monitoring. Lamego's actions were an outgrowth of his employment and inherent
12 in the working environment because Defendant assigned Lamego to help develop
13 Defendant's non-invasive monitoring technology and provide patent disclosures.
14 O'Reilly and Lamego's actions were at least typical or broadly incidental to
15 Defendant's business of developing non-invasive monitoring technology, filing
16 patents on such technology, developing relationships with clinicians, and
17 developing strategic plans for clinical monitoring. O'Reilly and Lamego's actions
18 were at least generally foreseeable as part of their duties to develop non-invasive
19 monitoring technology, provide patent disclosures, develop relationships with
20 clinicians, and develop strategic plans for clinical monitoring. As a result,
21 Defendant is liable for its employees' actions under the doctrine of respondeat
22 superior.

23 262. Plaintiffs had no way of knowing, or learning, of Defendant's and its
24 employees' improper acquisition, use, or disclosure prior to January 10, 2017.
25 Defendant did not publish Plaintiffs' Confidential Information in patent
26 applications until after January 10, 2017, and the first product at issue was not
27 announced until 2018. Additionally, based at least on Plaintiffs' conversations
28 with Lamego, Plaintiffs' letter to Apple, and Plaintiffs' confidentiality

1 agreement with Apple, Plaintiffs had no reason to suspect or believe that
2 Defendant had ignored Plaintiffs' letter and improperly acquired, used, and
3 disclosed Plaintiffs' Confidential Information until after Plaintiffs discovered
4 patent applications published after January 10, 2017, and accused products
5 announced in 2018. In September 2020, Apple announced partnerships with
6 three of the health care systems that Plaintiffs were cultivating and targeting for
7 research collaborations on patient health parameter measurements.

8 263. Defendant and the former employees also led Plaintiffs to believe
9 they intended to respect Plaintiffs' intellectual property rights and concealed
10 Defendant's and its employees' acquisition, use, and disclosure of Plaintiffs'
11 Confidential Information. After O'Reilly left Masimo, he assured Plaintiffs that
12 he and Apple were not and would not be competing against Plaintiffs. Similarly,
13 when Lamego left Cercacor, he assured Plaintiffs that he would not violate his
14 agreements with Plaintiffs and volunteered that he would not work on
15 technology similar to Plaintiffs' technology. Plaintiffs notified Defendant that
16 Lamego possessed the Confidential Information on January 24, 2014. Defendant
17 never informed Plaintiffs that Lamego or O'Reilly had used or disclosed the
18 Confidential Information. Defendant also requested non-publication of patent
19 applications, which prevented Plaintiffs from learning of the contents of those
20 applications until much later. For example, Defendant requested non-
21 publication of the '268 Application (which issued as the '754 Patent), the '422
22 Application (which issued as the '997 Patent), and the '664 Application (which
23 issued as the '095 Patent). On information and belief, Defendant requested non-
24 publication of those applications to prevent Plaintiffs from learning those
25 applications contained Plaintiffs' Confidential Information, and from learning
26 the Defendant had acquired, used and disclosed Plaintiffs' Confidential
27 Information. On information and belief, Defendant does not normally request
28

1 non-publication of patent applications and, instead, allows the vast majority of
2 its patent applications to publish in the ordinary course.

3 264. Plaintiffs were harmed by Defendant's and its employees'
4 acquisition, use, and disclosure of Plaintiffs' Confidential Information, and
5 Defendant's and its employees' actions were substantial factors in causing
6 Plaintiffs' harm. As a direct and proximate result of Defendant's and its
7 employees' willful, improper, and unlawful acquisition, use, and disclosure of
8 Plaintiffs' trade secrets, Plaintiffs have suffered, and will continue to suffer, great
9 harm and damage. Plaintiffs will continue to be irreparably damaged unless
10 Defendant is enjoined from further use and disclosure of Plaintiffs' Confidential
11 Information.

12 265. Defendant and its employees were unjustly enriched by Defendant's
13 acquisition, use, and disclosure of Plaintiffs' Confidential Information, and
14 Defendant's and its employees' actions were substantial factors in causing
15 Defendant to be unjustly enriched. Defendant and its employees were unjustly
16 enriched because its misappropriation of Plaintiffs' Confidential Information
17 caused Defendant and its employees to receive a benefit that they otherwise would
18 not have achieved.

19 266. If neither damages nor unjust enrichment caused by Defendant's and
20 its employees' misappropriation of Plaintiffs' Confidential Information is provable
21 at trial, Plaintiffs are entitled to a reasonable royalty for the period of time that
22 Defendant's and its employees use of Plaintiffs' Confidential Information could
23 have been prohibited.

24 267. The aforementioned acts of Defendant and its employees wrongfully
25 misappropriating Plaintiffs' trade secrets were, and continue to be, willful and
26 malicious, warranting an award of reasonable attorneys' fees, as provided by
27 Cal. Civ. Code § 3426.4, and exemplary damages, as provided by Cal. Civ. Code
28 §§ 3294 and 3426.3(c).

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XXI. FOURTEENTH CAUSE OF ACTION
(CORRECTION OF INVENTORSHIP OF U.S. PATENT NO. 10,078,052)

268. Plaintiffs hereby reallege and incorporate by reference the allegations set forth in paragraphs 1 through 50.

269. Lamego is a named inventor of U.S. Patent 10,078,052 presently recorded as owned by Apple.

270. The '052 Patent claims subject matter that Lamego obtained from discussions with, or jointly conceived with, Masimo employees. For example, Claim 1 of the '052 Patent recites an electronic device comprising a housing defining an aperture; an optical sensing system comprising a light emitter for emitting light through the aperture, the light emitter positioned adjacent the aperture; and a light detector for obtaining a first portion of the light after the first portion of the light reflects from an object; and a reflector disposed about the aperture and adapted to reflect a second portion of the light back into the object after the second portion of the light reflects from the object. Lamego obtained this subject matter from discussions with, or jointly conceived it with, Diab. Accordingly, Diab is a joint inventor of any patentable subject matter claimed in the '052 Patent, and should have been named as an inventor on the '052 Patent.

271. In written assignments, Lamego, as well as Diab, agreed to assign and assigned to Masimo all patentable subject matter (as well as all works of authorship, developments, improvements, or trade secrets) conceived during their employment at Masimo, including ownership of all patents and patent applications claiming such subject matter.

272. Those assignments vested in Masimo all legal and equitable title to all patents and patent applications reciting inventions made during their employment, such that Masimo is at least a joint owner of the '052 Patent and

1 Masimo has standing to seek correction of inventorship to perfect Masimo's
2 ownership interest in the '052 Patent.

3 273. In at least one written assignment, Lamego agreed to assign and
4 assigned to Cercacor all patentable subject matter (as well as all works of
5 authorship, developments, improvements, or trade secrets) conceived during his
6 employment at Cercacor, including ownership of all patents and patent
7 applications claiming such subject matter. An exemplary agreement conveying
8 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
9 16-3). Accordingly, to the extent the evidence establishes that Lamego obtained
10 patentable subject matter claimed in the '052 Patent from, or jointly conceived
11 such subject matter with, Masimo employees while Lamego was an employee of
12 Cercacor, Cercacor would be a joint owner of the '052 Patent and has standing
13 to seek correction of inventorship to perfect Cercacor's ownership interest in the
14 '052 Patent.

15 274. Pursuant to 28 U.S.C. § 2201 and 35 U.S.C. § 256, Plaintiffs seek
16 an order directing the U.S. Patent and Trademark Office to correct the
17 inventorship of the '052 Patent by adding inventor Diab as a named inventor.

18 **XXII. FIFTEENTH CAUSE OF ACTION**
19 **(CORRECTION OF INVENTORSHIP OF U.S. PATENT NO. 10,247,670)**

20 275. Plaintiffs hereby reallege and incorporate by reference the
21 allegations set forth in paragraphs 1 through 50.

22 276. Lamego is a named inventor of U.S. Patent 10,247,670 presently
23 recorded as owned by Apple.

24 277. The '670 Patent claims subject matter that Lamego obtained from
25 discussions with, or jointly conceived with, Masimo employees. For example,
26 Claim 1 of the '670 Patent recites an electronic device comprising a housing
27 with a surface; a reflective layer that is formed on the surface, wherein the
28 reflective layer has first and second openings; a light emitter that emits light

1 through the first opening; and a light detector that receives the light emitted by
2 the light emitter through the second opening. Lamego obtained this subject
3 matter from discussions with, or jointly conceived it with, Diab. Accordingly,
4 Diab is a joint inventor of any patentable subject matter claimed in the
5 '670 Patent, and should have been named as an inventor on the '670 Patent.

6 278. In written assignments, Lamego, as well as Diab, agreed to assign
7 and assigned to Masimo all patentable subject matter (as well as all works of
8 authorship, developments, improvements, or trade secrets) conceived during
9 their employment at Masimo, including ownership of all patents and patent
10 applications claiming such subject matter.

11 279. Those assignments vested in Masimo all legal and equitable title to
12 all patents and patent applications reciting inventions made during their
13 employment, such that Masimo is at least a joint owner of the '670 Patent and
14 Masimo has standing to seek correction of inventorship to perfect Masimo's
15 ownership interest in the '670 Patent.

16 280. In at least one written assignment, Lamego agreed to assign and
17 assigned to Cercacor all patentable subject matter (as well as all works of
18 authorship, developments, improvements, or trade secrets) conceived during his
19 employment at Cercacor, including ownership of all patents and patent
20 applications claiming such subject matter. An exemplary agreement conveying
21 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
22 16-3). Accordingly, to the extent the evidence establishes that Lamego obtained
23 patentable subject matter claimed in the '670 Patent from, or jointly conceived
24 such subject matter with, Masimo employees while Lamego was an employee of
25 Cercacor, Cercacor would be a joint owner of the '670 Patent and has standing
26 to seek correction of inventorship to perfect Cercacor's ownership interest in the
27 '670 Patent.

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1 281. Pursuant to 28 U.S.C. § 2201 and 35 U.S.C. § 256, Plaintiffs seek
2 an order directing the U.S. Patent and Trademark Office to correct the
3 inventorship of the '670 Patent by adding inventor Diab as a named inventors.

4 **XXIII. SIXTEENTH CAUSE OF ACTION**
5 **(CORRECTION OF INVENTORSHIP OF U.S. PATENT NO. 9,952,095)**

6 282. Plaintiffs hereby reallege and incorporate by reference the
7 allegations set forth in paragraphs 1 through 50.

8 283. Lamego is a named inventor of U.S. Patent 9,952,095 presently
9 recorded as owned by Apple.

10 284. The '095 Patent claims subject matter that Lamego obtained from
11 discussions with, or jointly conceived with, Masimo employees. For example,
12 Claim 1 of the '095 Patent recites an electronic device comprising a housing
13 comprising a surface adapted to be positioned proximate a measurement site of
14 a subject; a biometric sensor positioned at least partially within the surface and
15 comprising: a plurality of light sources for emitting light toward the
16 measurement site at a selected modulation frequency; and an optical sensor for
17 obtaining light exiting the measurement site; and an input amplifier coupled to
18 the output of the biometric sensor and disposed within the housing; a high pass
19 filter coupled to an output of the input amplifier and disposed within the
20 housing, the high pass filter having a cutoff frequency above that of a periodic
21 biometric property of the measurement site; an output amplifier coupled to an
22 output of the high pass filter and disposed within the housing; and an analog to
23 digital converter coupled to an output of the output amplifier and disposed
24 within the housing. Lamego obtained this subject matter from discussions with,
25 or jointly conceived it with, Diab. Accordingly, Diab is a joint inventor of any
26 patentable subject matter claimed in the '095 Patent, and should have been
27 named as an inventor on the '095 Patent.

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1 285. In written assignments, Lamego, as well as Diab, agreed to assign
2 and assigned to Masimo all patentable subject matter (as well as all works of
3 authorship, developments, improvements, or trade secrets) conceived during
4 their employment at Masimo, including ownership of all patents and patent
5 applications claiming such subject matter.

6 286. Those assignments vested in Masimo all legal and equitable title to
7 all patents and patent applications reciting inventions made during their
8 employment, such that Masimo is at least a joint owner of the '095 Patent and
9 Masimo has standing to seek correction of inventorship to perfect Masimo's
10 ownership interest in the '095 Patent.

11 287. In at least one written assignment, Lamego agreed to assign and
12 assigned to Cercacor all patentable subject matter (as well as all works of
13 authorship, developments, improvements, or trade secrets) conceived during his
14 employment at Cercacor, including ownership of all patents and patent
15 applications claiming such subject matter. An exemplary agreement conveying
16 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
17 16-3). Accordingly, to the extent the evidence establishes that Lamego obtained
18 patentable subject matter claimed in the '095 Patent from, or jointly conceived
19 such subject matter with, Masimo employees while Lamego was an employee of
20 Cercacor, Cercacor would be a joint owner of the '095 Patent and has standing
21 to seek correction of inventorship to perfect Cercacor's ownership interest in the
22 '095 Patent.

23 288. Pursuant to 28 U.S.C. § 2201 and 35 U.S.C. § 256, Plaintiffs seek
24 an order directing the U.S. Patent and Trademark Office to correct the
25 inventorship of the '095 Patent by adding inventor Diab as a named inventor.
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XXIV. SEVENTEENTH CAUSE OF ACTION
(CORRECTION OF INVENTORSHIP OF U.S. PATENT NO. 10,219,754)

289. Plaintiffs hereby reallege and incorporate by reference the allegations set forth in paragraphs 1 through 50.

290. Lamego is a named inventor of U.S. Patent 10,219,754 presently recorded as owned by Apple.

291. The '754 Patent claims subject matter that Lamego obtained from discussions with, or jointly conceived with, Masimo employees. For example, Claim 1 of the '754 Patent recites a method for estimating physiological parameters when modulated light from a first light source and a second light source is emitted toward a body part of a user, the method comprising determining a first multiplier value by: turning on the first light source; generating a first initial signal in response to capturing a first light sample corresponding to the first light source; demodulating the first initial signal to produce first initial demodulated signals; filtering and decimating the first initial demodulated signals; and determining the first multiplier value based on the filtered and decimated first initial demodulated signals; determining a second multiplier value by: turning on the second light source; generating a second initial signal in response to capturing a second light sample corresponding to the second light source; demodulating the second initial signal to produce second initial demodulated signals; filtering and decimating the second initial demodulated signals; and determining the second multiplier value based on the filtered and decimated second initial demodulated signals; capturing multiple light samples while the first light source and the second light source are turned on to emit modulated light toward the body part of the user and converting the multiple light samples into a captured signal; demodulating the captured signal to produce multiple demodulated signals; performing a first decimation stage by: low pass filtering each demodulated signal; and decimating each

1 demodulated signal; performing a second decimation stage after the first
2 decimation stage by: low pass filtering each demodulated signal; and decimating
3 each demodulated signal; demultiplexing each demodulated signal after the
4 second decimation stage to produce a first signal associated with the first light
5 source and a second signal associated with the second light source; multiplying
6 the first signal by the first multiplier value using a first multiplier circuit to
7 obtain a first conditioned signal; multiplying the second signal by the second
8 multiplier value using a second multiplier circuit to obtain a second conditioned
9 signal; and analyzing the first conditioned signal and the second conditioned
10 signal to estimate the physiological parameter of the user. Lamego obtained this
11 subject matter from discussions with, or jointly conceived it with, Al-Ali, Diab,
12 and Weber. Accordingly, Al-Ali, Diab, and Weber are joint inventors of any
13 patentable subject matter claimed in the '754 Patent, and should have been
14 named as inventors on the '754 Patent.

15 292. In written assignments, Lamego, as well as Al-Ali, Diab, and
16 Weber, agreed to assign and assigned to Masimo all patentable subject matter
17 (as well as all works of authorship, developments, improvements, or trade
18 secrets) conceived during their employment at Masimo, including ownership of
19 all patents and patent applications claiming such subject matter.

20 293. Those assignments vested in Masimo all legal and equitable title to
21 all patents and patent applications reciting inventions made during their
22 employment, such that Masimo is at least a joint owner of the '754 Patent and
23 Masimo has standing to seek correction of inventorship to perfect Masimo's
24 ownership interest in the '754 Patent.

25 294. In at least one written assignment, Lamego agreed to assign and
26 assigned to Cercacor all patentable subject matter (as well as all works of
27 authorship, developments, improvements, or trade secrets) conceived during his
28 employment at Cercacor, including ownership of all patents and patent

1 applications claiming such subject matter. An exemplary agreement conveying
2 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
3 16-3). Accordingly, to the extent the evidence establishes that Lamego obtained
4 patentable subject matter claimed in the '754 Patent from, or jointly conceived
5 such subject matter with, Masimo employees while Lamego was an employee of
6 Cercacor, Cercacor would be a joint owner of the '754 Patent and has standing
7 to seek correction of inventorship to perfect Cercacor's ownership interest in the
8 '754 Patent.

9 295. Pursuant to 28 U.S.C. § 2201 and 35 U.S.C. § 256, Plaintiffs seek
10 an order directing the U.S. Patent and Trademark Office to correct the
11 inventorship of the '754 Patent by adding inventors Al-Ali, Diab, and Weber as
12 named inventors.

13 **XXV. EIGHTEENTH CAUSE OF ACTION**
14 **(CORRECTION OF INVENTORSHIP OF U.S. PATENT NO. 9,723,997)**

15 296. Plaintiffs hereby reallege and incorporate by reference the
16 allegations set forth in paragraphs 1 through 50.

17 297. Lamego is a named inventor of U.S. Patent 9,723,997 presently
18 recorded as owned by Apple.

19 298. The '997 Patent claims subject matter that Lamego obtained from
20 discussions with, or jointly conceived with, Cercacor employees. For example,
21 Claim 20 of the '997 Patent recites a method for using a mobile personal
22 computing device to obtain health data, comprising using a camera and a
23 proximity sensor to emit light into a body part of a user touching a surface of the
24 mobile personal computing device; using at least two of the camera, an ambient
25 light sensor, or the proximity sensor to receive at least part of the emitted light
26 reflected by the body part of the user and generate sensor data; and computing
27 health data of the user, utilizing the processing unit, using at least the sensor
28 data regarding the received light. Lamego obtained this subject matter from

1 discussions with, or jointly conceived it with, Greg Olsen. Accordingly, Olsen
2 is a joint inventor of any patentable subject matter claimed in the '997 Patent,
3 and should have been named as an inventor on the '997 Patent.

4 299. In written assignments, Lamego, as well as Olsen, agreed to assign
5 and assigned to Cercacor all patentable subject matter (as well as all works of
6 authorship, developments, improvements, or trade secrets) conceived during
7 their employment at Cercacor, including ownership of all patents and patent
8 applications claiming such subject matter. An exemplary agreement conveying
9 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
10 16-3).

11 300. Those assignments vested in Cercacor all legal and equitable title
12 to all patents and patent applications reciting inventions made during their
13 employment, such that Cercacor is at least a joint owner of the '997 Patent and
14 Cercacor has standing to seek correction of inventorship to perfect Cercacor's
15 ownership interest in the '997 Patent.

16 301. In at least one written assignment, Lamego agreed to assign and
17 assigned to Masimo all patentable subject matter (as well as all works of
18 authorship, developments, improvements, or trade secrets) conceived during his
19 employment at Masimo, including ownership of all patents and patent
20 applications claiming such subject matter. Accordingly, to the extent the
21 evidence establishes that Lamego obtained patentable subject matter claimed in
22 the '997 Patent from, or jointly conceived such subject matter with, Masimo
23 employees while Lamego was an employee of Masimo, Masimo would be a
24 joint owner of the '997 Patent and has standing to seek correction of
25 inventorship to perfect Masimo's ownership interest in the '997 Patent.

26 302. Pursuant to 28 U.S.C. § 2201 and 35 U.S.C. § 256, Plaintiffs seek
27 an order directing the U.S. Patent and Trademark Office to correct the
28 inventorship of the '997 Patent by adding inventor Olsen as a named inventor.

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XXVI. NINETEENTH CAUSE OF ACTION
(CORRECTION OF INVENTORSHIP OF U.S. PATENT NO. 10,524,671)

303. Plaintiffs hereby reallege and incorporate by reference the allegations set forth in paragraphs 1 through 50.

304. Lamego is a named inventor of U.S. Patent 10,524,671 presently recorded as owned by Apple.

305. The '671 Patent claims subject matter that Lamego obtained from discussions with, or jointly conceived with, Masimo employees. For example, Claim 1 of the '671 Patent recites a wearable device, comprising a first light source; a second light source, the second light source operating at a different wavelength than the first light source; at least one light receiver; and a processing unit communicably coupled to the first light source, the second light source, and the at least one light receiver; wherein the processing unit is configured to: use the first light source and the second light source to emit light into a body part of a user; and dependent on the light emitted by the first light source and received by the at least one light receiver, compute a pulse rate of the user using the light emitted by the second light source and received by the at least one light receiver. Lamego obtained this subject matter from discussions with, or jointly conceived it with, Diab. Accordingly, Diab is a joint inventor of any patentable subject matter claimed in the '671 Patent, and should have been named as an inventor on the '671 Patent.

306. In written assignments, Lamego, as well as Diab, agreed to assign and assigned to Masimo all patentable subject matter (as well as all works of authorship, developments, improvements, or trade secrets) conceived during their employment at Masimo, including ownership of all patents and patent applications claiming such subject matter.

307. Those assignments vested in Masimo all legal and equitable title to all patents and patent applications reciting inventions made during their

1 employment, such that Masimo is at least a joint owner of the '671 Patent and
2 Masimo has standing to seek correction of inventorship to perfect Masimo's
3 ownership interest in the '671 Patent.

4 308. In at least one written assignment, Lamego agreed to assign and
5 assigned to Cercacor all patentable subject matter (as well as all works of
6 authorship, developments, improvements, or trade secrets) conceived during his
7 employment at Cercacor, including ownership of all patents and patent
8 applications claiming such subject matter. An exemplary agreement conveying
9 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
10 16-3). Accordingly, to the extent the evidence establishes that Lamego obtained
11 patentable subject matter claimed in the '671 Patent from, or jointly conceived
12 such subject matter with, Masimo employees while Lamego was an employee of
13 Cercacor, Cercacor would be a joint owner of the '671 Patent and has standing
14 to seek correction of inventorship to perfect Cercacor's ownership interest in the
15 '671 Patent.

16 309. Pursuant to 28 U.S.C. § 2201 and 35 U.S.C. § 256, Plaintiffs seek
17 an order directing the U.S. Patent and Trademark Office to correct the
18 inventorship of the '671 Patent by adding inventor Diab as a named inventor.

19 **XXVII. TWENTIETH CAUSE OF ACTION**
20 **(DECLARATORY JUDGMENT OF OWNERSHIP OF**
21 **U.S. PATENT NO. 10,078,052)**

22 310. Plaintiffs hereby reallege and incorporate by reference the
23 allegations set forth in paragraphs 1 through 50.

24 311. U.S. Patent 10,078,052 is recorded as owned by Apple.

25 312. The '052 Patent claims subject matter that Lamego obtained from
26 discussions with, or jointly conceived with, Masimo employees. For example,
27 Claim 1 of the '052 Patent recites an electronic device comprising a housing
28 defining an aperture; an optical sensing system comprising a light emitter for

1 emitting light through the aperture, the light emitter positioned adjacent the
2 aperture; and a light detector for obtaining a first portion of the light after the
3 first portion of the light reflects from an object; and a reflector disposed about
4 the aperture and adapted to reflect a second portion of the light back into the
5 object after the second portion of the light reflects from the object. Lamego
6 obtained this subject matter from discussions with, or jointly conceived it with
7 Diab. Accordingly, Diab is a joint inventor of any patentable subject matter
8 claimed in the '052 Patent, and should have been named as an inventor on the
9 '052 Patent

10 313. Lamego and Diab made any inventive contributions to at least Claim
11 1 while they were employees of Masimo.

12 314. In written assignments, Lamego, as well as Diab, agreed to assign
13 and assigned to Masimo all patentable subject matter (as well as all works of
14 authorship, developments, improvements, or trade secrets) conceived during
15 their employment at Masimo, including ownership of all patents and patent
16 applications claiming such subject matter.

17 315. Those assignments vested in Masimo all legal and equitable title to
18 patents and patent applications reciting inventions made during their
19 employment, such that Masimo is at least a joint owner of the '052 Patent and
20 all applications, patents, continuations, divisionals, and reissues that claim priority
21 to the '052 Patent, including foreign counterparts.

22 316. In at least one written assignment, Lamego agreed to assign and
23 assigned to Cercacor all patentable subject matter (as well as all works of
24 authorship, developments, improvements, or trade secrets) conceived during his
25 employment at Cercacor, including ownership of all patents and patent
26 applications claiming such subject matter. An exemplary agreement conveying
27 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
28 16-3). That assignment vested in Cercacor all legal and equitable title to patents

1 and patent applications reciting inventions made during his employment, such
2 that, to the extent the evidence establishes that Lamego obtained patentable
3 subject matter claimed in the '052 Patent from, or jointly conceived such subject
4 matter with, Cercacor employees while Lamego was an employee of Cercacor,
5 Cercacor would be a joint owner of the '052 Patent and all applications, patents,
6 continuations, divisionals, and reissues that claim priority to the '052 Patent,
7 including foreign counterparts.

8 317. Based on the forgoing, Plaintiffs seek declaratory relief under at
9 least 28 U.S.C. §§ 2201 & 2202, as well as applicable state contract law and
10 federal patent law, declaring that Masimo is at least a joint owner of the '052
11 Patent (or, to the extent it is determined that Masimo employees invented all of
12 the patentable subject matter claimed in the '052 Patent, that Masimo is the
13 exclusive owner), and, in the alternative, that Cercacor is a joint owner of the
14 '052 Patent. Plaintiffs also seek an order from the Court directing the Patent
15 Office to amend the Patent Office records to reflect the ownership interest of
16 Masimo and/or Cercacor.

17 **XXVIII. TWENTY-FIRST CAUSE OF ACTION**
18 **(DECLARATORY JUDGMENT OF OWNERSHIP OF**
19 **U.S. PATENT NO. 10,247,670)**

20 318. Plaintiffs hereby reallege and incorporate by reference the
21 allegations set forth in paragraphs 1 through 50.

22 319. U.S. Patent 10,247,670 is recorded as owned by Apple.

23 320. The '670 Patent claims subject matter that Lamego obtained from
24 discussions with, or jointly conceived with, Masimo employees. For example,
25 Claim 1 of the '670 Patent recites an electronic device comprising a housing
26 with a surface; a reflective layer that is formed on the surface, wherein the
27 reflective layer has first and second openings; a light emitter that emits light
28 through the first opening; and a light detector that receives the light emitted by

1 the light emitter through the second opening. Lamego obtained this subject
2 matter from discussions with, or jointly conceived it with, Diab. Accordingly,
3 Diab is a joint inventor of any patentable subject matter claimed in the
4 '670 Patent, and should have been named as an inventor on the '670 Patent.

5 321. Lamego and Diab made any inventive contributions to at least Claim
6 1 while they were employees of Masimo.

7 322. In written assignments, Lamego, as well as Diab, agreed to assign
8 and assigned to Masimo all patentable subject matter (as well as all works of
9 authorship, developments, improvements, or trade secrets) conceived during
10 their employment at Masimo, including ownership of all patents and patent
11 applications claiming such subject matter.

