

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner,

v.

MASIMO CORPORATION,

Patent Owner.

Case IPR2024-00290

U.S. Patent 8,190,223

DECLARATION OF R. JAMES DUCKWORTH, PHD

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

I reserve the right to supplement my opinions in the future to respond to any arguments or positions Apple may raise, taking account of new information as it becomes available to me.

Dated: 9/15/2024



R. James Duckworth, Ph.D

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I. INTRODUCTION

1. I, R. James Duckworth, Ph.D. have been retained by Knobbe, Martens, Olson & Bear, LLP, counsel for Patent Owner Masimo Corporation (“Masimo”). I am making this declaration at the request of Masimo in the matter of *Inter Partes* Review of U.S. Patent No. 8,190,223 (“the ’223 Patent”) (“IPR2024-00290”) challenging Claims 1-4, 6, 11-22, 27-28, 32, 34, 36-37, and 42-44. I understand that Masimo has asserted the ’223 Patent against Petitioner in *Apple Inc. v. Masimo Corporation and Sound United, LLC*, U.S. District Court for the District of Delaware, Case No. 1:22-cv-01378-MN (“the Delaware Litigation”).

2. I am being compensated for my work in this matter at my standard hourly rate for expert consulting services. My compensation in no way depends on the outcome of this proceeding. I have no financial interest in any of the parties to these matters.

II. INFORMATION AND MATERIALS CONSIDERED

3. I have been asked to provide technical expert opinions relating to the validity of the claims of the ’223 Patent. In conducting the analyses and forming the opinions set forth in this Declaration, I have reviewed and considered the ’223 Patent’s claims, specification, and file history. I have also reviewed and considered Apple’s petition for IPR2024-00290 (“the 290 Petition”), the prior art

references that Apple relies on, the declaration of Dr. Andrew Cockburn (EX1003), and all other exhibits that Apple attached to the 290 Petition.

4. I have also reviewed and considered at least the following materials in preparing this declaration.

Exhibit No.	Description
1001	U.S. Patent No. 8,190,223
1002	File History for U.S. Patent No. 8,190,223
1003	December 12, 2023 Declaration of Dr. Cockburn
1004	U.S. Patent No. 6,707,476
1005	U.S. Patent Pub. No. 2002/0184055
1006	U.S. Patent Pub. No. 2006/0064020
1007	U.S. Patent No. 6,151,518
1009	U.S. Patent No. 6,385,471
2030	Masimo Corp., Press Releases, 2005, http://www.masimo.com/news/2006.htm , captured Oct. 30, 2009
2031	Masimo Corp., Masimo rainbow® Pulse Co-Oximetry, https://professional.masimo.com/technology/co-oximetry/rainbow/ , captured Mar. 20, 2024
2032	Joint Claim Construction Brief Regarding Masimo Asserted Patents, No. 1:22-cv-01378, D.I. 295, Aug. 31, 2023, <i>Apple Inc. v. Masimo Corp.</i> (D. Del.)

Exhibit No.	Description
2033	Jim Duckworth, “Integrated First Responder Location and Physiological Monitoring,” Presentation, 1st Invitational Workshop on Body Area Network Technology and Applications, Worcester Polytechnic Institute, Jun. 19-20, 2011
2034	Yitzhak Mendelson, “Wearable Wireless Pulse Oximetry for Physiological Monitoring,” Presentation, PPL Workshop, Worcester Polytechnic Institute, Aug. 4 2008
2035	Y. Mendelson, J. Duckworth, et al. “A Wearable Pulse Oximeter for Remote Physiological Monitoring,” Proceedings of the 28th IEEE EMBS Annual Int’l Conf., Aug. 30 - Sept. 3, 2006
2036	U.S. Patent No. 6,091,530
2037	U.S. Patent No. 6,075,755
2038	U.S. Patent Application Publication 2002/0082488
2039	Merriam Webster’s Collegiate Dictionary, 11 th Ed. (2003)
2040	Cambridge Advanced Learner’s Dictionary (2003)
2041	The New Britannica/Webster Dictionary Reference Guide (1981)
2043	Transcript of August 23, 2024 Deposition of Dr. Andrew Cockburn

To the extent not listed above, I have also reviewed any other materials I discuss or cite herein.

5. In preparing this Declaration, I have considered my own knowledge and experience, including my work in the fields of electrical and computer engineering; my experience teaching within those subjects; my experience working with others involved in those fields; and the materials identified herein. I understand

my analyses and opinions, including my review of any materials cited herein, should be made from the perspective of a person of ordinary skill in the art related to the '223 Patent at the relevant time ("POSITA"). I understand the relevant time is March 1, 2005. Accordingly, my analyses and opinions are made from that relevant perspective. My testimony herein refers to the knowledge of a POSITA as of March 1, 2005, unless indicated otherwise.

6. Any figures appearing in this Declaration were prepared with the assistance of counsel and reflect my understanding of the '223 Patent and the materials discussed herein.

III. EXPERIENCE AND QUALIFICATIONS

7. My academic and professional background is in electrical and computer engineering. I obtained a Bachelor of Engineering degree in Electrical and Electronic Engineering from the University of Bradford, England and a Ph.D. Degree in Electrical and Electronic Engineering from the University of Nottingham, England. My Ph.D. thesis work concerned increasing the speed of data processing using multiple processing elements to complete computations in parallel and triggering computations based on the availability of data. After completing my Ph.D., I was a lecturer in the university's Computer Science Department for two years.

8. For more than 40 years, I have studied, designed, and worked in these fields. My experience includes over 35 years of teaching and research, including in the fields of pulse oximetry and other physiological monitoring technologies, low powered wireless sensor design, embedded system design, wearable technology, and indoor location tracking for first responders, among others.

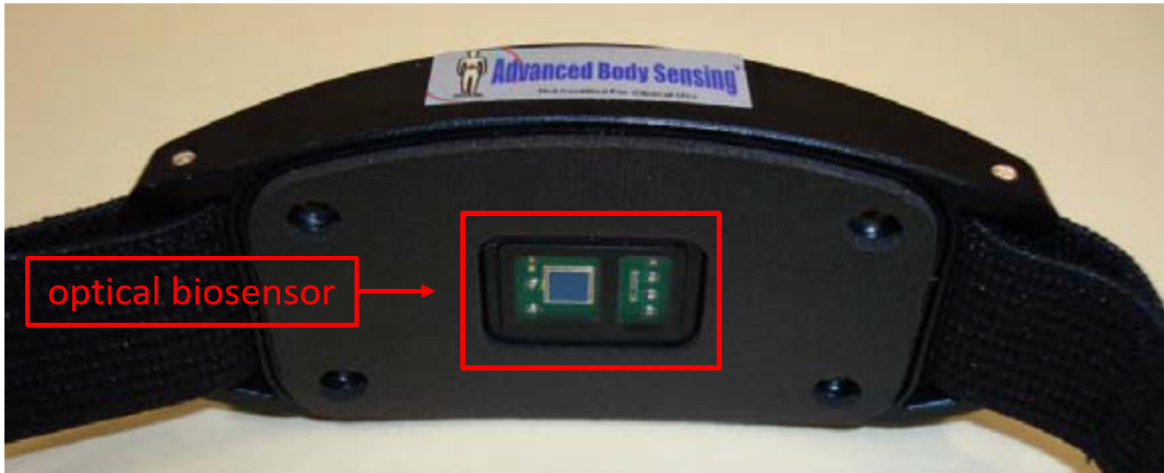
9. I have been a professor of electrical and computer engineering at Worcester Polytechnic Institute (“WPI”) for over 35 years. I joined WPI in January 1987 as an Assistant Professor of Electrical Engineering and was an Associate Professor of Electrical and Computer Engineering from July 1991 to June 2021. Presently, I am a Professor Emeritus of Electrical and Computer Engineering at WPI.

10. More recently, my research work has centered on Precision Personnel Location (PPL) for First Responders. This project started as a result of a tragic incident in Worcester in 1999, when six firefighters lost their lives in a warehouse fire. The overall goal of the PPL project is to protect the lives of emergency responders and to enhance their ability to accomplish their missions through research and development of systems for personnel location and tracking, movements, physiological and environment status monitoring, and command and control. The PPL project brought together diverse technical capabilities from other centers and laboratories at WPI to address important problems for emergency responders, the

most critical of which is precise location and path tracking for each person in a building.

11. From 2005 through 2008, I worked extensively with my colleague at WPI, Professor Yitzhak Mendelson, Ph.D., to research, publish papers about, design, and make, wearable pulse oximetry devices. In 2007, I formed a company with Professor Mendelson called Advanced Body Sensing to design and build small battery-powered wearable pulse oximeter devices that could be mounted on the forehead with a strap. To meet these design goals, we had to develop a completely new device, as our prior work concerned prototype devices that required an external power supply and additional instrumentation to operate. Together, Professor Mendelson and I developed, along with a small team of engineers, a new housing, optical sensor, and associated electronics, including the design and programming of microprocessor and wireless transmission components. As part of this project, we conducted physiological monitoring, including heart rate, respiration rate, oxygen saturation level, skin and environment temperature, posture and activity level, and core body temperature, each of which were monitored on a display. EX2033, 2.

