

Exhibit D-2
Initial Invalidity Claim Chart for U.S. Patent No. 10,736,507
Development of a Remote Pulse Oximeter (“Bailey”)

Development of a Remote Pulse Oximeter (“Bailey”), which was published in May 2010, is prior art to U.S. Patent No. 10,736,507 (the “’507 patent”) pursuant to at least pre-AIA 35 U.S.C. §§ 102(a), 102(b), and/or 102(e) under the ’507 patent’s proper priority date. Bailey anticipates and/or renders obvious the asserted claims of the ’507 patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all asserted claims of the ’507 patent are anticipated and/or rendered obvious over Bailey under at least the apparent construction of the claims advanced by Masimo based on its Preliminary Infringement Contentions served on May 25, 2023 (the “Infringement Contentions”). The excerpts cited herein are exemplary. For any claim limitation, Apple may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein. Apple expressly reserves the right to use the entirety of any reference and otherwise to supplement these contentions to add additional information showing that Bailey invalidates the asserted claims of the ’507 patent.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Apple contends that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited for the ’507 patent in Apple’s Initial Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Apple’s Initial Invalidity Contentions, the ’507 patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Bailey with the teachings of the other references charted for the ’507 patent in Apple’s Initial Invalidity Contentions; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the ’507 patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Apple also contends that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5)

the modification would have been “obvious to try”; (6) the modification was known work in one field of endeavor that would have prompted variations of it for use in either the same or different field based on design incentives or other market forces; (7) there was an explicit teaching, suggestion, or motivation in the prior art for the modification.

These Initial Invalidity Contentions are based on Apple’s present understanding of the ’507 patent claims and Masimo’s theories of infringement against Apple. Apple expressly does not agree that, under a correct construction or reading of the claims, that Apple’s accused products meet the limitations of the asserted claims of the ’507 Patent or that the claims satisfy the requirements of 35 U.S.C. § 112. Apple’s contentions herein are not, and should in no way be seen as, admissions as to or adoptions of any particular claim scope or construction, or as an admission that any particular element is met by any accused product in any particular way. Apple therefore objects to any attempt to imply claim construction from this chart. Apple’s Initial Invalidity Contentions do not represent Apple’s agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein. However, at least under Masimo’s apparent application of the claims for the purposes of infringement (which Apple expressly disagrees with), Bailey would have rendered the asserted claims of the ’507 patent invalid. Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Masimo in its Infringement Contentions; such use, however, does not imply that Apple adopt or agree with Masimo’s constructions in any way. Apple further reserves the right to supplement these contentions in response to any claim construction orders by the Court.

Apple is investigating this prior art and has not yet completed discovery from third parties who may have information concerning it. Pursuant to Federal Rule of Civil Procedure 26(e), the Local Rules of the District of Delaware, and the Orders of record in this matter Apple reserves the right to modify, amend, and/or supplement these contentions as information becomes available (*e.g.*, witness testimony and/or non-public documentation) and as discovery proceeds.

Claim 13	Prior Art
13[pre] A computer-implemented method of informing a user of mobile measurement of oxygen saturation ("SpO2"), the computer-implemented method comprising:	Under at least the apparent construction based on Masimo's Infringement Contentions, and to the extent that the preamble is limiting, Bailey discloses and/or renders obvious a computer-implemented method of informing a user of mobile measurement of oxygen saturation ("SpO2"). For example, Bailey discloses and/or suggests a pulse oximeter that could wirelessly transmit pulse oximetry data to a portable device, such as a smartphone, for convenient, remote monitoring of oxygen saturation by a user: <i>See, e.g.,</i> Bailey, 3 ("Pulse oximetry is widely maintained as the standard method for measuring a person's blood oxygen saturation. Monitoring such a vital sign allows for detecting the onset and progression of various diseases and conditions that could result in tissue and organ damage or death due to lack of required oxygen delivery. The goal of this project was to design a pulse oximeter geared toward consumer use that could wirelessly transmit data to a portable device, such as a smartphone, for convenient, remote monitoring of oxygen saturation. This report describes the design process for developing a working prototype of the pulse oximeter."). Bailey, 8 ("This report details the design, development, and construction of a remotely monitored pulse oximeter, a device that measures blood oxygen saturation."). Bailey, 8 ("The project entailed the design of a pulse oximeter intended primarily for consumer use. This requirement meant that the device needed to be user-friendly and as small and unobtrusive as possible. Pulse oximeters for consumer use have been on the market for a number of years now; however, the novelty of this project was mostly in the remote monitoring capability of the oxygen saturation data. TI wanted a device that could incorporate and demonstrate some of the wireless technology it has developed, so the decision was made to have a pulse oximeter with the ability to communicate data to a smartphone or other portable device. This potentially made the device smaller by not needing to incorporate a display and user interface on the oximeter itself. It also lent itself to situations such as remote monitoring of an infant's oxygen levels during sleep to warn of dangerously low oxygen conditions that may be associated with Sudden Infant Death Syndrome (SIDS) or suffocation. However, the ultimate goal of the project was to develop a working oximeter prototype so TI could use it as a reference design. TI could then use the design and the knowledge accumulated throughout its development to better address the needs of their customers.").

	Bailey, 63–64 (“The remote pulse oximeter project has resulted in a functional design that fulfilled all of the major functional requirements, as well as Texas Instruments’ request for a reference design for future customers in the medical device field. The unit is powered from a readily available 2032 battery, which is already widely implemented in several other medical devices. The form factor of the housing is such that it mitigates ambient light noise, protects the vital circuitry from damage in day-to-day use, and the novel ear-clip design is compatible with a wide range of potential users. In terms of functionality, the oximeter was able to output the user’s SpO2 level, with an accuracy comparable with commercial-grade sensors, in addition to dynamically calculating and displaying the user’s heart rate. The oximeter hardware was able to transmit data wirelessly, and can do so through any existing WiFi network. Lastly, the novel iPhone OS-based user interface proved to be a simple means of acquiring and displaying data, and due to the growing popularity of Apple’s iPhone and iPod touch, is currently available to over 70 million consumers. . . this pulse oximeter design has demonstrated that not only is it fully functional as a stand-alone device, but also that it could potentially be commercialized by Texas Instruments. The most expensive portions of this prototype, being the rapid-prototyped housing and PCB fabrication and population, would be significantly reduced if ordered in large numbers. Further, nearly all of the analog components are produced by Texas Instruments, further reducing cost. Expanding the user interface to include both PCs, Macs, as well as other smart-phone operating systems, such as Google Android, Palm WebOS, and Blackberry devices would account for a much larger percentage of the target consumer audience, reducing design costs associated with creating a proprietary user interface system.”). To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[a] outputting, from an optical sensor of an SpO2 measurement	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious outputting, from an optical sensor of an SpO2 measurement system, one or more signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more signals responsive to an oxygen saturation of said tissue.

system, one or more signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more signals responsive to an oxygen saturation of said tissue; and	For example, Bailey discloses and/or suggests outputting signals from photodiodes generated from LED light attenuated by tissue of the user's measurement site tissue and which relate to the user's blood oxygen saturation: <i>See, e.g.,</i> Bailey, 3 (“Pulse oximetry is widely maintained as the standard method for measuring a person's blood oxygen saturation. Monitoring such a vital sign allows for detecting the onset and progression of various diseases and conditions that could result in tissue and organ damage or death due to lack of required oxygen delivery. The goal of this project was to design a pulse oximeter geared toward consumer use that could wirelessly transmit data to a portable device, such as a smartphone, for convenient, remote monitoring of oxygen saturation. This report describes the design process for developing a working prototype of the pulse oximeter.”). Bailey, 8 (“This report details the design, development, and construction of a remotely monitored pulse oximeter, a device that measures blood oxygen saturation.”). Bailey, 8 (“The project entailed the design of a pulse oximeter intended primarily for consumer use. This requirement meant that the device needed to be user-friendly and as small and unobtrusive as possible. Pulse oximeters for consumer use have been on the market for a number of years now; however, the novelty of this project was mostly in the remote monitoring capability of the oxygen saturation data. TI wanted a device that could incorporate and demonstrate some of the wireless technology it has developed, so the decision was made to have a pulse oximeter with the ability to communicate data to a smartphone or other portable device. This potentially made the device smaller by not needing to incorporate a display and user interface on the oximeter itself. It also lent itself to situations such as remote monitoring of an infant's oxygen levels during sleep to warn of dangerously low oxygen conditions that may be associated with Sudden Infant Death Syndrome (SIDS) or suffocation. However, the ultimate goal of the project was to develop a working oximeter prototype so TI could use it as a reference design. TI could then use the design and the knowledge accumulated throughout its development to better address the needs of their customers.”). Bailey, 10 (“Typical pulse oximeters utilize two light emitting diodes (LEDs), one red and one infrared, to measure relative levels of HbO₂ and Hb as blood is pumped through the body. The LEDs are
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positioned on one side of an extremity of the body, usually a finger, ear or toe, and a photodetector is placed on the opposite side, as in Figure 1.”).

Bailey, Figure 1:

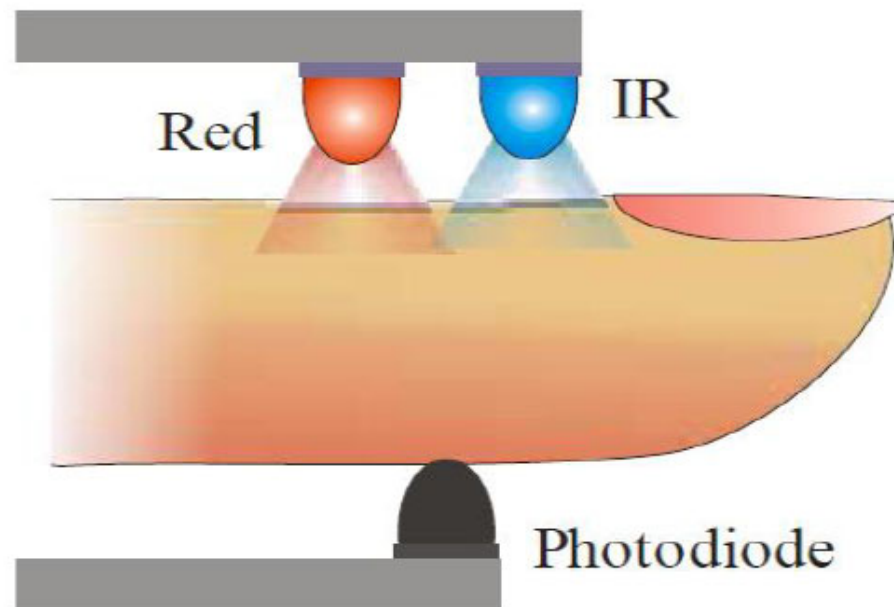


Figure 1: Typical pulse oximeter configuration [4]

Bailey, 11 (“In operation the LEDs are pulsed alternately, with one off while the other is on, allowing the photodetector to measure the transmitted light intensity at each wavelength separately. The transmitted light intensity differs greatly at each wavelength and can be attributed to the attenuation as it travels through the body, which results from a combination of reflection, scattering, and absorption by tissue and bone, venous blood, and arterial blood in the region. These values are then also related to the absorption of light by the oxyhemoglobin and deoxyhemoglobin molecules. Figure 2 shows the

	absorption of each molecule and its dependence on wavelength. The idea is that at the red wavelength (normally around 660 nm), the absorption by oxyhemoglobin (HbO₂) is significantly less than for deoxyhemoglobin (Hb). Conversely, at the infrared wavelength (usually around 910 nm), the relationship switches, with HbO₂ absorbing more than Hb. This means that measuring the light output at these two wavelengths will differ greatly due to the concentrations and absorbance properties of each hemoglobin type. As stated before, as the heart contracts and relaxes, the concentration of HbO₂ fluctuates respectively, which causes the amount of light absorbed as it travels through the sample to change. This results in a cyclic relationship between absorption and time that takes the form shown in Figure 3, with the peaks and troughs corresponding to the beating of the heart as well as high and low oxyhemoglobin concentrations respectively.”).
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Bailey, Figure 2:

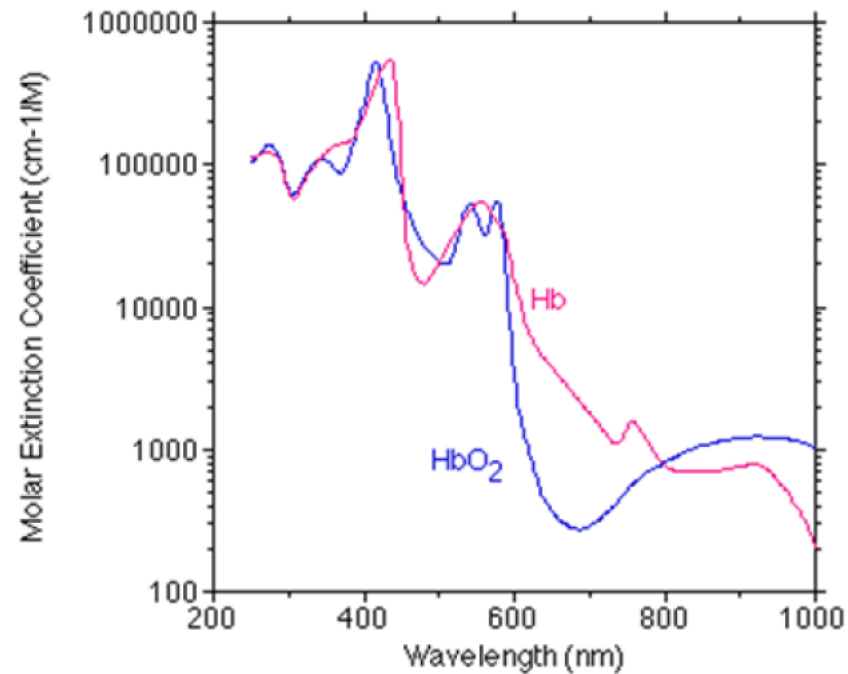


Figure 2: Attenuation of oxyhemoglobin and deoxyhemoglobin with wavelength [5]

Bailey, 12 (“Through calibration of the pulse oximeter, this ratio can then be related to actual blood oxygen saturation. Pulse oximeters are typically calibrated by comparing readings at specific times with data gathered from a blood gas analysis done at the same times and then mathematically relating the ratios to actual blood oxygen levels.”).