12 323. Those assignments vested in Masimo all legal and equitable title to
13 patents and patent applications reciting inventions made during their
14 employment, such that Masimo is at least a joint owner of the '670 Patent and
15 all applications, patents, continuations, divisionals, and reissues that claim priority
16 to the '670 Patent, including foreign counterparts.

17 324. In at least one written assignment, Lamego agreed to assign and
18 assigned to Cercacor all patentable subject matter (as well as all works of
19 authorship, developments, improvements, or trade secrets) conceived during his
20 employment at Cercacor, including ownership of all patents and patent
21 applications claiming such subject matter. An exemplary agreement conveying
22 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
23 16-3). That assignment vested in Cercacor all legal and equitable title to patents
24 and patent applications reciting inventions made during his employment, such
25 that, to the extent the evidence establishes that Lamego obtained patentable
26 subject matter claimed in the '670 Patent from, or jointly conceived such subject
27 matter with, Cercacor employees while Lamego was an employee of Cercacor,
28 Cercacor would be a joint owner of the '670 Patent and all applications, patents,

1 continuations, divisionals, and reissues that claim priority to the '670 Patent,
2 including foreign counterparts.

3 325. Based on the forgoing, Plaintiffs seek declaratory relief under at
4 least 28 U.S.C. §§ 2201 & 2202, as well as applicable state contract law and
5 federal patent law, declaring that Masimo is at least a joint owner of the '670
6 Patent (or, to the extent it is determined that Masimo employees invented all of
7 the patentable subject matter claimed in the '670 Patent, that Masimo is the
8 exclusive owner), and, in the alternative, that Cercacor is a joint owner of the
9 '670 Patent. Plaintiffs also seek an order from the Court directing the Patent
10 Office to amend the Patent Office records to reflect the ownership interest of
11 Masimo and/or Cercacor.

12 **XXIX. TWENTY-SECOND CAUSE OF ACTION**
13 **(DECLARATORY JUDGMENT OF OWNERSHIP OF**
14 **U.S. PATENT NO. 9,952,095)**

15 326. Plaintiffs hereby reallege and incorporate by reference the
16 allegations set forth in paragraphs 1 through 50.

17 327. U.S. Patent 9,952,095 is recorded as owned by Apple.

18 328. The '095 Patent claims subject matter that Lamego obtained from
19 discussions with, or jointly conceived with, Masimo employees. For example,
20 Claim 1 of the '095 Patent recites an electronic device comprising a housing
21 comprising a surface adapted to be positioned proximate a measurement site of
22 a subject; a biometric sensor positioned at least partially within the surface and
23 comprising: a plurality of light sources for emitting light toward the
24 measurement site at a selected modulation frequency; and an optical sensor for
25 obtaining light exiting the measurement site; and an input amplifier coupled to
26 the output of the biometric sensor and disposed within the housing; a high pass
27 filter coupled to an output of the input amplifier and disposed within the
28 housing, the high pass filter having a cutoff frequency above that of a periodic

1 biometric property of the measurement site; an output amplifier coupled to an
2 output of the high pass filter and disposed within the housing; and an analog to
3 digital converter coupled to an output of the output amplifier and disposed
4 within the housing. Lamego obtained this subject matter from discussions with,
5 or jointly conceived it with, Diab. Accordingly, Diab is a joint inventor of any
6 patentable subject matter claimed in the '095 Patent, and should have been
7 named as an inventor on the '095 Patent.

8 329. Lamego and Diab made any inventive contributions to at least Claim
9 1 while they were employees of Masimo.

10 330. In written assignments, Lamego, as well as Diab, agreed to assign
11 and assigned to Masimo all patentable subject matter (as well as all works of
12 authorship, developments, improvements, or trade secrets) conceived during
13 their employment at Masimo, including ownership of all patents and patent
14 applications claiming such subject matter.

15 331. Those assignments vested in Masimo all legal and equitable title to
16 patents and patent applications reciting inventions made during their
17 employment, such that Masimo is at least a joint owner of the '095 Patent and
18 all applications, patents, continuations, divisionals, and reissues that claim priority
19 to the '095 Patent, including foreign counterparts.

20 332. In at least one written assignment, Lamego agreed to assign and
21 assigned to Cercacor all patentable subject matter (as well as all works of
22 authorship, developments, improvements, or trade secrets) conceived during his
23 employment at Cercacor, including ownership of all patents and patent
24 applications claiming such subject matter. An exemplary agreement conveying
25 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
26 16-3). That assignment vested in Cercacor all legal and equitable title to patents
27 and patent applications reciting inventions made during his employment, such
28 that, to the extent the evidence establishes that Lamego obtained patentable

1 subject matter claimed in the '095 Patent from, or jointly conceived such subject
2 matter with, Cercacor employees while Lamego was an employee of Cercacor,
3 Cercacor would be a joint owner of the '095 Patent and all applications, patents,
4 continuations, divisionals, and reissues that claim priority to the '095 Patent,
5 including foreign counterparts.

6 333. Based on the forgoing, Plaintiffs seek declaratory relief under at
7 least 28 U.S.C. §§ 2201 & 2202, as well as applicable state contract law and
8 federal patent law, declaring that Masimo is at least a joint owner of the '095
9 Patent (or, to the extent it is determined that Masimo employees invented all of
10 the patentable subject matter claimed in the '095 Patent, that Masimo is the
11 exclusive owner), and, in the alternative, that Cercacor is a joint owner of the
12 '095 Patent. Plaintiffs also seek an order from the Court directing the Patent
13 Office to amend the Patent Office records to reflect the ownership interest of
14 Masimo and/or Cercacor.

15 **XXX. TWENTY-THIRD CAUSE OF ACTION**
16 **(DECLARATORY JUDGMENT OF OWNERSHIP OF**
17 **U.S. PATENT NO. 10,219,754)**

18 334. Plaintiffs hereby reallege and incorporate by reference the
19 allegations set forth in paragraphs 1 through 50.

20 335. U.S. Patent 10,219,754 is recorded as owned by Apple.

21 336. The '754 Patent claims subject matter that Lamego obtained from
22 discussions with, or jointly conceived with, Masimo employees. For example,
23 Claim 1 of the '754 Patent recites a method for estimating physiological
24 parameters when modulated light from a first light source and a second light
25 source is emitted toward a body part of a user, the method comprising
26 determining a first multiplier value by: turning on the first light source;
27 generating a first initial signal in response to capturing a first light sample
28 corresponding to the first light source; demodulating the first initial signal to

1 produce first initial demodulated signals; filtering and decimating the first initial
2 demodulated signals; and determining the first multiplier value based on the
3 filtered and decimated first initial demodulated signals; determining a second
4 multiplier value by: turning on the second light source; generating a second
5 initial signal in response to capturing a second light sample corresponding to the
6 second light source; demodulating the second initial signal to produce second
7 initial demodulated signals; filtering and decimating the second initial
8 demodulated signals; and determining the second multiplier value based on the
9 filtered and decimated second initial demodulated signals; capturing multiple
10 light samples while the first light source and the second light source are turned
11 on to emit modulated light toward the body part of the user and converting the
12 multiple light samples into a captured signal; demodulating the captured signal
13 to produce multiple demodulated signals; performing a first decimation stage
14 by: low pass filtering each demodulated signal; and decimating each
15 demodulated signal; performing a second decimation stage after the first
16 decimation stage by: low pass filtering each demodulated signal; and decimating
17 each demodulated signal; demultiplexing each demodulated signal after the
18 second decimation stage to produce a first signal associated with the first light
19 source and a second signal associated with the second light source; multiplying
20 the first signal by the first multiplier value using a first multiplier circuit to
21 obtain a first conditioned signal; multiplying the second signal by the second
22 multiplier value using a second multiplier circuit to obtain a second conditioned
23 signal; and analyzing the first conditioned signal and the second conditioned
24 signal to estimate the physiological parameter of the user. Lamego obtained this
25 subject matter from discussions with, or jointly conceived it with, Al-Ali, Diab,
26 and Weber. Accordingly, Al-Ali, Diab, and Weber are joint inventors of any
27 patentable subject matter claimed in the '754 Patent, and should have been
28 named as inventors on the '754 Patent.

1 337. Lamego, Al-Ali, Diab, and Weber made any inventive contributions
2 to at least Claim 1 while they were employees of Masimo.

3 338. In written assignments, Lamego, Al-Ali, Diab, and Weber, agreed
4 to assign and assigned to Masimo all patentable subject matter (as well as all
5 works of authorship, developments, improvements, or trade secrets) conceived
6 during their employment at Masimo, including ownership of all patents and
7 patent applications claiming such subject matter.

8 339. Those assignments vested in Masimo all legal and equitable title to
9 patents and patent applications reciting inventions made during their
10 employment, such that Masimo is at least a joint owner of the '754 Patent and
11 all applications, patents, continuations, divisionals, and reissues that claim priority
12 to the '754 Patent, including foreign counterparts.

13 340. In at least one written assignment, Lamego agreed to assign and
14 assigned to Cercacor all patentable subject matter (as well as all works of
15 authorship, developments, improvements, or trade secrets) conceived during his
16 employment at Cercacor, including ownership of all patents and patent
17 applications claiming such subject matter. An exemplary agreement conveying
18 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
19 16-3). That assignment vested in Cercacor all legal and equitable title to patents
20 and patent applications reciting inventions made during his employment, such
21 that, to the extent the evidence establishes that Lamego obtained patentable
22 subject matter claimed in the '754 Patent from, or jointly conceived such subject
23 matter with, Cercacor employees while Lamego was an employee of Cercacor,
24 Cercacor would be a joint owner of the '754 Patent and all applications, patents,
25 continuations, divisionals, and reissues that claim priority to the '754 Patent,
26 including foreign counterparts.

27 341. Based on the forgoing, Plaintiffs seek declaratory relief under at
28 least 28 U.S.C. §§ 2201 & 2202, as well as applicable state contract law and

1 federal patent law, declaring that Masimo is at least a joint owner of the '754
2 Patent (or, to the extent it is determined that Masimo employees invented all of
3 the patentable subject matter claimed in the '754 Patent, that Masimo is the
4 exclusive owner), and, in the alternative, that Cercacor is a joint owner of the
5 '754 Patent. Plaintiffs also seek an order from the Court directing the Patent
6 Office to amend the Patent Office records to reflect the ownership interest of
7 Masimo and/or Cercacor.

8 **XXXI. TWENTY-FOURTH CAUSE OF ACTION**
9 **(DECLARATORY JUDGMENT OF OWNERSHIP OF**
10 **U.S. PATENT NO. 9,723,997)**

11 342. Plaintiffs hereby reallege and incorporate by reference the
12 allegations set forth in paragraphs 1 through 50.

13 343. U.S. Patent 9,723,997 is recorded as owned by Apple.

14 344. The '997 Patent claims subject matter that Lamego obtained from
15 discussions with, or jointly conceived with, Cercacor employees. For example,
16 Claim 20 of the '997 Patent recites a method for using a mobile personal
17 computing device to obtain health data, comprising using a camera and a
18 proximity sensor to emit light into a body part of a user touching a surface of the
19 mobile personal computing device; using at least two of the camera, an ambient
20 light sensor, or the proximity sensor to receive at least part of the emitted light
21 reflected by the body part of the user and generate sensor data; and computing
22 health data of the user, utilizing the processing unit, using at least the sensor
23 data regarding the received light. Lamego obtained this subject matter from
24 discussions with, or jointly conceived it with, Greg Olsen. Accordingly, Olsen
25 is a joint inventor of any patentable subject matter claimed in the '997 Patent,
26 and should have been named as an inventor on the '997 Patent.

27 345. Lamego and Olsen made any inventive contributions to at least
28 Claim 20 while they were employees of Cercacor.

1 346. In written assignments, Lamego, as well as Olsen, agreed to assign
2 and assigned to Cercacor all patentable subject matter (as well as all works of
3 authorship, developments, improvements, or trade secrets) conceived during
4 their employment, including ownership of all patents and patent applications
5 claiming such subject matter. An exemplary agreement conveying such rights
6 was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No. 16-3).

7 347. Those assignments vested in Cercacor all legal and equitable title
8 to patents and patent applications reciting inventions made during their
9 employment, such that Cercacor is at least a joint owner of the '997 Patent and
10 all applications, patents, continuations, divisionals, and reissues that claim priority
11 to the '997 Patent, including foreign counterparts.

12 348. In at least one written assignment, Lamego agreed to assign and
13 assigned to Masimo all patentable subject matter (as well as all works of
14 authorship, developments, improvements, or trade secrets) conceived during his
15 employment at Masimo, including ownership of all patents and patent
16 applications claiming such subject matter. That assignment vested in Masimo
17 all legal and equitable title to patents and patent applications reciting inventions
18 made during his employment, such that, to the extent the evidence establishes
19 that Lamego obtained patentable subject matter claimed in the '997 Patent from,
20 or jointly conceived such subject matter with, Masimo employees while
21 Lamego was an employee of Masimo, Masimo would be a joint owner of the
22 '997 Patent and all applications, patents, continuations, divisionals, and reissues
23 that claim priority to the '997 Patent, including foreign counterparts.

24 349. Based on the forgoing, Plaintiffs seek declaratory relief under at
25 least 28 U.S.C. §§ 2201 & 2202, as well as applicable state contract law and
26 federal patent law, declaring that Cercacor is at least a joint owner of the '997
27 Patent (or, to the extent it is determined that Cercacor employees invented all of
28 the patentable subject matter claimed in the '997 Patent, that Cercacor is the

1 exclusive owner), and, in the alternative, that Masimo is a joint owner of the
2 '997 Patent. Plaintiffs also seek an order from the Court directing the Patent
3 Office to amend the Patent Office records to reflect the ownership interest of
4 Cercacor and/or Masimo.

5 **XXXII. TWENTY-FIVE CAUSE OF ACTION**
6 **(DECLARATORY JUDGMENT OF OWNERSHIP OF**
7 **U.S. PATENT NO. 10,524,671)**

8 350. Plaintiffs hereby reallege and incorporate by reference the
9 allegations set forth in paragraphs 1 through 50.

10 351. U.S. Patent 10,524,671 is recorded as owned by Apple.

11 352. The '671 Patent claims subject matter that Lamego obtained from
12 discussions with, or jointly conceived with, Masimo employees. For example,
13 Claim 1 of the '671 Patent recites a wearable device, comprising a first light
14 source; a second light source, the second light source operating at a different
15 wavelength than the first light source; at least one light receiver; and a
16 processing unit communicably coupled to the first light source, the second light
17 source, and the at least one light receiver; wherein the processing unit is
18 configured to: use the first light source and the second light source to emit light
19 into a body part of a user; and dependent on the light emitted by the first light
20 source and received by the at least one light receiver, compute a pulse rate of the
21 user using the light emitted by the second light source and received by the at
22 least one light receiver. Lamego obtained this subject matter from discussions
23 with, or jointly conceived it with, Diab. Accordingly, Diab is a joint inventor of
24 any patentable subject matter claimed in the '671 Patent, and should have been
25 named as an inventor on the '671 Patent.

26 353. Lamego and Diab made any inventive contributions to at least Claim
27 1 while they were employees of Masimo.

28

1 354. In written assignments, Lamego, as well as Diab, agreed to assign
2 and assigned to Masimo all patentable subject matter (as well as all works of
3 authorship, developments, improvements, or trade secrets) conceived during
4 their employment at Masimo, including ownership of all patents and patent
5 applications claiming such subject matter.

6 355. Those assignments vested in Masimo all legal and equitable title to
7 patents and patent applications reciting inventions made during their
8 employment, such that Masimo is at least a joint owner of the '671 Patent and
9 all applications, patents, continuations, divisionals, and reissues that claim priority
10 to the '671 Patent, including foreign counterparts.

11 356. In at least one written assignment, Lamego agreed to assign and
12 assigned to Cercacor all patentable subject matter (as well as all works of
13 authorship, developments, improvements, or trade secrets) conceived during his
14 employment at Cercacor, including ownership of all patents and patent
15 applications claiming such subject matter. An exemplary agreement conveying
16 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
17 16-3). That assignment vested in Cercacor all legal and equitable title to patents
18 and patent applications reciting inventions made during his employment, such
19 that, to the extent the evidence establishes that Lamego obtained patentable
20 subject matter claimed in the '671 Patent from, or jointly conceived such subject
21 matter with, Cercacor employees while Lamego was an employee of Cercacor,
22 Cercacor would be a joint owner of the '671 Patent and all applications, patents,
23 continuations, divisionals, and reissues that claim priority to the '671 Patent,
24 including foreign counterparts.

25 357. Based on the forgoing, Plaintiffs seek declaratory relief under at
26 least 28 U.S.C. §§ 2201 & 2202, as well as applicable state contract law and
27 federal patent law, declaring that Masimo is at least a joint owner of the '671
28 Patent (or, to the extent it is determined that Masimo employees invented all of

1 the patentable subject matter claimed in the '671 Patent, that Masimo is the
2 exclusive owner), and, in the alternative, that Cercacor is a joint owner of the
3 '671 Patent. Plaintiffs also seek an order from the Court directing the Patent
4 Office to amend the Patent Office records to reflect the ownership interest of
5 Masimo and/or Cercacor.

6 **XXXIII. TWENTY-SIXTH CAUSE OF ACTION**
7 **(DECLARATORY JUDGMENT OF OWNERSHIP OF**
8 **U.S. PATENT APPLICATION NO. 15/960,507)**

9 358. Plaintiffs hereby reallege and incorporate by reference the
10 allegations set forth in paragraphs 1 through 50.

11 359. U.S. Patent Application 15/960,507 is recorded as owned by Apple.

12 360. Any inventive contribution that Lamego could have made to the
13 alleged invention of the subject matter claimed in the '507 application was made
14 while he was a Masimo employee during 2000-2001 and 2003-2006, or a
15 Cercacor employee during 2006-2014. This includes, for example, Claim 21 of
16 the '507 Application, which recites “a biometric sensor within a housing of a
17 wearable electronic device, the biometric sensor comprising: an emitter for
18 transmitting modulated light toward a measurement site of a subject through a
19 first aperture in the housing; an optical sensor for receiving modulated light
20 through a second aperture in the housing, the modulated light at least partially
21 exiting the measurement site; a high pass filter to receive an output of the
22 optical sensor, the high pass filter having a cutoff frequency above a frequency
23 of a periodic optical property of the measurement site; and an analog to digital
24 converter to receive an output of the high pass filter.”

25 361. In written assignments, Lamego agreed to assign and assigned to
26 Masimo all patentable subject matter (as well as all works of authorship,
27 developments, improvements, or trade secrets) conceived during their
28

1 employment at Masimo, including ownership of all patents and patent
2 applications claiming such subject matter.

3 362. Those assignments vested in Masimo all legal and equitable title to
4 patents and patent applications reciting inventions made during their
5 employment, such that Masimo is at least a joint owner of the '507 Application
6 and all applications, patents, continuations, divisionals, and reissues that claim
7 priority to the '507 Application, including foreign counterparts.

8 363. In at least one written assignment, Lamego agreed to assign and
9 assigned to Cercacor all patentable subject matter (as well as all works of
10 authorship, developments, improvements, or trade secrets) conceived during his
11 employment at Cercacor, including ownership of all patents and patent
12 applications claiming such subject matter. An exemplary agreement conveying
13 such rights was attached as Exhibit A to Apple's Motion to Dismiss (Doc. No.
14 16-3). That assignment vested in Cercacor all legal and equitable title to patents
15 and patent applications reciting inventions made during his employment, such
16 that, to the extent the evidence establishes that Lamego obtained patentable
17 subject matter claimed in the '507 Application from, or jointly conceived such
18 subject matter with, Cercacor employees while Lamego was an employee of
19 Cercacor, Cercacor would be a joint owner of the '507 Application and all
20 applications, patents, continuations, divisionals, and reissues that claim priority to
21 the '507 Application, including foreign counterparts.

22 364. Based on the forgoing, Plaintiffs seek declaratory relief under at
23 least 28 U.S.C. §§ 2201 & 2202, as well as applicable state contract law and
24 federal patent law, declaring that Masimo is at least a joint owner of the '507
25 Application (or, to the extent it is determined that Masimo employees invented
26 all of the patentable subject matter claimed in the '507 Application, that Masimo
27 is the exclusive owner), and, in the alternative, that Cercacor is a joint owner of
28 the '507 Application. Plaintiffs also seek an order from the Court directing the

1 Patent Office to amend the Patent Office records to reflect the ownership
2 interest of Masimo and/or Cercacor.

3 **XXXIV. TWENTY-SEVENTH CAUSE OF ACTION**
4 **(DECLARATORY JUDGMENT OF OWNERSHIP OF**
5 **U.S. PATENT APPLICATION NO. 16/700,710)**

6 365. Plaintiffs hereby reallege and incorporate by reference the
7 allegations set forth in paragraphs 1 through 50.

8 366. U.S. Patent Application 16/700,710 is recorded as owned by Apple.

9 367. Any inventive contribution that Lamego could have made to the
10 alleged invention of the subject matter claimed in the '710 application was made
11 while he was a Masimo employee during 2000-2001 and 2003-2006, or a
12 Cercacor employee during 2006-2014. This includes, for example, Claim 15 of
13 the '710 Application, which recites "a wearable device, comprising: a first light
14 source that operates at a first wavelength; a second light source that operates at a
15 second wavelength; at least one light receiver; and a processing unit that is
16 configured to, upon detection of an object using light of the first wavelength
17 received by the at least one light receiver, use light of the second wavelength
18 received by the at least one light receiver to determine health data for a user."

19 368. In written assignments, Lamego agreed to assign and assigned to
20 Masimo all patentable subject matter (as well as all works of authorship,
21 developments, improvements, or trade secrets) conceived during their
22 employment at Masimo, including ownership of all patents and patent
23 applications claiming such subject matter.

24 369. Those assignments vested in Masimo all legal and equitable title to
25 patents and patent applications reciting inventions made during their
26 employment, such that Masimo is at least a joint owner of the '710 Application
27 and all applications, patents, continuations, divisionals, and reissues that claim
28 priority to the ' 710 Application, including foreign counterparts.

1 and/or participation with them have infringed each of the '265, '628, '553, '554,
2 '564, '765, '194, '195, '366, '994, '703, and '776 patents through the
3 manufacture, use, importation, offer for sale, and/or sale of infringing products
4 and/or any of the other acts prohibited by 35 U.S.C. § 271;

5 B. Pursuant to 35 U.S.C. § 283, an injunction enjoining Defendant and
6 its officers, agents, servants, employees, attorneys and all others in active
7 concert and/or participation with them from infringing the '265, '628, '553,
8 '554, '564, '765, '194, '195, '366, '994, '703, and '776 patents through the
9 manufacture, use, importation, offer for sale, and/or sale of infringing products
10 and/or any of the other acts prohibited by 35 U.S.C. § 271, including
11 preliminary and permanent injunctive relief;

12 C. Pursuant to 35 U.S.C. § 284, an award compensating Masimo for
13 Defendant's infringement of the '265, '628, '553, '554, '564, '765, '194, '195,
14 '366, '994, '703, and '776 patents through payment of not less than a reasonable
15 royalty on Defendant's sales of infringing products;

16 D. Pursuant to 35 U.S.C. § 284, an award increasing damages up to
17 three times the amount found or assessed by the jury for Defendant's
18 infringement of each of the '265, '628, '553, '554, '564, '765, '194, '195, '366,
19 '994, '703, and '776 patents in view of the willful and deliberate nature of the
20 infringement;

21 E. Pursuant to 35 U.S.C. § 285, a finding that this is an exceptional
22 case, and an award of reasonable attorneys' fees and non-taxable costs;

23 F. An assessment of prejudgment and post-judgment interest and
24 costs against Defendant, together with an award of such interest and costs,
25 pursuant to 35 U.S.C. § 284;

26 G. That Defendant be adjudged to have misappropriated Plaintiffs' trade
27 secrets in violation of the California Uniform Trade Secrets Act, Cal. Civ. Code
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1 § 3426 *et seq.*, and that Defendant's acts in doing so be adjudged willful,
2 malicious, oppressive, and done knowingly;

3 H. That Defendant be adjudged to have been unjustly enriched;

4 I. That Plaintiffs be awarded damages for actual losses, unjust
5 enrichment, and/or a reasonable royalty pursuant to Cal. Civ. Code § 3426.3.

6 J. That Defendant, its agents, servants, employees, and attorneys, and
7 all those persons in active concert or participation with Defendant, be forthwith
8 temporarily, preliminarily, and thereafter permanently required to return all of
9 Plaintiffs' trade secrets and confidential information and enjoined from further
10 using and disclosing to any third parties any of Plaintiffs' trade secrets and
11 confidential information;

12 K. That Defendant be enjoined from selling or offering to sell any
13 product, including Defendant's Apple Watch Series 4 and later devices, that
14 includes or uses any of Plaintiffs' trade secrets;

15 L. That Defendant be directed to file with this Court and to serve on
16 Plaintiffs within thirty (30) days after the service of the injunction, a report in
17 writing, under oath, setting forth in detail the manner and form in which
18 Defendant has complied with the injunction;

19 M. That Defendant be required to account to Plaintiffs for any and all
20 gains, profits, and advantages derived by it, and all damages sustained by
21 Plaintiffs, by reason of Defendant's acts complained herein;

22 N. That Plaintiffs be awarded exemplary damages and reasonable
23 attorneys' fees pursuant to Cal. Civ. Code § 3426.3(c) and 3426.4;

24 O. That the U.S. Patent and Trademark Office be directed to correct
25 the inventorship of the '052, '670, '095, '754, '671, and '997 patents to add the
26 correct inventors;

27 P. An order imposing a constructive trust for the benefit of Plaintiffs
28 over: (1) any trade secrets Defendants obtained from Plaintiffs; (2) any profits,

1 revenues, or other benefits obtained by Defendants as a result of any disclosure
2 or use of trade secrets obtained from Plaintiffs; and (3) the Lamego Patents and
3 the Lamego Patent Applications;

4 Q. That Plaintiffs be declared exclusive owners, or at least joint owners,
5 of the patents and patent applications that are based on Plaintiffs' developments,
6 including the '052, '670, '095, '754, '671, and '997 patents, and the '507 and
7 '710 applications, and all applications, patents, continuations, divisionals, and
8 reissues that claim priority to those patents and that patent application, including
9 foreign counterparts;

10 R. An award of taxable costs; and

11 S. That this Court award such other and further relief as this Court
12 may deem just.

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Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: February 5, 2021

By: /s/ Adam B. Powell
Joseph R. Re
Stephen C. Jensen
Perry D. Oldham
Stephen W. Larson
Adam B. Powell

Attorneys for Plaintiffs,
Masimo Corporation and
Cercacor Laboratories, Inc.

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DEMAND FOR JURY TRIAL

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Plaintiffs Masimo Corporation and Cercacor Laboratories, Inc. hereby demands a trial by jury on all issues so triable.

Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: February 5, 2021

By: /s/ Adam B. Powell

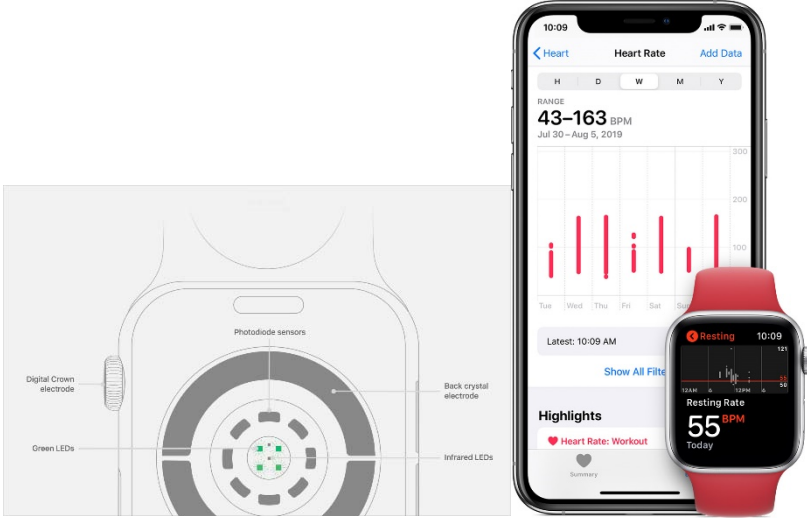
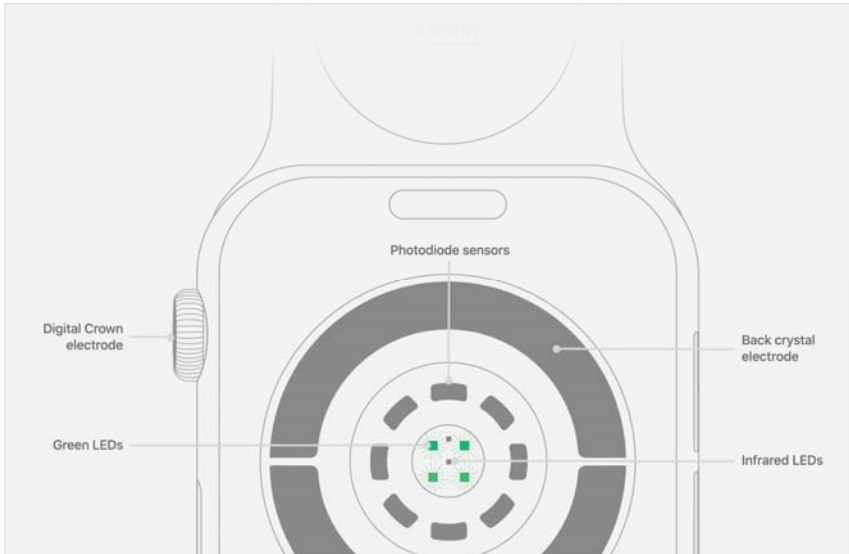
Joseph R. Re
Stephen C. Jensen
Perry D. Oldham
Stephen W. Larson
Adam B. Powell

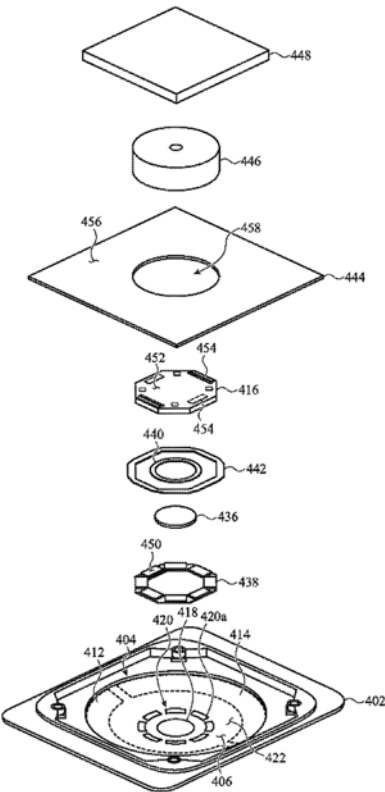
Attorneys for Plaintiffs,
Masimo Corporation and
Cercacor Laboratories, Inc.


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EXHIBIT 1

U.S. Patent No. 10,258,265

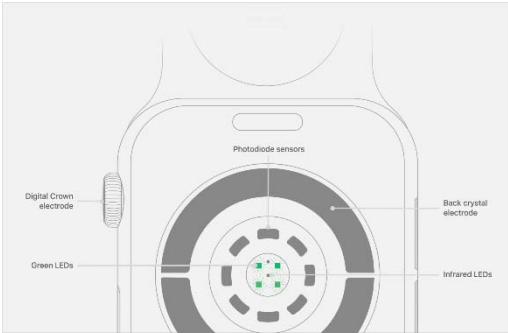

U.S. Patent No. 10,258,265 Claim 1	Description of Accused Products
<p>1. A noninvasive optical physiological measurement device adapted to be worn by a wearer, the noninvasive optical physiological measurement device providing an indication of a physiological parameter of the wearer comprising:</p>	<p>The Apple Watch Series 4 and later devices are noninvasive optical physiological measurement devices adapted to be worn by a wearer, and provide an indication of a physiological parameter as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p>
<p>a plurality of emitters of different wavelengths;</p>	<p>The Apple Watch Series 4 and later devices include a plurality of emitters of different wavelengths. The Apple Watch Series 4 and later devices include green and infrared LEDs as found on the Apple website at https://support.apple.com/en-us/HT204666:</p> 


U.S. Patent No. 10,258,265 Claim 1	Description of Accused Products
<p>a housing having a surface and a circular wall protruding from the surface;</p>	<p>The Apple Watch Series 4 and later devices include a housing having a surface and a circular wall protruding from the surface. Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, a circular wall arranged on substrate:</p>  <p style="text-align: center;">FIG. 4C</p>

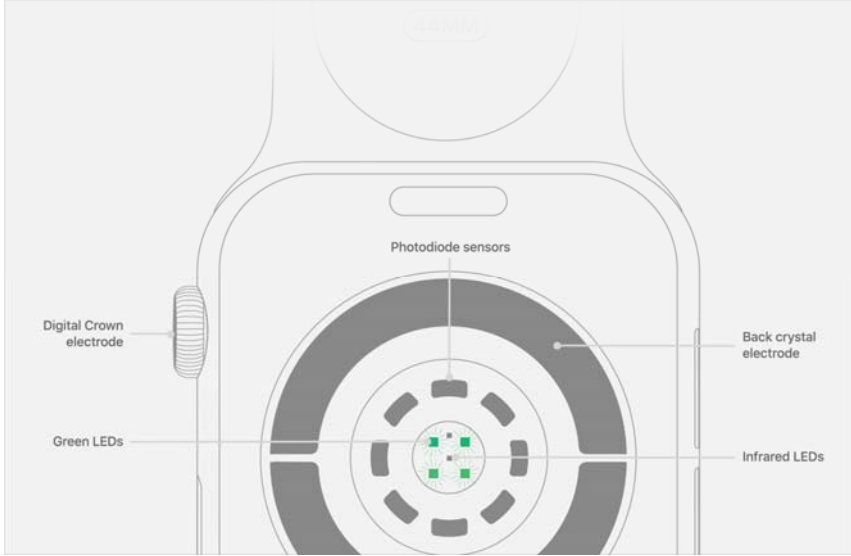
U.S. Patent No. 10,258,265 Claim 1	Description of Accused Products
<p>at least four detectors arranged on the surface and spaced apart from each other, the at least four detectors configured to output one or more signals responsive to light from the one or more light emitters attenuated by body tissue, the one or more signals indicative of a physiological parameter of the wearer; and</p>	<p>The Apple Watch Series 4 and later devices include at least four detectors arranged on the surface and spaced apart from each other, the at least four detectors configured to output one or more signals responsive to light from the one or more light emitters attenuated by body tissue, the one or more signals indicative of a physiological parameter of the wearer. The Apple Watch Series 4 and later devices include eight photodiode sensors as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 4 and later devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue and is indicative of a physiological parameter of the wearer:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>https://support.apple.com/en-us/HT204666.</p>

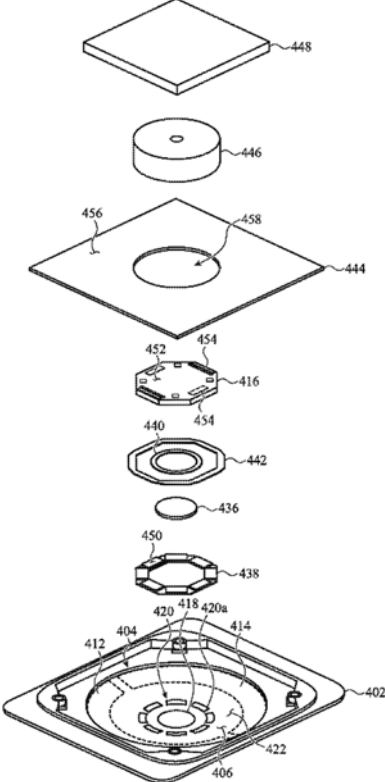
U.S. Patent No. 10,258,265 Claim 1	Description of Accused Products
<p>a light permeable cover arranged above at least a portion of the housing, the light permeable cover comprising a protrusion arranged to cover the at least four detectors.</p>	<p>The Apple Watch Series 4 and later devices include a light permeable cover arranged above at least a portion of the housing, the light permeable cover comprising a protrusion arranged to cover the at least four detectors.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, a dome-shaped carrier having a surface that protrudes from the back of the watch. The dome-shaped carrier is arranged above at least a portion of the housing and is arranged to cover the at least four detectors:</p> <p style="text-align: center;"> FIG. 4A FIG. 4C </p>

U.S. Patent No. 10,292,628

U.S. Patent No. 10,292,628 Claim 1	Description of Accused Products
<p>1. A noninvasive optical physiological sensor comprising:</p>	<p>The Apple Watch Series 4 and later devices are noninvasive optical physiological sensors.</p> <p>The Apple Watch Series 4 and later devices include a plurality of emitters of different wavelengths (for example, green and infrared LEDs) and at least four detectors (for example, photodiode sensors) spaced apart from each other as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>   <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p>

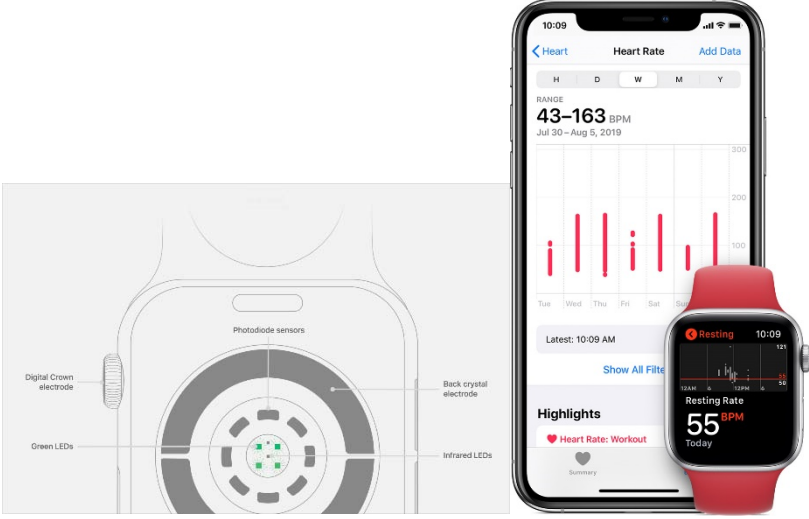
U.S. Patent No. 10,292,628 Claim 1	Description of Accused Products
<p>a plurality of emitters configured to emit light into tissue of a user;</p>	<p>The Apple Watch Series 4 and later devices include a plurality of emitters configured to emit light into tissue of a user. The Apple Watch Series 4 and later devices include green and infrared LEDs as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 4 and later devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue and is indicative of a physiological parameter of the wearer:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>https://support.apple.com/en-us/HT204666.</p>

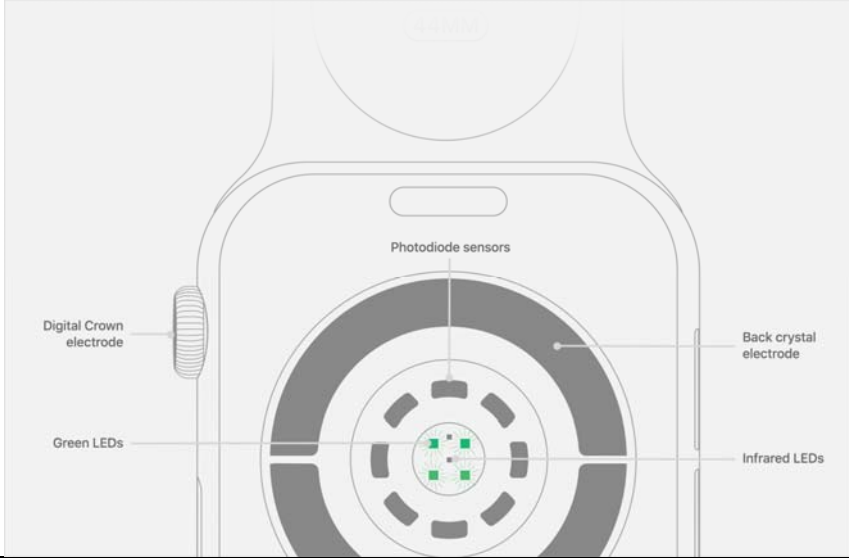
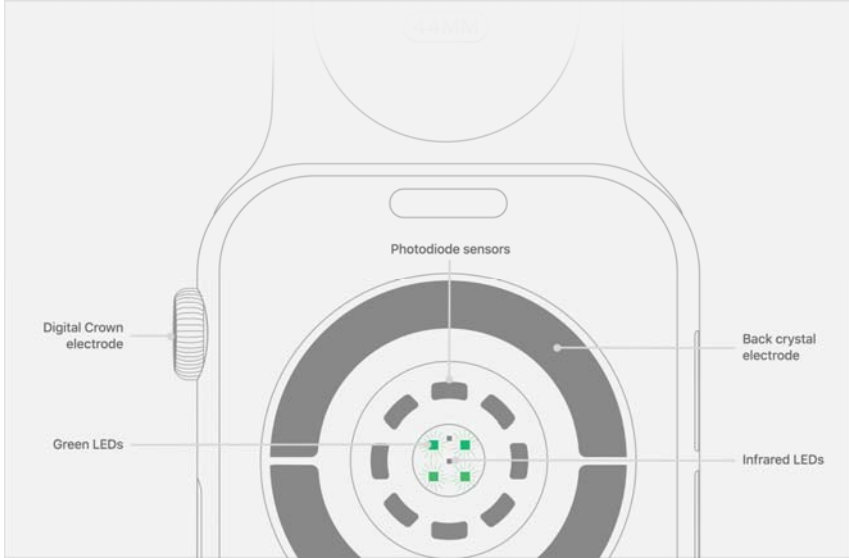
U.S. Patent No. 10,292,628 Claim 1	Description of Accused Products
<p>a plurality of detectors configured to detect light that has been attenuated by tissue of the user, wherein the plurality of detectors comprise at least four detectors;</p>	<p>The Apple Watch Series 4 and later devices include a plurality of detectors configured to detect light that has been attenuated by tissue of the user, wherein the plurality of detectors comprise at least four detectors. The Apple Watch Series 4 and later devices include photodiode sensors as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 4 and later devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue and is indicative of a physiological parameter of the wearer:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>https://support.apple.com/en-us/HT204666.</p>

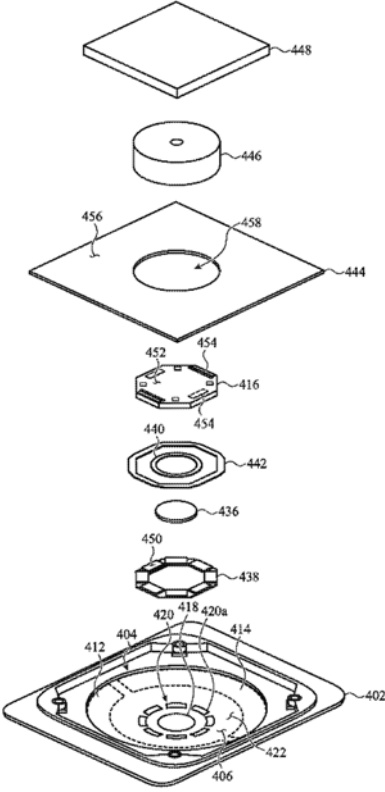
U.S. Patent No. 10,292,628 Claim 1	Description of Accused Products
<p>a housing configured to house at least the plurality of detectors; and</p>	<p>The Apple Watch Series 4 and later devices include a housing configured to house at least the plurality of detectors. Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication), shows, for example, such housing:</p>  <p style="text-align: center;">FIG. 4C</p>

U.S. Patent No. 10,292,628 Claim 1	Description of Accused Products
<p>a light permeable cover configured to be located between tissue of the user and the plurality of detectors when the noninvasive optical physiological sensor is worn by the user, wherein the cover comprises an outwardly protruding convex surface configured to cause tissue of the user to conform to at least a portion of the outwardly protruding convex surface when the noninvasive optical physiological sensor is worn by the user and during operation of the noninvasive optical physiological sensor, and wherein the plurality of detectors are configured to receive light passed through the outwardly protruding convex surface after attenuation by tissue of the user.</p>	<p>The Apple Watch Series 4 and later devices include a light permeable cover configured to be located between tissue of the user and the plurality of detectors when the noninvasive optical physiological sensor is worn by the user, wherein the cover comprises an outwardly protruding convex surface configured to cause tissue of the user to conform to at least a portion of the outwardly protruding convex surface when the noninvasive optical physiological sensor is worn by the user and during operation of the noninvasive optical physiological sensor, and wherein the plurality of detectors are configured to receive light passed through the outwardly protruding convex surface after attenuation by tissue of the user.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such a cover in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;"> FIG. 4A FIG. 4C </p>

U.S. Patent No. 10,588,553

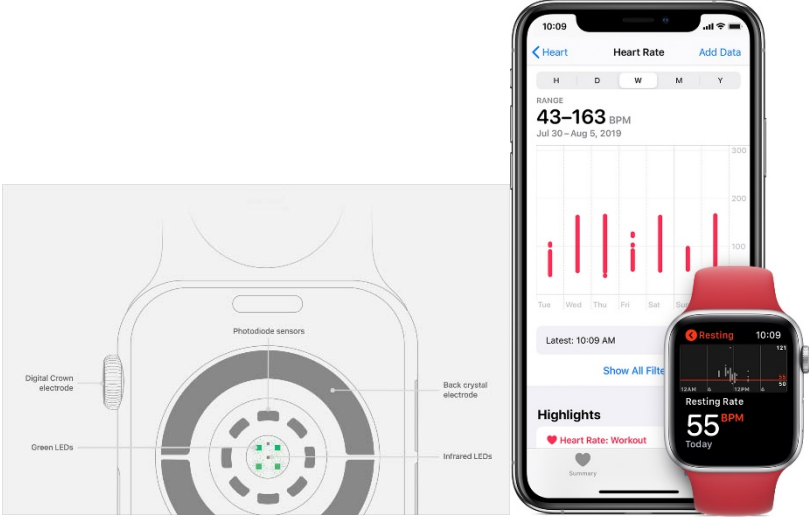
U.S. Patent No. 10,588,553 Claim 1	Description of Accused Products
<p>A noninvasive optical physiological sensor comprising:</p>	<p>The Apple Watch Series 4 and 5 devices are noninvasive optical physiological sensors as found on the Apple website at https://support.apple.com/en-us/HT204666:</p> 

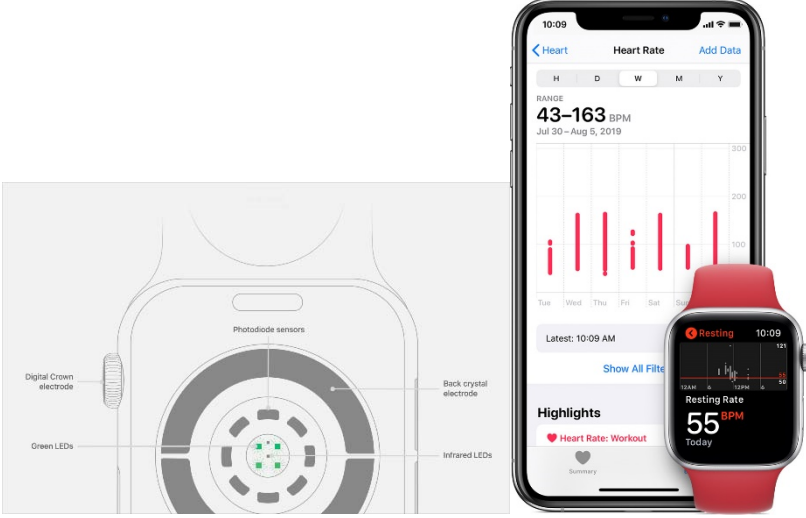
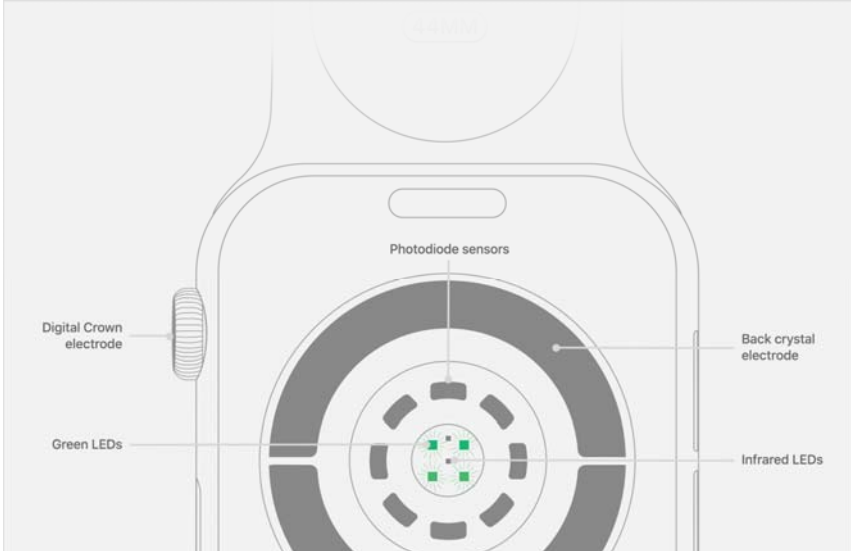
U.S. Patent No. 10,588,553 Claim 1	Description of Accused Products
<p>a plurality of emitters configured to emit light into tissue of a user;</p>	<p>The Apple Watch Series 4 and 5 devices include a plurality of emitters configured to emit light into tissue of a user. The Apple Watch Series 4 and 5 devices include green and infrared LEDs as found on the Apple website at https://support.apple.com/en-us/HT204666:</p> 
<p>at least four detectors, wherein at least one of the at least four detectors is configured to detect light that has been attenuated by tissue of the user, and wherein the at least four detectors are arranged on a substrate;</p>	<p>The Apple Watch Series 4 and 5 devices include at least four detectors, wherein at least one of the at least four detectors is configured to detect light that has been attenuated by tissue of the user, and wherein the at least four detectors are arranged on a substrate. The Apple Watch Series 4 and 5 devices include eight photodiode sensors on a substrate, as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 4 and 5 devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue:</p>

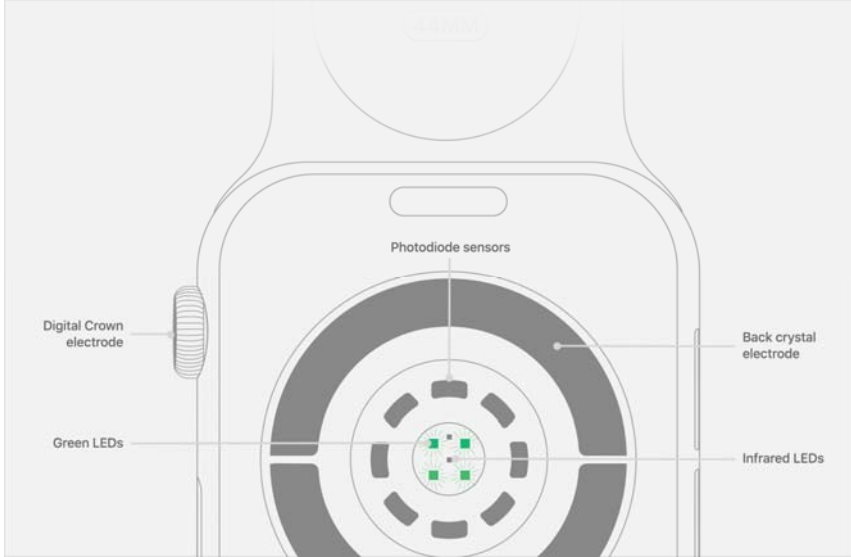
U.S. Patent No. 10,588,553 Claim 1	Description of Accused Products
	<p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>https://support.apple.com/en-us/HT204666.</p>
<p>a wall configured to circumscribe at least the at least four detectors; and</p>	<p>The Apple Watch Series 4 and 5 devices include a wall configured to circumscribe at least the at least four detectors. Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, wall circumscribing photodiode sensors arranged on a substrate:</p>  <p style="text-align: center;">FIG. 4C</p>

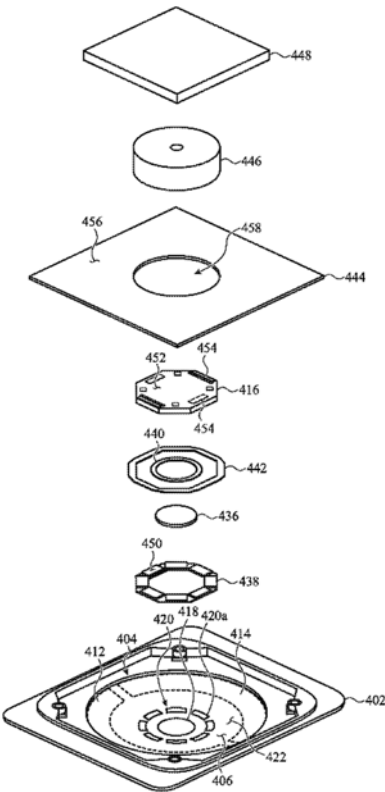
U.S. Patent No. 10,588,553 Claim 1	Description of Accused Products
<p>a cover configured to be located between tissue of the user and the at least four detectors when the noninvasive optical physiological sensor is worn by the user, wherein the cover comprises a single protruding convex surface operable to conform tissue of the user to at least a portion of the single protruding convex surface when the noninvasive optical physiological sensor is worn by the user, and wherein the wall operably connects to the substrate and the cover.</p>	<p>The Apple Watch Series 4 and later devices include a cover configured to be located between tissue of the user and the at least four detectors when the noninvasive optical physiological sensor is worn by the user, wherein the cover comprises a single protruding convex surface operable to conform tissue of the user to at least a portion of the single protruding convex surface when the noninvasive optical physiological sensor is worn by the user, and wherein the wall operably connects to the substrate and the cover.</p> <p>The dome-shaped carrier in Figs. 4A and 4C of Apple's '912 publication is illustrative of the Apple Watch Series 4 and later devices. The dome-shaped carrier has a surface that protrudes from the back of the watch, is located between tissue of the user and the at least four detectors when the noninvasive optical physiological sensor is worn by the user, and comprises a single protruding convex surface operable to conform tissue of the user to at least a portion of the single protruding convex surface when the noninvasive optical physiological sensor is worn by the user, wherein the wall operably connects to the substrate and the cover:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>