12. Our design and development process led us to the final forehead-mounted pulse oximetry device shown below.

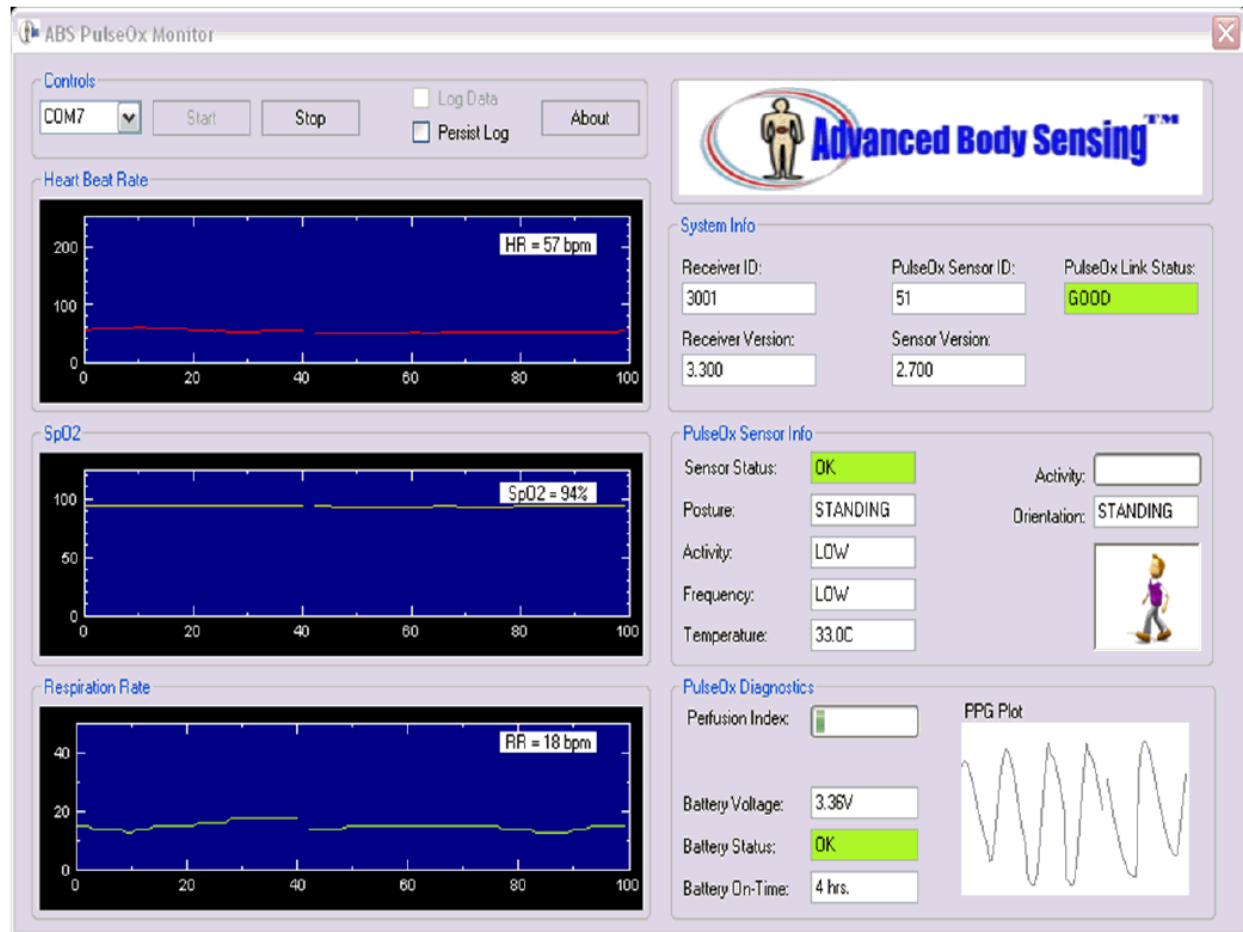


EX2034, 24 (annotated).

13. Our final device design allowed for a number of vital signs to be measured including oxygen saturation (SpO_2) and heart rate (HR). Our device had the potential for use in combat casualty care, such as for remote triage, and by first responders. It was used as part of the PPL project and by the United States Air Force.

14. One publication stemming from this work is titled “A Wearable Reflectance Pulse Oximeter for Remote Physiological Monitoring,” which published in 2006. I have included this publication as EX2035. As stated in the paper, our wearable Pulse Oximeter measured arterial oxygen saturation (SpO_2) and utilized the principle of photoplethysmography: “Pulse oximetry also relies on the detection of photoplethysmographic (PPG) signals produced by variations in the quantity of arterial blood that is associated with periodic contractions and relaxations of the heart.” EX2035, 1; *see also id.*, 2.

15. On August 4, 2008, Professor Mendelson presented on our Advanced Body Sensing work, including the above device, at an annual international technology conference held at WPI called the PPL Workshop. His presentation, titled “Wearable Wireless Pulse Oximetry for Physiological Monitoring,” is included as EX2034. As part of the presentation, Professor Mendelson provided visuals detailing the graphical user interface (GUI) that we developed in conjunction with a software engineer as part of our Advanced Body Sensing work. EX2034, 24, 25. As can be seen in this presentation, we developed a GUI which displayed graphical representations of various parameters measured over a period of time, including heart rate, SpO₂, and respiration rate. EX2034, 25. The GUI also provided information about the system and pulse oximeter used. *Id.*



Id.

16. In 2011, I presented this work at the 1st Invitational Workshop on Body Area Network Technology and Applications. I have included the presentation as Exhibit 2033.

17. Due to a change in direction by the principals of the company, Advanced Body Sensing was closed in 2014.

18. For over 30 years, I developed and taught courses at WPI relevant to the technology disclosed in the '223 Patent. The classes I developed and taught included associated laboratory exercises and projects, which I also developed. As

reflected in my curriculum vitae (EX2001), I developed and taught at least the following relevant courses: (1) Microprocessor System Design; (2) Modeling and synthesis of digital system using Verilog and VHDL; (3) VHDL for Modeling and Synthesis; (4) Computer System Design; (5) Multi-processor and Distributed Systems; (6) Advanced Computer System Design; and (7) Advanced Digital System Design with FPGAs. Many of these courses required students to design user interfaces to display the output from their projects.

19. In the course of my work at WPI, I have advised hundreds of engineering students in B.S. and M.S. programs and advised or co-advised approximately ten Ph.D. students that have completed Ph.D. degrees. Many of these student projects and research involved the design of user interfaces to display information related to the operation of the project.

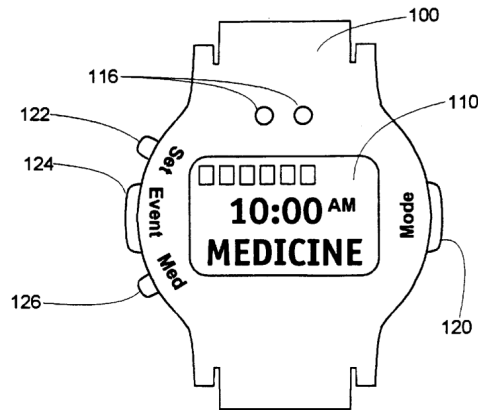
20. Additionally, I have authored or co-authored dozens of technical papers in refereed journals and conference proceedings. I have also given many conference presentations in the fields I have taught, researched, and worked.

21. Aside from my work at WPI, I have years of experience working with portable, battery powered sensors. During leave in approximately 2000 from WPI, I was the Vice President of Engineering for Adaptive Instruments. At Adaptive Instruments, I was responsible for designing and manufacturing a line of wireless industrial sensors for use in industrial process control, including the software

development of user interfaces for the wireless sensors. As a consultant, I helped program a small, battery powered device that included a microcontroller and custom LCD and was used to count the number of times an inhaler had been used. Also, as a consultant, I helped design and program a wrist-worn device that reminded the user throughout the day of the medications that needed to be taken. My work on the wrist-worn device led to the patent I obtained on a “Low Power Infrared Communication System,” U.S. Patent No. 6,091,530, included as EX2036. This wearable electronic device provided functionality on a display, contained a microcontroller to calculate and display messages, and incorporated buttons for user control. EX2036, Abstract, 2:7–17.¹

22. My technical work also contributed to features in the same device shown in U.S. Patent No. 6,075,755 titled “Medical Reminder System and Messaging Watch,” included as EX2037. As in my ’530 Patent above, the device incorporated a display with watch functionality (LCD display 110), contained a microcontroller to calculate and display medication reminder messages, and incorporated buttons (120, 122, 124, 126) for user control. EX2037, 6:28–65. Figure 1 of the ’755 Patent is shown below.

¹ Citations herein containing a colon (“:”) are to columns and lines, where available, or to pages and lines, where lines are numbered.

**Fig. 1**

EX2037, Fig. 1.

23. In addition to those listed above, I am a named co-inventor on several patents, including:

- a. U.S. Patent No. 7,292,189, issued in 2007, titled “Methods and Apparatus for High Resolution Positioning”;
- b. U.S. Patent No. 9,476,963, issued in 2016, titled “Search and Rescue Method and System”;
- c. U.S. Patent No. 9,658,309, issued in 2017, titled “Precision Location Method and System”; and
- d. U.S. Patent No. 9,846,042, issued in 2017, titled “Gyroscope Assisted Scalable Visual Simultaneous Localization and Mapping.”

24. Above, I have provided a short summary of my education and experience that I believe is most relevant to the analyses and opinions I have

expressed in this Declaration. A copy of my curriculum vitae, which describes in further detail my qualifications, responsibilities, employment history, honors, awards, professional associations, presentations, publications, and patents is included as EX2001.

IV. APPLICABLE LEGAL STANDARDS

25. I am an electrical and computer engineer by training and profession. The opinions I express in this Declaration involve the application of my knowledge and experience to the evaluation of the '223 Patent and certain prior art to the '223 Patent.

26. Although I have been involved as a technical expert in patent matters before, I am not an expert in patent law. Therefore, I have been advised of certain principles of patent law applicable in this matter, which I have used in arriving at my determinations and opinions. The paragraphs below express my understanding of the legal requirements I have used in forming my opinions.

A. Claim Construction

27. I understand that, in assessing the patentability of a patent claim, the Patent Office generally construes claim terms by giving them their ordinary and customary meaning, as they would have been understood by a POSITA at the time of the invention in view of the intrinsic record (patent specification and file history). However, I understand that the inventors may, in the patent specification, expressly

define a claim term to have a meaning that differs from the term's ordinary and customary meaning. I also understand that the inventors may disavow or disclaim certain claim scope, thereby departing from the ordinary and customary meaning, when the intrinsic record demonstrates that a clear and unambiguous disavowal or disclaimer has occurred. I understand that extrinsic evidence, such as relevant technical literature and dictionaries, may be useful in ascertaining how a POSITA would have understood a claim term, but the intrinsic record is the primary source for determining the meaning of claim terms. For the purposes of this review, and to the extent necessary, I have interpreted each claim term in accordance with the principles set forth in this paragraph.

B. Obviousness

28. I understand that a claim is unpatentable as “obvious” under 35 U.S.C. § 103 if the claimed subject matter as a whole would have been obvious to a POSITA at the time of the invention. I also understand that an obviousness analysis takes into account the following factors, which are sometimes referred to as the *Graham* factors: (1) the scope and content of the prior art, (2) the differences between the claimed subject matter and the prior art, (3) the level of ordinary skill in the art at the time of the invention, and (4) “objective indicia of non-obviousness,” also referred to as secondary considerations of non-obviousness. I understand that these objective indicia include considerations such as whether there was: (i) any

unexpected result(s); (ii) skepticism of the invention; (iii) a teaching away from the invention; (iv) failure of others to find the solution(s) provided by the claimed invention; (v) copying by other companies; (vi) commercial success due to the merits of the claimed invention; (vii) praise by others for the invention; and (viii) a long-felt need in the industry for the claimed invention.