Bailey, 15 (“In each of the following system designs there are four parts: the source/detector, the LED driver, the signal amplifier, and the digital/user interface. The source is a combination of two LEDs, one red and one infrared, which are pulsed at alternate times. The detector consists of a photodiode

	located opposite the two LEDs, which detects the amount of light passing through the tissue. The LED driver is a circuit coupled with a temperature sensor and is used to manipulate the brightness and on/off state of each LED. The signal amplifier circuit amplifies the small currents generated by light incident on the photodiode to a usable signal. The digital interface is the circuit brain – it includes the microcontroller and its programming, which directs the functionality of the entire circuit. The digital interface also includes the wireless transmitter that sends data to the user interface. The user interface is the means by which the user can monitor his heart rate and oxygen saturation levels. The three system designs initially considered are summarized in the following sections.”). Bailey, 16 (“The first design the team developed consisted of an oximeter that would be placed on the finger of the wearer. Two LEDs would be used for the source, one red and one infrared, and an avalanche photodiode (APD) utilized as the detector. An APD can be thought of as a photodetector that provides a built-in first stage of gain through avalanche multiplication, which is regarded as the semiconductor analog to photomultiplier tubes. The trade-off to obtain this gain is that a large reverse-bias voltage must be present across the APD. Furthermore, a Fresnel lens would be placed above the APD to collect as much of the light as possible that was transmitted through the finger. The LED driver circuit for this design is shown in Figure 4. This design places the LEDs on the collector of the NPN transistor shown. This implementation uses a small number of components and offers low power consumption and low current drift. The feedback loop around the operational amplifier provides stability by reducing the current drift on the output. A downside to the design is that there is an overshoot present on the output current (see Figure 4 at right). This overshoot will make the max current of 100mA difficult to get exactly because if the input voltage is slightly under or slightly over the current will be below the 100mA. This also presents a possibility that the transistor could become too hot since it would be driving all the current.”). Bailey, 17 (“The second design that the team developed was also for use as a finger-mounted pulse oximeter. The source design was the same, consisting of two LEDs, one red and one infrared. A phototransistor was selected for the detector, as it would provide internal gain. To increase the light collection capability, a reflective light collector made of either glass or plastic would be placed on top of the detector. This design would increase the light collection efficiency, thereby decreasing the power consumption of the system, but unfortunately it would be fairly large and bulky due to the size of the light collector.”).
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	Bailey, 18 (“The third design considered, and the one ultimately chosen to proceed with development, consisted of a pulse oximeter sensor fastened to the ear of the wearer. This offered an advantage over the proposed finger oximeters because a person generally moves their ears much less than their fingers. This would reduce motion artifact within the signal, which would increase the accuracy of the oxygen saturation read out from the pulse oximeter. The downside to this design was that the housing was more complex in order to make it more comfortable for the wearer.”). Bailey, 22 (“The operation of the ear oximeter was to closely follow that of standard pulse oximeters currently on the market. Therefore, it would consist of a red and an infrared LED placed on one side of the ear and opposite a photodiode. The LEDs would be pulsed, with one being on while the other is off and continually alternating in that fashion, at a combined rate of 100 Hz. Light would reach the photodiode, causing it to output a signal, which would then be amplified, processed, and the ratio of the two signals would be mathematically related to the actual oxygen saturation of the user. Afterward, the device would transmit the oxygen saturation as well as the pulsatile signal to an iPhone or iPod Touch and be displayed on a user interface that would allow the data to be monitored and stored.”). To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[b] via a processing board of the SpO2 measurement system, the processing board in data communication with the optical sensor and a mobile	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious via a processing board of the SpO2 measurement system, the processing board in data communication with the optical sensor and a mobile computing device including a display. For example, Bailey discloses and/or suggests a processing board which processes the signals to generate blood oxygen measurements: <i>See, e.g., Bailey, Figure 7:</i>

computing device
including a display:

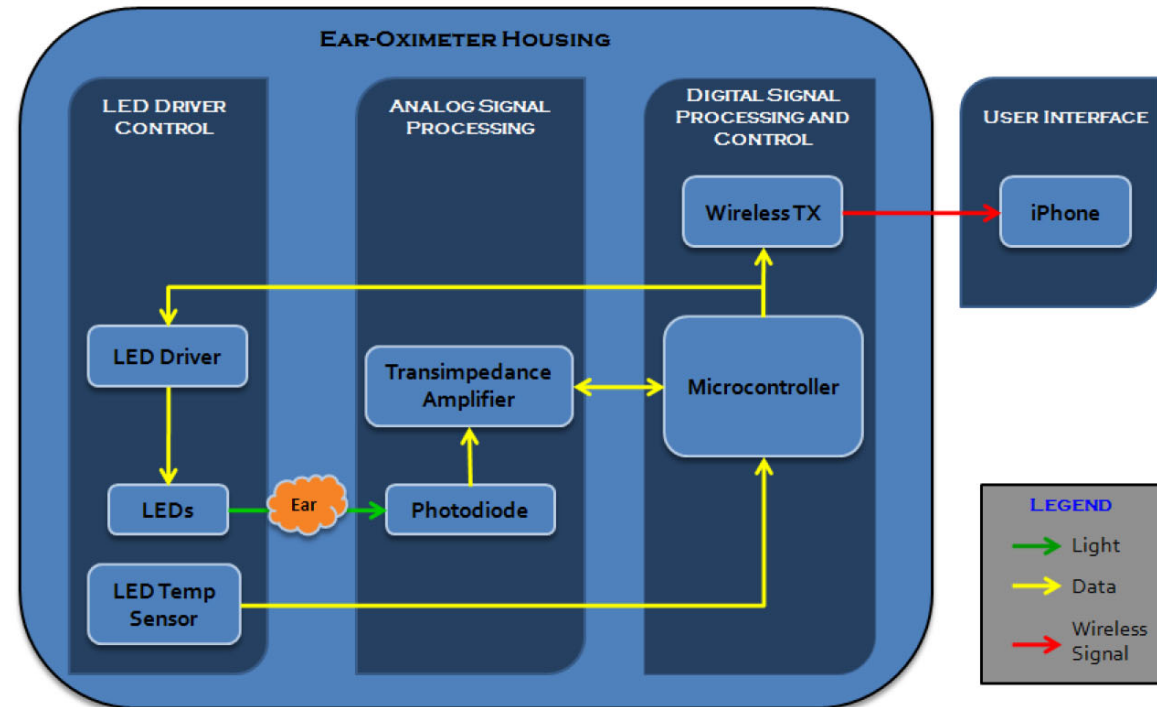


Figure 7: Block diagram showing final design by subsections

Bailey, 22 (“The operation of the ear oximeter was to closely follow that of standard pulse oximeters currently on the market. Therefore, it would consist of a red and an infrared LED placed on one side of the ear and opposite a photodiode. The LEDs would be pulsed, with one being on while the other is off and continually alternating in that fashion, at a combined rate of 100 Hz. Light would reach the photodiode, causing it to output a signal, which would then be amplified, processed, and the ratio of the two signals would be mathematically related to the actual oxygen saturation of the user. Afterward, the device would transmit the oxygen saturation as well as the pulsatile signal to an iPhone or iPod Touch and be displayed on a user interface that would allow the data to be monitored and stored.”).

	Bailey, 22 (“The design of the pulse oximeter can be broken down into several subsystems. The subsystems and their interactions are visualized in the block diagram depicted in Figure 7. Within the housing of the ear oximeter there are three main systems: the LED driver control, analog signal processing, and digital signal processing systems. The user interface is located outside the housing on a portable device and receives data wirelessly from the pulse oximeter.”). Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[c] receiving said one or more signals from the optical sensor;	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious the processing board receiving said one or more signals from the optical sensor. For example, Bailey discloses and/or suggests the processing board receiving said one or more signals from the photodiode: <i>See, e.g., Bailey, Figure 7:</i>

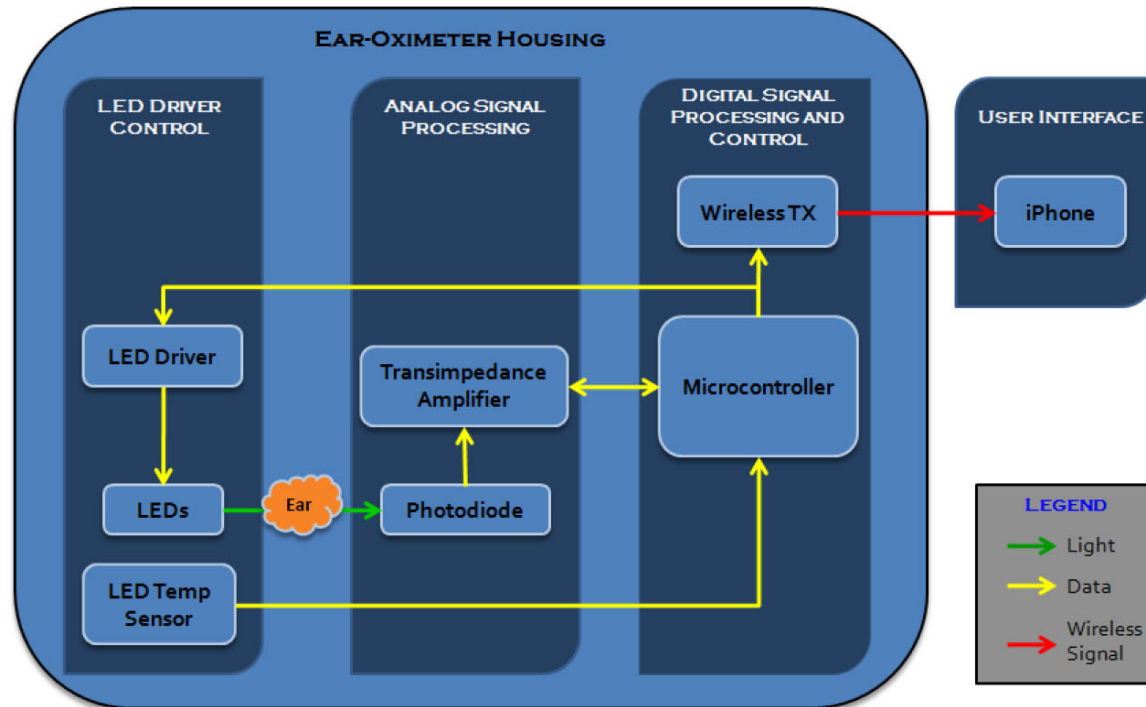


Figure 7: Block diagram showing final design by subsections

Bailey, 22 (“The operation of the ear oximeter was to closely follow that of standard pulse oximeters currently on the market. Therefore, it would consist of a red and an infrared LED placed on one side of the ear and opposite a photodiode. The LEDs would be pulsed, with one being on while the other is off and continually alternating in that fashion, at a combined rate of 100 Hz. Light would reach the photodiode, causing it to output a signal, which would then be amplified, processed, and the ratio of the two signals would be mathematically related to the actual oxygen saturation of the user. Afterward, the device would transmit the oxygen saturation as well as the pulsatile signal to an iPhone or iPod Touch and be displayed on a user interface that would allow the data to be monitored and stored.”).

	Bailey, 22 (“The design of the pulse oximeter can be broken down into several subsystems. The subsystems and their interactions are visualized in the block diagram depicted in Figure 7. Within the housing of the ear oximeter there are three main systems: the LED driver control, analog signal processing, and digital signal processing systems. The user interface is located outside the housing on a portable device and receives data wirelessly from the pulse oximeter.”). Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[d] processing said one or more signals to generate the SpO2 measurement values; and	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious the processing board processing said one or more signals to generate the SpO2 measurement values. For example, Bailey discloses and/or suggests the processing board processing the signals to generate blood oxygen measurement values: <i>See, e.g., Bailey, Figure 7:</i>

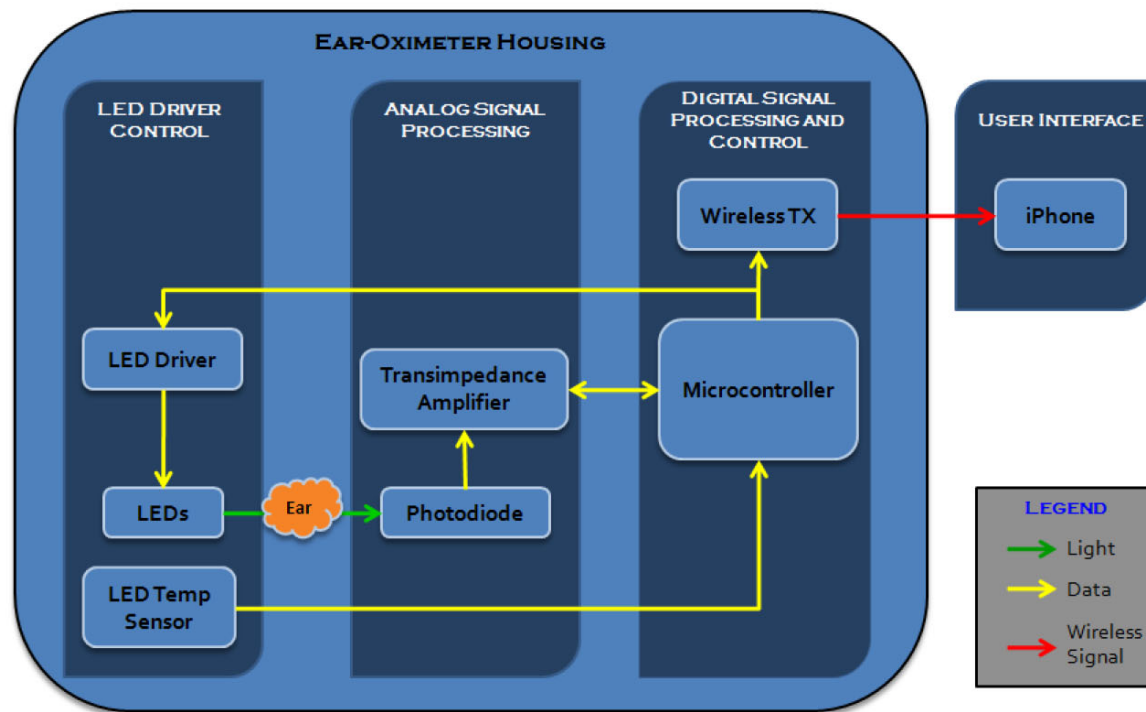


Figure 7: Block diagram showing final design by subsections

Bailey, Figure 35:

	the device would transmit the oxygen saturation as well as the pulsatile signal to an iPhone or iPod Touch and be displayed on a user interface that would allow the data to be monitored and stored.”). Bailey, 22 (“The design of the pulse oximeter can be broken down into several subsystems. The subsystems and their interactions are visualized in the block diagram depicted in Figure 7. Within the housing of the ear oximeter there are three main systems: the LED driver control, analog signal processing, and digital signal processing systems. The user interface is located outside the housing on a portable device and receives data wirelessly from the pulse oximeter.”). Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[e] outputting the SpO2 measurement values to the mobile computing device; and	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious the processing board outputting the SpO2 measurement values to the mobile computing device. For example, Bailey discloses and/or suggests outputting the blood oxygen measurement values to an iPhone:

See, e.g., Bailey, Figure 7:

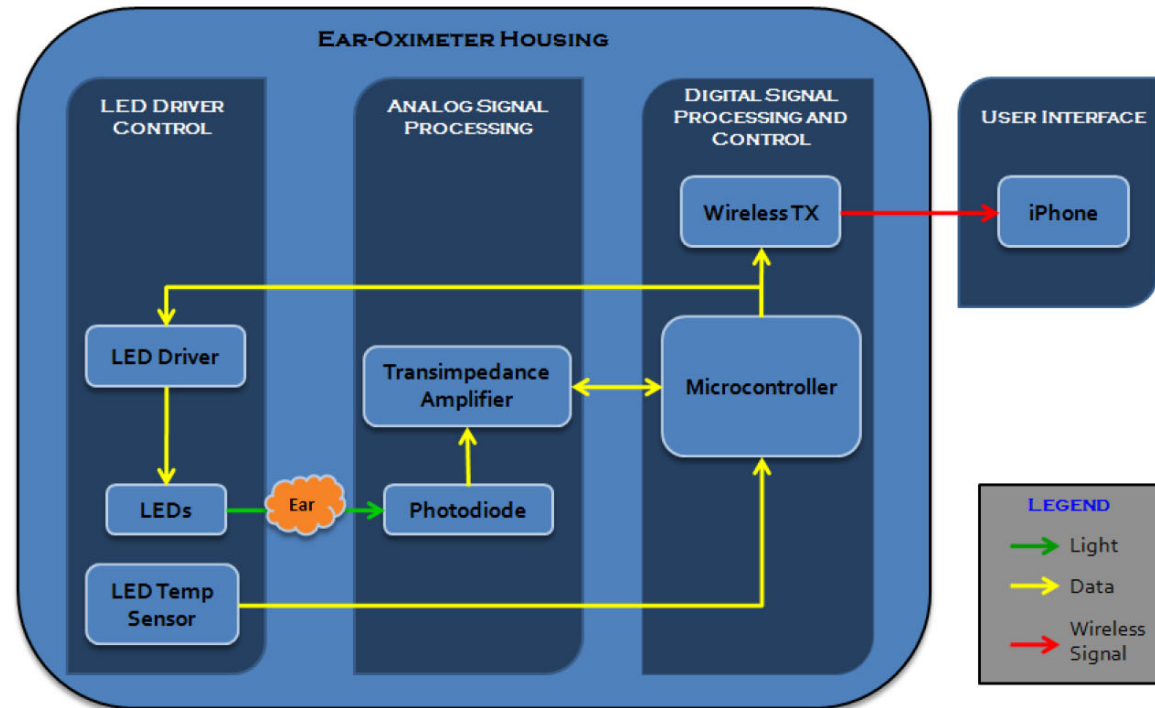


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Bailey, 22 (“The operation of the ear oximeter was to closely follow that of standard pulse oximeters currently on the market. Therefore, it would consist of a red and an infrared LED placed on one side of the ear and opposite a photodiode. The LEDs would be pulsed, with one being on while the other is off and continually alternating in that fashion, at a combined rate of 100 Hz. Light would reach the photodiode, causing it to output a signal, which would then be amplified, processed, and the ratio of the two signals would be mathematically related to the actual oxygen saturation of the user. Afterward,

	the device would transmit the oxygen saturation as well as the pulsatile signal to an iPhone or iPod Touch and be displayed on a user interface that would allow the data to be monitored and stored.”). Bailey, 22 (“The design of the pulse oximeter can be broken down into several subsystems. The subsystems and their interactions are visualized in the block diagram depicted in Figure 7. Within the housing of the ear oximeter there are three main systems: the LED driver control, analog signal processing, and digital signal processing systems. The user interface is located outside the housing on a portable device and receives data wirelessly from the pulse oximeter.”). Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[f] via an application configured to execute commands	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious via an application configured to execute commands on the mobile computing device. For example, Bailey discloses and/or suggests an application comprising commands executed on the iPhone:

on the mobile computing device:	<i>See, e.g.,</i> Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). Bailey, 47–48 (“The purpose of the user interface was to display the recorded data from the microcontroller via wireless interface. It also needed to be able to sound an alarm when a low oxygen level was reached. These two functional requirements had to be met for a successful design of the user interface. The alert signal was constrained by an audible level around 80dB so that it could be easily heard and responded to but not as loud as to damage a person’s hearing. TI also had a separate requirement that the user interface be implemented for an iPhone. This was attainable because Apple makes a software development kit (SDK) available for the public to develop software for the iPhone OS. The iPhone OS is the operating system that the iPhone and iPod Touch use for operation. Since an iPhone was more expensive than an iPod Touch and had features that the project did not require, the final device was used with the pulse oximeter prototype was an iPod Touch. The iPod Touch had Bluetooth and WiFi capabilities that could be used for wireless communication. The Bluetooth was limited by the SDK to peer-to-peer communication so we had to use the WiFi to connect to the intermediary pass-through device. It also had a speaker to accommodate the alert signal, a file system allow the saving of files, an LCD to display the GUI, and a development framework allowing access to these features. The SDK used Objective C as its primary language along with C, Java, and some C++ being able to be used as well. The SDK provided several tools to help in the application development process. These tools were Xcode, Interface Builder, and Instruments. Xcode is an integrated development environment (IDE) for writing code for Apple’s products. Interface Builder is a tool allowing the GUI to be created graphically rather than programmatically (writing code). Instruments is a utility that gave a plethora of vitals on the application in the debug process which
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	included a leak detector and memory usage. Apple provided these tools to developers to streamline the process of creating software for their products.”). Bailey, 53–54 (“Physically, the subsystems are integrated in three major parts: the components contained within the physical housing, the components contained within the sensor housing, and the components of the user interface. The flowchart presented in Figure 34 indicates how the various subsystems interface with one another. The microcontroller, LED driver, and wireless transmitter circuits are located on a single PCB, located within the main housing, which mounts to the arm of the wearer. The LEDs, photodiode, and transimpedance amplifier are located in the sensor housing, which clamps around the ear of the wearer. The sensor housing and main housing are connected via a wire and an FPC connector that is accepted by the main housing. The remaining portions of the pulse oximeter are implemented in the user interface itself, within the GUI application that is displayed on the iPod. The user interface is where data transmitted over WiFi from the microcontroller is received and displayed.”). To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[g] generating a graphical user interface having a plurality of display portions;	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious generating a graphical user interface having a plurality of display portions. For example, Bailey discloses and/or suggests the iPhone application generating a GUI with a plurality of display portions: <i>See, e.g.</i>, Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is

	converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). Bailey, 47–48 (“The purpose of the user interface was to display the recorded data from the microcontroller via wireless interface. It also needed to be able to sound an alarm when a low oxygen level was reached. These two functional requirements had to be met for a successful design of the user interface. The alert signal was constrained by an audible level around 80dB so that it could be easily heard and responded to but not as loud as to damage a person’s hearing. TI also had a separate requirement that the user interface be implemented for an iPhone. This was attainable because Apple makes a software development kit (SDK) available for the public to develop software for the iPhone OS. The iPhone OS is the operating system that the iPhone and iPod Touch use for operation. Since an iPhone was more expensive than an iPod Touch and had features that the project did not require, the final device was used with the pulse oximeter prototype was an iPod Touch. The iPod Touch had Bluetooth and WiFi capabilities that could be used for wireless communication. The Bluetooth was limited by the SDK to peer-to-peer communication so we had to use the WiFi to connect to the intermediary pass-through device. It also had a speaker to accommodate the alert signal, a file system allow the saving of files, an LCD to display the GUI, and a development framework allowing access to these features. The SDK used Objective C as its primary language along with C, Java, and some C++ being able to be used as well. The SDK provided several tools to help in the application development process. These tools were Xcode, Interface Builder, and Instruments. Xcode is an integrated development environment (IDE) for writing code for Apple’s products. Interface Builder is a tool allowing the GUI to be created graphically rather than programmatically (writing code). Instruments is a utility that gave a plethora of vitals on the application in the debug process which included a leak detector and memory usage. Apple provided these tools to developers to streamline the process of creating software for their products.”). Bailey, 53–54 (“Physically, the subsystems are integrated in three major parts: the components contained within the physical housing, the components contained within the sensor housing, and the components of the user interface. The flowchart presented in Figure 34 indicates how the various
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subsystems interface with one another. The microcontroller, LED driver, and wireless transmitter circuits are located on a single PCB, located within the main housing, which mounts to the arm of the wearer. The LEDs, photodiode, and transimpedance amplifier are located in the sensor housing, which clamps around the ear of the wearer. The sensor housing and main housing are connected via a wire and an FPC connector that is accepted by the main housing. The remaining portions of the pulse oximeter are implemented in the user interface itself, within the GUI application that is displayed on the iPod. The user interface is where data transmitted over WiFi from the microcontroller is received and displayed.”).

Bailey, Figure 31:

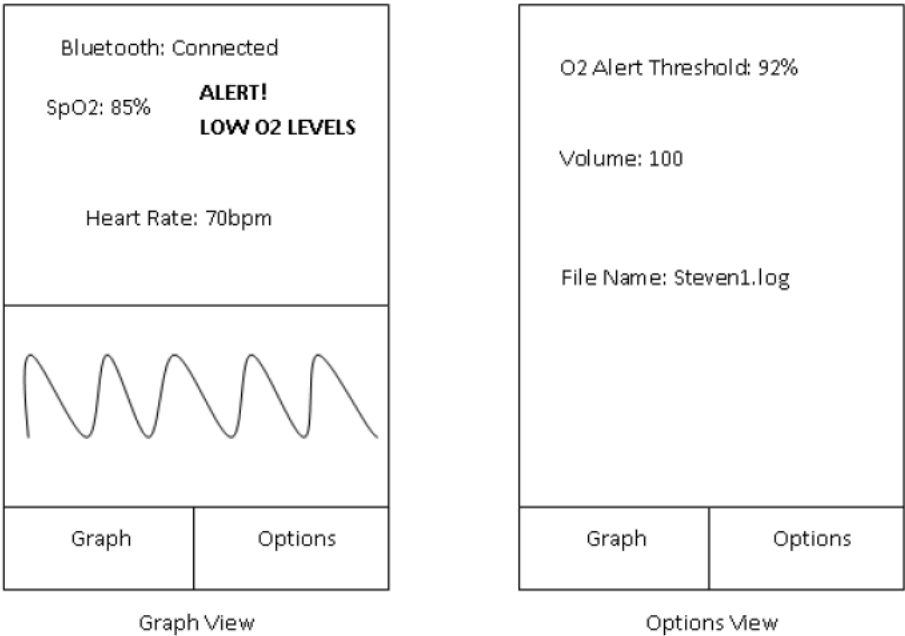


Figure 31: Design template for user interface featuring 2 main screens

Bailey, Figure 32:



Figure 32: Final user interface GUI implemented on iPod Touch

Bailey, Figure 33:

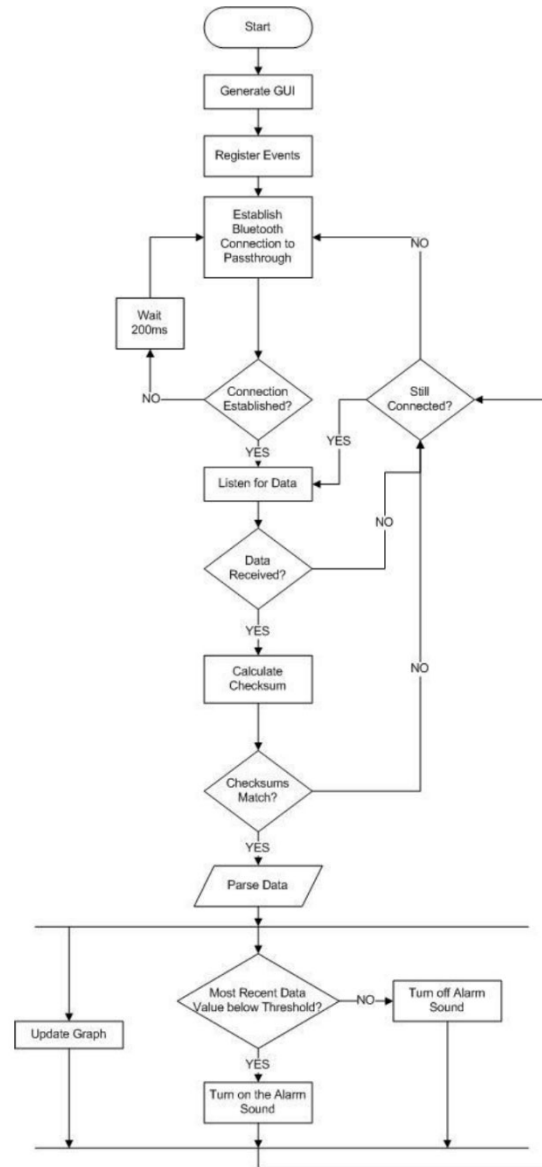


Figure 33: User interface program flow

Bailey, Figure 45:

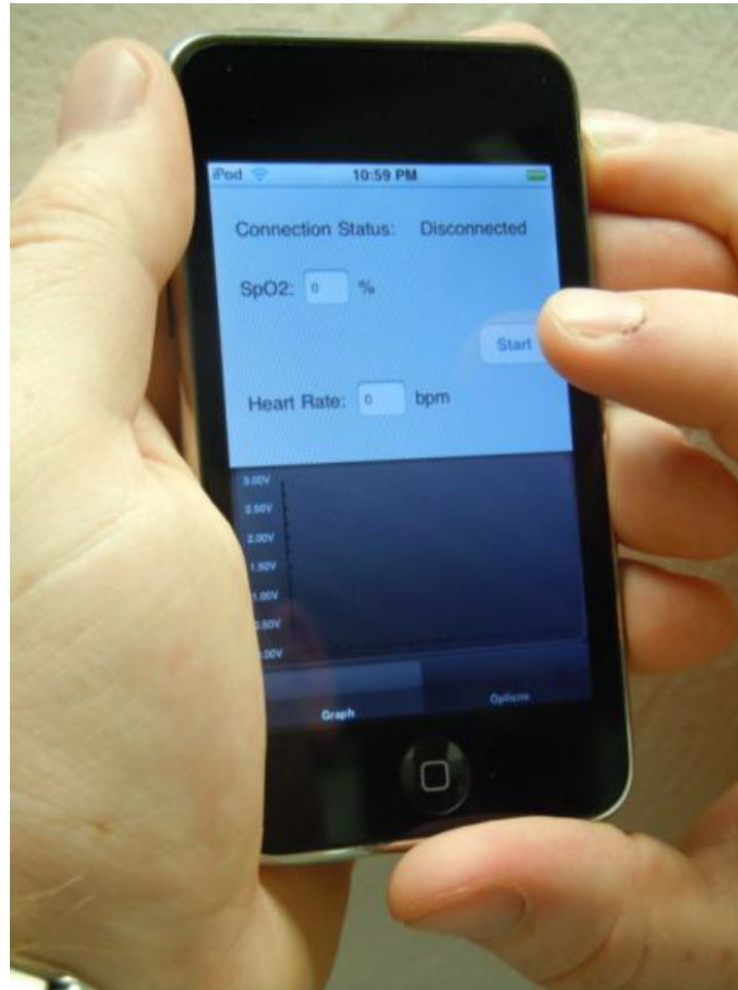


Figure 45: Final iPhone interface

	To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[h] displaying, in at least one portion of the plurality of display portions, a representation of a physiological parameter of a plurality of physiological parameters comprising at least the SpO2 measurement values; and	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious displaying, in at least one portion of the plurality of display portions, a representation of a physiological parameter of a plurality of physiological parameters comprising at least the SpO2 measurement values. For example, Bailey discloses and/or suggests displaying a representation of SpO2 values in one portion of the display and representation of heart rate in a different portion of the display: <i>See, e.g.,</i> Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). Bailey, 47–48 (“The purpose of the user interface was to display the recorded data from the microcontroller via wireless interface. It also needed to be able to sound an alarm when a low oxygen level was reached. These two functional requirements had to be met for a successful design of the user interface. The alert signal was constrained by an audible level around 80dB so that it could be easily heard and responded to but not as loud as to damage a person’s hearing. TI also had a separate requirement that the user interface be implemented for an iPhone. This was attainable because Apple

	makes a software development kit (SDK) available for the public to develop software for the iPhone OS. The iPhone OS is the operating system that the iPhone and iPod Touch use for operation. Since an iPhone was more expensive than an iPod Touch and had features that the project did not require, the final device was used with the pulse oximeter prototype was an iPod Touch. The iPod Touch had Bluetooth and WiFi capabilities that could be used for wireless communication. The Bluetooth was limited by the SDK to peer-to-peer communication so we had to use the WiFi to connect to the intermediary pass-through device. It also had a speaker to accommodate the alert signal, a file system allow the saving of files, an LCD to display the GUI, and a development framework allowing access to these features. The SDK used Objective C as its primary language along with C, Java, and some C++ being able to be used as well. The SDK provided several tools to help in the application development process. These tools were Xcode, Interface Builder, and Instruments. Xcode is an integrated development environment (IDE) for writing code for Apple’s products. Interface Builder is a tool allowing the GUI to be created graphically rather than programmatically (writing code). Instruments is a utility that gave a plethora of vitals on the application in the debug process which included a leak detector and memory usage. Apple provided these tools to developers to streamline the process of creating software for their products.”). Bailey, 53–54 (“Physically, the subsystems are integrated in three major parts: the components contained within the physical housing, the components contained within the sensor housing, and the components of the user interface. The flowchart presented in Figure 34 indicates how the various subsystems interface with one another. The microcontroller, LED driver, and wireless transmitter circuits are located on a single PCB, located within the main housing, which mounts to the arm of the wearer. The LEDs, photodiode, and transimpedance amplifier are located in the sensor housing, which clamps around the ear of the wearer. The sensor housing and main housing are connected via a wire and an FPC connector that is accepted by the main housing. The remaining portions of the pulse oximeter are implemented in the user interface itself, within the GUI application that is displayed on the iPod. The user interface is where data transmitted over WiFi from the microcontroller is received and displayed.”). Bailey, Figure 31:
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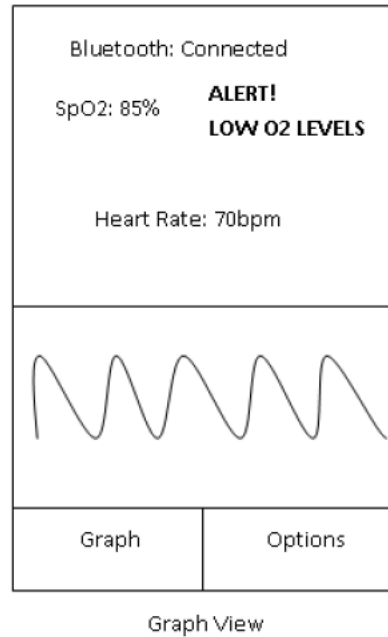


Figure 31: Design template for user interface featuring 2 main screens

Bailey, Figure 32:



Figure 32: Final user interface GUI implemented on iPod Touch

Bailey, Figure 33:

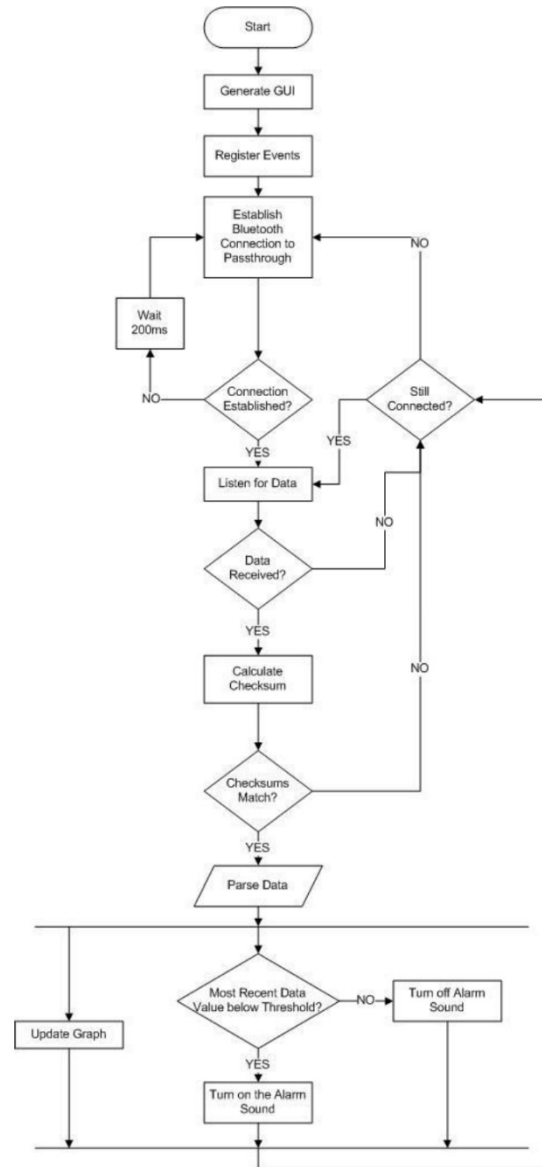


Figure 33: User interface program flow

Bailey, Figure 45:

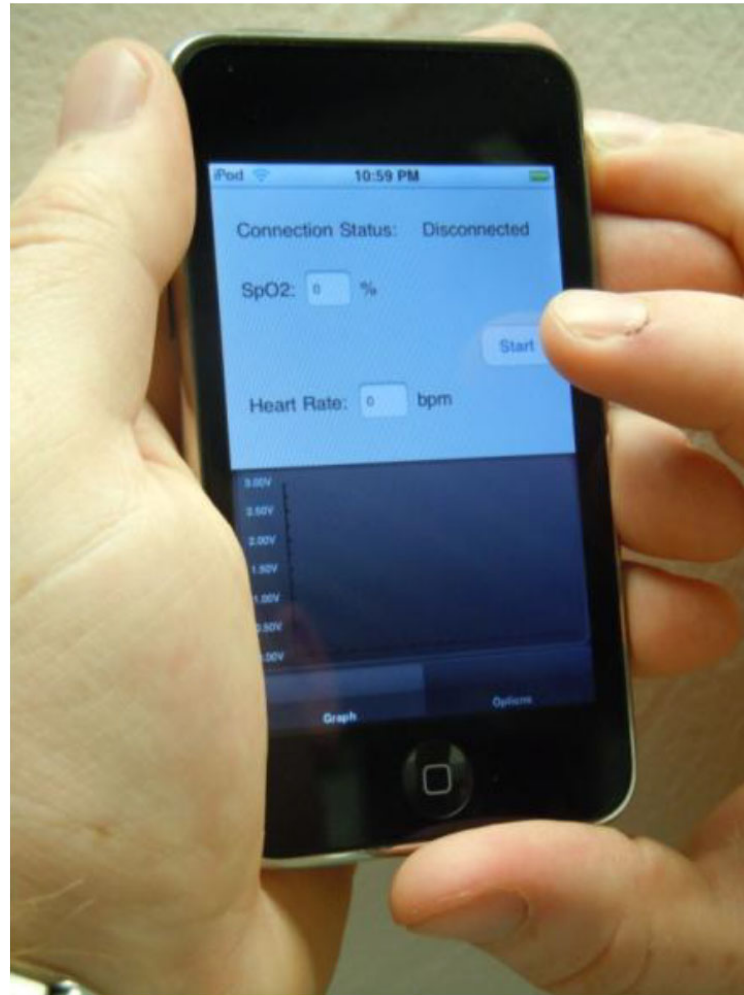
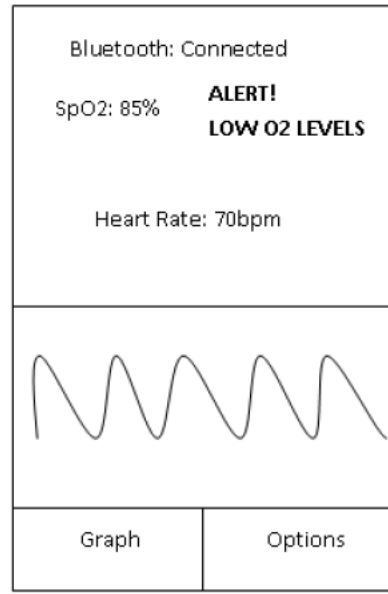


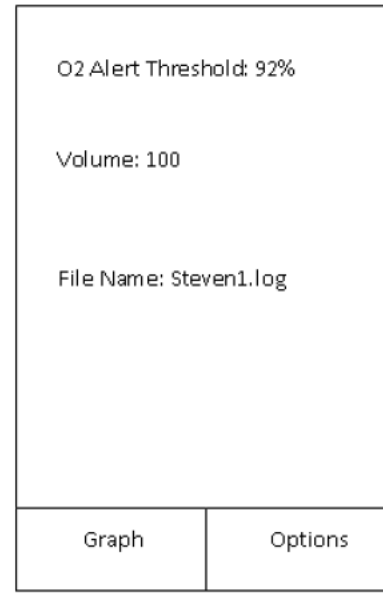
Figure 45: Final iPhone interface

	To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
13[i] displaying, in a different portion of the plurality of portions, a plurality of user inputs configured to allow the user to interact with at least one of the plurality of display portions or the application.	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious displaying, in a different portion of the plurality of portions, a plurality of user inputs configured to allow the user to interact with at least one of the plurality of display portions or the application. For example, Bailey discloses and/or suggests displaying on the GUI of the iPhone application user input options to allow the user to interact with the plurality of display portions: <i>See, e.g., Bailey, 23</i> (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). Bailey, 47–48 (“The purpose of the user interface was to display the recorded data from the microcontroller via wireless interface. It also needed to be able to sound an alarm when a low oxygen level was reached. These two functional requirements had to be met for a successful design of the user interface. The alert signal was constrained by an audible level around 80dB so that it could be easily heard and responded to but not as loud as to damage a person’s hearing. TI also had a separate requirement that the user interface be implemented for an iPhone. This was attainable because Apple makes a software development kit (SDK) available for the public to develop software for the iPhone

	OS. The iPhone OS is the operating system that the iPhone and iPod Touch use for operation. Since an iPhone was more expensive than an iPod Touch and had features that the project did not require, the final device was used with the pulse oximeter prototype was an iPod Touch. The iPod Touch had Bluetooth and WiFi capabilities that could be used for wireless communication. The Bluetooth was limited by the SDK to peer-to-peer communication so we had to use the WiFi to connect to the intermediary pass-through device. It also had a speaker to accommodate the alert signal, a file system allow the saving of files, an LCD to display the GUI, and a development framework allowing access to these features. The SDK used Objective C as its primary language along with C, Java, and some C++ being able to be used as well. The SDK provided several tools to help in the application development process. These tools were Xcode, Interface Builder, and Instruments. Xcode is an integrated development environment (IDE) for writing code for Apple’s products. Interface Builder is a tool allowing the GUI to be created graphically rather than programmatically (writing code). Instruments is a utility that gave a plethora of vitals on the application in the debug process which included a leak detector and memory usage. Apple provided these tools to developers to streamline the process of creating software for their products.”). Bailey, 53–54 (“Physically, the subsystems are integrated in three major parts: the components contained within the physical housing, the components contained within the sensor housing, and the components of the user interface. The flowchart presented in Figure 34 indicates how the various subsystems interface with one another. The microcontroller, LED driver, and wireless transmitter circuits are located on a single PCB, located within the main housing, which mounts to the arm of the wearer. The LEDs, photodiode, and transimpedance amplifier are located in the sensor housing, which clamps around the ear of the wearer. The sensor housing and main housing are connected via a wire and an FPC connector that is accepted by the main housing. The remaining portions of the pulse oximeter are implemented in the user interface itself, within the GUI application that is displayed on the iPod. The user interface is where data transmitted over WiFi from the microcontroller is received and displayed.”). Bailey, Figure 31:
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Graph View