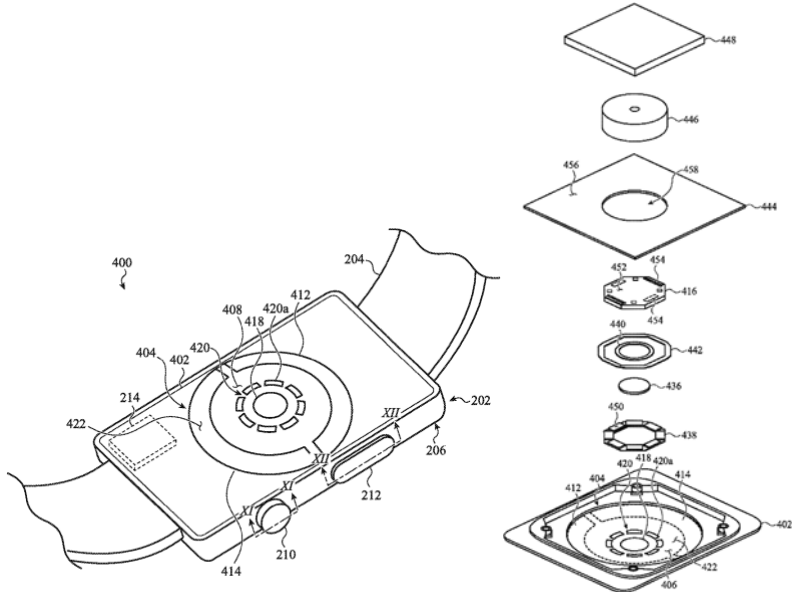
U.S. Patent No. 10,588,554

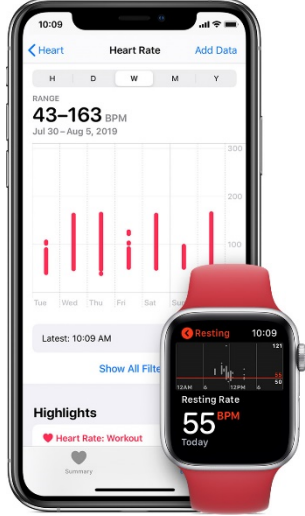
U.S. Patent No. 10,588,554 Claim 20	Description of Accused Products
A physiological measurement system comprising:	<p>The Apple Watch Series 4 and later devices in combination with iPhone devices are physiological measurement systems.</p> <p>The Apple Watch Series 4 and later devices as found on the Apple website at https://support.apple.com/en-us/HT204666:</p> 

U.S. Patent No. 10,588,554 Claim 20	Description of Accused Products
<p>a physiological sensor device comprising:</p>	<p>The Apple Watch Series 4 and later devices are physiological sensor devices.</p> <p>The Apple Watch Series 4 and later devices include a plurality of emitters of different wavelengths (for example, green and infrared LEDs) and at least four detectors (for example, photodiode sensors) spaced apart from each other as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p>
<p>a plurality of emitters configured to emit light into tissue of a user;</p>	<p>The Apple Watch Series 4 and later devices include a plurality of emitters configured to emit light into tissue of a user. The Apple Watch Series 4 and later devices include green and infrared LEDs as found on the Apple website at https://support.apple.com/en-us/HT204666:</p> 

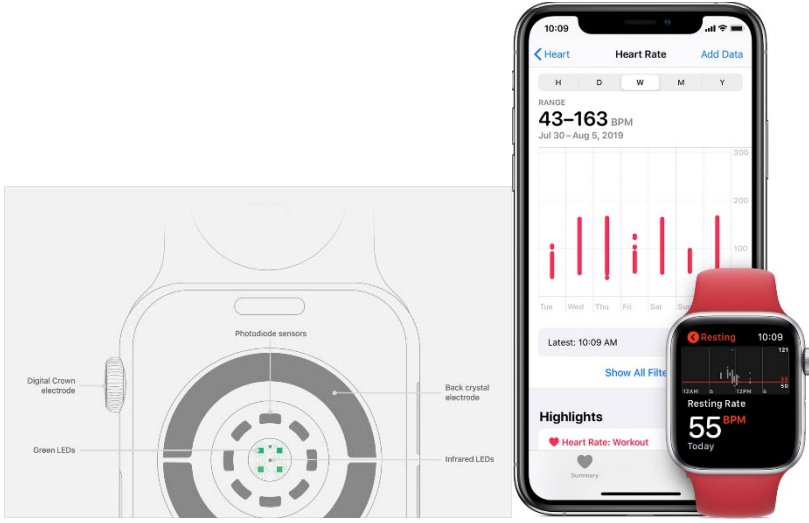
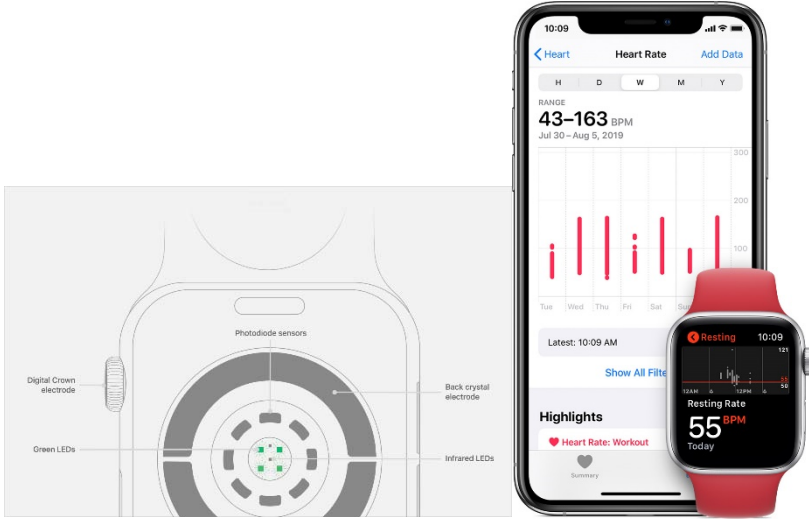
U.S. Patent No. 10,588,554 Claim 20	Description of Accused Products
<p>at least four detectors, wherein each of the at least four detectors has a corresponding window that allows light to pass through to the detector;</p>	<p>The Apple Watch Series 4 and later devices include at least four detectors, wherein each of the at least four detectors has a corresponding window that allows light to pass through to the detector. The Apple Watch Series 4 and later devices include eight photodiode sensors with corresponding windows that allow light to pass through to the detector, as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 4 and later devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>https://support.apple.com/en-us/HT204666.</p>

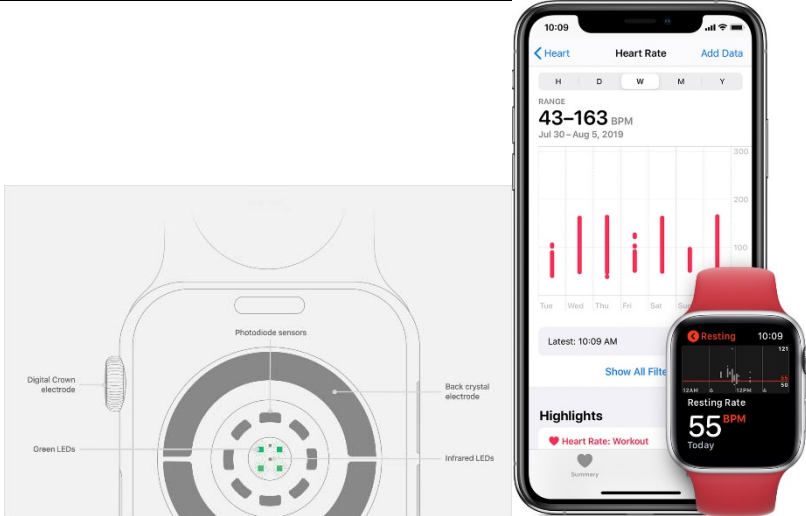
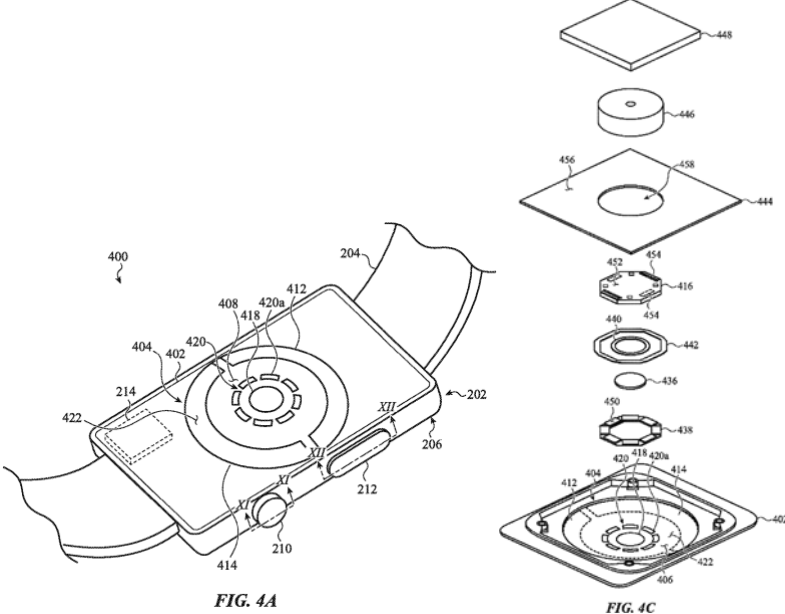
U.S. Patent No. 10,588,554 Claim 20	Description of Accused Products
<p>a wall that surrounds at least the at least four detectors; and</p>	<p>The Apple Watch Series 4 and later devices include a wall that surrounds at least the at least four detectors. Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, a wall surrounding photodiode sensors arranged on substrate:</p>  <p>The diagram, labeled FIG. 4C, shows an exploded view of a sensor assembly. At the top is a square substrate 448. Below it is a cylindrical component 446. The next layer is a square substrate 444 with a central circular opening 458 and a surrounding wall 456. Below this is a component 416 with features 452, 454, and 440. This is followed by a ring-like component 442 with a central opening 436. Below that is another component 438 with features 450 and 418. The bottom-most part is a square substrate 402 with a central circular opening 422 and a surrounding wall 406. Inside the opening 422, there are four detectors 412, 414, 418, and 420a, each with a corresponding feature 404, 414, 418, and 420a respectively.</p> <p>FIG. 4C</p>

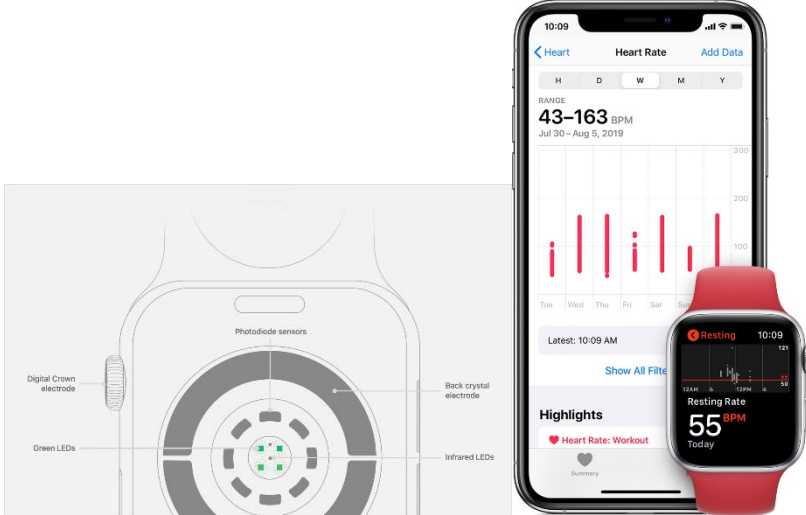
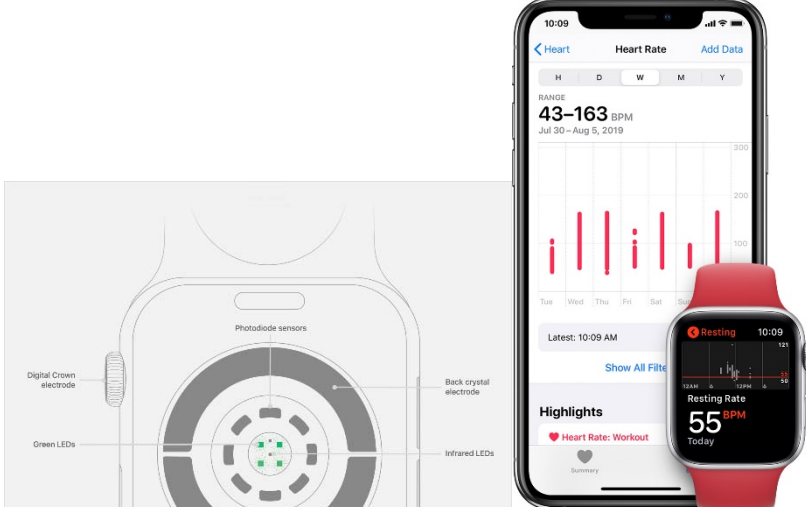
U.S. Patent No. 10,588,554 Claim 20	Description of Accused Products
<p>a cover comprising a single protruding convex surface, wherein the single protruding convex surface is configured to be located between tissue of the user and the at least four detectors when the physiological sensor device is worn by the user, wherein at least a portion of the single protruding convex surface is sufficiently rigid to cause tissue of the user to conform to at least a portion of a shape of the single protruding convex surface when the physiological sensor device is worn by the user, and wherein the cover operably connects to the wall; and</p>	<p>The Apple Watch Series 4 and later devices include a cover comprising a single protruding convex surface, wherein the single protruding convex surface is configured to be located between tissue of the user and the at least four detectors when the physiological sensor device is worn by the user, wherein at least a portion of the single protruding convex surface is sufficiently rigid to cause tissue of the user to conform to at least a portion of a shape of the single protruding convex surface when the physiological sensor device is worn by the user, and wherein the cover operably connects to the wall; and.</p> <p>The Apple Watch Series 4 and later devices include a dome-shaped carrier having a surface that protrudes from the back of the watch. The dome-shaped carrier is located between tissue of the user and the at least four detectors when the noninvasive optical physiological sensor is worn by the user, and comprises a single protruding convex surface operable to conform tissue of the user to at least a portion of the single protruding convex surface when the noninvasive optical physiological sensor is worn by the user, and wherein the wall operably connects to the substrate and the cover. Figs. 4A and 4C of Apple's '912 publication are illustrative of the dome-shaped cover in the Apple Watch Series 4 and later devices:</p>  <p style="text-align: center;">FIG. 4A FIG. 4C</p>

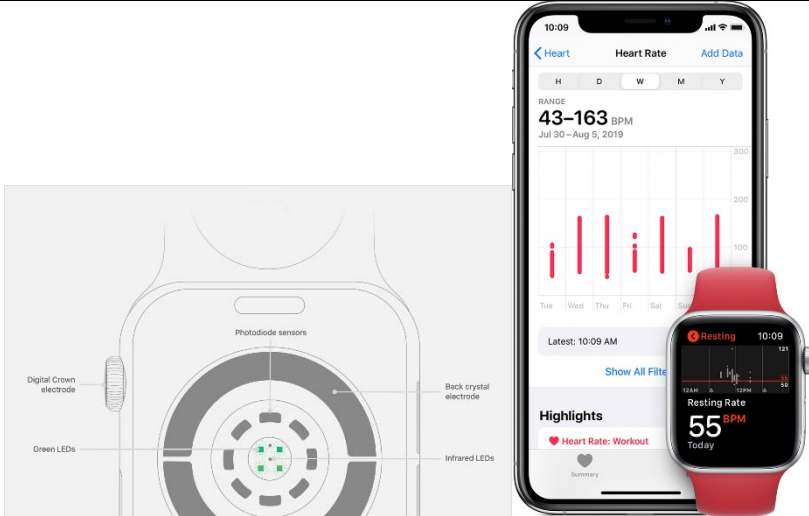
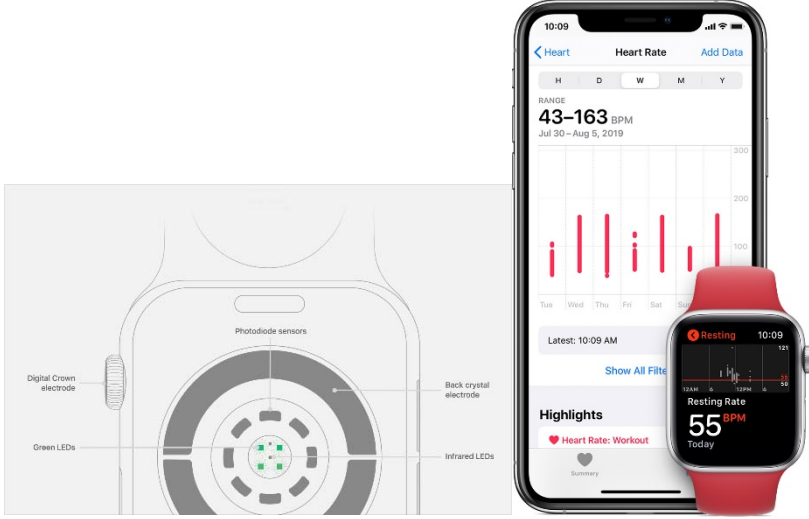
U.S. Patent No. 10,588,554 Claim 20	Description of Accused Products
<p>a handheld computing device in wireless communication with the physiological sensor device.</p>	<p>The Apple Watch Series 4 and later devices are physiological sensor devices that communicate wirelessly with handheld computing devices.</p> <p>The Apple Watch Series 4 and later devices communicate wirelessly with Apple iOS devices as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watch Series 4 and later devices communicate wirelessly with Apple iOS devices as described on the Apple website at https://support.apple.com/en-us/HT204505:</p> <p>To set up and use your Apple Watch, you need an iPhone with the latest version of iOS.</p> <p>watchOS 6 is compatible with Apple Watch Series 1 and later. Upgrading to watchOS 6 requires an iPhone 6s or later running iOS 13 or later.</p> <p>You also need to make sure that your iPhone has Bluetooth turned on, and that it's connected to Wi-Fi or a cellular network.</p> <p>If you already set up your Apple Watch but want to use it with a different iPhone, you can transfer your Apple Watch and its content to your new iPhone.</p>

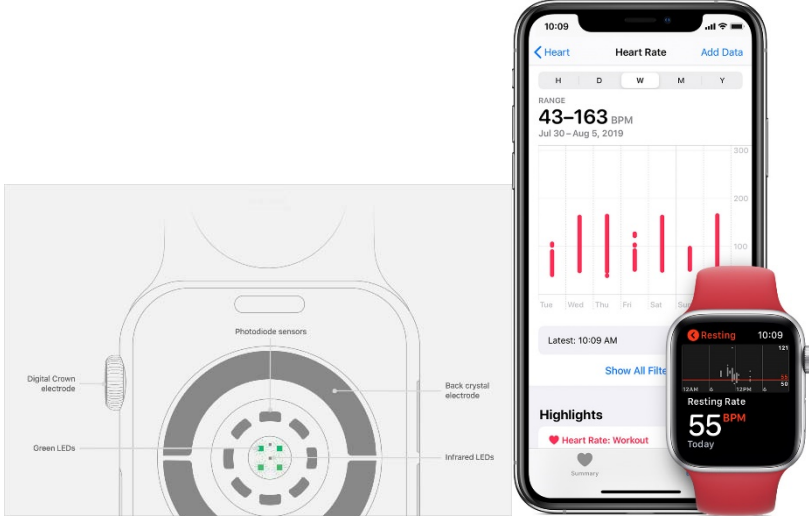
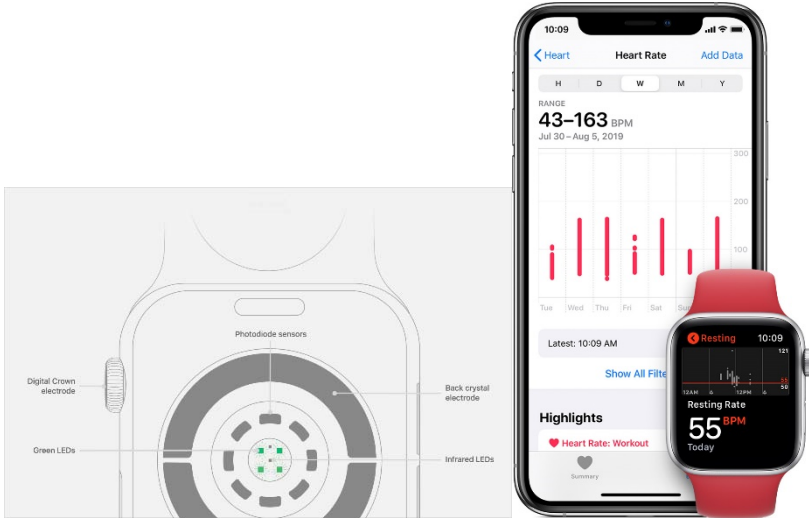
U.S. Patent No. 10,624,564

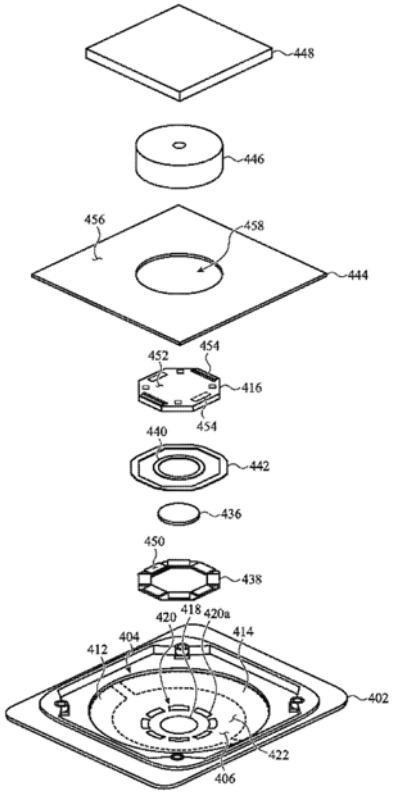
U.S. Patent No. 10,624,564 Claim 1	Description of Accused Products
<p>1. A user-worn physiological measurement device comprising:</p>	<p>The Apple Watch Series 4 and later devices are user-worn physiological measurement devices as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram shows the back of an Apple Watch with labels: Digital Crown electrode, Photodiode sensors, Back crystal electrode, Green LEDs, and Infrared LEDs. The smartphone screenshot shows the 'Heart Rate' app with a range of 43-163 BPM, a bar chart, and a watch face displaying 'Resting Rate 55 BPM Today'.</p>
<p>one or more emitters configured to emit light into tissue of a user;</p>	<p>The Apple Watch Series 4 and later devices include one or more emitters configured to emit light into tissue of a user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram and screenshot are identical to the first row, showing the back of the watch with sensor labels and the heart rate app interface.</p>
<p>at least four detectors arranged on a substrate;</p>	<p>The Apple Watch Series 4 and later devices include at least four detectors arranged on a substrate as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

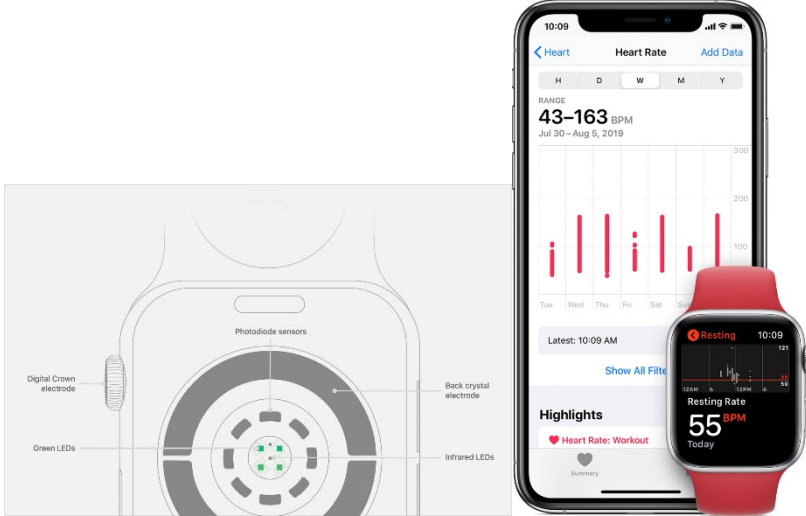
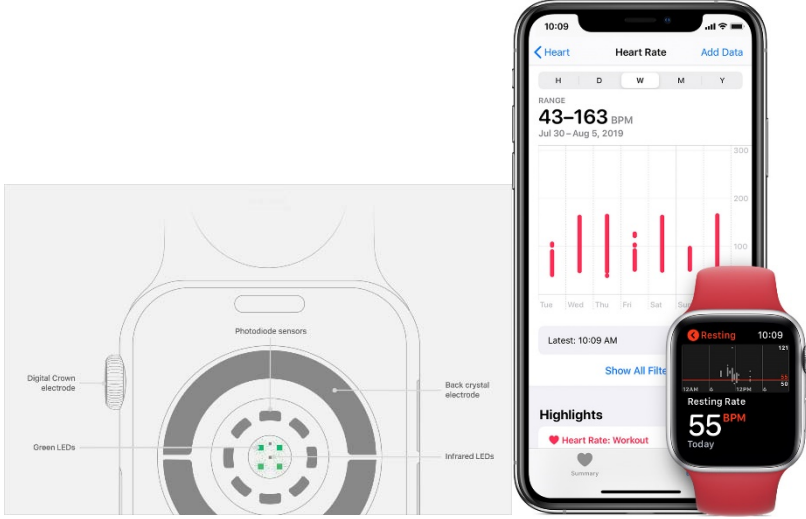
U.S. Patent No. 10,624,564 Claim 1	Description of Accused Products
	
<p>a cover comprising a protruding convex surface, wherein the protruding convex surface extends over all of the at least four detectors arranged on the substrate, wherein at least a portion of the protruding convex surface is rigid;</p>	<p>The Apple Watch Series 4 and later devices include a rigid protruding convex surface that extends over all of the at least four detectors arranged on the substrate.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such a cover in the Apple Watch Series 4 and later devices:</p>  <p style="text-align: center;">FIG. 4A FIG. 4C</p>
<p>one or more processors configured to:</p>	<p>The Apple Watch Series 4 and later devices include one or more processors as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

U.S. Patent No. 10,624,564 Claim 1	Description of Accused Products
	 <p>The diagram shows the back of an Apple Watch Series 4 with labels for: Digital Crown electrode, Green LEDs, Photodiode sensors, Back crystal electrode, and Infrared LEDs. To the right, a smartphone displays a heart rate app interface with a range of 43-163 BPM and a bar chart. A red Apple Watch is shown in the foreground displaying a resting heart rate of 55 BPM.</p>
<p>receive one or more signals from at least one of the at least four detectors, the one or more signals responsive to at least a physiological parameter of the user; and</p>	<p>The Apple Watch Series 4 and later devices receive one or more signals from at least one of the at least four detectors, the one or more signals responsive to at least a physiological parameter of the user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This diagram is identical to the one in the first row, showing the sensor layout on the watch back and the corresponding heart rate data on a smartphone and the watch face.</p>
<p>process the one or more signals to determine measurements of the physiological parameter;</p>	<p>The Apple Watch Series 4 and later devices process the one or more signals to determine measurements of the physiological parameter as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