29. In determining the scope and content of the prior art, it is my understanding that a reference is considered appropriate prior art if it falls within the field of the inventor's endeavor. In addition, a reference is appropriate prior art if it is reasonably pertinent to the particular problem with which the inventor was involved. A reference is reasonably pertinent if it logically would have commended itself to an inventor's attention in considering his or her problem. If a reference relates to the same problem as the claimed invention, that supports use of the reference as prior art in an obviousness analysis.

30. To assess the differences between prior art and the claimed subject matter, it is my understanding that 35 U.S.C. § 103 requires the claimed invention to be considered as a whole. This "as a whole" assessment requires showing that a POSITA at the time of invention, confronted by the same problems as the inventor and with no knowledge of the claimed invention, would have selected the elements from the prior art and combined them in the claimed manner.

31. It is my further understanding that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include: combining prior art elements according to known methods to yield predictable results; simple substitution of one known element for another to obtain predictable results; a predictable use of prior art elements according to their established functions; applying a known technique to a known device (method or product) ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and some teaching, suggestion, or motivation that would have led a POSITA to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

32. I understand that the obviousness analysis must be performed from the perspective of a POSITA at the time of the alleged invention. I understand this requirement is to help avoid using impermissible hindsight in the analysis. I further understand that the claims of the patent-at-issue must not be used to provide a road map for obviousness; instead, the claims would have been obvious only if a POSITA, without knowledge of the patent-at-issue, would have been motivated to combine the teachings of the prior art to arrive at the claimed invention and had a reasonable expectation of success in doing so.

33. I understand that an assessment of what a reference discloses or teaches—for purposes of an anticipation analysis or an obviousness analysis—must be conducted from the perspective of a POSITA at the time of the invention. In other words, a reference discloses or teaches a claim limitation if a POSITA would, at the relevant time, interpret the reference as expressly, implicitly, or inherently disclosing the claim limitation. I further understand that a reference does not need to use the exact language of the claim to disclose a claim limitation. I also understand that something is only “inherent in,” and therefore taught by the prior art, if it necessarily flows from the explicit disclosure of the prior art. I understand the fact that a certain result or characteristic may be present in the prior art is not sufficient to establish inherency.

34. I understand that the obviousness analysis also must show that the prior art, taken as a whole, enables a POSITA to make and use the claimed invention.

35. Applying these legal standards to Claims 1-4, 6, 11-22, 27-28, 32, 34, 36-37, and 42-44 of the '223 Patent, I believe Claims 1-4, 6, 11-22, 27-28, 32, 34, 36-37, and 42-44 would not have been obvious to a POSITA based on the grounds asserted by Apple in its petition, as discussed below.

V. BACKGROUND OF THE TECHNOLOGY

A. '223 Patent (EX1001)

36. The '223 Patent is titled “Noninvasive Multi-Parameter Patient Monitor” and issued May 29, 2012. The '223 Patent claims priority to provisional application nos. 60/657,281, 60/657,596, 60/657,268, and 60/657,759, each of which was filed on March 1, 2005. The '223 Patent discloses and claims improvements to displaying multiple physiological parameters when space is limited on a display. EX1001, Abstract.

37. The '223 Patent explains that the monitored physiological parameters can include noninvasive measurements such as pulse rate, blood oxygen (SpO₂), carbon monoxide saturation (HbCO), total hemoglobin (Hbt), methemoglobin (HbMet), and others. *Id.*, Abstract, 2:59-65. There “is a need to provide patient monitors capable of displaying multiple physiological parameters, other than or in addition to SpO₂, plethysmograph waveforms, or pulse rates.” *Id.*, 2:52-54. The '223 Patent enables “more parameter data to be displayed than the available physical display area or real estate.” *Id.*, 3:12-14. For example, a monitor “may be displaying a first parameter, such as a plethysmograph, and upon determining measurements indicating that HbMet is trending toward an alarm condition, the monitor may automatically switch from displaying the first parameter to the alarming parameter, or in this case, a trend of the alarming parameter.” *Id.*, 5:20-25.

38. The '223 Patent also provides figures depicting replacing one physiological parameter with another. Figs. 9 and 10 are expanded versions of the display shown on the device depicted in Fig. 7. *Id.*, 16:35-36, 16:45-48, 16:59-61. As shown below, the device in Fig. 9 displays SpO2 and heart rate. *Id.*, Fig. 9. These parameters are replaced in Figs. 10 with HbCO and HbMet, respectively. *Id.*, Fig. 10, 16:59-17:15.

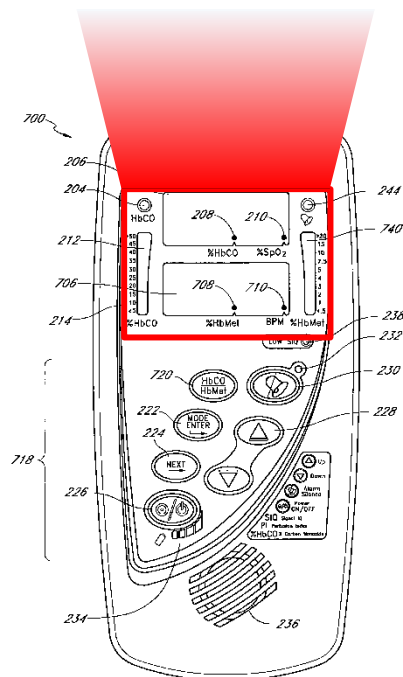
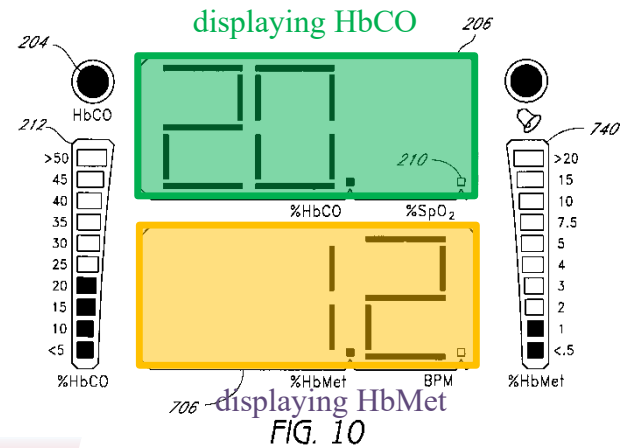
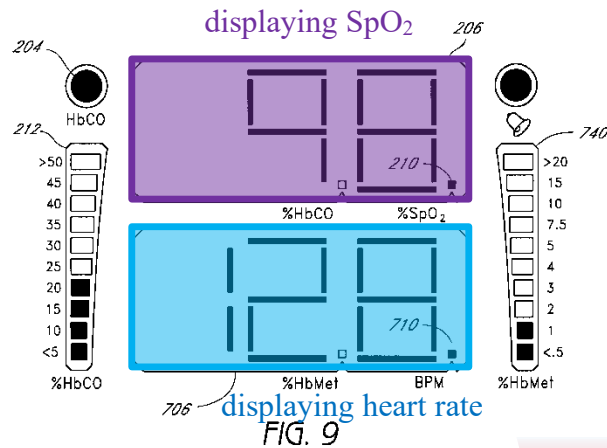


FIG. 7

Id., Figs. 7, 9, 10 (annotations added).

39. I have reproduced Claim 1 of the '223 Patent below as an example claim. I have emphasized the claim language directed to replacing the value of one physiological parameter with another based on an event. For convenience, I have adopted Apple's labeling of the claim elements.

Limitation	Claim Language
[1pre]	A patient monitor capable of measuring at least two physiological parameters,
[1a]	the patient monitor comprising a display capable of displaying a measured value of a first physiological parameter of body tissue of a monitored patient in a first display area or displaying a measured value of a second physiological parameter of the body tissue in a second display area where the first display area and the second display area comprise at least some common display area capable of displaying information
[1b]	wherein in the common display area, <i>the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured values based on an occurrence of an event,</i>
[1c]	<i>the event being the measured value of one of the first or second physiological parameters approaching one or more threshold values indicative of a worsening state of a patient.</i>

B. Apple's Prior Art References

1. Naghavi (EX1005)

40. U.S. Patent Pub. No. 2002/0184055 to Naghavi et al. is titled “System And Method For Healthcare Specific Operating System.” Naghavi describes a “personal healthcare management system 10, comprises components that work together to provide an out-of-hospital, affordable, real time, automated intelligent system for early managing and risk stratifying of patients 1 based on their symptoms, physiologic data (ECG, BP) and their past medical history.” EX1005, ¶24. The personal healthcare management system 10 includes a computer 11 and one or more

home-based medical devices 20. *Id.*, ¶¶25-26. The medical devices 20 may comprise “electrocardiograph device, a blood pressure measurement device, thermometers, digital biochemical devices, glucometers, and physiological laboratory kits, digital biomechanical monitoring devices, peak-flow meter, and the like, or combinations thereof.” *Id.*, ¶32.

41. The personal healthcare management system 10 gathers information about the patient “such as past medical history, symptoms, risk factors, ECGs, and the like, and stores them in heartfolio database 30.” *Id.*, ¶41. The personal healthcare management system 10 “processes the current symptoms, past medical clinical information 30” of the patient and “dynamic physiologic data for risk stratification and management” to create an output. *Id.*, ¶44. Outputs can range from “simple patient advice to more sophisticated actions like activating an alarm system or informing health care provider automatically.” *Id.*, ¶45.

42. In the display of the personal healthcare management system 10, a patient can find items “in a single visual display of displayed items comprising menus, health objects, icons, and options.” *Id.*, ¶58. The icons and health objects on the display “may change in color, shape, order, or other mutable attribute according to different time schedules and severity or degree of some of findings, e.g. the shape, size, color, and relative position of each icon can change according to a current health status and health plan of patient 1.” *Id.*, ¶59.