Options View

Figure 31: Design template for user interface featuring 2 main screens

Bailey, Figure 32:



Figure 32: Final user interface GUI implemented on iPod Touch

Bailey, Figure 45:

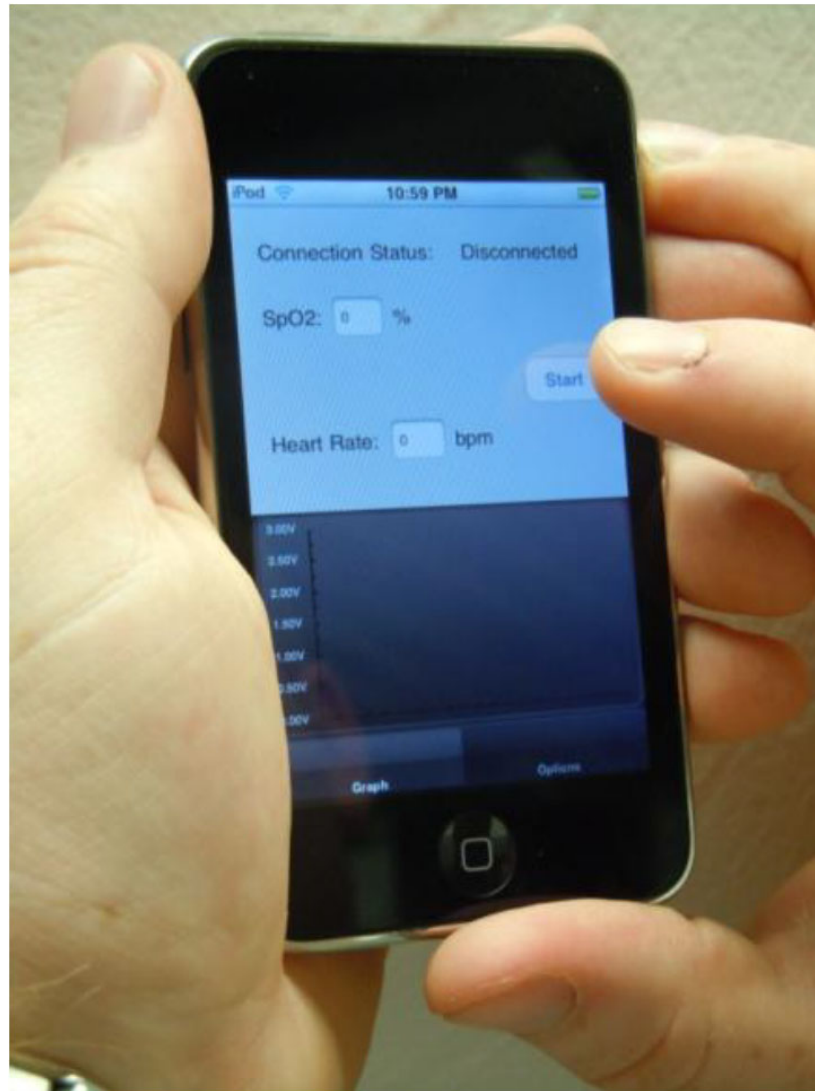


Figure 45: Final iPhone interface

	To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
Claim 14	Prior Art
14[pre] The computer-implemented method of claim 13, further comprising, via the application:	Under at least the apparent construction based on Masimo’s Infringement Contentions, and to the extent that the preamble is limiting, Bailey discloses and/or renders obvious the computer-implemented method of claim 13. <i>See, e.g., Claim 13.</i> Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious the application. For example, Bailey discloses and/or suggests an application comprising commands executed on the iPhone: <i>See, e.g., Bailey, 23</i> (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). Bailey, 47–48 (“The purpose of the user interface was to display the recorded data from the microcontroller via wireless interface. It also needed to be able to sound an alarm when a low oxygen

	level was reached. These two functional requirements had to be met for a successful design of the user interface. The alert signal was constrained by an audible level around 80dB so that it could be easily heard and responded to but not as loud as to damage a person's hearing. TI also had a separate requirement that the user interface be implemented for an iPhone. This was attainable because Apple makes a software development kit (SDK) available for the public to develop software for the iPhone OS. The iPhone OS is the operating system that the iPhone and iPod Touch use for operation. Since an iPhone was more expensive than an iPod Touch and had features that the project did not require, the final device was used with the pulse oximeter prototype was an iPod Touch. The iPod Touch had Bluetooth and WiFi capabilities that could be used for wireless communication. The Bluetooth was limited by the SDK to peer-to-peer communication so we had to use the WiFi to connect to the intermediary pass-through device. It also had a speaker to accommodate the alert signal, a file system allow the saving of files, an LCD to display the GUI, and a development framework allowing access to these features. The SDK used Objective C as its primary language along with C, Java, and some C++ being able to be used as well. The SDK provided several tools to help in the application development process. These tools were Xcode, Interface Builder, and Instruments. Xcode is an integrated development environment (IDE) for writing code for Apple's products. Interface Builder is a tool allowing the GUI to be created graphically rather than programmatically (writing code). Instruments is a utility that gave a plethora of vitals on the application in the debug process which included a leak detector and memory usage. Apple provided these tools to developers to streamline the process of creating software for their products.”). Bailey, 53–54 (“Physically, the subsystems are integrated in three major parts: the components contained within the physical housing, the components contained within the sensor housing, and the components of the user interface. The flowchart presented in Figure 34 indicates how the various subsystems interface with one another. The microcontroller, LED driver, and wireless transmitter circuits are located on a single PCB, located within the main housing, which mounts to the arm of the wearer. The LEDs, photodiode, and transimpedance amplifier are located in the sensor housing, which clamps around the ear of the wearer. The sensor housing and main housing are connected via a wire and an FPC connector that is accepted by the main housing. The remaining portions of the pulse oximeter are implemented in the user interface itself, within the GUI application that is displayed on the iPod. The user interface is where data transmitted over WiFi from the microcontroller is received and displayed.”).
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Bailey, Figure 31:

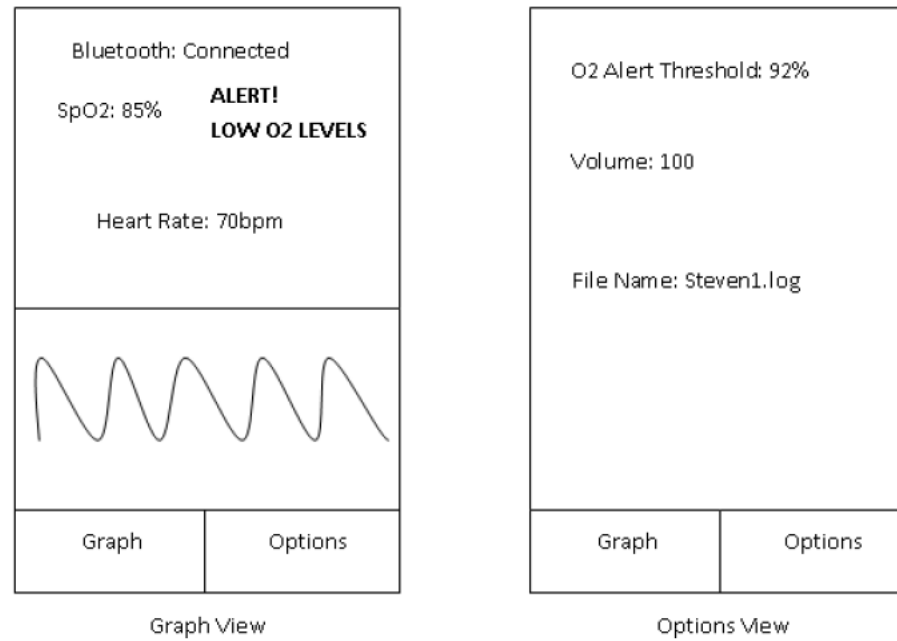


Figure 31: Design template for user interface featuring 2 main screens

Bailey, Figure 32:



Figure 32: Final user interface GUI implemented on iPod Touch

Bailey, Figure 33:

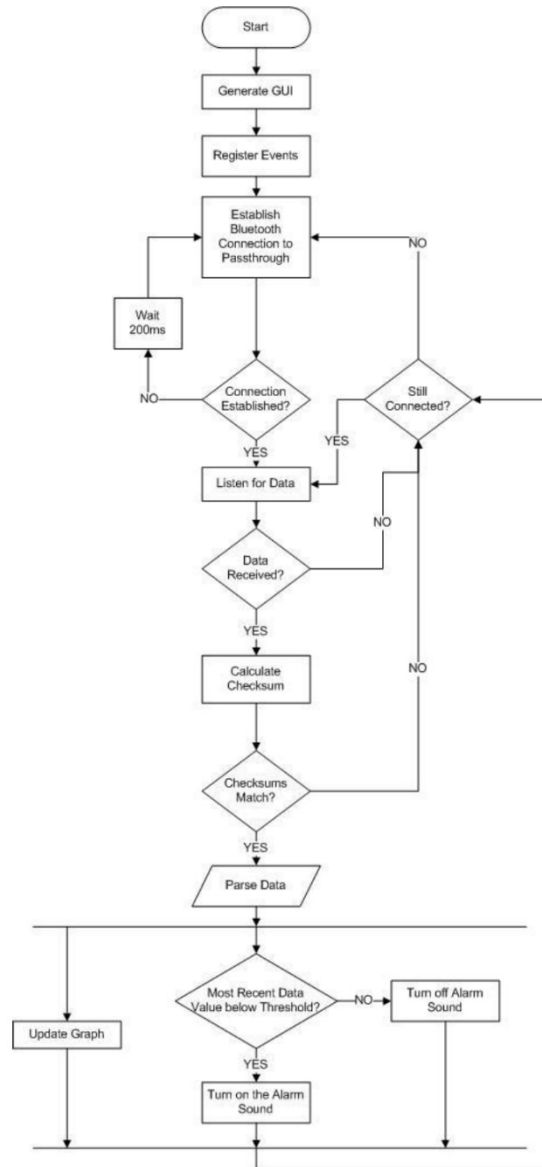


Figure 33: User interface program flow

Bailey, Figure 45:

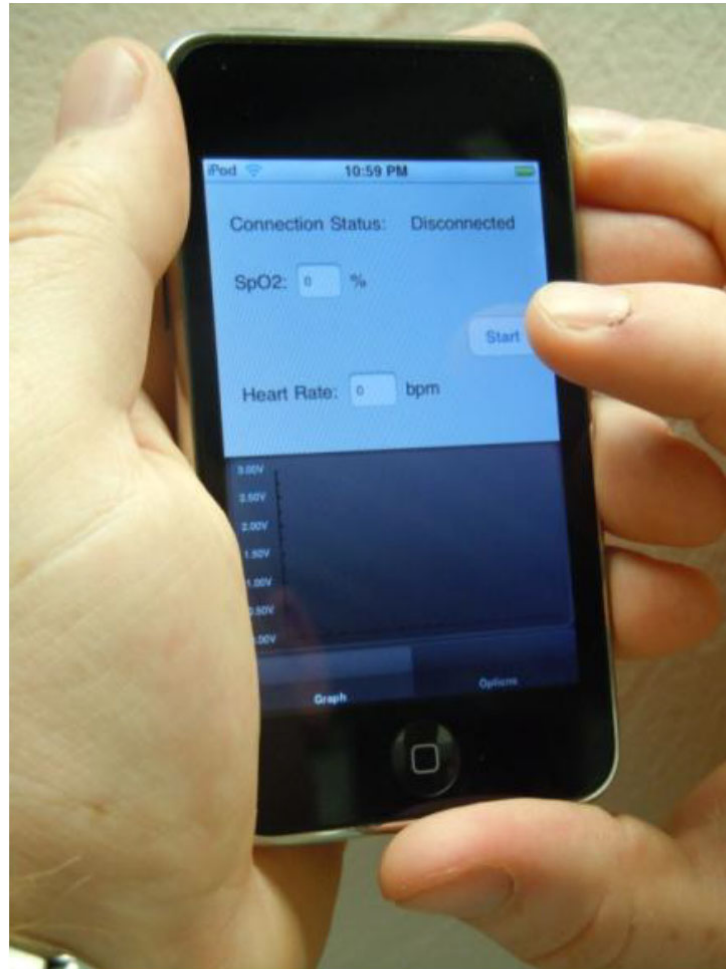


Figure 45: Final iPhone interface

	To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
14[a] performing a trend analysis on received SpO2 measurement values; and	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious performing a trend analysis on received SpO2 measurement values. For example, Bailey discloses and/or suggests logging and analyzing blood oxygen levels over long periods of time: <i>See, e.g.,</i> Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). Bailey, 47–48 (“The purpose of the user interface was to display the recorded data from the microcontroller via wireless interface. It also needed to be able to sound an alarm when a low oxygen level was reached. These two functional requirements had to be met for a successful design of the user interface. The alert signal was constrained by an audible level around 80dB so that it could be easily heard and responded to but not as loud as to damage a person’s hearing. TI also had a separate requirement that the user interface be implemented for an iPhone. This was attainable because Apple makes a software development kit (SDK) available for the public to develop software for the iPhone OS. The iPhone OS is the operating system that the iPhone and iPod Touch use for operation. Since an