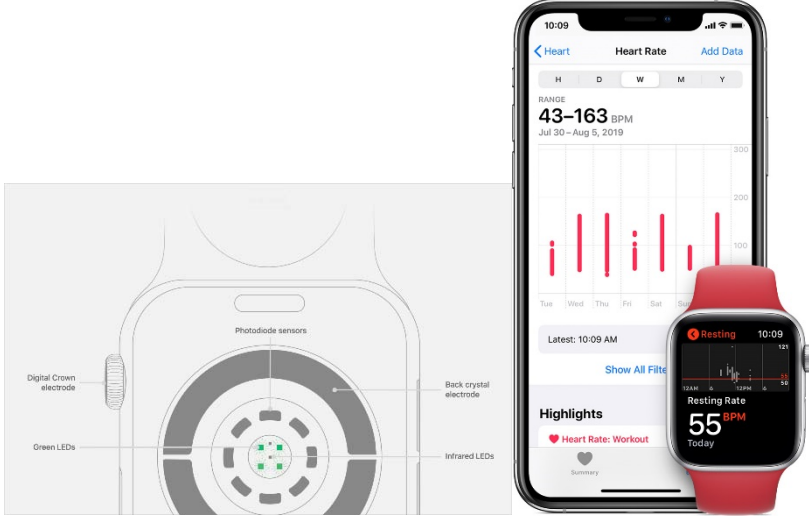
U.S. Patent No. 10,624,564 Claim 1	Description of Accused Products
	 <p>The diagram shows the back of an Apple Watch with various sensors labeled: Digital Crown electrode, Green LEDs, Photodiode sensors, Back crystal electrode, and Infrared LEDs. To the right, a smartphone displays a heart rate app interface with a range of 43-163 BPM, a bar chart, and a red Apple Watch showing a resting heart rate of 55 BPM.</p>
<p>a network interface configured to communicate with a mobile phone;</p>	<p>The Apple Watch Series 4 and later devices include a network interface configured to communicate with a mobile phone as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram is identical to the one above, showing the back of an Apple Watch with labeled sensors and a smartphone displaying heart rate data.</p>
<p>a touch-screen display configured to provide a user interface, wherein:</p>	<p>The Apple Watch Series 4 and later devices include a touch-screen display configured to provide a user interface as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

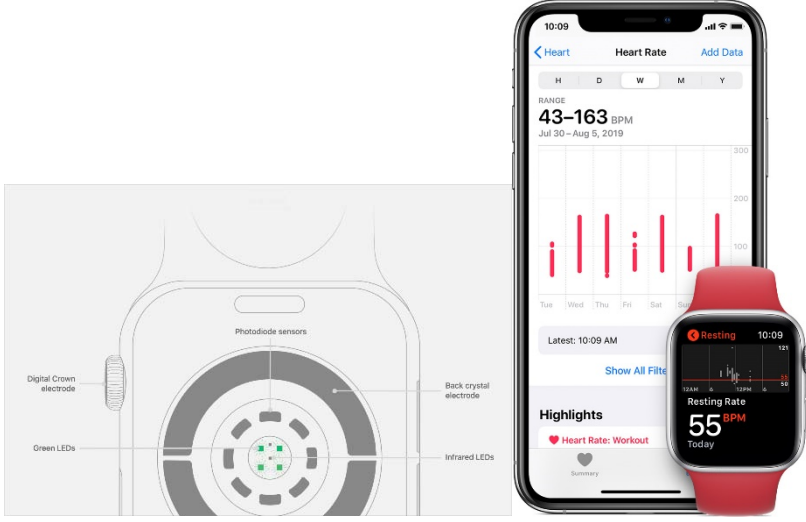
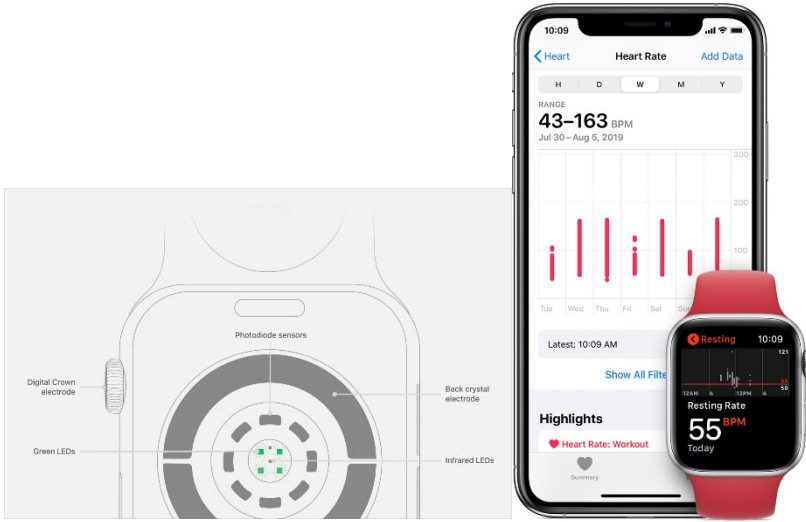
U.S. Patent No. 10,624,564 Claim 1	Description of Accused Products
	
<p>the user interface is configured to display indicia responsive to the measurements of the physiological parameter, and</p>	<p>The Apple Watch Series 4 and later devices include a user interface configured to display indicia responsive to the measurements of the physiological parameter as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p> 
<p>an orientation of the user interface is configurable responsive to a user input;</p>	<p>The Apple Watch Series 4 and later devices have an orientation of the user interface that is configurable responsive to a user input as shown on the Apple website at https://support.apple.com/guide/watch/change-language-orientation-apple-watch-apd0bf18f46b/watchos.</p>

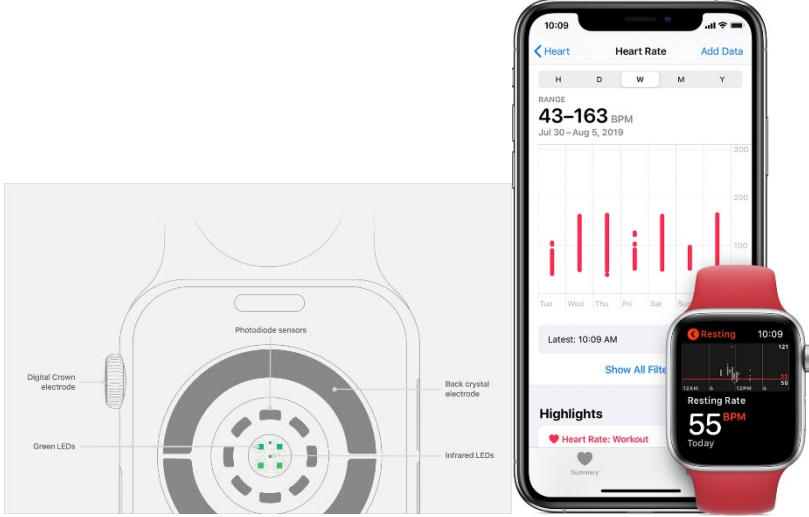
U.S. Patent No. 10,624,564 Claim 1	Description of Accused Products
<p>a wall that surrounds at least the at least four detectors, wherein the wall operably connects to the substrate and the cover;</p>	<p>The Apple Watch Series 4 and later devices include a wall that surrounds at least the at least four detectors and operably connects to the substrate and the cover.</p> <p>Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, such a wall:</p>  <p>The diagram, labeled FIG. 4C, shows an exploded view of a watch case wall assembly. At the top is a square cover (448). Below it is a cylindrical component (446). The main wall assembly (444) consists of a square substrate (456) with a central circular opening (458). A ring component (452) with four protrusions (454) fits into the opening. Below this is another ring component (442) with four protrusions (440). A small circular component (436) is positioned below the ring. Another ring component (450) with four protrusions (438) fits into the opening. The bottom part of the diagram shows the wall assembly (402) mounted on a substrate (404) with four detectors (412) and a central circular opening (414). The wall assembly (402) has four protrusions (420) and a central circular opening (422). The central circular opening (422) is surrounded by a ring component (418) with four protrusions (420a). A small circular component (406) is positioned below the ring.</p> <p>FIG. 4C</p>
<p>a storage device configured to at least temporarily store at least the measurements of the physiological parameter; and</p>	<p>The Apple Watch Series 4 and later devices include a storage device configured to at least temporarily store at least the measurements of the physiological parameter as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

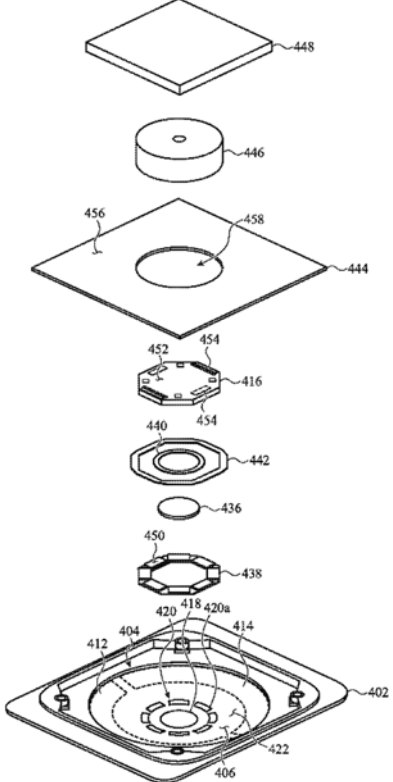
U.S. Patent No. 10,624,564 Claim 1	Description of Accused Products
	 <p>The diagram shows a top-down view of a wrist with heart rate sensors. Labels include: Digital Crown electrode, Green LEDs, Photodiode sensors, Back crystal electrode, and Infrared LEDs. To the right, a smartphone displays a 'Heart Rate' app interface. The screen shows a range of 43-163 BPM for the period Jul 30 - Aug 5, 2019. A bar chart shows heart rate over the week. The 'Latest' reading is 10:09 AM. A 'Highlights' section shows 'Heart Rate: Workout' with a heart icon. An Apple Watch with a red band is shown in the foreground, displaying 'Resting 10:09 121' and 'Resting Rate 55 BPM Today'.</p>
<p>a strap configured to position the physiological measurement device on the user.</p>	<p>The Apple Watch Series 4 and later devices include a strap configured to position the physiological measurement device on the user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This section is identical to the one above, showing the sensor diagram and the smartphone/Apple Watch displaying heart rate data.</p>

U.S. Patent No. 10,631,765

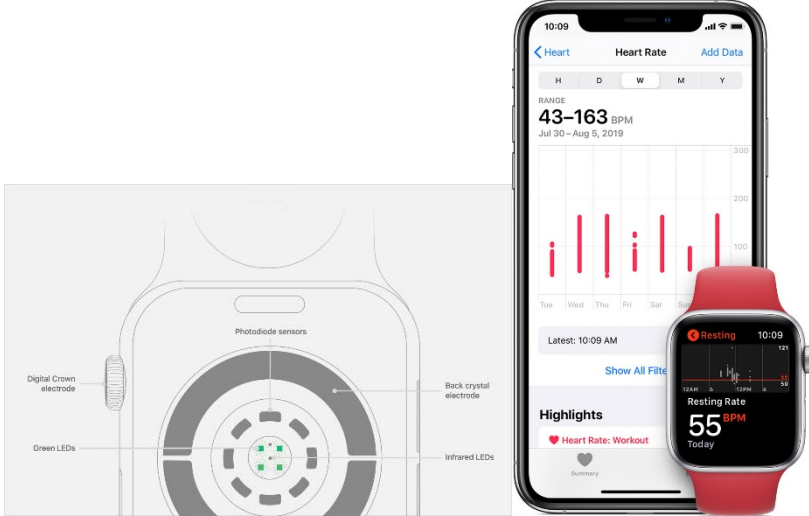
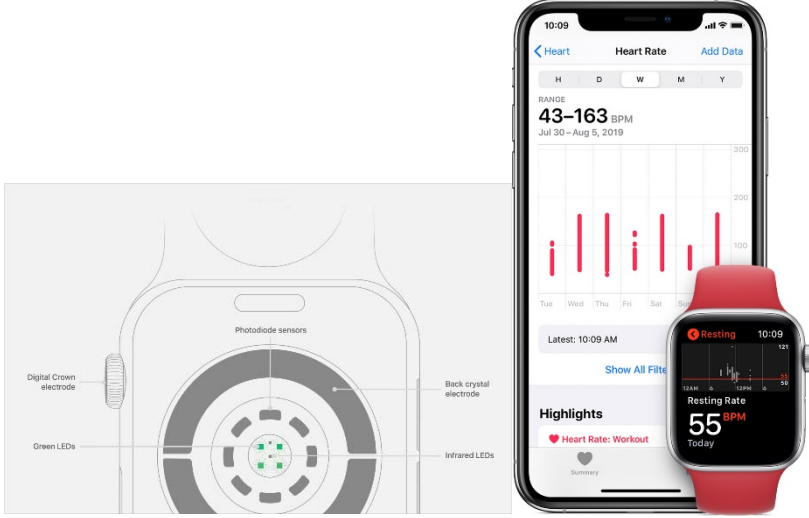
U.S. Patent No. 10,631,765 Claim 1	Description of Accused Products
<p>1. A physiological measurement system comprising:</p>	<p>The Apple Watch Series 4 and later devices in combination with iPhone devices are physiological measurement systems.</p> <p>The Apple Watch Series 4 and later devices include a plurality of emitters of different wavelengths (for example, green and infrared LEDs) and at least four detectors (for example, photodiode sensors) spaced apart from each other as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p>
<p>a physiological sensor device comprising:</p>	<p>The Apple Watch Series 4 and later devices are physiological sensor devices as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

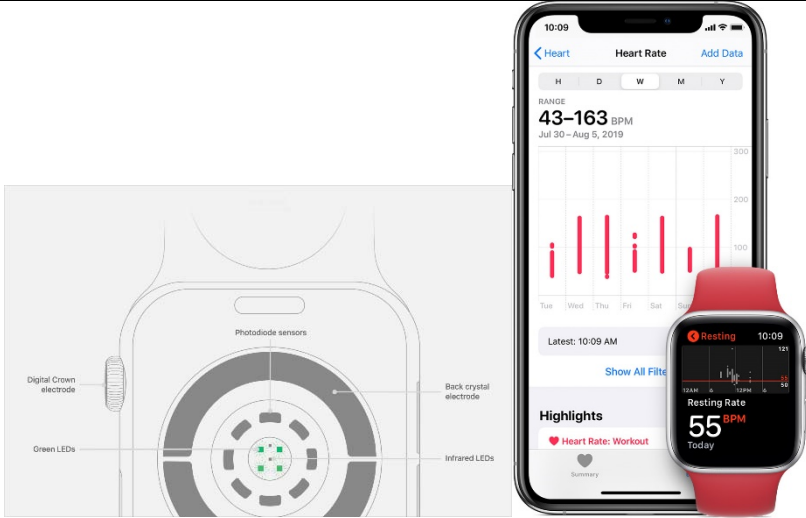
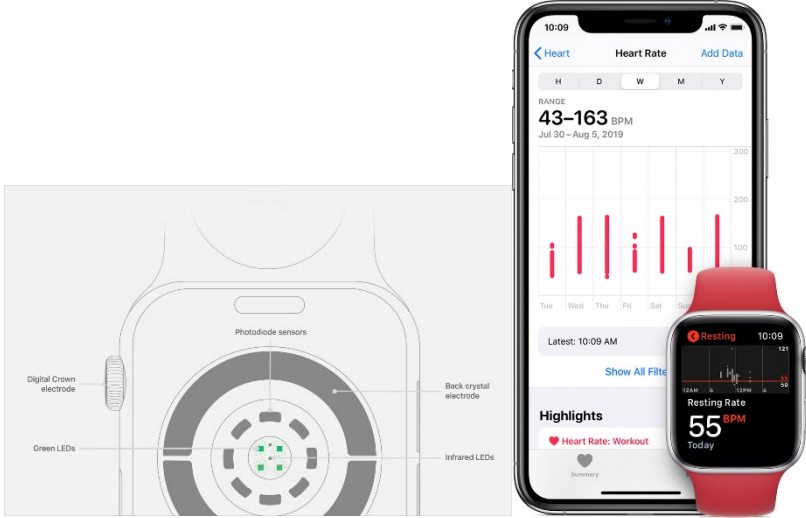
U.S. Patent No. 10,631,765 Claim 1	Description of Accused Products
	 <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p>
<p>one or more emitters configured to emit light into tissue of a user;</p>	 <p>The Apple Watch Series 4 and later devices include one or more emitters configured to emit light into tissue of a user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p> <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p>
<p>at least four detectors, wherein each of the at least four detectors has a corresponding window that</p>	<p>The Apple Watch Series 4 and later devices include at least four detectors with a corresponding window that allows light to pass through to the detector.</p> <p>The Apple Watch Series 4 and later devices include a plurality of emitters of different wavelengths (for example, green and infrared</p>

U.S. Patent No. 10,631,765 Claim 1	Description of Accused Products
<p>allows light to pass through to the detector;</p>	<p>LEDs) and at least four detectors (for example, photodiode sensors) spaced apart from each other as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p> <p>See also apertures 230 described in US20190090806A1, including Fig. 2.</p>
<p>a wall that surrounds at least the at least four detectors; and</p>	<p>The Apple Watch Series 4 and later devices include a wall that surrounds at least the at least four detectors.</p>

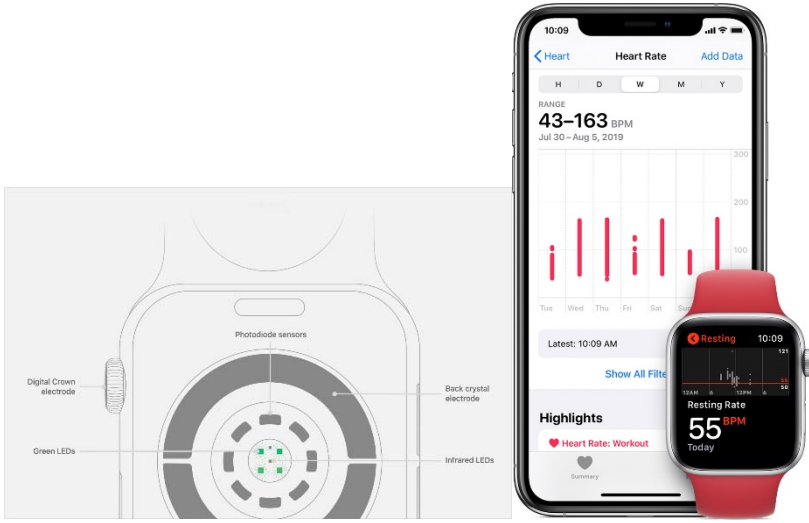
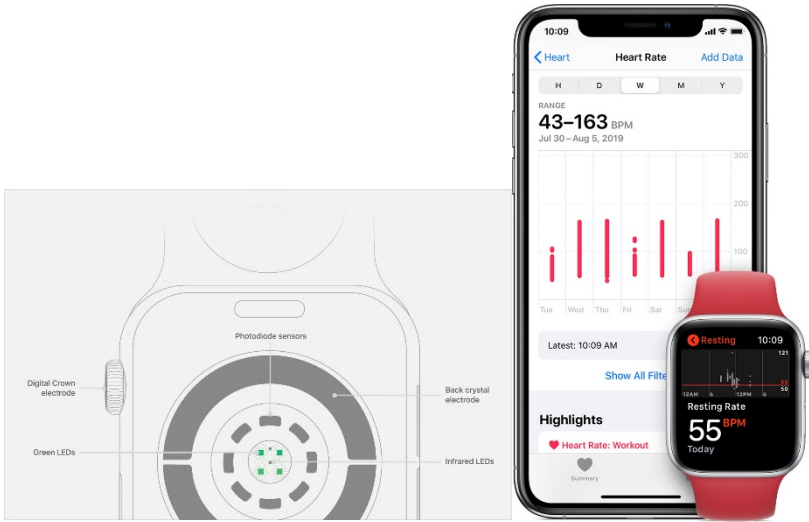
U.S. Patent No. 10,631,765 Claim 1	Description of Accused Products
	<p>Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, such a wall:</p>  <p style="text-align: center;">FIG. 4C</p>
<p>a cover comprising a protruding convex surface, wherein the protruding convex surface is above all of the at least four detectors, wherein at least a portion of the protruding convex surface is rigid, and wherein the cover operably connects to the wall; and</p>	<p>The Apple Watch Series 4 and later devices include a rigid protruding convex surface that is above all of the at least four detectors and operably connects to the wall.</p>

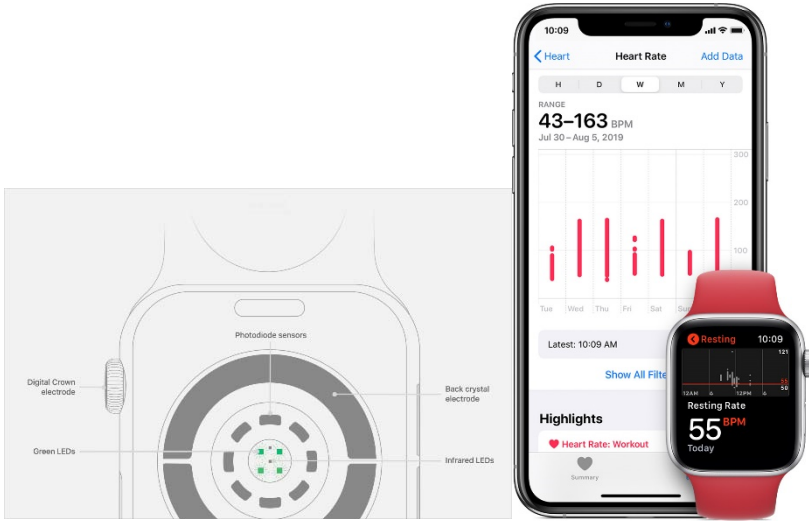
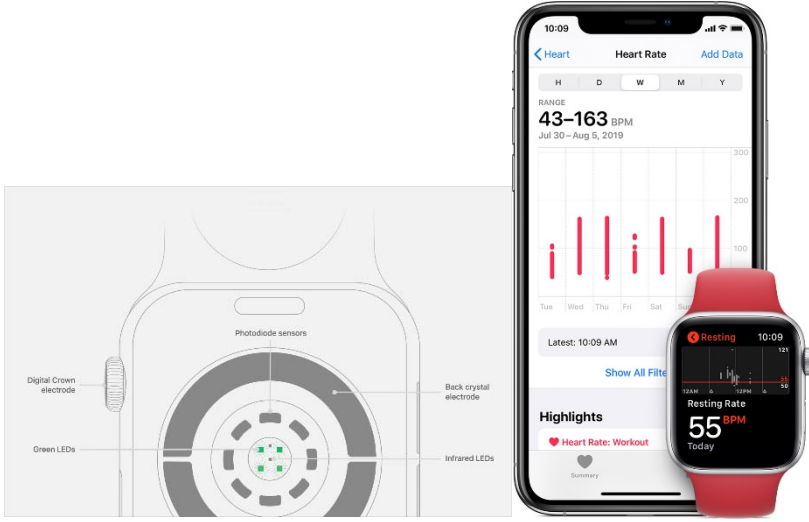
U.S. Patent No. 10,631,765 Claim 1	Description of Accused Products
	<p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such a cover in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>
<p>a handheld computing device in wireless communication with the physiological sensor device, wherein the handheld computing device comprises:</p>	<p>The Apple iPhone devices are in wireless communication with the physiological sensor device as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>
<p>one or more processors configured to wirelessly receive one or more signals from the physiological sensor device, the one or more signals responsive to</p>	<p>The Apple iPhone devices include one or more processors configured to wirelessly receive one or more signals from the physiological sensor device, the one or more signals responsive to at least a physiological parameter of the user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

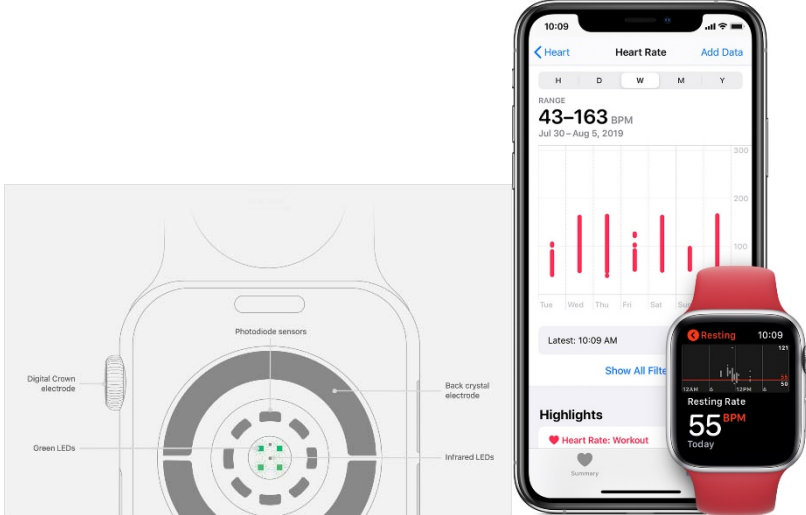
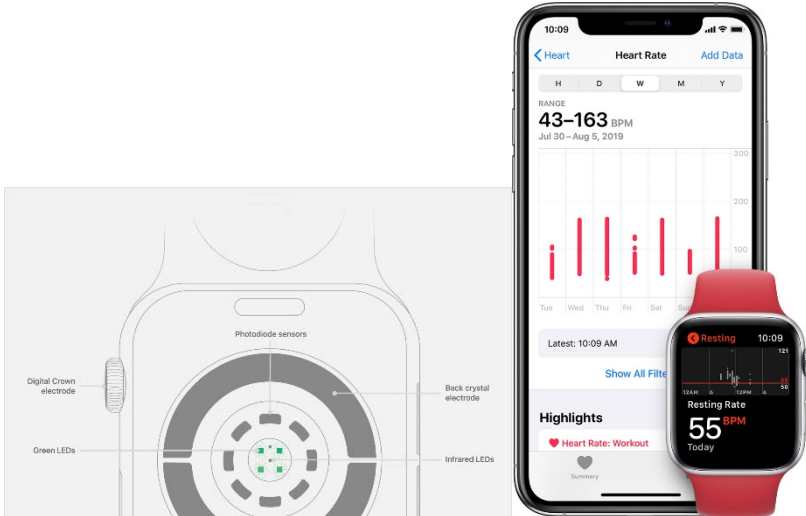
U.S. Patent No. 10,631,765 Claim 1	Description of Accused Products
<p>at least a physiological parameter of the user;</p>	
<p>a touch-screen display configured to provide a user interface, wherein:</p>	<p>The iPhone devices include a touch-screen display configured to provide a user interface as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p> 
<p>the user interface is configured to display indicia responsive to measurements of the physiological parameter, and</p>	<p>The Apple iPhone devices include a user interface configured to display indicia responsive to measurements of the physiological parameter as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