2. Hochstedler (EX1004)

43. U.S. Patent No. 6,707,476 to Hochstedler is titled “Automatic Layout Selection For Information Monitoring System.” Hochstedler describes a graphical user interface (GUI) to display medical information. EX1004, Abstract, 1:49-50. The GUI in Hochstedler describes a method to “automat[e] the change of the layout of a GUI.” *Id.*, 1:54-55. Hochstedler describes how it changes the layout of the GUI:

The system determines the active or currently used components of the current layout and monitors the system to detect changes in the system’s capabilities (e.g., an additional sensor is added) or changes in the system’s environment (e.g., a switch is made from one medical procedure to another). After detecting one or more changes in the system, the system reviews a group of available layouts and determines which, if any, more closely matches the system as changed. If an available layout more closely matches the changed system, then the system may implement an automatic change or switch of the layout or prompt the user to change the layout by presenting a selection of layout options.

Id., 1:55-67.

44. Hochstedler further explains the type of changes: “an overall layout (a layout with multiple, and usually different components),” “a sub-layout (a more specialized version of an overall layout),” “waveform window (a component designed to illustrate waveforms),” or “a parameter block (a component designed to show non-waveform information).” *Id.*, 2:7-13.

3. Burnes (EX1006)

45. U.S. Patent Pub. No. 2006/0064020 to Burnes et al. is titled “Clinic Dashboard Monitor.” Burnes describes a “remote patient monitoring system” that “displays a summary table of categorized parameter values for multiple patients simultaneously.” EX1006, Abstract. The system analyzes data received from various medical devices used to monitor patients. *Id.*, ¶31. The system displays summary parameter values for multiple patients simultaneously. *Id.* “The monitored parameters available for display will in part depend on the type of device the patient has and the particular monitoring features that are enabled.” *Id.*, ¶33. Various icons can be used to indicate the status of the patient or parameter, such as an exclamation point for an alert indicating a need for clinical attention, a solid circle as a warning symbol, and an “OK” as a normal symbol. *Id.*, ¶50. An example of a display in Burnes is shown below.

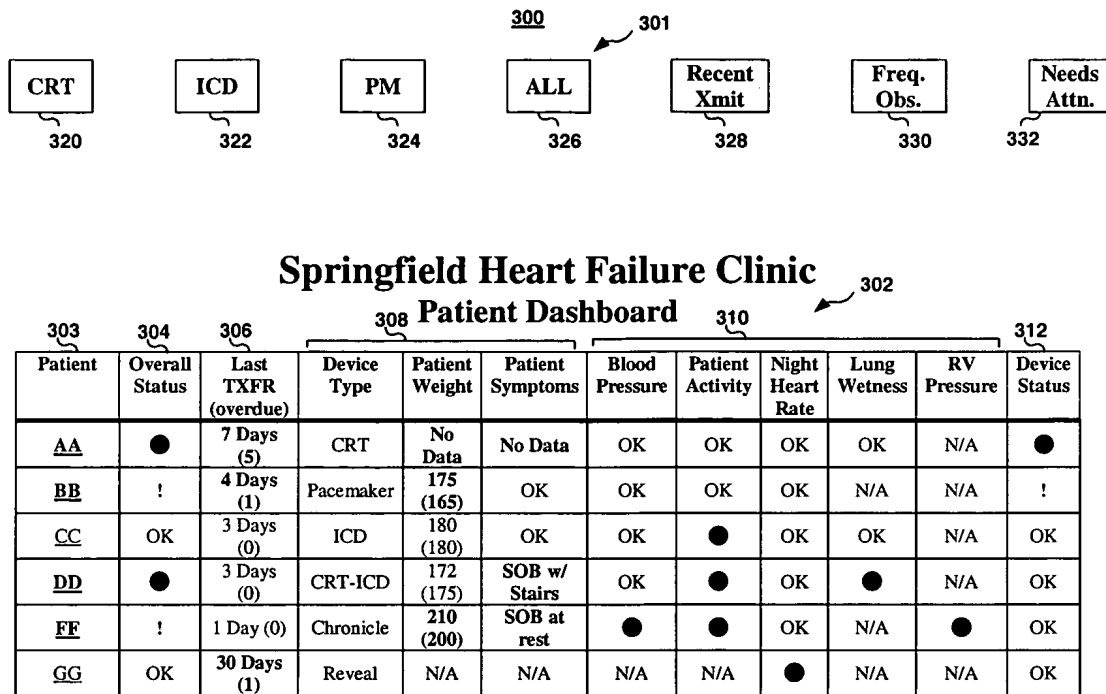


FIG. 7

Id., Fig. 7.

4. Hayashi (EX1007)

46. U.S. Patent No. 6,151,518 to Hayashi is titled “Instrument For Measuring Concentrations Of Constituent Parts Of Blood.” Hayashi describes a “blood-constituent concentration measuring instrument” which purports to optically measure the “concentrations of the constituent parts of blood.” EX1007, 3:29-32. Blood constituents Hayashi purports to measure include “a hematocrit value, oxyhemoglobin concentration, deoxyhemoglobin concentration, carboxyhemoglobin concentration, methemoglobin concentration, and an optical path length change.” *Id.*, 6:33-37.

5. Mortz (EX1009)

47. U.S. Patent No. 6,385,471 to Mortz is titled “System For Pulse Oximetry Spo2 Determination.” Mortz describes a “system for noninvasively calculating the oxygenation of hemoglobin in arterial blood using a pulse oximeter.” EX1009, 2:25-28. Mortz describes a pulse oximeter system that calculates pulse rate and oxygen saturation. *Id.*, 5:16-21.

VI. LEVEL OF ORDINARY SKILL IN THE RELEVANT ART

48. I understand that obviousness must be evaluated from the perspective of what would have been known or understood by a person of ordinary skill in the art (“POSITA”) at the time of the invention. I have been informed by counsel and understand that the priority date of the ’223 Patent is March 1, 2005. I understand that date to be the time of the invention for my analysis. I have been informed that the level of ordinary skill in the art may be determined by various factors including: (a) the type of problems encountered in the art, (b) prior art solutions to those problems, (c) the rapidity with which innovations are made, (d) the sophistication of the technology, and (e) the educational level of active workers in the field.

49. The field of art relevant to the ’223 Patent is multi-parameter patient monitors capable of determining multiple physiological parameters and display the monitored parameters. EX1001, Abstract. A POSITA at the time of the ’223 Patent would be a person with a Bachelor of Science degree in an academic discipline

emphasizing the design of software or user interfaces, in combination with training or at least one to two years of related work experience with the design of user interfaces. Alternatively, the person could have also had a Master of Science degree in a relevant academic discipline with less than a year of related work experience in the same discipline.

50. A POSITA would also include persons with a working knowledge of physiological monitoring technologies and/or optical sensors used in physiological monitoring technologies. The person would have had a Bachelor of Science degree in an academic discipline emphasizing the design of electrical, computer, software, or optical technologies, in combination with training or at least one to two years of related work experience with capture and processing of data or information, or designing and using optical sensors or systems, including but not limited to physiological monitoring technologies. Alternatively, the person could have also had a Master of Science degree in a relevant academic discipline with less than a year of related work experience in the same discipline.

51. I understand that Apple has proposed a different level of skill in the art at the time of the invention of the '223 Patent, which is as follows:

[O]ne of ordinary skill in the art relating to, and at the time of, the invention of the '223 Patent would have had at least a bachelor's degree in computer science, computer engineering, electrical engineering, biomedical engineering, human-computer interaction, or a related field, and would have had at least two years of relevant work experience in the design and development of graphical user interfaces (GUIs), human-

computer interfaces, or equivalents thereof. Less work experience may be compensated by a higher level of education and vice versa.

EX1003, ¶22.

52. I understand that Apple does not contend that the level of skill in the art affects the patentability of the challenged claims. EX1003 ¶22. While the level of skill I identified above is more accurate, for at least the reasons set forth below, I believe that the claims' patentability is confirmed regardless of which definition of the level of ordinary skill in the art is adopted.

53. I understand the capabilities of a POSITA as proposed by myself and Apple as of March 1, 2005. Indeed, I possessed at least those capabilities myself before, during, and after that time. As a professor of electrical and computer engineering for over three decades, I have taught many such persons and understand the level of knowledge and skill that persons with such academic experience would have possessed in March 2005. Through my education and decades of experience, such as teaching relevant engineering courses, I am familiar with what a POSITA would have understood in March 2005 and qualified to provide opinions from the perspective of a POSITA at the relevant time.

VII. CLAIM CONSTRUCTION

A. Measured Value (All Claims)

54. All claims of the '223 Patent recite displaying the "measured value[s]" of a first physiological parameter (or blood parameter) and a second physiological

parameter (or blood parameter). A POSITA would have recognized that, based on the claims and specification of the '223 Patent, the physiological or blood parameter must be currently detected and determined by the monitor.

55. First, a POSITA would have recognized that the plain claim language of the '223 Patent requires the parameters, whether physiological or blood, to be *currently* detected and determined by the monitor. All claims of the '223 Patent recite either replacing or changing the display of a measured value based on an “event” or other occurrence. *See, e.g.*, limitations [1b], [13b], [15b], [18b], [21b], [27c], [28c]. These claimed events or other occurrences involve a parameter which is (1) approaching or crossing a threshold (limitations [1c], [13c], [27c], [28c]), (2) alarming (limitation [15c]), (3) more critical than the other (limitation [18b]), or (4) otherwise indicating a worsening state of a patient (limitation [21b]). *See* Limitations [1c], [13c], [15c], [18b], [21b], [27c], [28c]. In order for the claimed patient monitors and methods to identify that an event or other occurrence has happened, the patient monitor must be *currently* monitoring the first and second parameter. As such, based on the claim language of the claims of the '223 Patent, a POSITA would have understood that the “measured values” of the first and second physiological parameters (or blood parameters) must be *currently* measured for all claims.

56. Other claims of the '223 Patent confirm this understanding of “measured value.” For instance, Claim 19 recites “measured values of the first and

second physiological parameters are determined using an output signal of a light sensitive detector capable of detecting light attenuated by the body tissue.” A POSITA, reading this claim language, would have understood that the measured value is based on an output signal that is *actively* (e.g. *currently*) measured by the light sensitive detector.

57. Other claims terms of the ’223 Patent are consistent with the understanding that a “measured value” must be *presently* measured. For example:

- “an invasively measured value” (Claims 5, 23);
- “a non-invasively measured value” (Claim 6); and
- “glucose” (Claim 7).