	iPhone was more expensive than an iPod Touch and had features that the project did not require, the final device was used with the pulse oximeter prototype was an iPod Touch. The iPod Touch had Bluetooth and WiFi capabilities that could be used for wireless communication. The Bluetooth was limited by the SDK to peer-to-peer communication so we had to use the WiFi to connect to the intermediary pass-through device. It also had a speaker to accommodate the alert signal, a file system allow the saving of files, an LCD to display the GUI, and a development framework allowing access to these features. The SDK used Objective C as its primary language along with C, Java, and some C++ being able to be used as well. The SDK provided several tools to help in the application development process. These tools were Xcode, Interface Builder, and Instruments. Xcode is an integrated development environment (IDE) for writing code for Apple’s products. Interface Builder is a tool allowing the GUI to be created graphically rather than programmatically (writing code). Instruments is a utility that gave a plethora of vitals on the application in the debug process which included a leak detector and memory usage. Apple provided these tools to developers to streamline the process of creating software for their products.”). Bailey, 53–54 (“Physically, the subsystems are integrated in three major parts: the components contained within the physical housing, the components contained within the sensor housing, and the components of the user interface. The flowchart presented in Figure 34 indicates how the various subsystems interface with one another. The microcontroller, LED driver, and wireless transmitter circuits are located on a single PCB, located within the main housing, which mounts to the arm of the wearer. The LEDs, photodiode, and transimpedance amplifier are located in the sensor housing, which clamps around the ear of the wearer. The sensor housing and main housing are connected via a wire and an FPC connector that is accepted by the main housing. The remaining portions of the pulse oximeter are implemented in the user interface itself, within the GUI application that is displayed on the iPod. The user interface is where data transmitted over WiFi from the microcontroller is received and displayed.”). Bailey, Figure 31:
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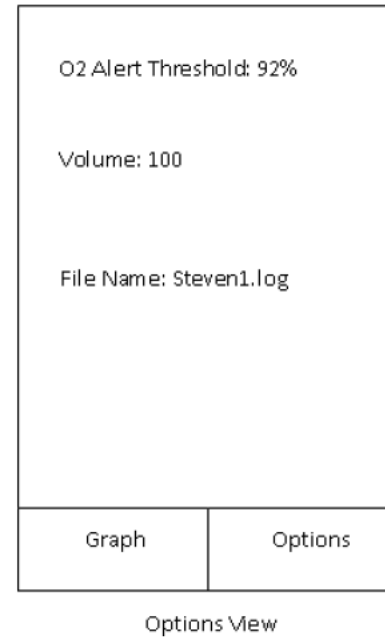
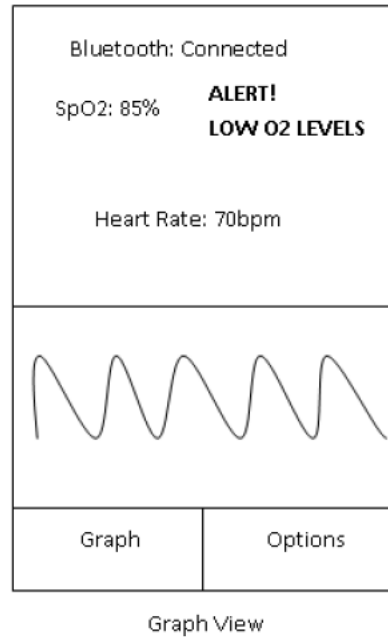


Figure 31: Design template for user interface featuring 2 main screens

Bailey, Figure 32:



Figure 32: Final user interface GUI implemented on iPod Touch

Bailey, Figure 33:

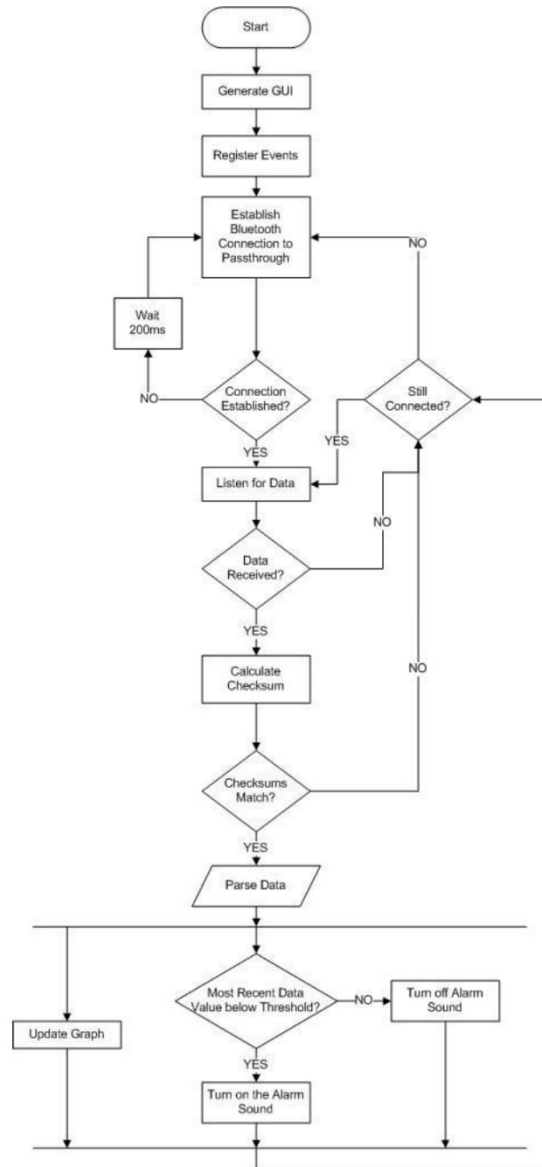


Figure 33: User interface program flow

Bailey, Figure 45:

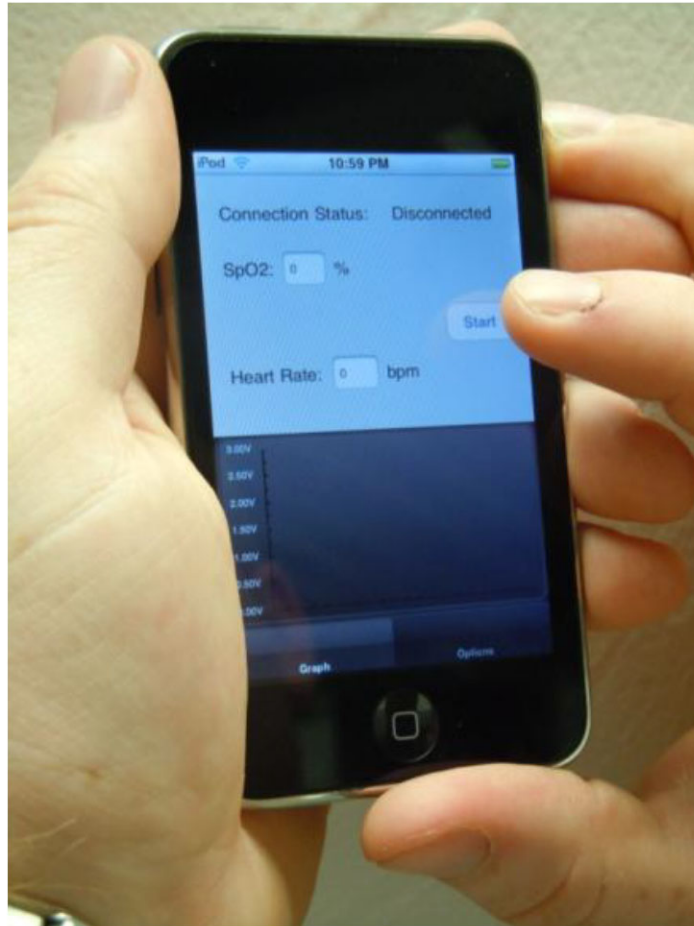


Figure 45: Final iPhone interface

Bailey, 14 (“3.4 Data Logging: In order to monitor trends in the blood oxygen saturation of the user, a means to record and store data was integrated into the final pulse oximeter design. A metric of one

week's worth of continuous oxygen saturation data being able to be stored and accessed was chosen in order to give the user ample time to back up the data to an external source, such as a hard drive or home computer. It was proposed that the device would output a file that was easily accessible and readable using common software, such as Microsoft Excel, so that both the user and medical personnel alike could easily read and analyze the recorded blood oxygen levels over long periods of time.”).

Bailey, Table 1:

Table 1: System requirements specified by sponsor for final pulse oximeter design

Functional Requirement	Customer Importance	CTQ (metric)	Target Value
Accuracy	5	Percentage (%)	Accurate to within $\pm 2\%$ of actual blood oxygen concentration
Battery Life	5	Hour	Minimum of 12 hour battery life on a single charge
Perceptible Alert Signal	5	Decibels (dB)	80 dB
Data Logging	4	Week	1 weeks worth of data from continuous monitoring
Transmission Distance	4	Meter (m)	25 m wireless data transmission
Shock Resistance	2	Meter (m)	Survive at least 2 m fall
Water Resistance	2	Meter (m)	Water resistant to depth of 3 m

Bailey, Table 5:

Table 5: Subsystem testing procedures and results

Subsystem	Requirement	Measurement Procedure	Metric	Expected Result	Actual Result	Pass/Fail
LED Driver	Provide a linear variable output current	Measure the output current as input voltage changes	Amps	0-30mA linear current	0-29.6mA linear current	✓
	Provide a square wave output current at 1kHz	Measure output current with an oscilloscope while switch is in circuit	Amps	Square wave with rise/fall times of the current level at 1kHz	More of a triangle wave at current level at 1kHz (Usable signal)	✓
	Have correct LED function with known Nellcor oximeter sensor	Verify that both Red and IR LEDs pulse at proper rate and sequence	Visual Pulse	Both LEDs pulsed opposite each other at 1kHz	LEDs pulse alternately, similar to commercially available units	✓
LED Driver & Temp Sensor	Circuit produces desired voltage across LEDs	Measure the V_{be} across the LED with multimeter	Volts	Voltage across LEDs between 0-1.1V	1.9V voltage drop across both LEDs	✓
User Interface	Transmit data via WiFi	Transmit text from computer to iPod Touch	Visual	Correct message displays on screen	Correct message displayed on screen	✓
	Plays sound	Run code to produce sound	Aural	Sound clip is heard	Sound played correctly	✓
	Parse and graph data	Observe the graph	Visual	Data graphed correctly	Data graphed correctly	✓
	Data translated	Input data to RF and receive output on WiFi	Visual	Data received correctly	Data received correctly	✓
	GUI functions correctly	Use the program on iPod Touch to find faults/bugs	Visual	No faults/bugs	No faults/bugs found	✓
	Live data streaming	Observe the graph	Visual	Graph updates correctly	Graph updates in real time	✓
	Alert threshold functions correctly	Observe when levels go below threshold	Aural/Visual	Alert sounds when level falls below threshold	Alert sounds at low levels	✓
	Data logging	Inspect datalog generated from data received	Visual	Data is present and well formed	Data is present and well formed	✓
Digital Hardware	Communicate between microcontroller and ADC	Verify I2C signal lines	Volts	9 cycle clock and data	Stable clock	✓
Transimpedance Amplifier	Amplifier stable with photodiode on input	Apply step input and observe stability of output	Volts	Saturated or unsaturated output	Stable output for photodiode with large junction capacitance	✓
	Amplify 10nA to 1uA photodiode signal	Use OxSim and Nellcor sensor to inject current	Volts	Amplified square wave voltage with DC offset	Square wave output with high frequency noise; heart beat detected	✓
	Output square wave settles fast enough for ADC to sample peak signal	Measure settling time	Time	Settles quickly (should not see much overshoot with $PM=80^\circ$)	With 50 μ s pulses, output wave settles in a sufficient amount of time	✓

Bailey, Table 7:

Table 7: Overall system testing procedure and results

Requirement	Measurement Procedure	Metric	Expected Result	Actual Result	Pass/Fail
Accuracy – accurate to within $\pm 2\%$ of actual blood oxygen concentration	Compare O_2 concentration values from remote pulse oximeter with those of Massimo oximeter	Oxygen saturation (%)	$\pm 2\%$ difference from Massimo oximeter readings		?
Perceptible Alert Signal - audible alert during low oxygen conditions	Generate a simulated low oxygen signal in order to trigger alert	Decibels	80dB alert signal triggered at adjustable low oxygen level	65dB at 1m ~80dB at ~0.5m	✓
Battery Life - remain functional for desired time on battery power	Run oximeter continuously until electronic components shut off due to insufficient power from battery	Time (Hours)	Oximeter will be able to run continuously for 12 hours or longer	~2 hours continuous use	✓
Transmission Distance - wirelessly send data over the required distance	Gradually separate oximeter from user interface until data is no longer transferred	Distance (m)	Transmit data no less than 25m	~35m	✓
Data Logging – ability to continuously monitor data for specified time period	Run oximeter over course of one night, observe file size, multiply by seven	Time (Weeks)	At least 1 week worth of data logged from continuous monitoring	~11MB/week (iPhone has 8GB of capacity)	✓
Shock Resistance – system must remain functional after 2m fall	Model housing and components in SolidWorks and conduct FEA analysis to predict performance	Stress (N/m^2)	Oximeter will maintain full functionality after fall	SolidWorks verification of maximum stress of $\sim 400kN/m^2$	✓
Water Resistance – resistant to a depth of 3m	Submerge in water for period of 30 seconds	Distance (m)	Oximeter will maintain full functionality after water submersion	Not performed due to time constraints	✗

Bailey, 62 (“The required functions of the user interface were: to display the SpO2 and heart rate, to sound an alert for low SpO2 levels, and to perform data logging.”).