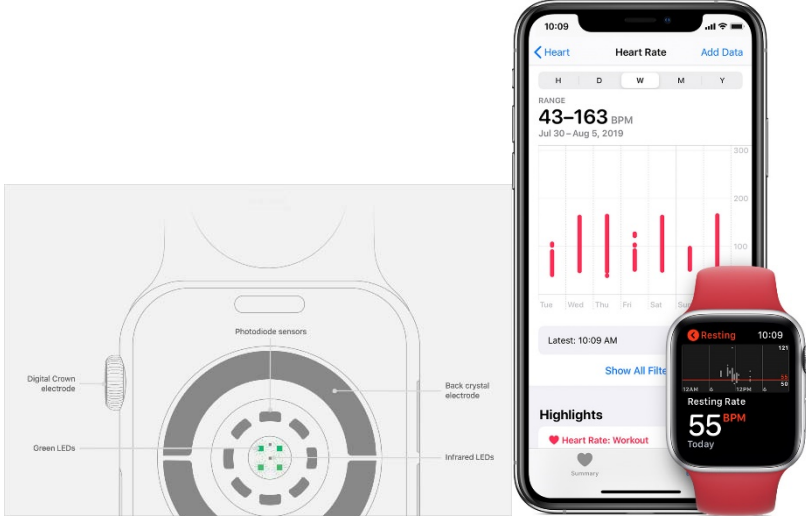
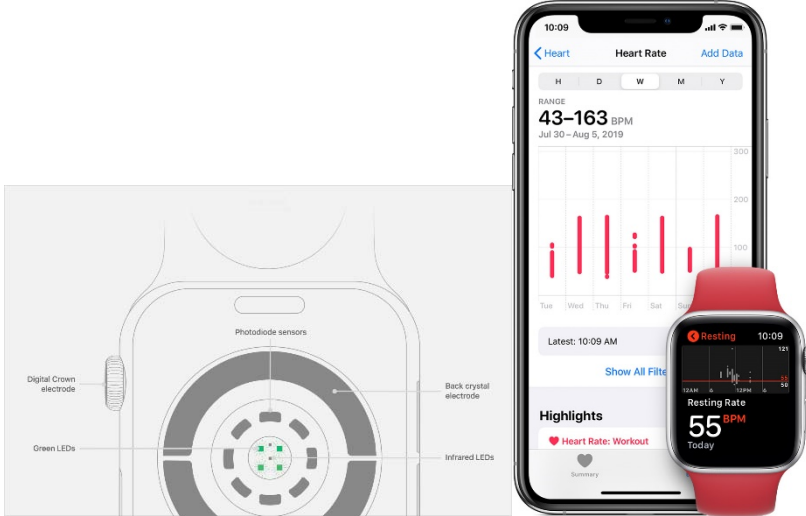
U.S. Patent No. 10,631,765 Claim 1	Description of Accused Products
	
<p>an orientation of the user interface is configurable responsive to a user input; and</p>	<p>The Apple iPhone devices have an orientation of the user interface that is configurable responsive to a user input as shown on the Apple website at https://support.apple.com/en-us/HT204547, https://support.apple.com/guide/watch/change-language-orientation-apple-watch-apd0bf18f46b/watchos.</p>
<p>a storage device configured to at least temporarily store at least the measurements of the physiological parameter.</p>	<p>The Apple iPhone devices include a storage device configured to at least temporarily store at least the measurements of the physiological parameter as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p> 

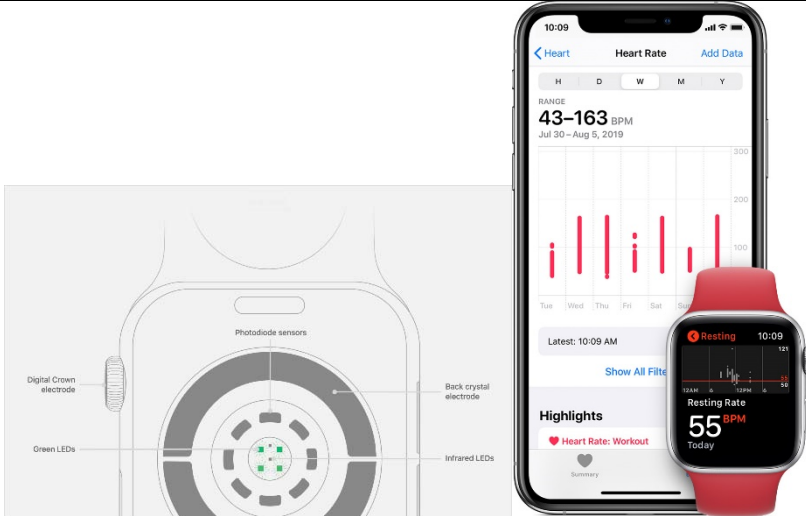
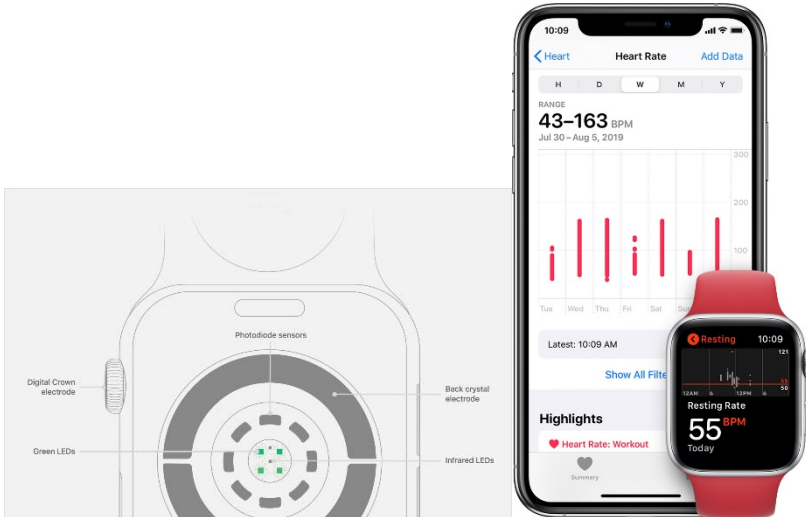
U.S. Patent No. 10,702,194

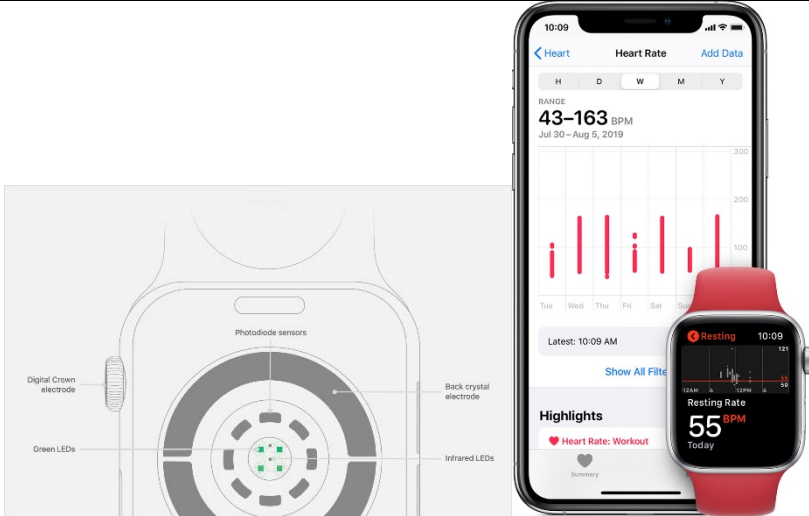
U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
<p>1. A physiological measurement system comprising:</p>	<p>The Apple Watch Series 4 and later devices are physiological measurement systems as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram shows the back of an Apple Watch Series 4 with labels: Digital Crown electrode, Photodiode sensors, Back crystal electrode, Green LEDs, and Infrared LEDs. The smartphone screenshot shows the 'Heart Rate' app interface with a range of 43-163 BPM for Jul 30-Aug 5, 2019, and a 'Resting' heart rate of 55 BPM.</p>
<p>a physiological sensor device comprising:</p>	<p>The Apple Watch Series 4 and later devices are physiological sensor devices as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram shows the back of an Apple Watch Series 4 with labels: Digital Crown electrode, Photodiode sensors, Back crystal electrode, Green LEDs, and Infrared LEDs. The smartphone screenshot shows the 'Heart Rate' app interface with a range of 43-163 BPM for Jul 30-Aug 5, 2019, and a 'Resting' heart rate of 55 BPM.</p>

U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
<p>one or more emitters configured to emit light into tissue of a user;</p>	<p>The Apple Watch Series 4 and later devices include one or more emitters configured to emit light into tissue of a user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram shows the back of an Apple Watch with labels for 'Photodiode sensors', 'Digital Crown electrode', 'Green LEDs', 'Back crystal electrode', and 'Infrared LEDs'. To the right is a screenshot of the 'Heart Rate' app on an iPhone, showing a heart rate range of 43-163 BPM and a current resting rate of 55 BPM on the watch face.</p>
<p>a first set of photodiodes, wherein:</p>	<p>The Apple Watch Series 4 and later devices include a first set of photodiodes as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This section is identical to the first row, showing the same diagram and app screenshot.</p>
<p>the first set of photodiodes comprises at least four photodiodes,</p>	<p>The Apple Watch Series 4 and later devices include the first set of photodiodes comprises at least four photodiodes as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

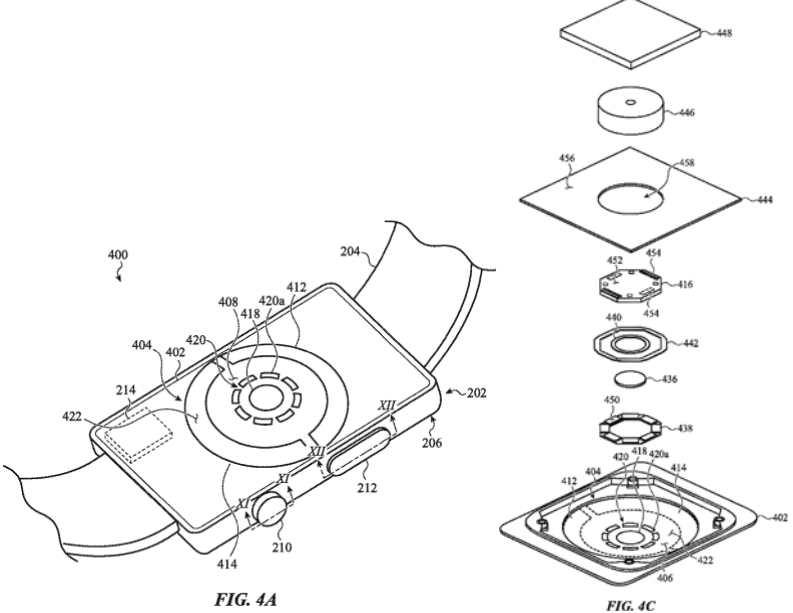
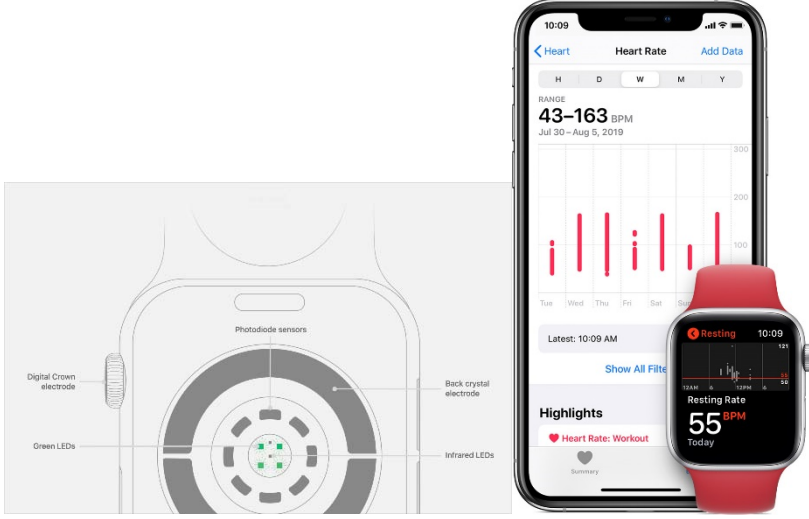
U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
	 <p>The diagram shows the back of an Apple Watch with various sensors labeled: Digital Crown electrode, Photodiode sensors, Back crystal electrode, Green LEDs, and Infrared LEDs. To the right, an iPhone displays the 'Heart Rate' app interface, showing a range of 43-163 BPM for the period Jul 30-Aug 5, 2019, and a bar chart of heart rate data. Below the iPhone, an Apple Watch with a red band displays the 'Resting' heart rate as 55 BPM.</p>
<p>the photodiodes of the first set of photodiodes are connected to one another in parallel to provide a first signal stream, and</p>	<p>Upon information and belief, the Apple Watch Series 4 and later devices include a first set of photodiodes connected to one another in parallel to provide a first signal stream as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This section contains the same diagram and app screenshots as the first row, illustrating the sensor layout and the resulting heart rate data.</p>
<p>each of the photodiodes of the first set of photodiodes has a corresponding window that allows light to pass through to the photodiode;</p>	<p>The Apple Watch Series 4 and later devices are configured so that each of the photodiodes of the first set of photodiodes has a corresponding window that allows light to pass through to the photodiode as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

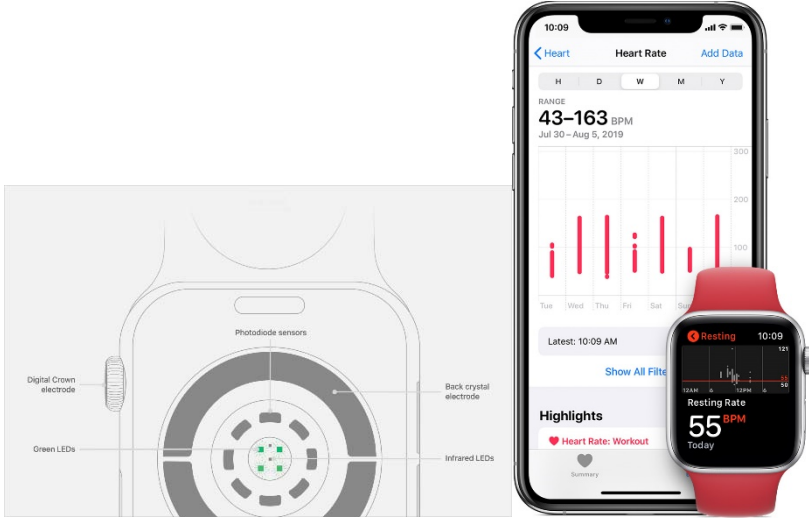
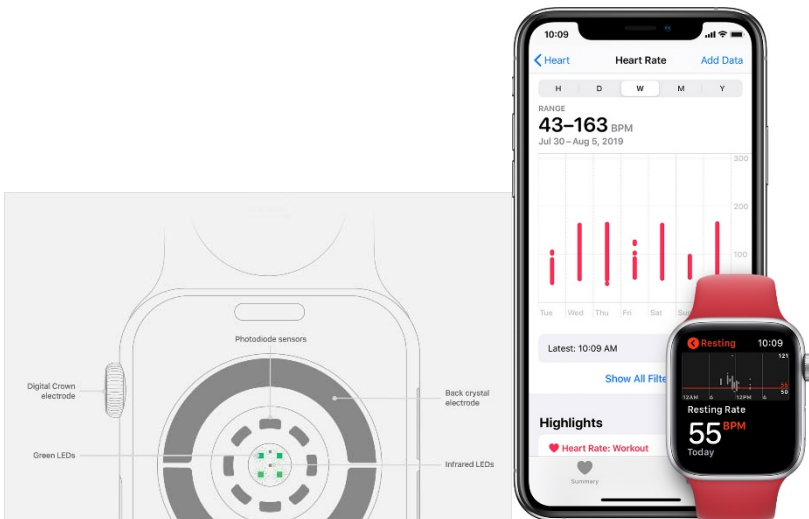
U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
	 <p>The diagram shows the back of an Apple Watch with various sensors labeled: Digital Crown electrode, Green LEDs, Photodiode sensors, Back crystal electrode, and Infrared LEDs. To the right, a smartphone displays a heart rate app interface with a range of 43-163 BPM and a bar chart. A red Apple Watch is shown in the foreground displaying a resting heart rate of 55 BPM.</p> <p>See also apertures 230 described in US20190090806A1, including Fig. 2.</p>
<p>a second set of photodiodes, wherein:</p>	<p>The Apple Watch Series 4 and later devices include a second set of photodiodes as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This diagram is identical to the one in the first row, showing the back of the Apple Watch with sensor labels and a smartphone displaying heart rate data.</p>
<p>the second set of photodiodes comprises at least four photodiodes,</p>	<p>The Apple Watch Series 4 and later devices include a second set of photodiodes that comprises four photodiodes as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

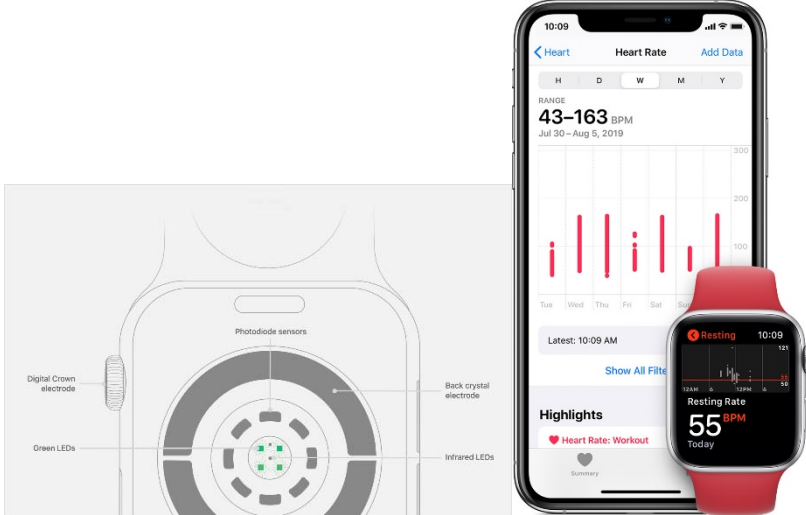
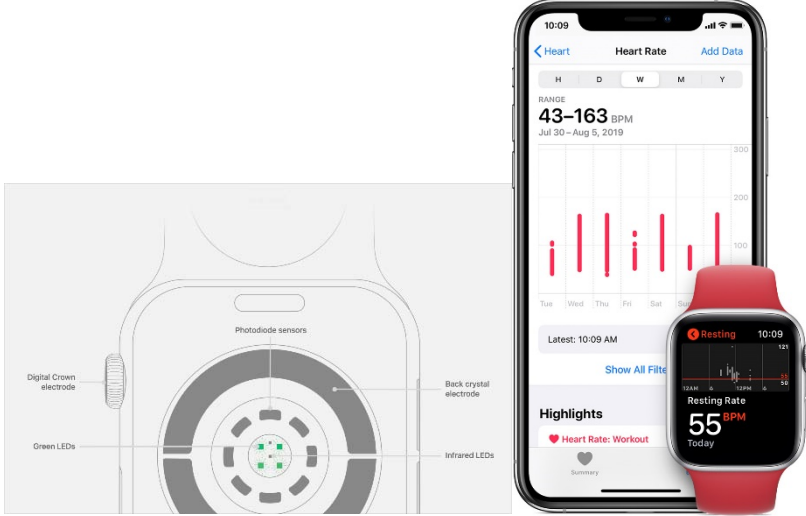
U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
	
<p>the photodiodes of the second set of photodiodes are connected to one another in parallel to provide a second signal stream, and</p>	<p>Upon information and belief, the Apple Watch Series 4 and later devices include photodiodes connected to one another in parallel to provide a second signal stream as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p> 
<p>each of the photodiodes of the second set of photodiodes has a corresponding window that allows light to pass through to the photodiode;</p>	<p>The Apple Watch Series 4 and later devices are configured so that each of the photodiodes of the second set of photodiodes has a corresponding window that allows light to pass through to the photodiode as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
	 <p>See also apertures 230 described in US20190090806A1, including Fig. 2.</p>

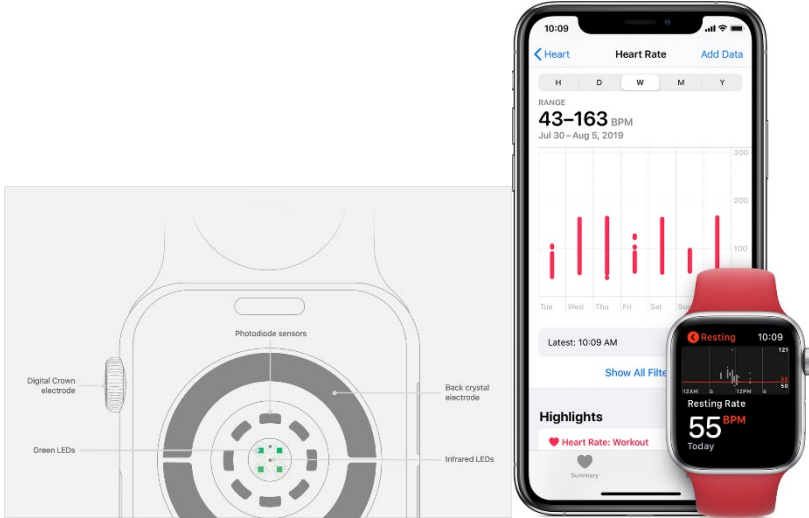
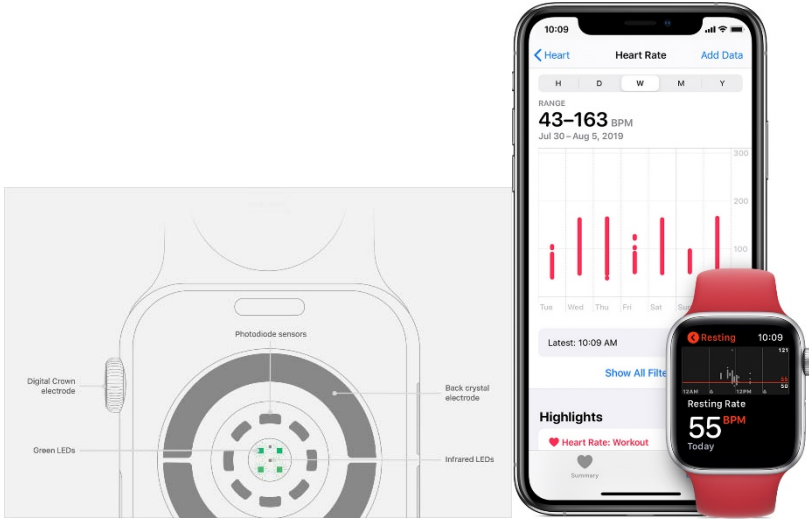
U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
<p>a wall that surrounds at least the first and second sets of photodiodes; and</p>	<p>The Apple Watch Series 4 and later devices include a wall that surrounds at least the first and second sets of photodiodes.</p> <p>Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, such a wall:</p> <p style="text-align: center;">FIG. 4C</p>

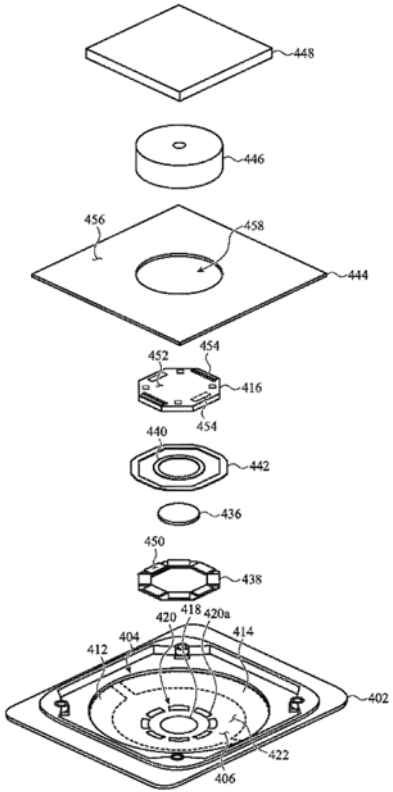
U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
<p>a cover comprising a protruding convex surface, wherein the protruding convex surface is above all of the photodiodes of the first and second sets of photodiodes, wherein at least a portion of the protruding convex surface is rigid, and wherein the cover is above the wall; and</p>	<p>The Apple Watch Series 4 and later devices include a rigid protruding convex surface that is above all of the photodiodes of the first and second sets of photodiodes and the wall.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such a cover in the Apple Watch Series 4 and later devices:</p>  <p style="text-align: center;">FIG. 4A FIG. 4C</p>
<p>a handheld computing device in wireless communication with the physiological sensor device, wherein the handheld computing device comprises:</p>	<p>The Apple iPhone devices are in wireless communication with the physiological sensor device as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p> 
<p>one or more processors configured to wirelessly receive one or more signals from the physiological</p>	<p>The Apple iPhone devices include one or more processors configured to wirelessly receive one or more signals from the physiological sensor device, the one or more signals responsive to at least a physiological</p>

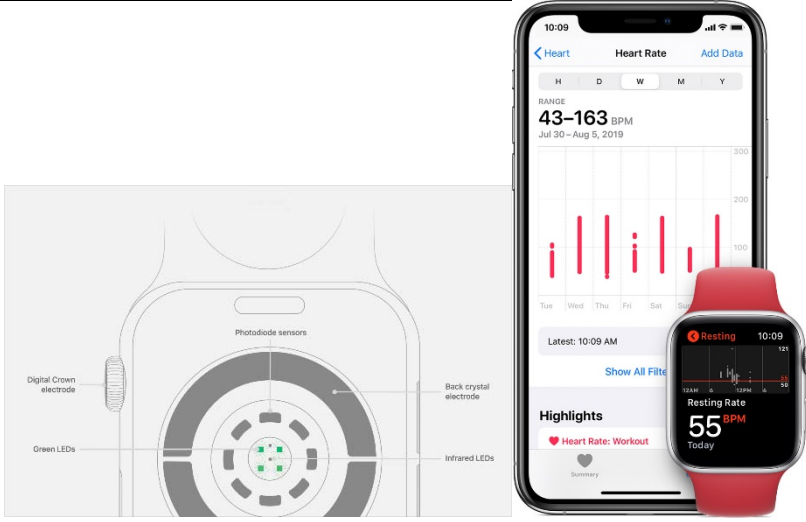
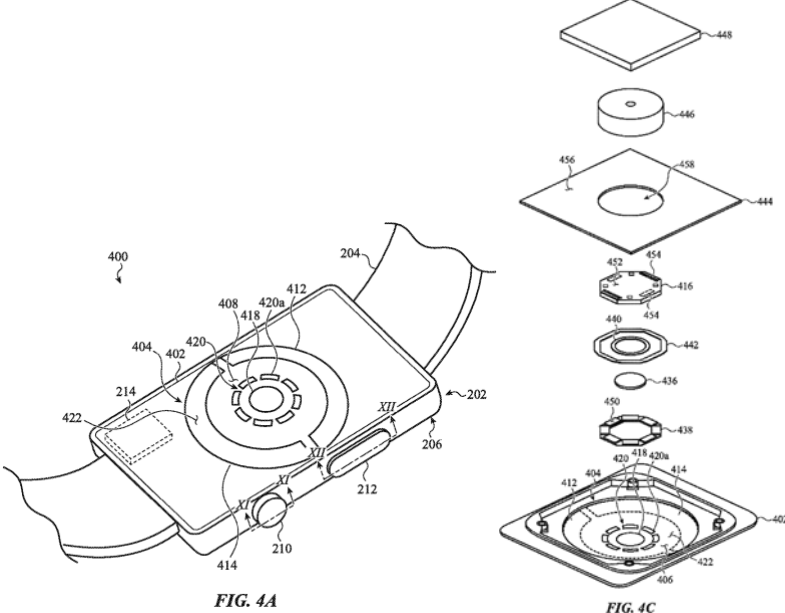
U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
<p>sensor device, the one or more signals responsive to at least a physiological parameter of the user;</p>	<p>parameter of the user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p> 
<p>a touch-screen display configured to provide a user interface, wherein:</p>	<p>The Apple iPhone devices include a touch-screen display configured to provide a user interface as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p> 
<p>the user interface is configured to display indicia responsive to measurements of the physiological parameter, and</p>	<p>The Apple iPhone devices include a user interface configured to display indicia responsive to measurements of the physiological parameter as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