58. Second, a POSITA, in view of the specification of the ’223 Patent, would have understood that a “measured value” must be *currently* measured. The specification describes a device that uses a sensor to “produce[] sufficient data for the determination of HbCO, HbMet, Hbt, and SpO2, SpO2 only, SpO2 and HbMet, any combination of the foregoing or other parameters, or the like.” EX1001, 9:55-

59. Using the data produced, the device obtains and determines “the many parameters capable of being measured by the monitor.” EX1001, 10:6-9. A POSITA would understand that these passages describe calculating the measured parameters from the data collected by the monitor.

The specification for the '223 Patent also explains the patient monitor has a display for displaying these values as measured. The display of the monitor can display:

- measured pulse rate in beats per minute (“BPM”) (*Id.*, 11:12-14);
- measured HbCO values (*Id.*, 11:32-33);
- measured values of SpO₂ to HbCO (*Id.*, 11:41-42);
- one or more of the measured parameters (*Id.*, 11:59-60);
- measured values of perfusion over time (*Id.*, 13:59);
- measured values of SpO₂, HbCO, BPM, perfusion (*Id.*, 15:22-23);
- measured values of SpO₂ (*Id.* 14:46); and
- measured values of additional parameters, such as, HbCO (*Id.*, 14:54-55).

59. From the repeated uses of “measured values” throughout the '223 Patent, a POSITA would have understood that a “measured value” refers to a parameter being detected and determined by the patient monitor, such as from sensor data. Accordingly, a POSITA would have understood a “measured value” is based on data being currently collected.

60. Thus, from the specification and claims of the '223 Patent, a POSITA would have understood that a “measured value” refers to “a value of a parameter currently detected and determined by the monitor.”

B. “First” And “Second” (All Claims)

61. All claims of the '223 Patent recite displaying a *first* physiological (or blood) parameter, and a *second* physiological (or blood) parameter. *See* Limitations [1a], [13a], [15a], [18a], [21b], [27a], [28a]. A POSITA would have recognized that, by reciting both a *first* parameter, and a *second* parameter, each claim requires at least two distinct “measured value[s],” each of which represents a *different* parameter.

62. This understanding is confirmed by several claims of the '223 Patent which specifically identify the parameters measured, such as oxygen saturation as the *first* parameter, and carbon monoxide as the *second* parameter. In each of these claims, the *first* parameter is a different parameter than the *second* parameter, such as:

- “the measured value of the first physiological parameter comprises an indication of oxygen saturation and the measured value of the second physiological parameter comprises an indication of carbon monoxide saturation” (Claims 8, 24);
- “the measured value of the first physiological parameter comprises an indication of oxygen saturation and the measured value of the second physiological parameter comprises an indication of methemoglobin saturation” (Claims 9, 25); and
- “the measured value of the first physiological parameter comprises an indication of carbon monoxide saturation and the measured value of the second physiological parameter comprises an indication of methemoglobin saturation” (Claim 10, 26).

63. In view of the plain claim language, a POSITA would have recognized that the measured value of a *first* parameter refers to a *different* measured value than the measured value of a *second* parameter.

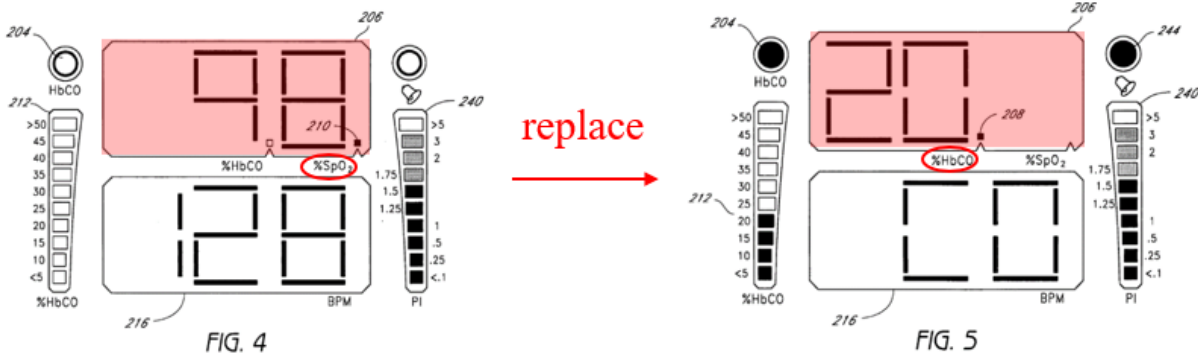
C. “Replaced” / “Replaces,” / “Replacing” (Claims 1, 15, 18, 21, 27)

64. Independent Claims 1, 15, 18, 21, and 27 each contain a variation of a limitation where the display of a measured value of a physiological parameter (or blood parameter) is “replaced” (“replacing” in Claim 21 or “replaces” in Claim 27) with a measured value of another physiological parameter (or blood parameter). Referring to Apple’s limitation numbering, these are limitations [1b], [15b], [18b], [21b], and [27b]. *See* Pet., vi–xi. For simplicity, in this section I will generally refer to the term “replaced,” but it should be understood my opinion also applies to the terms “replacing” and “replaces” in Claims 21 and 27, respectively.

65. The term “replaced,” as generally used in the English language, means “to take the place of.” *See, e.g.*, EX2039, 1056 (“*to take the place of* especially as a substitute or successor”); EX2040, 1058 (“*to take the place of* something, or to put something or someone in the place of something or someone else”). Everyday usage of the term “replaced” confirm this understanding. For example, when a person “replaces” a car windshield, the original or old windshield does not remain on the car. Similarly, when a person “replaces” a bad habit with a good habit, the person no longer keeps the old habit.

66. The '223 Patent uses the terms “replace” and “replaced” consistent with the above understanding. For example, the specification instructs a caregiver to “replace the batteries” when the final LED indicating battery life begins to flash. EX1001 at 12:62-65. Elsewhere in the specification, it explains the memory device of the sensor used with the patient monitor may store “sensor life data indicating whether some or all sensor components have expired and *should be replaced.*” *Id.* at 8:1-2. A POSITA, in view of the specification, would recognize that the old batteries and expired sensors do not remain after they are replaced. Like the batteries and sensor, a POSITA would recognize that when a measured value of a first parameter is “replaced” with a measured value of a second parameter, the display no longer shows the measured value of the first parameter. In its place, the display shows the measured value of the second parameter.

67. Figures 3, 4, and 5 confirm the meaning of “replaced” in the context of the '223 Patent. For example, Figure 3 of the '223 Patent illustrates an “exemplary display of the patient monitor.” EX1001, FIG. 3, 14:20-24. Figures 4 and 5 illustrate how the display of Figure 3 replaces a measured value of a first physiological parameter (SpO₂ in Fig. 4) with a measured value of a second physiological parameter (HbCO in Fig. 5). *See id.*, 4:15-21, 14:45-46 (explaining in Fig. 4, the display shows SpO₂), 14:66-15:2 (explaining in Fig. 5, the display “has shifted the data to the left to quickly and efficiently indicate that the displayed parameter is *other than SpO₂*”).



Id., FIG. 4, FIG. 5 (annotations added).

68. The '223 Patent also explains that the purpose of the invention is to “enabl[e] more parameter to be displayed than the available physical display real estate” permits. EX1001, Abstract; *see also id.*, 3:10-14, 10:6-9. The '223 Patent accomplishes this goal by removing one measured value of a parameter from the display of the patient monitor and displaying the measured value of a different parameter in its place. EX1001, 5:20-25 (“For example, a patient monitor may be displaying a first parameter, such as a plethysmograph, and upon determining measurements indicating that HBMet is trending toward an alarm condition, the monitor may automatically switch from displaying the first parameter to the alarming parameter...”); *see also id.* at 10:6-12 (explaining that in a display with “insufficient space,” the display “cycle[s] through two or more measured parameters in an area common to both parameters.”).

69. The *ex parte* reexamination of the '223 Patent confirms that a measured value of a parameter is no longer visible on the display once it is “replaced” by a measured value of a different parameter. The '223 Patent originally issued on May

29, 2012. On September 13, 2012, an anonymous third-party requester filed a request for an *ex parte* reexamination of Claims 1-47 of the '223 Patent. EX1020, 734. In the request, the requester alleged the claims of the '223 Patent were anticipated by U.S. Patent Application Publication 2002/0082488 ("Al-Ali"), or obvious over Al-Ali in combination with other references. EX1020, 734-739, 746.

70. The third party requester argued Al-Ali disclosed "chang[ing] from displaying one of the measured values of the first or second physiological parameter ... to displaying the other of the measured values based on an occurrence of an event." EX1020, 755. To support their position, the requester stated that "the common display area of Al-Ali changes from showing a first set of physiological parameters measured from a particular tissue site, to displaying a first and a second set of physiological parameters measured from first and second tissue sites." *Id.*

71. The requester alleged Al-Ali rendered obvious "replacing the display of the measured value of the first physiological parameter with a display of a measured value of a second physiological parameter," as recited in Claim 21 of the '223 Patent. EX1020, 767-68. The requester acknowledged Al-Ali did not "disclose replacing the measured value shown in the single site display with the measured value of the second physiological parameter shown in the multi-site display," but alleged that "this is nothing more than a trivial and obvious substitution of design elements." EX1020, 768-69.

72. On October 23, 2012, the PTO granted the request for *ex parte* reexamination. EX1020, 634-42.

73. In the first office action during reexam, the Examiner found Claims 21-26 patentable over the prior art for the following reasons:

Claims 21-26 define over the art in that none of the art replaces the display of a first measured value with a second measured value when a change in the measurement of the second value indicates a worsening of the patient's condition. As noted above, *Al-Ali does not replace the first value, but switches from displaying the first value to displaying first and second values*. He [sic] request asserts that while Al-Ali does not replace the value, this is nothing more than trivial and obvious substitution of design elements. The examiner disagrees, noting that there is not sufficient evidence to support this position. The only support is a statement by the requester. Bald assertions are insufficient to establish obviousness. As such, claim 21, and its dependent claims 22-26, define over Al-Ali alone, as presented in the request.

EX1020, 99.²

74. Thus, the Examiner expressly distinguished *replacing* a first measured value with a second measured value (*e.g.*, display A → display B) from switching to displaying both the first and second measured values (*e.g.*, display A → display A & B). In response to the first office action, Masimo agreed with the Examiner's statements regarding the patentability of Claims 21-26 and amended the other claims to include a similar "replaced" or "replacing" limitation. EX1020, 56-74. Specifically, Masimo stated:

² All emphases are added unless noted otherwise.