	To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
14[b] displaying results of the trend analysis in at least one portion of the plurality of display portions.	Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious displaying results of the trend analysis in at least one portion of the plurality of display portions. For example, Bailey discloses and/or suggests displaying the logged blood oxygen data on the display: <i>See, e.g.,</i> Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). Bailey, 47–48 (“The purpose of the user interface was to display the recorded data from the microcontroller via wireless interface. It also needed to be able to sound an alarm when a low oxygen level was reached. These two functional requirements had to be met for a successful design of the user interface. The alert signal was constrained by an audible level around 80dB so that it could be easily heard and responded to but not as loud as to damage a person’s hearing. TI also had a separate requirement that the user interface be implemented for an iPhone. This was attainable because Apple makes a software development kit (SDK) available for the public to develop software for the iPhone OS. The iPhone OS is the operating system that the iPhone and iPod Touch use for operation. Since an

	iPhone was more expensive than an iPod Touch and had features that the project did not require, the final device was used with the pulse oximeter prototype was an iPod Touch. The iPod Touch had Bluetooth and WiFi capabilities that could be used for wireless communication. The Bluetooth was limited by the SDK to peer-to-peer communication so we had to use the WiFi to connect to the intermediary pass-through device. It also had a speaker to accommodate the alert signal, a file system allow the saving of files, an LCD to display the GUI, and a development framework allowing access to these features. The SDK used Objective C as its primary language along with C, Java, and some C++ being able to be used as well. The SDK provided several tools to help in the application development process. These tools were Xcode, Interface Builder, and Instruments. Xcode is an integrated development environment (IDE) for writing code for Apple’s products. Interface Builder is a tool allowing the GUI to be created graphically rather than programmatically (writing code). Instruments is a utility that gave a plethora of vitals on the application in the debug process which included a leak detector and memory usage. Apple provided these tools to developers to streamline the process of creating software for their products.”). Bailey, 53–54 (“Physically, the subsystems are integrated in three major parts: the components contained within the physical housing, the components contained within the sensor housing, and the components of the user interface. The flowchart presented in Figure 34 indicates how the various subsystems interface with one another. The microcontroller, LED driver, and wireless transmitter circuits are located on a single PCB, located within the main housing, which mounts to the arm of the wearer. The LEDs, photodiode, and transimpedance amplifier are located in the sensor housing, which clamps around the ear of the wearer. The sensor housing and main housing are connected via a wire and an FPC connector that is accepted by the main housing. The remaining portions of the pulse oximeter are implemented in the user interface itself, within the GUI application that is displayed on the iPod. The user interface is where data transmitted over WiFi from the microcontroller is received and displayed.”). Bailey, Figure 31:
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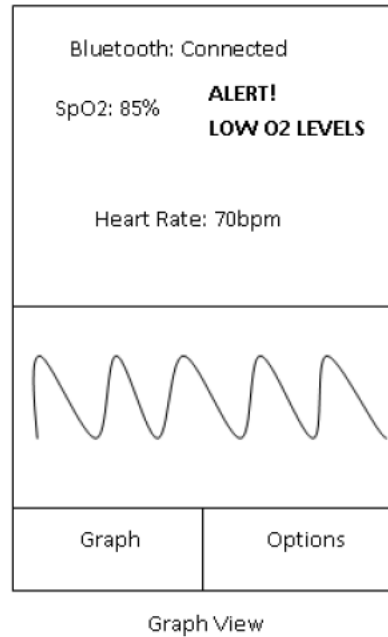


Figure 31: Design template for user interface featuring 2 main screens

Bailey, Figure 32:



Figure 32: Final user interface GUI implemented on iPod Touch

Bailey, Figure 33:

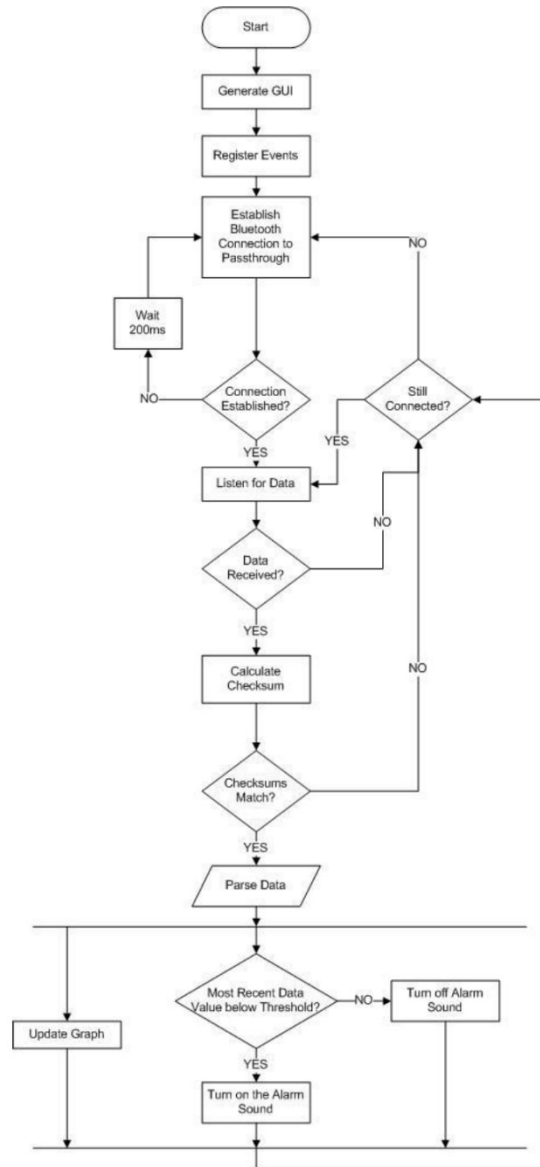


Figure 33: User interface program flow

Bailey, Figure 45:

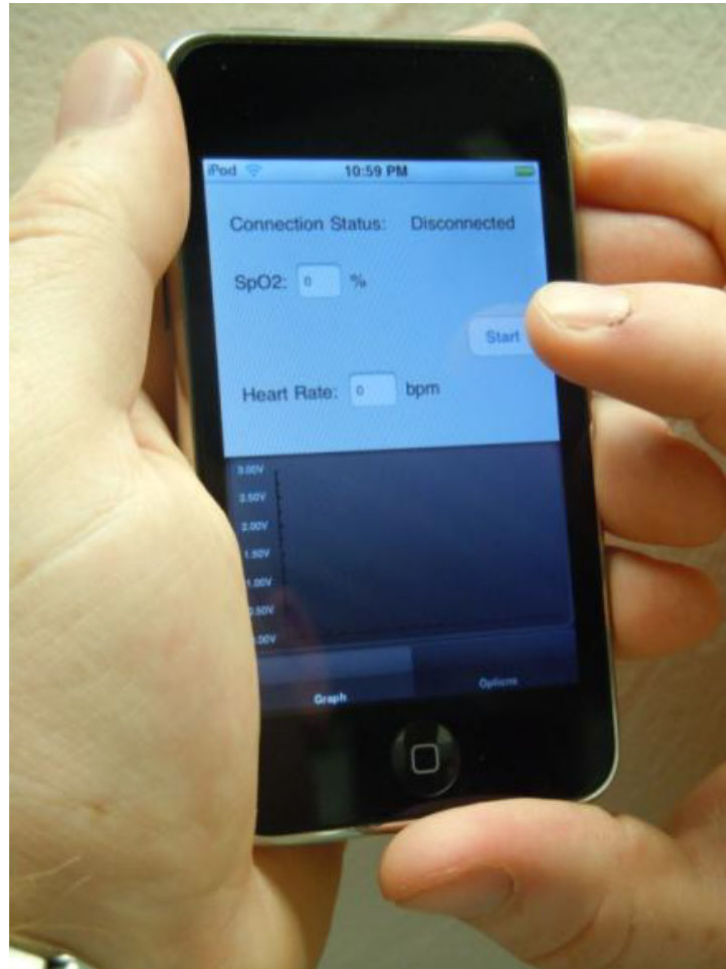


Figure 45: Final iPhone interface

Bailey, 14 (“3.4 Data Logging: In order to monitor trends in the blood oxygen saturation of the user, a means to record and store data was integrated into the final pulse oximeter design. A metric of one week’s worth of continuous oxygen saturation data being able to be stored and accessed was chosen in order to give the user ample time to back up the data to an external source, such as a hard drive or home computer.”).

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Table 1: System requirements specified by sponsor for final pulse oximeter design

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LED Driver	Provide a linear variable output current	Measure the output current as input voltage changes	Amps	0-30mA linear current	0-29.6mA linear current	✓
	Provide a square wave output current at 1kHz	Measure output current with an oscilloscope while switch is in circuit	Amps	Square wave with rise/fall times of the current level at 1kHz	More of a triangle wave at current level at 1kHz (Usable signal)	✓
	Have correct LED function with known Nellcor oximeter sensor	Verify that both Red and IR LEDs pulse at proper rate and sequence	Visual Pulse	Both LEDs pulsed opposite each other at 1kHz	LEDs pulse alternately, similar to commercially available units	✓
LED Driver & Temp Sensor	Circuit produces desired voltage across LEDs	Measure the V_{be} across the LED with multimeter	Volts	Voltage across LEDs between 0-1.1V	1.9V voltage drop across both LEDs	✓
User Interface	Transmit data via WiFi	Transmit text from computer to iPod Touch	Visual	Correct message displays on screen	Correct message displayed on screen	✓
	Plays sound	Run code to produce sound	Aural	Sound clip is heard	Sound played correctly	✓
	Parse and graph data	Observe the graph	Visual	Data graphed correctly	Data graphed correctly	✓
	Data translated	Input data to RF and receive output on WiFi	Visual	Data received correctly	Data received correctly	✓
	GUI functions correctly	Use the program on iPod Touch to find faults/bugs	Visual	No faults/bugs	No faults/bugs found	✓
	Live data streaming	Observe the graph	Visual	Graph updates correctly	Graph updates in real time	✓
	Alert threshold functions correctly	Observe when levels go below threshold	Aural/Visual	Alert sounds when level falls below threshold	Alert sounds at low levels	✓
	Data logging	Inspect datalog generated from data received	Visual	Data is present and well formed	Data is present and well formed	✓
Digital Hardware	Communicate between microcontroller and ADC	Verify I2C signal lines	Volts	9 cycle clock and data	Stable clock	✓
Transimpedance Amplifier	Amplifier stable with photodiode on input	Apply step input and observe stability of output	Volts	Saturated or unsaturated output	Stable output for photodiode with large junction capacitance	✓
	Amplify 10nA to 1uA photodiode signal	Use OxSim and Nellcor sensor to inject current	Volts	Amplified square wave voltage with DC offset	Square wave output with high frequency noise; heart beat detected	✓
	Output square wave settles fast enough for ADC to sample peak signal	Measure settling time	Time	Settles quickly (should not see much overshoot with $PM=80^\circ$)	With 50μs pulses, output wave settles in a sufficient amount of time	✓

Bailey, Table 7:

Table 7: Overall system testing procedure and results

Requirement	Measurement Procedure	Metric	Expected Result	Actual Result	Pass/Fail
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Perceptible Alert Signal - audible alert during low oxygen conditions	Generate a simulated low oxygen signal in order to trigger alert	Decibels	80dB alert signal triggered at adjustable low oxygen level	65dB at 1m ~80dB at ~0.5m	✓
Battery Life - remain functional for desired time on battery power	Run oximeter continuously until electronic components shut off due to insufficient power from battery	Time (Hours)	Oximeter will be able to run continuously for 12 hours or longer	~2 hours continuous use	✓
Transmission Distance - wirelessly send data over the required distance	Gradually separate oximeter from user interface until data is no longer transferred	Distance (m)	Transmit data no less than 25m	~35m	✓
Data Logging – ability to continuously monitor data for specified time period	Run oximeter over course of one night, observe file size, multiply by seven	Time (Weeks)	At least 1 week worth of data logged from continuous monitoring	~11MB/week (iPhone has 8GB of capacity)	✓
Shock Resistance – system must remain functional after 2m fall	Model housing and components in SolidWorks and conduct FEA analysis to predict performance	Stress (N/m^2)	Oximeter will maintain full functionality after fall	SolidWorks verification of maximum stress of $\sim 400kN/m^2$	✓
Water Resistance – resistant to a depth of 3m	Submerge in water for period of 30 seconds	Distance (m)	Oximeter will maintain full functionality after water submersion	Not performed due to time constraints	✗

Bailey, 62 (“The required functions of the user interface were: to display the SpO2 and heart rate, to sound an alert for low SpO2 levels, and to perform data logging.”).

	To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
Claim 16	Prior Art
16. The computer-implemented method of claim 13, further comprising, via the application, outputting one or more reminders to use the optical sensor to take measurements of SpO2 measurement values at predetermined times or cycles.	Under at least the apparent construction based on Masimo’s Infringement Contentions, and to the extent that the preamble is limiting, Bailey discloses and/or renders obvious the computer-implemented method of claim 13. <i>See, e.g., Claim 13.</i> Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious further comprising, via the application, outputting one or more reminders to use the optical sensor to take measurements of SpO2 measurement values at predetermined times or cycles. For example, a user could set a reminder to take future measurements via an application on the iPhone of Bailey. To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
Claim 17	Prior Art
17. The computer-implemented method of claim 13, further comprising,	Under at least the apparent construction based on Masimo’s Infringement Contentions, and to the extent that the preamble is limiting, Bailey discloses and/or renders obvious the computer-implemented method of claim 13.