U.S. Patent No. 10,702,194 Claim 1	Description of Accused Products
	 <p>The diagram shows the back of an Apple Watch with various sensors labeled: Digital Crown electrode, Green LEDs, Photodiode sensors, Back crystal electrode, and Infrared LEDs. To the right, a smartphone displays a heart rate monitoring app interface. The app shows a heart rate range of 43-163 BPM for the period Jul 30 - Aug 5, 2019. A bar chart shows heart rate data for the days of the week. Below the chart, it says 'Latest: 10:09 AM' and 'Show All Filter'. A 'Highlights' section shows 'Heart Rate: Workout' and a 'Resting Rate' of 55 BPM Today. A red Apple Watch is shown next to the smartphone.</p>
<p>an orientation of the user interface is configurable responsive to a user input;</p> <p>and</p>	<p>The Apple iPhone devices have an orientation of the user interface that is configurable responsive to a user input as shown on the Apple website at https://support.apple.com/en-us/HT204547, https://support.apple.com/guide/watch/change-language-orientation-apple-watch-apd0bf18f46b/watchos.</p>
<p>a storage device configured to at least temporarily store at least the measurements of the physiological parameter.</p>	<p>The Apple iPhone devices include a storage device configured to at least temporarily store at least the measurements of the physiological parameter as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This diagram is identical to the one in the first row, showing the back of an Apple Watch with labeled sensors and a smartphone displaying heart rate data.</p>

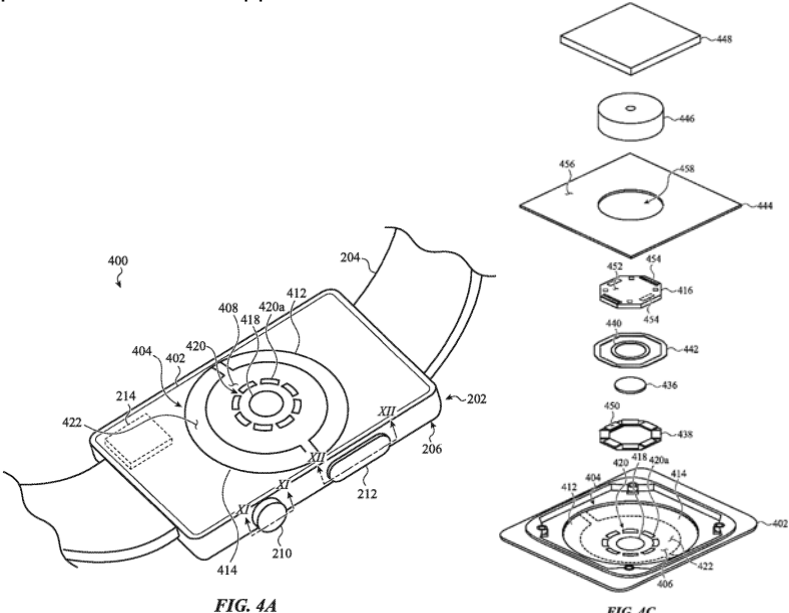
U.S. Patent No. 10,702,195

U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
<p>1. A user-worn physiological measurement device that defines a plurality of optical paths, the physiological measurement device comprising:</p>	<p>The Apple Watch Series 4 and later devices are user-worn physiological measurement devices that define a plurality of optical paths as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram shows the back of an Apple Watch Series 4 with labels for: Digital Crown electrode, Photodiode sensors, Back crystal electrode, Green LEDs, and Infrared LEDs. To the right, a smartphone displays a heart rate monitoring app with a range of 43-163 BPM for Jul 30-Aug 5, 2019, and a red Apple Watch displays a resting heart rate of 55 BPM.</p>
<p>one or more emitters configured to emit light into tissue of a user;</p>	<p>The Apple Watch Series 4 and later devices include one or more emitters configured to emit light into tissue of a user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This diagram is identical to the one above, showing the back of the Apple Watch with sensor labels and the associated smartphone and watch displaying heart rate data.</p>

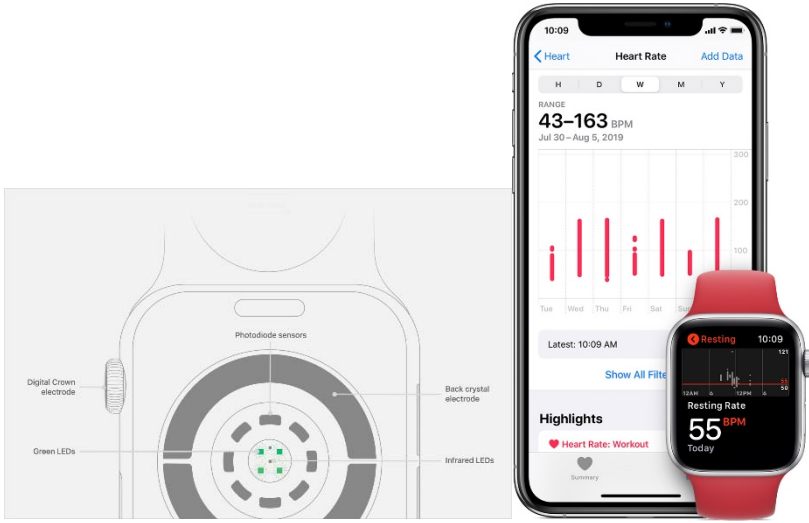
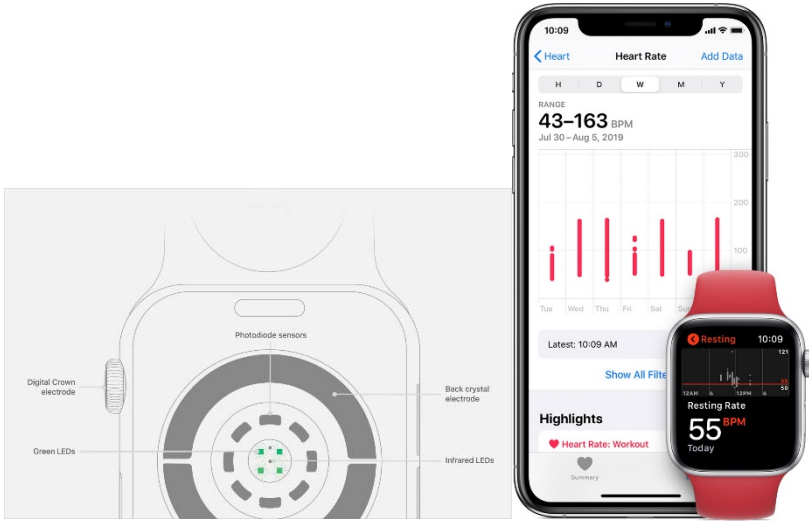
U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
<p>a first set of photodiodes positioned on a first surface and surrounded by a wall that is operably connected to the first surface, wherein:</p>	<p>The Apple Watch Series 4 and later devices include a first set of photodiodes positioned on a first surface and surrounded by a wall that is operably connected to the first surface.</p> <p>Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, such a wall:</p>  <p>The diagram, labeled FIG. 4C, shows an exploded view of a photodiode assembly. At the top is a square substrate 448. Below it is a cylindrical component 446. The next layer is a square substrate 444 with a central circular opening 458 and a surrounding ring 456. Below this is a component 416 with four photodiodes 454 and 452. This is followed by a ring component 442 with four photodiodes 454 and 440. Below that is a small circular component 436. The next is a component 438 with four photodiodes 450 and 420. The bottom-most part is a square substrate 402 with a central circular opening 422 and four photodiodes 412, 414, 418, and 420a. Various other components and features are labeled with reference numerals.</p> <p>FIG. 4C</p>
<p>the first set of photodiodes comprises at least four photodiodes, and</p>	<p>The Apple Watch Series 4 and later devices include a first set of photodiodes comprising at least four photodiodes as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
	
<p>the photodiodes of the first set of photodiodes are connected to one another in parallel to provide a first signal stream;</p>	<p>Upon information and belief, the Apple Watch Series 4 and later devices include photodiodes connected to one another in parallel to provide a first signal stream.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such photodiodes in the Apple Watch Series 4 and later devices:</p>  <p style="text-align: center;">FIG. 4A</p> <p style="text-align: center;">FIG. 4C</p>

U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
<p>a second set of photodiodes positioned on the first surface and surrounded by the wall, wherein:</p>	<p>The Apple Watch Series 4 and later devices include a second set of photodiodes positioned on the first surface and surrounded by the wall.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such photodiodes in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>
<p>the second set of photodiodes comprises at least four photodiodes, and</p>	<p>The Apple Watch Series 4 and later devices include a second set of photodiodes that comprises four photodiodes as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
<p>the photodiodes of the second set of photodiodes are connected to one another in parallel to provide a second signal stream; and</p>	<p>Upon information and belief, the Apple Watch Series 4 and later devices include photodiodes of the second set of photodiodes connected to one another in parallel to provide a second signal stream.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such photodiodes in the Apple Watch Series 4 and later devices:</p>  <p style="text-align: center;">FIG. 4A FIG. 4C</p>

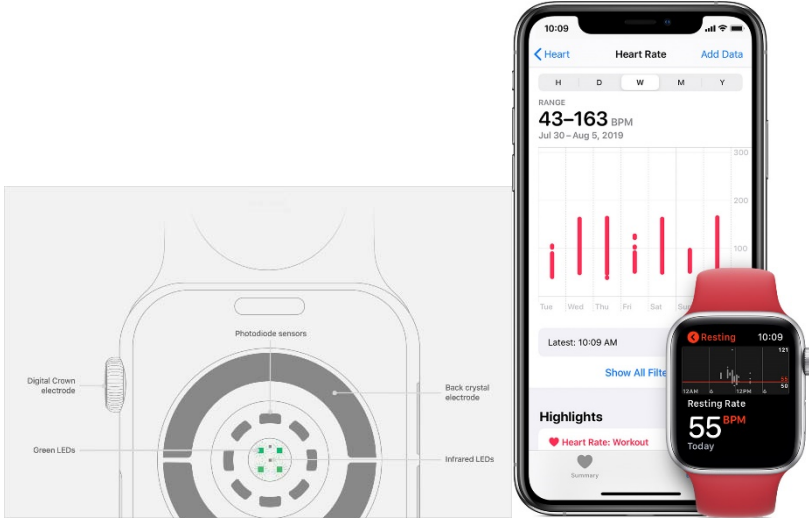
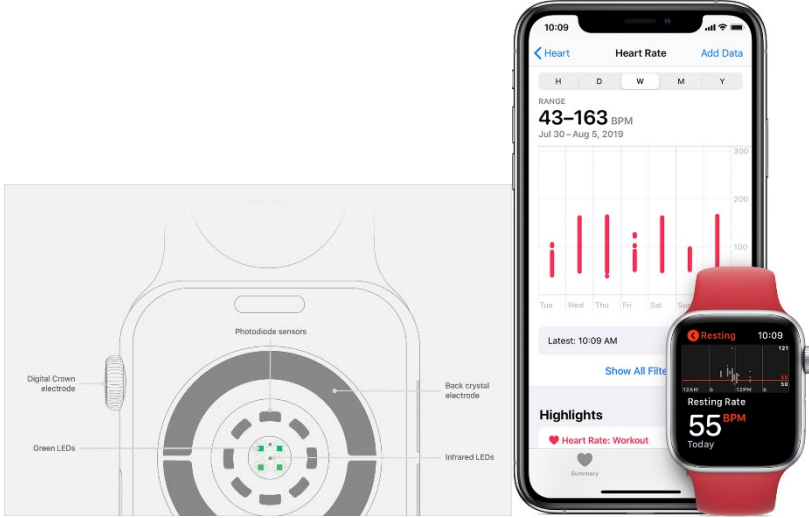
U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
<p>a cover located above the wall and comprising a single protruding convex surface configured to be located between tissue of the user and the first and second sets of photodiodes when the physiological measurement device is worn by the user,</p>	<p>The Apple Watch Series 4 and later devices include a cover located above the wall and comprising a single protruding convex surface configured to be located between tissue of the user and the first and second sets of photodiodes when the physiological measurement device is worn by the user.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such a cover in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>
<p>wherein the physiological measurement device provides a plurality of optical paths, wherein each of the optical paths:</p>	<p>The Apple Watch Series 4 and later devices provide a plurality of optical paths as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

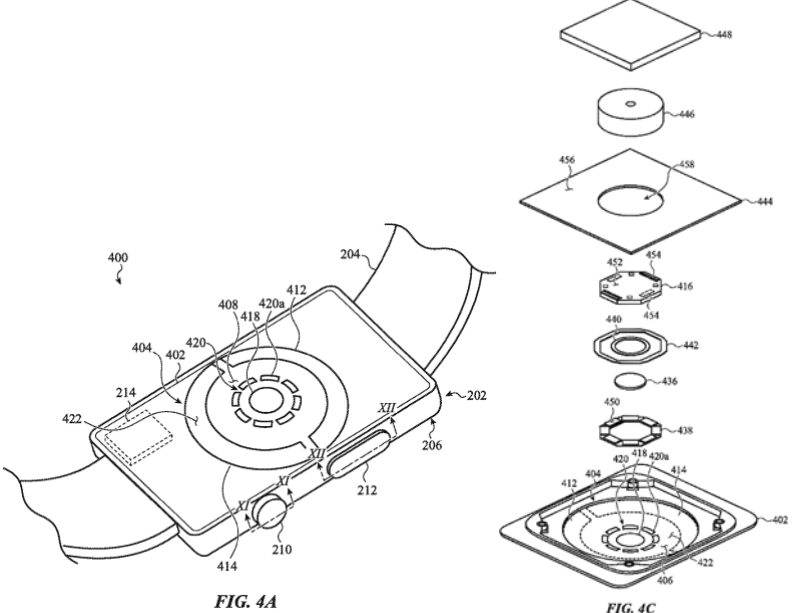
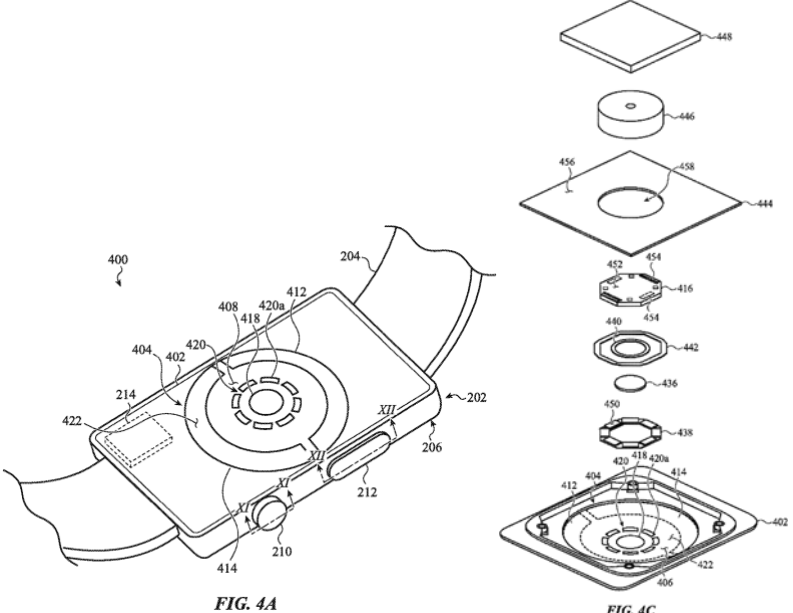
U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
<p>exits an emitter of the one or more emitters,</p>	<p>The Apple Watch Series 4 and later devices include an optical path that exits an emitter of the one or more emitters as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram shows the back of an Apple Watch Series 4 with labels for: Digital Crown electrode, Photodiode sensors, Green LEDs, Back crystal electrode, and Infrared LEDs. To the right, a smartphone displays the 'Heart Rate' app interface, showing a range of 43-163 BPM for Jul 30-Aug 5, 2019, and a 'Resting Rate' of 55 BPM on the watch face.</p>
<p>passes through tissue of the user,</p>	<p>The Apple Watch Series 4 and later devices include optical paths that pass through tissue of the user as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This section is identical to the one above, showing the same diagram of the Apple Watch back and the smartphone displaying heart rate data.</p>

U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
<p>passes through the single protruding convex surface, and</p>	<p>The Apple Watch Series 4 and later devices include optical paths that pass through the single protruding convex surface.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such a path in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A</p> <p style="text-align: center;">FIG. 4C</p>

U.S. Patent No. 10,702,195 Claim 1	Description of Accused Products
<p>arrives at a corresponding photodiode of the at least one of the first or second sets of photodiodes, the corresponding photodiode configured to receive light emitted by the emitter after traversal by the light of a corresponding optical path of the plurality of optical paths and after attenuation of the light by tissue of the user.</p>	<p>The Apple Watch Series 4 and later devices provide an optical path that arrives at a corresponding photodiode of the at least one of the first or second sets of photodiodes, the corresponding photodiode configured to receive light emitted by the emitter after traversal by the light of a corresponding optical path of the plurality of optical paths and after attenuation of the light by tissue of the user.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such a path in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>

U.S. Patent No. 10,709,366

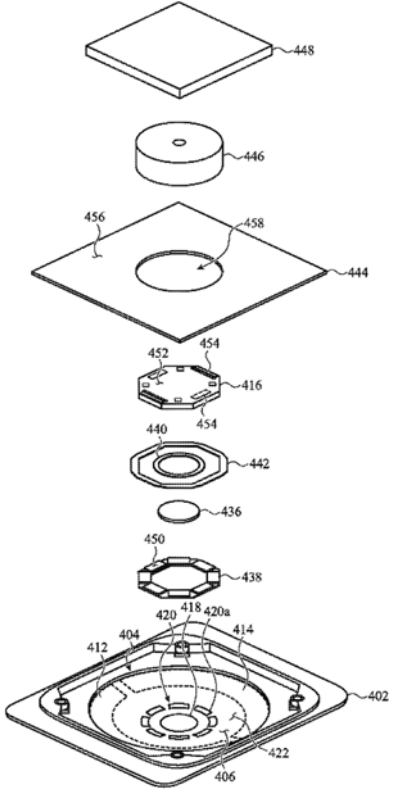
U.S. Patent No. 10,709,366 Claim 1	Description of Accused Products
<p>1. A noninvasive physiological parameter measurement device adapted to be worn by a wearer, the noninvasive physiological parameter measurement device comprising:</p>	<p>The Apple Watch Series 4 and later devices are noninvasive physiological parameter measurement devices adapted to be worn by a wearer as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The diagram shows the back of an Apple Watch with labels: Digital Crown electrode, Photodiode sensors, Back crystal electrode, Green LEDs, and Infrared LEDs. To the right, a smartphone displays the 'Heart Rate' app interface with a bar chart showing heart rate over the week of July 30-Aug 5, 2019. The range is 43-163 BPM. The latest reading is 55 BPM, categorized as 'Resting'.</p>
<p>one or more light emitters;</p>	<p>The Apple Watch Series 4 and later devices include one or more light emitters as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>This diagram is identical to the one above, showing the back of the Apple Watch with labels for the Digital Crown electrode, Photodiode sensors, Back crystal electrode, Green LEDs, and Infrared LEDs, alongside the smartphone app displaying heart rate data.</p>

U.S. Patent No. 10,709,366 Claim 1	Description of Accused Products
<p>a substrate having a surface;</p>	<p>The Apple Watch Series 4 and later devices include a substrate having a surface.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such substrate in the Apple Watch Series 4 and later devices:</p>  <p>FIG. 4A is a perspective view of a watch case assembly 400. It shows a case back 204, a case front 202, and a case side 206. A display 210 is mounted on the front, and a crown 212 is on the side. A camera lens 214 is on the back. Internal components include a sensor array 402, a lens 404, a lens holder 408, a lens cap 412, a lens cap holder 418, and a lens cap 420a. A lens cap 420 is also shown. FIG. 4C is an exploded view of the watch case assembly, showing the case back 448, a lens cap 446, a lens cap holder 456, a lens cap 458, a lens cap holder 444, a lens cap 452, a lens cap holder 454, a lens cap 416, a lens cap holder 440, a lens cap 454, a lens cap holder 442, a lens cap 436, a lens cap holder 450, a lens cap 438, a lens cap holder 420, a lens cap holder 418, a lens cap 414, a lens cap holder 412, a lens cap 404, a lens cap holder 406, and a lens cap 422.</p>
<p>a first set of photodiodes arranged on the surface and spaced apart from each other, wherein:</p>	<p>The Apple Watch Series 4 and later devices include a first set of photodiodes arranged on the surface and spaced apart from each other.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such photodiodes in the Apple Watch Series 4 and later devices:</p>  <p>FIG. 4A and FIG. 4C are identical to the diagrams in the first row, showing the watch case assembly and its exploded view with various components labeled.</p>

U.S. Patent No. 10,709,366 Claim 1	Description of Accused Products
<p>the first set of photodiodes comprises at least four photodiodes, and the photodiodes of the first set of photodiodes are connected to one another in parallel to provide a first signal stream responsive to light from at least one of the one or more light emitters attenuated by body tissue;</p>	<p>Upon information and belief, the Apple Watch Series 4 and later devices include the first set of photodiodes comprises at least four photodiodes, and the photodiodes of the first set of photodiodes are connected to one another in parallel to provide a first signal stream responsive to light from at least one of the one or more light emitters attenuated by body tissue.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such photodiodes in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>

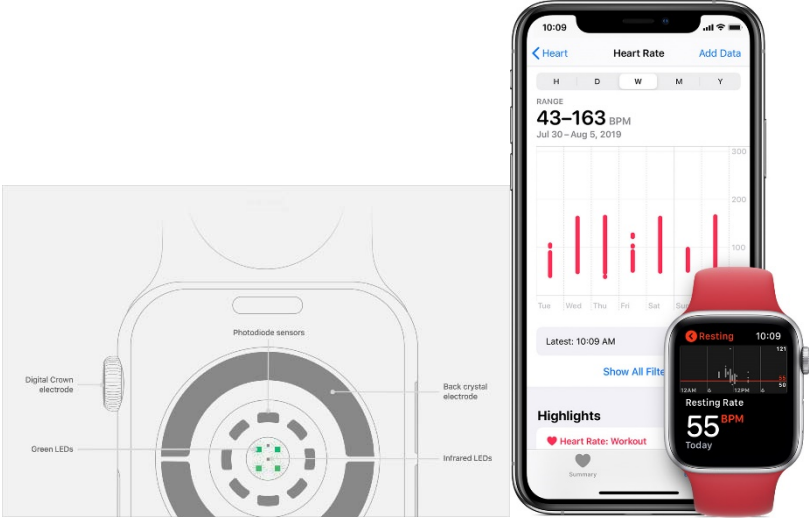
U.S. Patent No. 10,709,366 Claim 1	Description of Accused Products
<p>a second set of photodiodes arranged on the surface and spaced apart from each other, wherein:</p>	<p>The Apple Watch Series 4 and later devices include a second set of photodiodes arranged on the surface and spaced apart from each other.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such photodiodes in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>

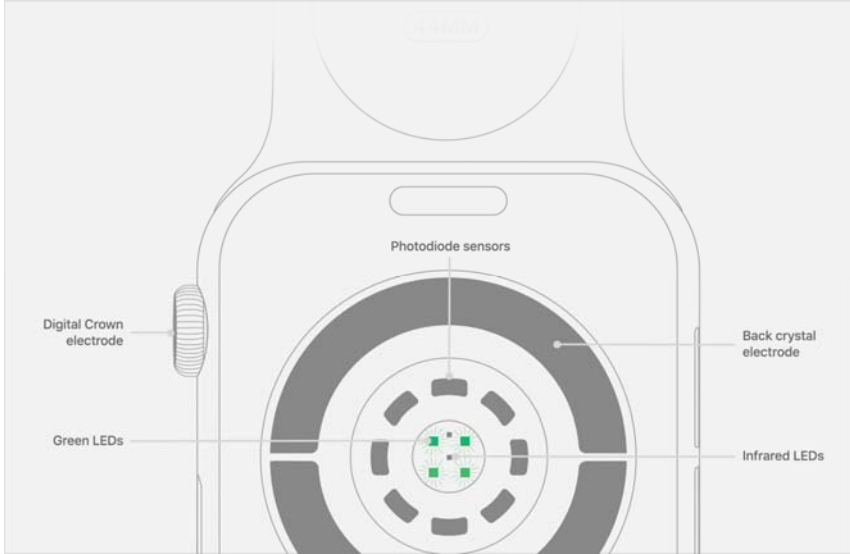
U.S. Patent No. 10,709,366 Claim 1	Description of Accused Products
<p>the second set of photodiodes comprises at least four photodiodes, the photodiodes of the second set of photodiodes are connected to one another in parallel to provide a second signal stream responsive to light from at least one of the one or more light emitters attenuated by body tissue, and</p>	<p>Upon information and belief, the Apple Watch Series 4 and later devices include a second set of photodiodes that comprise at least four photodiodes, the photodiodes of the second set of photodiodes are connected to one another in parallel to provide a second signal stream responsive to light from at least one of the one or more light emitters attenuated by body tissue.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such photodiodes in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>
<p>at least one of the first signal stream or the second signal stream includes information usable to determine a physiological parameter of a wearer of the noninvasive physiological parameter measurement device;</p>	<p>The Apple Watch Series 4 and later devices are configured to provide at least one of a first signal stream or a second signal stream that includes information usable to determine a physiological parameter of a wearer of the noninvasive physiological parameter measurement device as shown on the Apple website at https://support.apple.com/en-us/HT204666:</p>

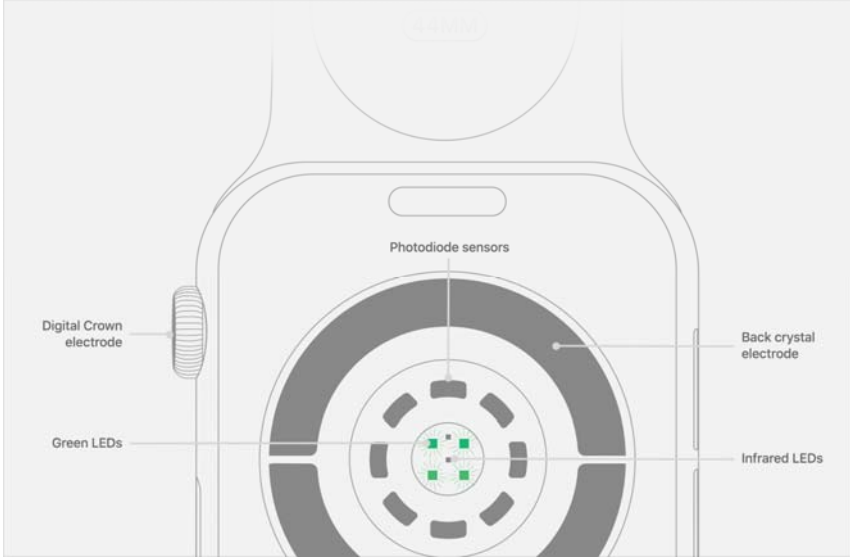
U.S. Patent No. 10,709,366 Claim 1	Description of Accused Products
<p>a wall extending from the surface and configured to surround at least the first and second sets of photodiodes; and</p>	<p>The Apple Watch Series 4 and later devices include a wall extending from the surface and configured to surround at least the first and second sets of photodiodes.</p> <p>Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, such a wall:</p>  <p>The diagram, labeled FIG. 4C, shows an exploded view of a sensor assembly. At the top is a square substrate 448. Below it is a cylindrical component 446. The next layer is a square substrate 444 with a central circular opening 458 and a surrounding ring 456. Below this is a component 454 with a central opening 452 and a ring 440. This is followed by a ring component 442 with a central opening 436. Below that is another ring component 438 with a central opening 450. The bottom-most part is a complex assembly 402, which includes a central circular opening 414, a ring 412, and various other components like 404, 406, 418, 420, and 422.</p> <p style="text-align: center;">FIG. 4C</p>