The Patentee agrees with the Office Action that the elements of Claim 21 are not taught or suggested by [Al-Ali]. The Patentee herein amended independent Claims 1, 15, 18 and 27 to more specifically claim a first display element is being replaced by a second display element, similar to Claim 21 above.

EX1020, 78.

75. After Masimo amended Claims 1, 15, 18, and 27 to also recite the “replaced” limitation, the Examiner issued a Notice of Intent to Issue a Reexamination Certificate. EX1020, 5-10. In the statement of reasons for patentability, the Examiner reaffirmed that the “replaced,” “replacing,” and “replaces” limitations require that the first measured value is no longer displayed after it is replaced. Specifically, the Examiner stated:

Claims 1-6, 8-12, 14-27, 29-44, all define over the art in that ***none of the art replaces the display of a first measured value with a second measured value*** when a change in the measurement of the second value indicates a worsening of the patient's condition. ***Al-Ali does not replace the first value, but switches from displaying the first value to displaying first and second values.*** The request asserts that while Al-Ali does not replace the value, this is nothing more than trivial and obvious substitution of design elements. The examiner disagrees, noting that there is not sufficient evidence to support this position. The only support is a statement by the requester. Bald assertions are insufficient to establish obviousness.

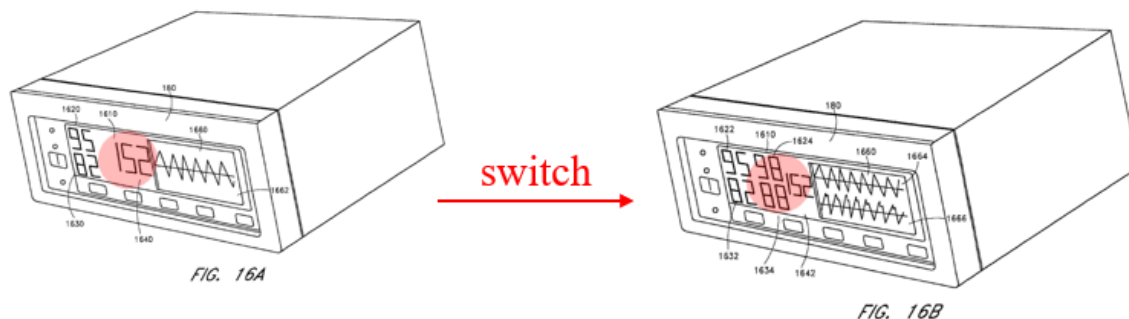
EX1020, 6. Thus, the Examiner again distinguished *replacing* a first measured value with a second measured value (e.g., display A → display B) from switching to displaying both measured values (e.g., display A → display A & B).

76. In the Notice of Intent, the Examiner also stated that:

In addition, when an alarm condition is detected, Al-Ali switches from displaying one parameter to displaying all of the parameters to allow the user to better view the conditions that caused the alarm (see Al-Ali paragraph [0095]). As such, there would be *no motivation to simply replace the first parameter with the second, as it would contradict the direct teaching in the reference of allowing the user to see the entirety of the patient's condition.* No other art of record teaches this feature.

EX1020, 6-7. A POSITA would have understood, like the Examiner did, that a measured value which is “replaced” is removed from the display.

77. A POSITA, in view of the reexamination, would have also looked to the disclosures of Al-Ali to confirm the difference between “switching,” and “replacing.” Paragraph 95 of Al-Ali, cited by the Examiner, explains the disclosed device has “[a] push button, menu selection [that] allows the user to manually switch between the single site display (FIG. 16A) and the multi-site display (FIG. 16B).” EX2038, ¶95. Annotated versions of Fig. 16A and Fig. 16B are reproduced below to visually exemplify *switching* from displaying one parameter to displaying all of the parameters, allowing the user to view the entirety of the patient’s condition.



EX2038, FIG. 16A, FIG. 16B (annotations added).

78. The Examiner allowed Claims 1, 15, 18, 21, and 27 specifically because Al-Ali did not disclose that the display of a first measured value is replaced by the display of a second measured value. The Examiner distinguished replacing, as required by the claims, from “switch[ing] from displaying the first value to displaying first and second values.” EX1020, 6. The Examiner reaffirmed that under the ordinary and customary meaning of “replaced,” the first measured value is not displayed after it has been replaced by the second measured value. EX1020, 6-7.

79. Thus, a POSITA, in view of the claims of the '223 Patent, the specification, the file history (including reexamination of the '223 Patent), and the basic understanding of “replaced” in the English language, would have understood that when a measured value of a first parameter is “replaced” by the measured value of a second parameter, the measured value of the first parameter is removed from the display, and the measured value of the second parameter is displayed in place of the measured value of the first parameter.

D. “Change” (Claims 13, 28)

80. Independent Claims 13 and 28 each recites a display that “changes” from displaying a measured value to displaying a different measured value. Based on the plain meaning of claim language, which requires changing from one measured value to another measured value, a POSITA would have understood that the claim

term “change,” as used in the claims of the ’223 Patent, should be interpreted similarly to “replaced,” as used in the claims of the ’223 Patent.

81. For example, Limitations [13a] and [13b] recite:

[13a]	the patient monitor comprising a display capable of displaying a measured value of a first physiological parameter of body tissue of a monitored patient in a first display area or displaying a measured value of a second physiological parameter of the body tissue in a second display area where the first display area and the second display area comprise at least some common display area capable of displaying information,
[13b]	wherein the common display area changes from displaying one of the measured values of the first or second physiological parameter to displaying the other of the measured values based on an occurrence of an event,

Here, the plain language of the claim makes clear that the patient monitor has a display with a “common display area” that can display either a measured value of a first physiological parameter or a measured value of a second physiological parameter. Limitation [13b] further explains that the “common display area *changes from displaying one of the measured values* of the first or second physiological parameter *to displaying the other of the measured values* based on an occurrence of an event.” Because the common display area is supposed to display either of the measured values of the first or second physiological parameters, and because the claim recites changing from displaying one to the other, a POSITA would understand that after the “change,” the original measured value is no longer displayed.

82. Claim 28 similarly recites “a user input button, the activation of which causes the display to *change from* displaying the measured value of the first blood parameter *to* displaying the measured value of the second blood parameter.” EX1001, 40. Like with Claim 13, a POSITA would have understood “change from ... to” similarly to the “replaced” limitations because the claim recites changing from displaying one thing to displaying another thing.

83. This understanding is consistent with the plain and ordinary meaning of the term “change,” as defined in multiple dictionaries. For example, both Merriam Webster and Britannica define change as “to replace with another.” EX2039, 206, EX2041, 146.

84. This definition is consistent with use of the term “changed” in everyday lexicon. For example, when a person “changes” a flat tire on a car, the flat tire does not remain on the car. When a person “changes” a lightbulb, the first lightbulb does not remain in the lightbulb socket.

85. A POSITA would therefore have understood the term “change,” as used in Claims 13 and 28, to have a similar meaning as “replaced,” “replacing,” and “replaces” as used in Claims 1, 15, 18, 21, and 27.

VIII. SUMMARY OF OPINIONS

86. I have conducted analyses leading to the opinions expressed in this Declaration. To summarize those opinions, it is my conclusion, from a technical

point of view, that Claims 1-4, 6, 11-22, 27-28, 32, 34, 36-37, and 42-44 of the '223 Patent would not have been obvious to a POSITA based on the grounds asserted by Apple in the 209 Petition.

87. It is my opinion that:

- (Ground 1A) Claims 1-4, 6, 11-18, and 20-22 would not have been obvious to a POSITA based on Naghavi, Hochstedler, and Burnes;
- (Ground 1B) Claims 19, 27-28, 32, 34, 36-37, and 42-43 would not have been obvious to a POSITA based on Naghavi, Hochstedler, Burnes, and Hayashi; and
- (Ground 1C) Claims 42-44 would not have been obvious to a POSITA based on Naghavi, Hochstedler, Burnes, Hayashi, and Mortz.

88. Below, I provide a detailed analysis supporting my opinions.

IX. GROUND 1A DOES NOT DEMONSTRATE OBVIOUSNESS

89. Apple's obviousness grounds rely on a core combination of Naghavi, Hochstedler, and Burnes. Pet., 1; EX2043, 45:10-16, 46:2-12 (confirming that the explanation of how Naghavi, Hochstedler, and Burnes are combined applies to all three grounds). Apple argues in Ground 1A that Claims 1-4, 6, 11-18, and 20-22 would have been obvious based on a combination of Naghavi, Hochstedler, and Burnes. Pet., 1. Apple then adds Hayashi to the combination in Ground 1B to address Claims 19, 27-28, 32, 34, 36-37, and 42-43. EX2043, 46:2-12. Finally, Apple adds

Hayashi and Mortz to the combination in Ground 1C to address Claims 42-44. *Id.*

However, in my opinion, none of these grounds demonstrate that any of the claims would have been obvious.

A. All Claims Require Currently Monitoring Two Parameters, One Of Which Is Not Displayed

90. As I explained above, all '223 Patent claims require “measured value[s]” of a “first” and “second” physiological parameter (or blood parameter). *See supra* Sections VII.A-B. A “measured value” is the “value of a parameter currently detected and determined by the monitor.” *Supra* Section VII.A. Furthermore, a POSITA would have understood that the claims all require currently measuring at least two different parameters because the claims recite both a “first” and “second” parameter. *Supra* Section VII.B.

91. Additionally, all claims require the “replace[ment]” of a measured value of a parameter with the measured value of another parameter (or “chang[ing]” from displaying one measured value to the other). *See* Sections VII.C-D. The claims further specify that the replacement or the change happens in a “common display area” (Claims 1, 13, 15, 18), a “display location” (Claim 21), or “display” (Claims 27 and 28). As explained above, when a measured value of a first parameter is “replace[d]” by the measured value of a second parameter, the measured value of the first parameter is removed from display and the measured value of the second parameter is displayed in its place. *Supra* Section VII.C-D.