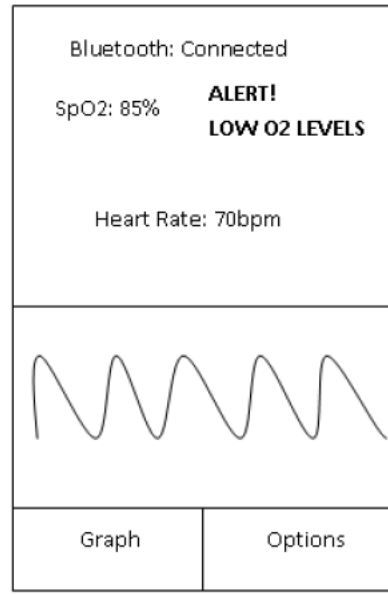
via the application, updating the representation of the physiological parameter to comprise one or more of a plurality of graphical representations of the SpO2 measurement values, the plurality of graphical representations comprising at least one of bar graphs or charts.	<i>See, e.g.,</i> Claim 13. Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious further comprising, via the application, updating the representation of the physiological parameter to comprise one or more of a plurality of graphical representations of the SpO2 measurement values, the plurality of graphical representations comprising at least one of bar graphs or charts. For example, Bailey discloses and/or suggests updating the graphical representation of the blood oxygen measurement values to allow the data to be viewed in real time: <i>See, e.g.,</i> Bailey, 50 (“The user interface used a few examples GUIs to help with development. The first was sample code from Apple that was used to develop the WiFi and FTP functionality. Specifically, the sample code named SimpleNetworkStreams [7] was used for the WiFi and SimpleFTPSample [6] was used for the FTP connection. They allowed for functioning connections that could then be modified to what was needed for the user interface. The plotting software used was from an open source plotting framework called Core Plot [2]. Core Plot simplified the graphing function of the user interface. It was able to periodically update the graph to the new data from the WiFi. This allowed the data to be viewed in real time.”). Bailey, Table 5:
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Table 5: Subsystem testing procedures and results

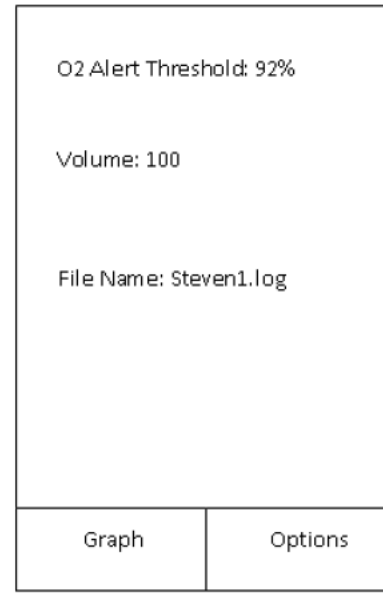
Subsystem	Requirement	Measurement Procedure	Metric	Expected Result	Actual Result	Pass/Fail
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User Interface	Transmit data via WiFi	Transmit text from computer to iPod Touch	Visual	Correct message displays on screen	Correct message displayed on screen	✓
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	GUI functions correctly	Use the program on iPod Touch to find faults/bugs	Visual	No faults/bugs	No faults/bugs found	✓
	Live data streaming	Observe the graph	Visual	Graph updates correctly	Graph updates in real time	✓
	Alert threshold functions correctly	Observe when levels go below threshold	Aural/Visual	Alert sounds when level falls below threshold	Alert sounds at low levels	✓
	Data logging	Inspect datalog generated from data received	Visual	Data is present and well formed	Data is present and well formed	✓
Digital Hardware	Communicate between microcontroller and ADC	Verify I2C signal lines	Volts	9 cycle clock and data	Stable clock	✓
Transimpedance Amplifier	Amplifier stable with photodiode on input	Apply step input and observe stability of output	Volts	Saturated or unsaturated output	Stable output for photodiode with large junction capacitance	✓
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	Bailey, 23 (“The microcontroller is the central unit controlling the functionality of most of the other systems. It sends signals to the LED driver, which adjusts the current going through the LEDs to produce a consistent and accurate light output. The photodiode senses the optical power (light) present on the other side of the sample (the ear in this case) and proportionally produces a current. This signal, in the form of an electrical current, is then sent to the transimpedance amplifier where it is converted into a voltage and amplified. The amplified signal is sent to the microcontroller where the signal data is processed and then sent to the wireless transmitter. The transmitter wirelessly communicates with the application on the iPhone to send and display the data on the user interface. There is also an LED temperature sensor in the housing that monitors the temperature of the LEDs and communicates with the microcontroller to adjust the current to the LEDs if the temperature near the skin rises to dangerous levels.”). Bailey, 47–48 (“The purpose of the user interface was to display the recorded data from the microcontroller via wireless interface. It also needed to be able to sound an alarm when a low oxygen level was reached. These two functional requirements had to be met for a successful design of the user interface. The alert signal was constrained by an audible level around 80dB so that it could be easily heard and responded to but not as loud as to damage a person’s hearing. TI also had a separate requirement that the user interface be implemented for an iPhone. This was attainable because Apple makes a software development kit (SDK) available for the public to develop software for the iPhone OS. The iPhone OS is the operating system that the iPhone and iPod Touch use for operation. Since an iPhone was more expensive than an iPod Touch and had features that the project did not require, the final device was used with the pulse oximeter prototype was an iPod Touch. The iPod Touch had Bluetooth and WiFi capabilities that could be used for wireless communication. The Bluetooth was limited by the SDK to peer-to-peer communication so we had to use the WiFi to connect to the intermediary pass-through device. It also had a speaker to accommodate the alert signal, a file system allow the saving of files, an LCD to display the GUI, and a development framework allowing access to these features. The SDK used Objective C as its primary language along with C, Java, and some C++ being able to be used as well. The SDK provided several tools to help in the application development process. These tools were Xcode, Interface Builder, and Instruments. Xcode is an integrated development environment (IDE) for writing code for Apple’s products. Interface Builder is a tool allowing the GUI to be created graphically rather than programmatically (writing code). Instruments is a utility that gave a plethora of vitals on the application in the debug process which
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	included a leak detector and memory usage. Apple provided these tools to developers to streamline the process of creating software for their products.”). Bailey, 53–54 (“Physically, the subsystems are integrated in three major parts: the components contained within the physical housing, the components contained within the sensor housing, and the components of the user interface. The flowchart presented in Figure 34 indicates how the various subsystems interface with one another. The microcontroller, LED driver, and wireless transmitter circuits are located on a single PCB, located within the main housing, which mounts to the arm of the wearer. The LEDs, photodiode, and transimpedance amplifier are located in the sensor housing, which clamps around the ear of the wearer. The sensor housing and main housing are connected via a wire and an FPC connector that is accepted by the main housing. The remaining portions of the pulse oximeter are implemented in the user interface itself, within the GUI application that is displayed on the iPod. The user interface is where data transmitted over WiFi from the microcontroller is received and displayed.”). Bailey, Figure 31:
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Graph View



Options View

Figure 31: Design template for user interface featuring 2 main screens

Bailey, Figure 32:



Figure 32: Final user interface GUI implemented on iPod Touch

Bailey, Figure 33:

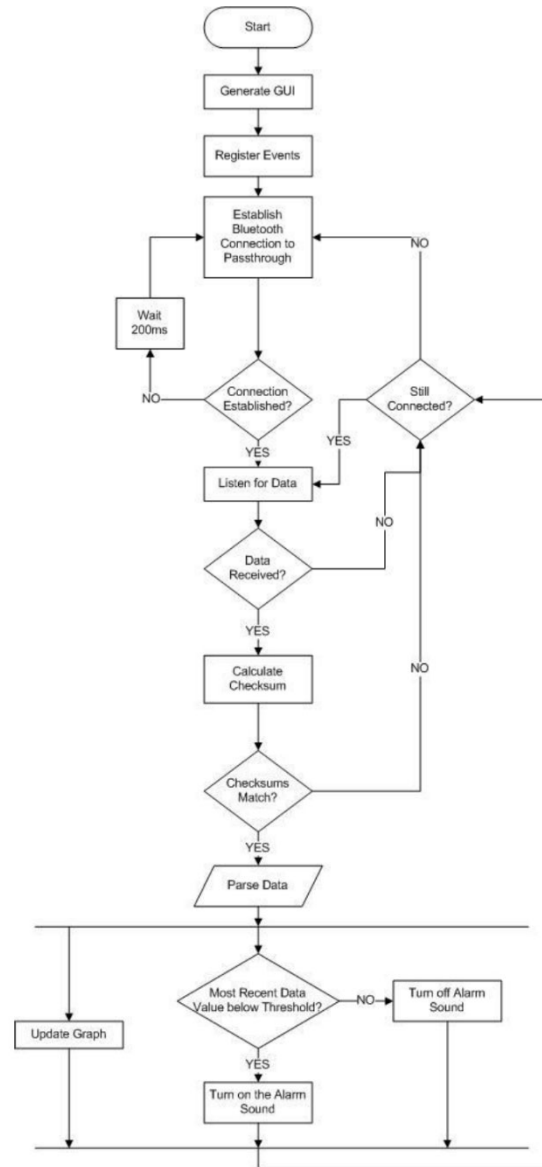


Figure 33: User interface program flow

Bailey, Figure 45:

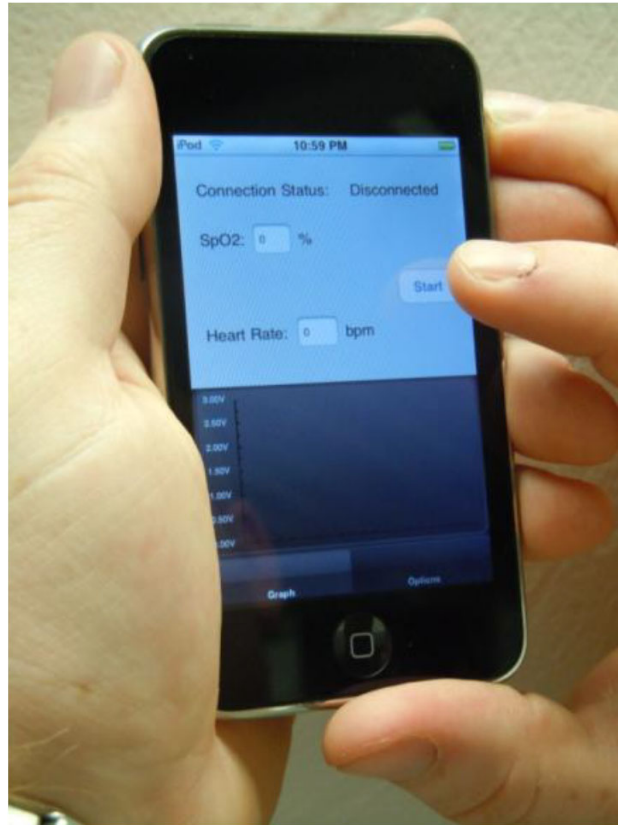


Figure 45: Final iPhone interface

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	Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions.
Claim 19	Prior Art
19. The computer-implemented method of claim 13, further comprising wirelessly transmitting the SpO2 measurement values from the SpO2 measurement system to the mobile computing device.	Under at least the apparent construction based on Masimo’s Infringement Contentions, and to the extent that the preamble is limiting, Bailey discloses and/or renders obvious the computer-implemented method of claim 13. <i>See, e.g., Claim 13.</i> Under at least the apparent construction based on Masimo’s Infringement Contentions, Bailey discloses and/or renders obvious further comprising wirelessly transmitting the SpO2 measurement values from the SpO2 measurement system to the mobile computing device. For example, Bailey discloses and/or suggests wirelessly transmitting pulse oximetry data to an iPhone for remote monitoring of oxygen saturation: <i>See, e.g., Bailey, 3 (“Pulse oximetry is widely maintained as the standard method for measuring a person’s blood oxygen saturation. Monitoring such a vital sign allows for detecting the onset and progression of various diseases and conditions that could result in tissue and organ damage or death due to lack of required oxygen delivery. The goal of this project was to design a pulse oximeter geared toward consumer use that could wirelessly transmit data to a portable device, such as a smartphone, for convenient, remote monitoring of oxygen saturation. This report describes the design process for developing a working prototype of the pulse oximeter.”).</i> Bailey, 8 (“The project entailed the design of a pulse oximeter intended primarily for consumer use. This requirement meant that the device needed to be user-friendly and as small and unobtrusive as possible. Pulse oximeters for consumer use have been on the market for a number of years now; however, the novelty of this project was mostly in the remote monitoring capability of the oxygen saturation data. TI wanted a device that could incorporate and demonstrate some of the wireless technology it has developed, so the decision was made to have a pulse oximeter with the ability to communicate data to a smartphone or other portable device. This potentially made the device smaller by not needing to incorporate a display and user interface on the oximeter itself. It also lent itself to

	situations such as remote monitoring of an infant’s oxygen levels during sleep to warn of dangerously low oxygen conditions that may be associated with Sudden Infant Death Syndrome (SIDS) or suffocation. However, the ultimate goal of the project was to develop a working oximeter prototype so TI could use it as a reference design. TI could then use the design and the knowledge accumulated throughout its development to better address the needs of their customers.”). Bailey, 63–64 (“The remote pulse oximeter project has resulted in a functional design that fulfilled all of the major functional requirements, as well as Texas Instruments’ request for a reference design for future customers in the medical device field. The unit is powered from a readily available 2032 battery, which is already widely implemented in several other medical devices. The form factor of the housing is such that it mitigates ambient light noise, protects the vital circuitry from damage in day-to-day use, and the novel ear-clip design is compatible with a wide range of potential users. In terms of functionality, the oximeter was able to output the user’s SpO2 level, with an accuracy comparable with commercial-grade sensors, in addition to dynamically calculating and displaying the user’s heart rate. The oximeter hardware was able to transmit data wirelessly, and can do so through any existing WiFi network. Lastly, the novel iPhone OS-based user interface proved to be a simple means of acquiring and displaying data, and due to the growing popularity of Apple’s iPhone and iPod touch, is currently available to over 70 million consumers. . . this pulse oximeter design has demonstrated that not only is it fully functional as a stand-alone device, but also that it could potentially be commercialized by Texas Instruments. The most expensive portions of this prototype, being the rapid-prototyped housing and PCB fabrication and population, would be significantly reduced if ordered in large numbers. Further, nearly all of the analog components are produced by Texas Instruments, further reducing cost. Expanding the user interface to include both PCs, Macs, as well as other smart-phone operating systems, such as Google Android, Palm WebOS, and Blackberry devices would account for a much larger percentage of the target consumer audience, reducing design costs associated with creating a proprietary user interface system.”). To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple’s Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of
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	success in combining Bailey with one or more of those references for the reasons set forth in Apple's Initial Invalidity Contentions.
Claim 20	Prior Art
20. The computer-implemented method of claim 13, further comprising, via the application, enabling the user to set reminders to take future measurements.	Under at least the apparent construction based on Masimo's Infringement Contentions, and to the extent that the preamble is limiting, Bailey discloses and/or renders obvious the computer-implemented method of claim 13. <i>See, e.g., Claim 13.</i> Under at least the apparent construction based on Masimo's Infringement Contentions, Bailey discloses and/or renders obvious further comprising, via the application, enabling the user to set reminders to take future measurements. For example, a user could set a reminder to take future measurements via an application on the iPhone of Bailey. To the extent Masimo contends or the Court determines that Bailey does not expressly or inherently disclose this limitation, it would have been obvious to combine Bailey with one or more references charted for this limitation in Apple's Initial Invalidity Contentions. A person of ordinary skill in the art would have been motivated to combine Bailey with one or more of those references for the reasons set forth in Apple's Initial Invalidity Contentions. A person of ordinary skill in the art would have had a reasonable expectation of success in combining Bailey with one or more of those references for the reasons set forth in Apple's Initial Invalidity Contentions.