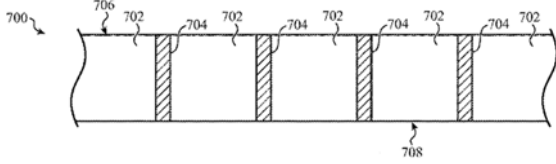
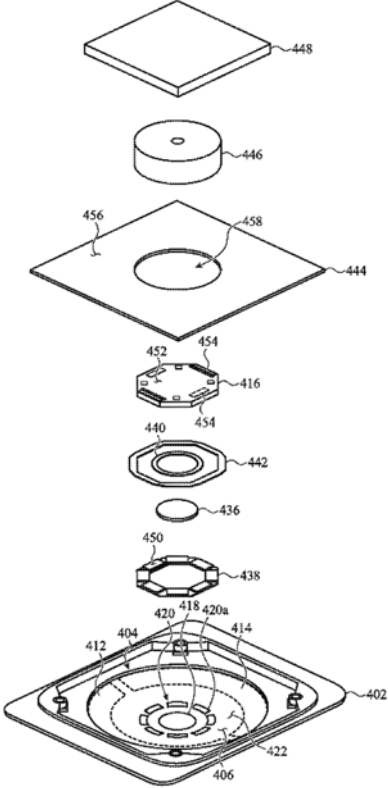
U.S. Patent No. 10,709,366 Claim 1	Description of Accused Products
<p>a cover arranged to cover at least a portion of the surface of the substrate, wherein the cover comprises a protrusion that extends over all of the photodiodes of the first and second sets of photodiodes arranged on the surface, and wherein the cover is further configured to cover the wall.</p>	<p>The Apple Watch Series 4 and later devices include a protrusion that extends over all of the photodiodes of the first and second sets of photodiodes arranged on the surface and the wall.</p> <p>Figs. 4A and 4C of Apple's '912 publication are illustrative of such a cover in the Apple Watch Series 4 and later devices:</p> <p style="text-align: center;">FIG. 4A FIG. 4C</p>

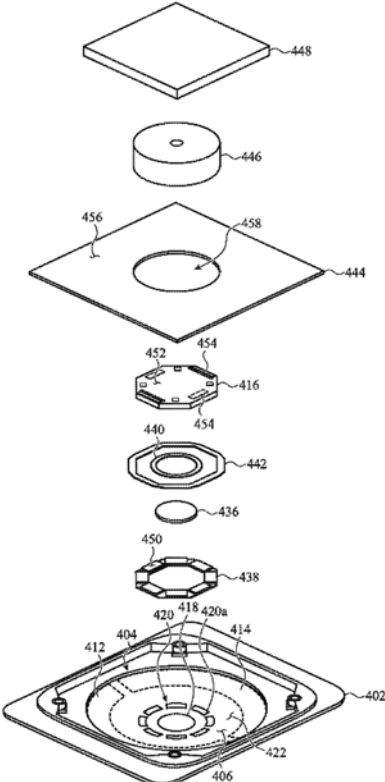
U.S. Patent No. 6,771,994

U.S. Patent No. 6,771,994 Claim 15	Description of Accused Products
<p>15. A sensor which generates at least first and second intensity signals from a light-sensitive detector which detects light of at least first and second wavelengths transmitted through body tissue carrying pulsing blood; the sensor comprising:</p>	<p>The Apple Watch Series 4 and later devices are sensors that generate at least first and second intensity signals from a light-sensitive detector which detects light of at least first and second wavelengths transmitted through body tissue carrying pulsing blood.</p> <p>The Apple Watch Series 4 and later devices include a plurality of emitters of different wavelengths (for example, green and infrared LEDs) and at least four detectors (for example, photodiode sensors) as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p>

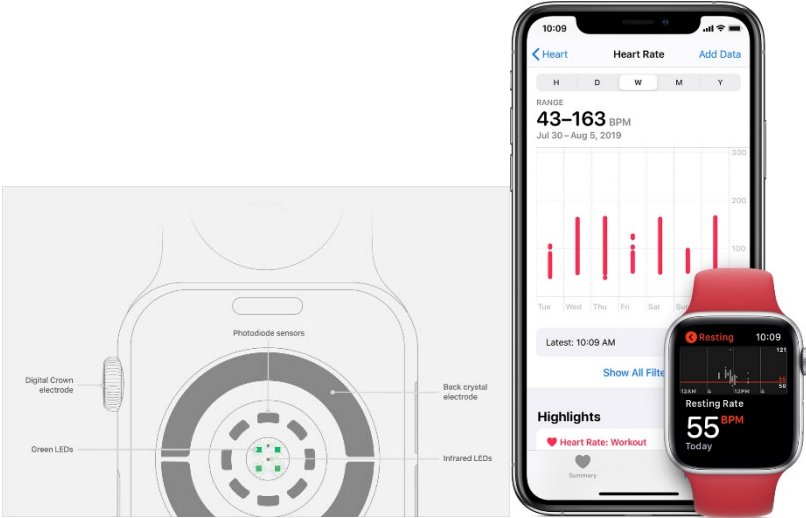
U.S. Patent No. 6,771,994 Claim 15	Description of Accused Products
<p>at least one light emission device;</p>	<p>The Apple Watch Series 4 and later devices include at least one light emission device. The Apple Watch Series 4 and later devices include green and infrared LEDs as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 4 and later devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue and is indicative of a physiological parameter of the wearer:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>https://support.apple.com/en-us/HT204666.</p>

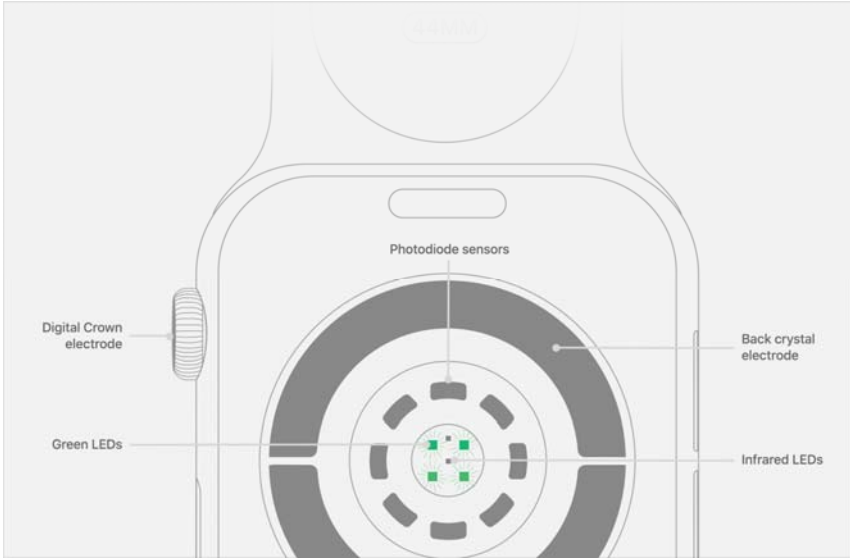
U.S. Patent No. 6,771,994 Claim 15	Description of Accused Products
<p>a light sensitive detector; and</p>	<p>The Apple Watch Series 4 and later devices include a light sensitive detector. The Apple Watch Series 4 and later devices include eight photodiode sensors as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 4 and later devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue and is indicative of a physiological parameter of the wearer:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>https://support.apple.com/en-us/HT204666.</p>
<p>a plurality of louvers positioned over the light sensitive detector to accept light from the at least one light emission device originating from a general direction of the at least one light emission device and then transmitting through</p>	<p>The Apple Watch Series 4 and later devices include a plurality of louvers positioned over the light sensitive detector to accept light from the at least one light emission device originating from a general direction of the at least one light emission device and then transmitting through body tissue carrying pulsing blood, wherein the louvers accept the light when the sensor is properly applied to tissue of a patient. Fig. 7 of Apple's U.S. Patent Application Publication 2019/0090806 (the '806 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, a</p>

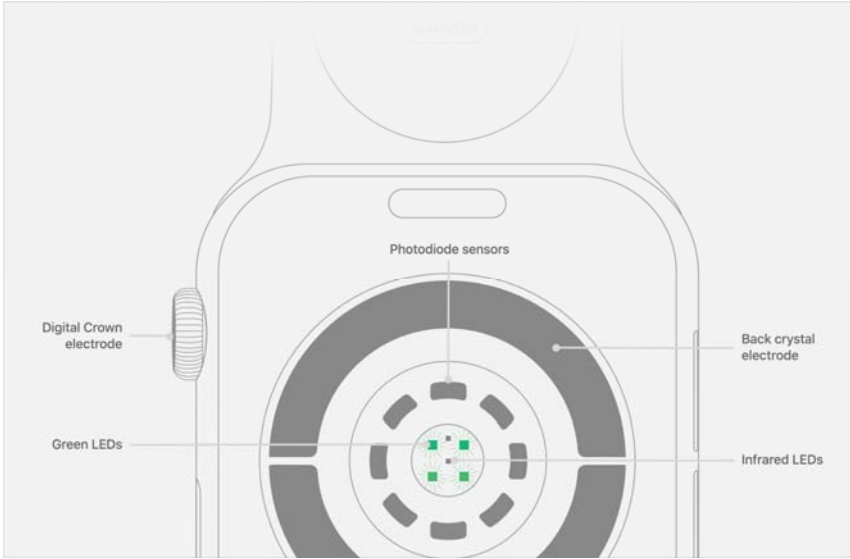
U.S. Patent No. 6,771,994 Claim 15	Description of Accused Products
<p>body tissue carrying pulsing blood, wherein the louvers accept the light when the sensor is properly applied to tissue of a patient.</p>	<p>plurality of louvers positioned over the light sensitive detector to accept light from the at least one light emission device originating from a general direction of the at least one light emission device and then transmitting through body tissue carrying pulsing blood:</p>  <p style="text-align: center;">FIG. 7</p>
<p>a light block forming an enclosing wall between the light emission source and the plurality of detectors, the light block defining the circular portion of the tissue measurement site, the light emission source arranged proximate a first side of the enclosing wall and the plurality of detectors arranged proximate a second side of the enclosing wall, the first side being different than the second side,</p>	<p>The Apple Watch Series 4 and later devices include a light block forming an enclosing wall between the light emission source and the plurality of detectors, the light block defining the circular portion of the tissue measurement site, the light emission source arranged proximate a first side of the enclosing wall and the plurality of detectors arranged proximate a second side of the enclosing wall, the first side being different than the second side. Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, a wall with LEDs arranged in the interior of the enclosing wall and photodiode sensors arranged on the exterior of the enclosing wall:</p>  <p style="text-align: center;">FIG. 4C</p>

U.S. Patent No. 6,771,994 Claim 15	Description of Accused Products
<p>wherein the enclosing wall prevents at least a portion of light emitted from the light emission source from being detected by the plurality of detectors without attenuation by the tissue, and wherein the plurality of detectors are arranged in an array having a spatial configuration corresponding to the circular portion of the tissue measurement site.</p>	<p>The Apple Watch Series 4 and later devices have an enclosing wall that prevents at least a portion of light emitted from the light emission source from being detected by the plurality of detectors without attenuation by the tissue, and wherein the plurality of detectors are arranged in an array having a spatial configuration corresponding to the circular portion of the tissue measurement site. Fig. 4C of Apple's U.S. Patent Application Publication 2019/0072912 (the '912 publication) is illustrative of the Apple Watch Series 4 and later devices. The Apple Watch Series 4 and later devices have, for example, a wall with LEDs arranged in the interior of the enclosing wall and photodiode sensors arranged on the exterior of the circular enclosing wall:</p>  <p>The diagram, labeled FIG. 4C, shows an exploded view of a circular sensor assembly. At the top is a square plate 448. Below it is a cylindrical component 446. The main assembly consists of a square base 444 with a central circular opening 458. A ring 456 surrounds the opening. Below the ring are several layers: a component 452 with a central opening 454; a component 416 with a central opening 454; a component 440 with a central opening 454; a component 442 with a central opening 454; a component 436; a component 450 with a central opening 438; and a component 420 with a central opening 418. The bottom-most part is a square frame 402 with a central circular opening 406. The frame has four legs 412 and a central opening 404. The frame is shown with a circular sensor array 414 and a light emission source 422. The sensor array 414 is arranged in a circular pattern around the central opening 406. The light emission source 422 is located at the center of the sensor array. The sensor array 414 is arranged in a circular pattern around the central opening 406. The light emission source 422 is located at the center of the sensor array. The sensor array 414 is arranged in a circular pattern around the central opening 406. The light emission source 422 is located at the center of the sensor array.</p> <p style="text-align: center;">FIG. 4C</p>

U.S. Patent No. 8,457,703

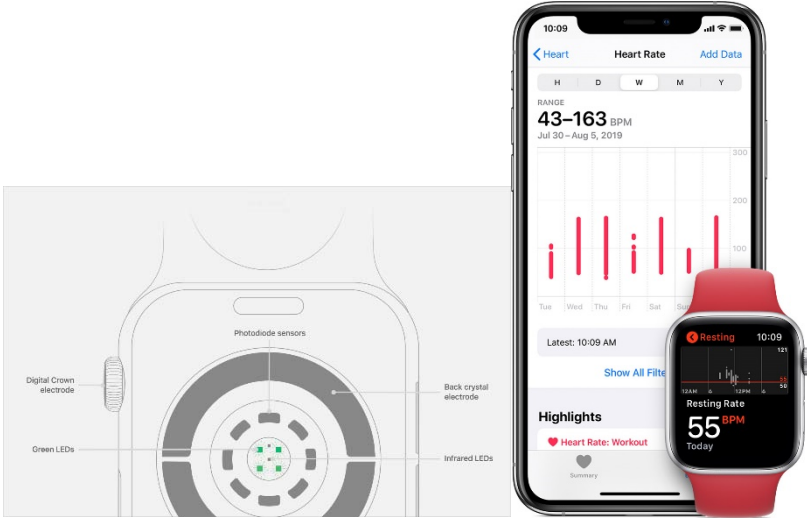
U.S. Patent No. 8,457,703 Claim 1	Description of Accused Products
<p>1. A method of managing power consumption during continuous patient monitoring by adjusting behavior of a patient monitor, the method comprising:</p>	<p>The Apple Watch Series 3 and later devices manage power consumption during continuous patient monitoring by adjusting behavior of a patient monitor.</p> <p>The Apple Watch Series 3 and later devices include a plurality of emitters of different wavelengths (for example, green and infrared LEDs) and detectors (for example, photodiode sensors) as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666.</p>

U.S. Patent No. 8,457,703 Claim 1	Description of Accused Products
<p>driving one or more light sources configured to emit light into tissue of a monitored patient;</p>	<p>The Apple Watch Series 3 and later devices drive one or more light sources configured to emit light into tissue of a monitored patient. The Apple Watch Series 3 and later devices include green and infrared LEDs as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 3 and later devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue and is indicative of a physiological parameter of the wearer:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>The optical heart sensor can also use infrared light. This mode is what Apple Watch uses when it measures your heart rate in the background, and for heart rate notifications. Apple Watch uses green LED lights to measure your heart rate during workouts and Breathe sessions, and to calculate walking average and Heart Rate Variability (HRV).</p> <p>https://support.apple.com/en-us/HT204666.</p>

U.S. Patent No. 8,457,703 Claim 1	Description of Accused Products
<p>receiving one or more signals from one or more detectors configured to detect said light after attenuation by said tissue;</p>	<p>The Apple Watch Series 3 and later devices receive one or more signals from one or more detectors configured to detect said light after attenuation by said tissue. The Apple Watch Series 3 and later devices include eight photodiode sensors as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The Apple Watches Series 3 and later devices are worn on the wrist such that the detectors are configured to detect light that has passed through tissue and is indicative of a physiological parameter of the wearer:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>The optical heart sensor can also use infrared light. This mode is what Apple Watch uses when it measures your heart rate in the background, and for heart rate notifications. Apple Watch uses green LED lights to measure your heart rate during workouts and Breathe sessions, and to calculate walking average and Heart Rate Variability (HRV).</p> <p>https://support.apple.com/en-us/HT204666.</p>

U.S. Patent No. 8,457,703 Claim 1	Description of Accused Products
continuously operating a patient monitor at a lower power consumption level to determine measurement values for one or more physiological parameters of a patient;	<p>The Apple Watch Series 3 and later devices continuously operate a patient monitor at a lower power consumption level to determine measurement values for one or more physiological parameters of a patient.</p> <p>The Apple Watches Series 3 and later devices transmit recorded data to the Health App on iOS devices. Upon information and belief, the pulse rate determination, the types of LEDs used to determine pulse rate, and the operation of the LEDs varies with pulse rate activity and heart rate context (e.g., background, sedentary, streaming, etc.), as described in International Application Publication WO 2018/226305 (the '305 publication), for example, at paragraphs [0055]-[0061].</p> <p>See also https://developer.apple.com/documentation/healthkit/hkquantitytypeidentifier/1615138-heartrate.</p>
comparing processing characteristics to a predetermined threshold; and	<p>Upon information and belief, the Apple Watches Series 3 and later devices compare processing characteristics to a predetermined threshold.</p> <p>The Apple Watches Series 3 and later devices transmit recorded data to the Health App on iOS devices. Upon information and belief, the pulse rate determination, the types of LEDs used to determine pulse rate, and the operation of the LEDs varies with pulse rate activity and heart rate context (e.g., background, sedentary, streaming, etc.).</p> <p>See also https://developer.apple.com/documentation/healthkit/hkquantitytypeidentifier/1615138-heartrate.</p>
when said processing characteristics pass said threshold, transitioning to continuously operating said patient monitor at a higher power consumption level, wherein said continuously operating at said lower power consumption level comprises reducing activation of an attached sensor, said sensor positioning said light sources and said detectors proximate said tissue.	<p>Upon information and belief, the Apple Watches Series 3 and later devices transition to continuously operating said patient monitor at a higher power consumption level.</p> <p>Upon information and belief, the Apple Watches Series 3 and later devices continuously operating at said lower power consumption level corresponds with reducing activation of an attached sensor, said sensor positioning said light sources and said detectors proximate said tissue.</p> <p>The Apple Watches Series 3 and later devices transmit recorded data to the Health App on iOS devices. Upon information and belief, the pulse rate determination, the types of LEDs used to determine pulse rate, and the operation of the LEDs varies with pulse rate activity and heart rate context (e.g., background, sedentary, streaming, etc.), as described in International Application Publication WO 2018/226305 (the '305 publication), for example, at paragraphs [0055]-[0061].</p> <p>See also https://developer.apple.com/documentation/healthkit/hkquantitytypeidentifier/1615138-heartrate.</p>

U.S. Patent No. 10,433,776

U.S. Patent No. 10,433,776 Claim 1	Description of Accused Products
<p>1. A method of operating a patient monitor configured to monitor at least a pulse rate of a patient by processing signals responsive to light attenuated by body tissue, the method comprising:</p>	<p>The Apple Watch Series 3 and later devices monitor at least a pulse rate of a patient by processing signals responsive to light attenuated by body tissue.</p> <p>The Apple Watch Series 3 and later devices include a plurality of emitters of different wavelengths (for example, green and infrared LEDs) and detectors (for example, photodiode sensors) as found on the Apple website at https://support.apple.com/en-us/HT204666:</p>  <p>The emitters and detectors are used to monitor physiological parameters, such as pulse rate. See https://support.apple.com/en-us/HT204666</p>
<p>operating the patient monitor according to a first control protocol, wherein said operating includes activating a first control protocol light source in accordance with the first control protocol, the first control protocol light source including one or more of a plurality of light sources;</p>	<p>The Apple Watch Series 3 and later devices operate according to a first control protocol, wherein said operating includes activating a first control protocol light source in accordance with the first control protocol, the first control protocol light source including one or more of a plurality of light sources.</p> <p>The Apple Watches Series 3 and later devices transmit recorded data to the Health App on iOS devices. Upon information and belief, the pulse rate determination, the types of LEDs used to determine pulse rate, and the operation of the LEDs varies with pulse rate activity and heart rate context (e.g., background, sedentary, streaming, etc.), as described in International Application Publication WO 2018/226305 (the '305 publication), for example, at paragraphs [0055]-[0061].</p> <p>See also https://developer.apple.com/documentation/healthkit/hkquantitytypeidentifier/1615138-heartrate.</p>

U.S. Patent No. 10,433,776 Claim 1	Description of Accused Products
<p>when operating according to the first control protocol, calculating, by the patient monitor, measurement values of the pulse rate, the measurement values responsive to light from the first control protocol light source, detected by a detector of an optical sensor after attenuation by body tissue of the patient using the patient monitor;</p>	<p>The Apple Watch Series 3 and later devices calculate measurement values of the pulse rate, the measurement values responsive to light from the first control protocol light source, detected by a detector of an optical sensor after attenuation by body tissue of the patient using the patient monitor:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>The optical heart sensor can also use infrared light. This mode is what Apple Watch uses when it measures your heart rate in the background, and for heart rate notifications. Apple Watch uses green LED lights to measure your heart rate during workouts and Breathe sessions, and to calculate walking average and Heart Rate Variability (HRV).</p> <p>https://support.apple.com/en-us/HT204666.</p>
<p>generating a trigger signal, wherein generating said trigger signal is responsive to at least one of: a comparison of processing characteristics to a predetermined threshold, a physiological event, or signal quality characteristics of signals received from the detector;</p>	<p>The Apple Watch Series 3 and later devices generate a trigger signal, wherein generating said trigger signal is responsive to at least one of: a comparison of processing characteristics to a predetermined threshold, a physiological event, or signal quality characteristics of signals received from the detector.</p> <p>The Apple Watches Series 3 and later devices transmit recorded data to the Health App on iOS devices. Upon information and belief, the pulse rate determination, the types of LEDs used to determine pulse rate, and the operation of the LEDs varies with pulse rate activity and heart rate context (e.g., background, sedentary, streaming, etc.), as described in International Application Publication WO 2018/226305 (the '305 publication), for example, at paragraphs [0055]-[0061].</p> <p>See also https://developer.apple.com/documentation/healthkit/hkquantitytypeidentifier/1615138-heartrate.</p>

U.S. Patent No. 10,433,776 Claim 1	Description of Accused Products
<p>in response to receiving the trigger signal, operating the patient monitor according to a second control protocol different from the first control protocol, wherein said operating includes activating a second control protocol light source in accordance with the second control protocol, the second control protocol light source including one or more of the plurality of light sources; and</p>	<p>The Apple Watch Series 3 and later devices in response to receiving the trigger signal, operate according to a second control protocol different from the first control protocol, wherein said operating includes activating a second control protocol light source in accordance with the second control protocol, the second control protocol light source including one or more of the plurality of light sources.</p> <p>The Apple Watches Series 3 and later devices transmit recorded data to the Health App on iOS devices. Upon information and belief, the pulse rate determination, the types of LEDs used to determine pulse rate, and the operation of the LEDs varies with pulse rate activity and heart rate context (e.g., background, sedentary, streaming, etc.), as described in International Application Publication WO 2018/226305 (the '305 publication), for example, at paragraphs [0055]-[0061].</p> <p>See also https://developer.apple.com/documentation/healthkit/hkquantitytypeidentifier/1615138-heartrate.</p>
<p>when operating the patient monitor according to the second control protocol, calculating the measurement values of the pulse rate, the measurement values responsive to light from the second control protocol light source, detected by the detector after attenuation by the body tissue of the patient using the patient monitor,</p>	<p>The Apple Watch Series 3 and later devices, when operating according to the second control protocol, calculate the measurement values of the pulse rate, the measurement values responsive to light from the second control protocol light source, detected by the detector after attenuation by the body tissue of the patient using the patient monitor:</p> <p>The optical heart sensor in Apple Watch uses what is known as photoplethysmography. This technology, while difficult to pronounce, is based on a very simple fact: Blood is red because it reflects red light and absorbs green light. Apple Watch uses green LED lights paired with light-sensitive photodiodes to detect the amount of blood flowing through your wrist at any given moment. When your heart beats, the blood flow in your wrist — and the green light absorption — is greater. Between beats, it's less. By flashing its LED lights hundreds of times per second, Apple Watch can calculate the number of times the heart beats each minute — your heart rate. The optical heart sensor supports a range of 30–210 beats per minute. In addition, the optical heart sensor is designed to compensate for low signal levels by increasing both LED brightness and sampling rate.</p> <p>The optical heart sensor can also use infrared light. This mode is what Apple Watch uses when it measures your heart rate in the background, and for heart rate notifications. Apple Watch uses green LED lights to measure your heart rate during workouts and Breathe sessions, and to calculate walking average and Heart Rate Variability (HRV).</p> <p>https://support.apple.com/en-us/HT204666.</p>

U.S. Patent No. 10,433,776 Claim 1	Description of Accused Products
	<p>The Apple Watches Series 3 and later devices transmit recorded data to the Health App on iOS devices. Upon information and belief, the pulse rate determination, the types of LEDs used to determine pulse rate, and the operation of the LEDs varies with pulse rate activity and heart rate context (e.g., background, sedentary, streaming, etc.).</p> <p>See also https://developer.apple.com/documentation/healthkit/hkquantitytypeidentifier/1615138-heartrate.</p>
<p>wherein said operating of the patient monitor according to the first control protocol operates the first control protocol light source according to a first duty cycle and said operating of the patient monitor according to the second control protocol operates the second control protocol light source according to a second duty cycle, wherein power consumption of the first control protocol light source according to the first duty cycle is different than power consumption of the second control protocol light source according to the second duty cycle.</p>	<p>The Apple Watch Series 3 and later devices operates the first control protocol light source according to a first duty cycle and operates the second control protocol light source according to a second duty cycle, wherein power consumption of the first control protocol light source according to the first duty cycle is different than power consumption of the second control protocol light source according to the second duty cycle.</p> <p>The Apple Watches Series 3 and later devices transmit recorded data to the Health App on iOS devices. Upon information and belief, the pulse rate determination, the types of LEDs used to determine pulse rate, and the operation of the LEDs varies with pulse rate activity and heart rate context (e.g., background, sedentary, streaming, etc.), as described in International Application Publication WO 2018/226305 (the '305 publication), for example, at paragraphs [0055]-[0061].</p> <p>See also https://developer.apple.com/documentation/healthkit/hkquantitytypeidentifier/1615138-heartrate.</p>