92. Based on the above, a POSITA would have understood that the claims require displaying the measured value of a first parameter and then replacing it with the measured value of a second parameter that the device is currently monitoring, but not displaying. That is because the measured values of the “first” and “second” parameters replace each other within the “common display area”/“display area”/“display” of the claims, and both parameters must be currently measured in order to determine when to make the replacement. Accordingly, the claims require a device that monitors both a displayed parameter and an undisplayed parameter so that it can replace one parameter with the other.

B. Apple’s Proposed Combination Does Not Replace A Measured Value With Another Measured Value On The Display (Claim 1 And Dependent Claims 2-4, 6, 11, 12, 14)

1. Hochstedler Changes Its Layout To Show All Currently Monitored Parameters

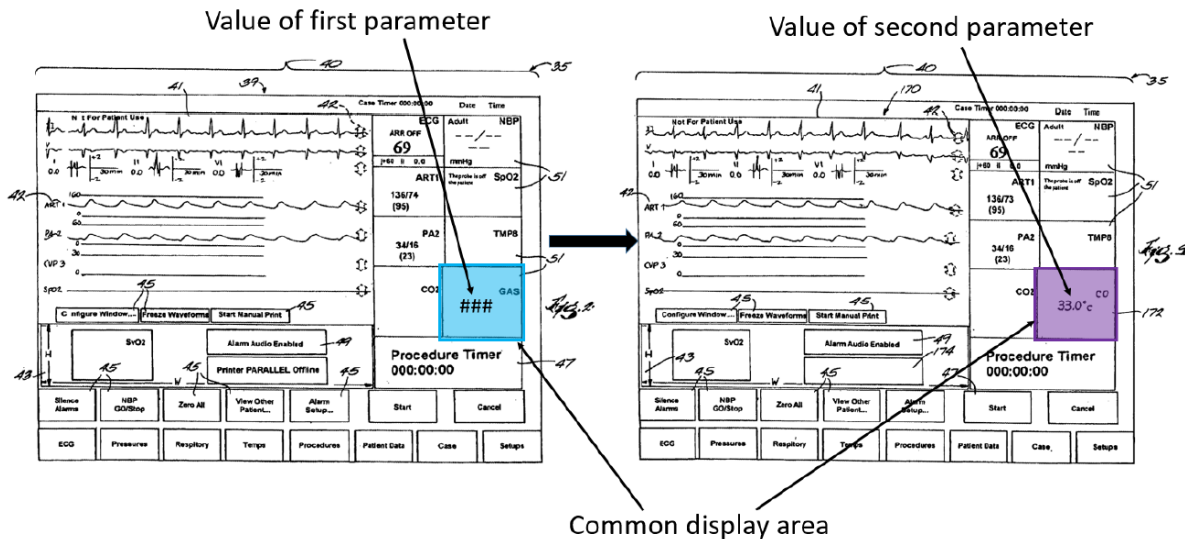
93. Apple and Dr. Cockburn assert that “Hochstedler offers examples of GUI configurations and changes consistent with those recited by the claims.” Pet., 10; *see also* EX1003, ¶37 (“the automatic arrangement of the icons and health objects when a ‘change[] in health status’ of the monitored patient is detected (as taught by Naghavi) is implemented based on the teachings of Hochstedler [C]onsistent with the operation of Hochstedler’s GUI, the change in layout can ‘occur after prompting the user for approval of the proposed change.’”). Apple and Dr. Cockburn rely on two display layout changes in Hochstedler, the display layout change from Fig. 2 to

Fig. 9 and the display layout change from Fig. 2 to Fig. 13, as allegedly disclosing “the display of the measured value of the first physiological parameter . . . is replaced with the measured value of the second physiological parameter.” Pet. 26; EX1003, ¶¶73-74.

94. At a high level, Apple and Dr. Cockburn compare the Fig. 2 layout with the Fig. 9 and Fig. 13 layouts and argue there has been a replacement of one measured parameter with another measured parameter because, by changing layouts, one parameter block or sub-layout changes to displaying a different parameter block or sub-layout. Pet. 25-27; EX 1003, ¶¶73-74. But the layout changes from Figs. 2 and 9 and Figs. 2 and 13 of Hochstedler do not disclose “the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured values,” as required by Claim 1. Instead, in each of these layout changes, Hochstedler switches its display layout to show a newly monitored parameter, but it does so by removing from display a parameter that is no longer monitored at all. As discussed above, the claims require “measured value[s]” from both a first and second parameter. Hochstedler does not replace a measured value of a first parameter with the measured value of a second parameter.

The Transition Between Figs. 2 and 9 Does Not Show the Claimed Replacement

95. Apple’s and Dr. Cockburn’s depictions of the alleged display layout changes from Fig. 2 to Fig. 9 are shown below.



EX1003, ¶73 (Dr. Cockburn’s annotations of Figs. 2 and 9 of Hochstedler).

96. The transition between Figs. 2 and 9 does not show that a measured value of GAS (in Fig. 2) has been “replaced” by a measured value of CO (in Fig. 9), as Apple and Dr. Cockburn contend. Instead, Hochstedler’s system changes its display layout to display all of the parameters measured at each time. There are no measured but undisplayed parameters. In Figure 2, “CO” is not monitored by the system, and in Figure 9, “GAS” is not monitored by the system. While Figure 2 and Figure 9 may appear different, this does not actually disclose Claim 1’s requirement of replacing a measured value of one parameter with the measured value of another parameter. A POSITA would not have understood Hochstedler to disclose replacing a currently measured parameter with another currently measured parameter.

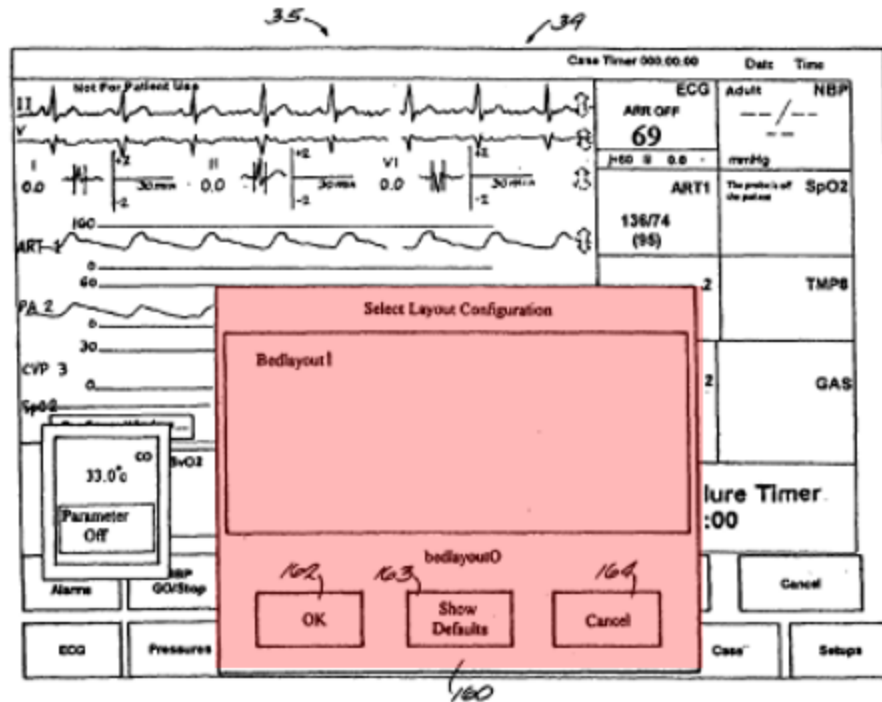
97. This is clear from Hochstedler’s specification. Hochstedler explains its system makes or prompts layout changes when there are “changes in the system’s

capabilities (*e.g.*, an additional sensor is added) or changes in the system's environment (*e.g.*, a switch is made from one medical procedure to another)."

EX1004, 1:56-60. Hochstedler further explains how the system makes or prompts these layout changes:

After detecting one or more changes in the system, the system reviews a group of available layouts and determines which, if any, more closely matches the system as changed. If an available layout more closely matches the changed system, then the system may implement an automatic change or switch of the layout or prompt the user to change the layout by presenting a selection of layout options.

EX1004, 1:60-67. Hochstedler explains that the display layout switch from Figures 2 to 9 when the system's capabilities have changed. "Figure 9 is an illustration of second layout displayed on the monitor of the patient monitoring system once selection from the dialog box shown in FIG. 8 has been made." EX1004, 2:43-45. To accomplish the display layout switch from Fig. 2 to Fig. 9, shown above, a dialog box of proposed selections for switching the layout appears on the layout of Fig. 2, as shown in Fig. 8, reproduced below.



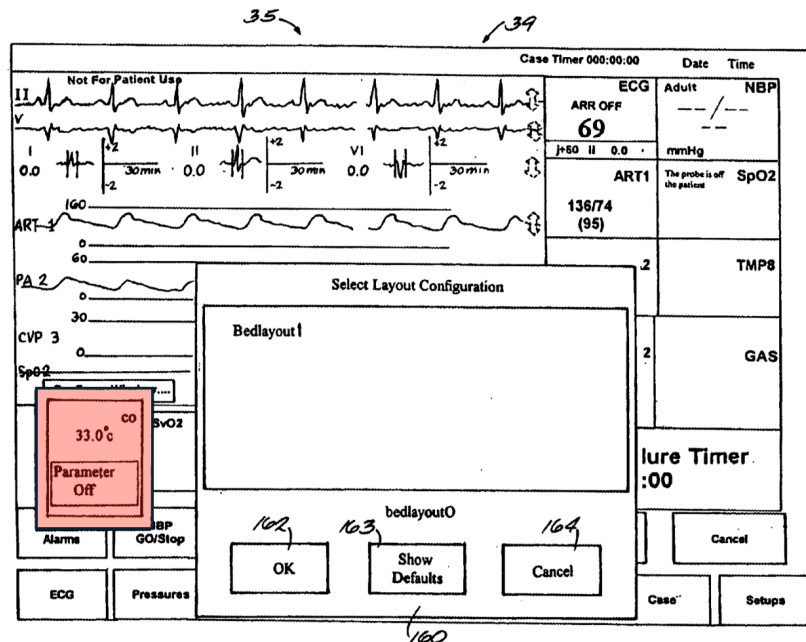
EX1004, Fig. 8 (annotation added).

98. Fig. 8 “illustrates an implementation of Option 3 where a pop-up list or dialogue box 160 is presented to the user showing the user that the overall layout is about to be changed to a new bed layout, Bedlayout1 ... If the user selects the OK button 162, the layout is switched to a layout 170 shown in Fig. 9.” EX1004, 8:30-40. Option 3, which controls the layout change from Fig. 2 to Fig. 9, involves the user specifying that “an automatic layout switch occur after prompting the user for approval of the proposed change.” EX1004, 5:43-45. When the system employs Option 3, “the system uses the best guess algorithm to pick or select one layout from the layout group that most closely matches the current or active capabilities of the system.” EX1004, 5:61-65. “The [best guess] algorithm assigns a perfect score to a

layout set that monitors exactly the parameters monitored by the system. If the layout set contains extra parameters, the layout set is given a lesser score than that which matches perfectly, but it is given a higher score than any layout set that is missing parameters.” EX1004, 6:64-7:2. Thus, Option 3 will select a layout that displays all the parameters the system can monitor at that time, even if it means displaying extra blank boxes for parameters that are not measured.

99. Hochstedler’s system switches from Figure 2 to Figure 9 only “once a selection from the dialog box shown in FIG. 8 has been made.” EX1004, 2:43-45. Thus, Hochstedler explains that its system changes the display layout because the active capabilities of the system (*e.g.*, the parameters Hochstedler is currently measuring) have changed. Hochstedler is not switching from one currently measured parameter to a previously undisplayed measured parameter.

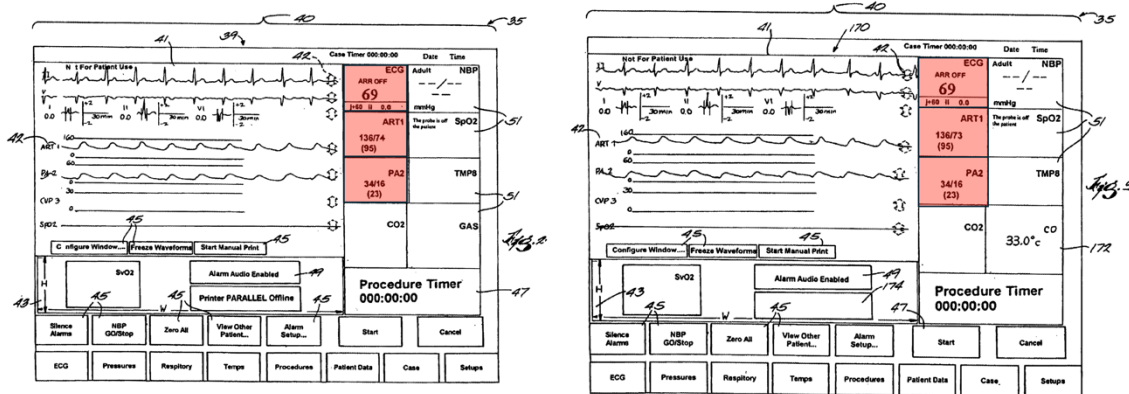
100. Figure 8 further confirms this understanding. Figure 8 shows that the layout is switching to include “CO” as a newly monitored parameter, indicated by the new pop-up dialog box and the text, “Parameter Off.”



EX1004, Fig. 8 (annotated). Thus, there is no teaching that “GAS” and “CO” are measured at the same time.

101. Thus, a POSITA would have understood that in Fig. 2, Hochstedler’s system displays *all* measured values *before* a change in system capabilities, and in Fig. 9, the system displays *all* measured values *after* the change in system capabilities (CO is added). The system switches the display layout from Fig. 2 to Fig. 9 to account for the changes to the system capabilities, which ensures that all measured values are displayed. In Fig. 2, there is no measured value of CO, so it cannot replace a measured value of GAS, even if there were a measured value of GAS. This does not satisfy the claim language of the ’223 Patent, which requires that one *measured value* is replaced with a different *measured value*.

102. Furthermore, the ECG, ART1 and PA2 parameters that are measured in Figure 2 continue to be measured in Figure 9.



EX1004, Fig. 2 (left), Fig. 9 (right) (annotated). This further confirms that Hochstedler discloses displaying all measured values. There is no teaching that Hochstedler replaces a current measured value with another currently measured value.

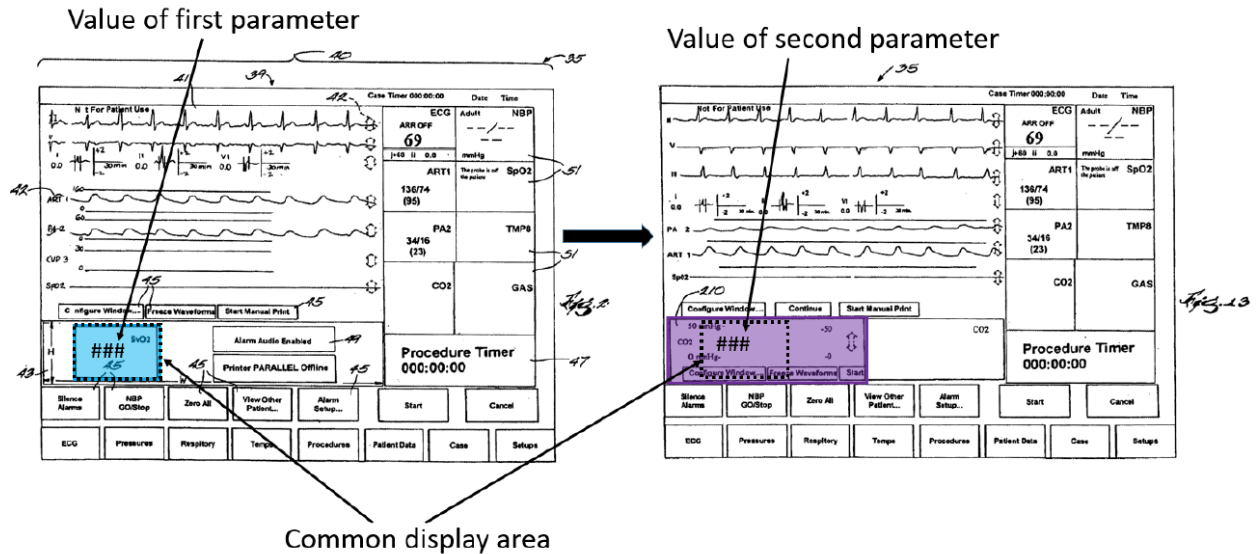
103. Moreover, there is no disclosure in Hochstedler that “GAS” is measured in Figure 2. Notably, Apple added “###” to the GAS block in Figure 2. But that annotation incorrectly suggested that there was a measured value of GAS that gets replaced in the transition between Figures 2 and 9. Without Apple’s markups, there is no measured value displayed in the GAS block. This would have suggested to a POSITA that GAS is not measured in Figure 2. Indeed, Hochstedler explains that in Figure 2, there may be sensors that are removed from the system or deactivated, and that sensors that are removed or deactivated are not part of the system’s capabilities. EX1004, 3:42-54. Hochstedler also teaches that it can display layouts that show all

of the system's capabilities and "extra parameters" that are not monitored by the system. *Id.* at 6:64-7:2. Thus, a POSITA would have understood that Hochstedler's Figure 2 shows an example of a display layout where GAS is one of those extra, unused parameters because unlike the ECG, ART1, and PA2 blocks which show measured values, GAS is an empty block.³

The Transition Between Figs. 2 and 13 Does Not Show the Claimed Replacement

104. Apple's and Dr. Cockburn's annotations to Figures 2 and 13 of Hochstedler are shown below.

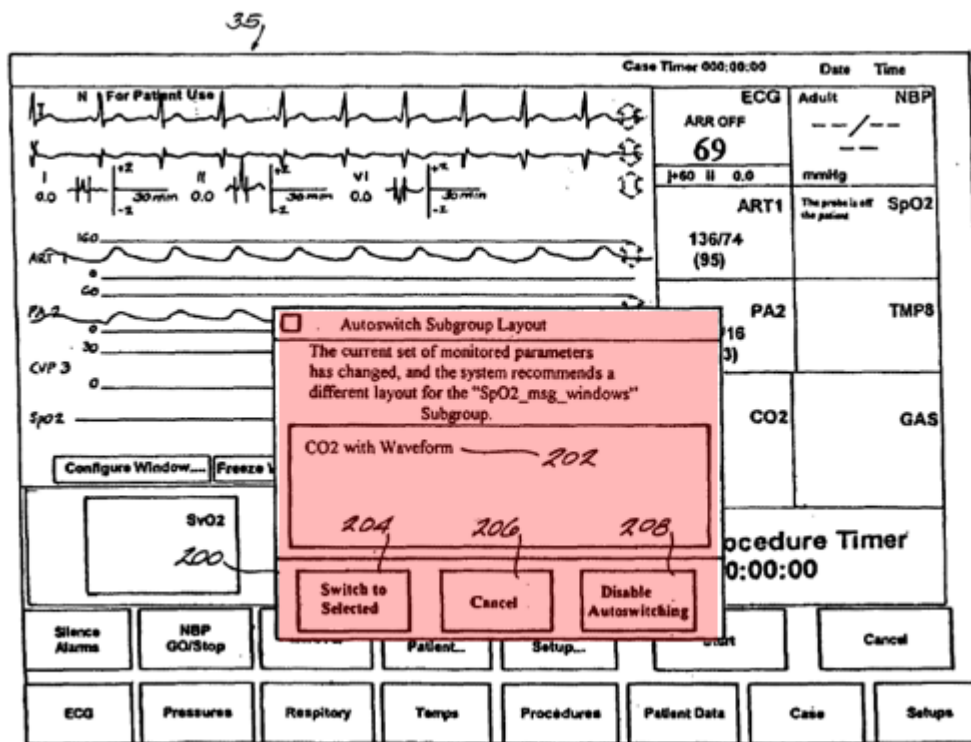
³ Hochstedler does not disclose what it means by "GAS." Hochstedler also does not disclose that GAS is a "physiological parameter of body tissue of a monitored patient" as required by the "first" and "second" measured values claimed in the '223 Patent. GAS could simply be something else associated with the system, like the "Procedure Timer." Indeed, Hochstedler explains that its "parameter blocks" refer to "a component designed to show non-waveform information." EX1004, 2:12-13. Given this disclosure, "GAS" could refer to something akin to anesthetic gases used to keep a patient unconscious during surgery. *See* EX1004, Fig. 4 (showing "Anesthesiologist" under "Environment Change Detail").



EX1003, ¶74 (Dr. Cockburn’s annotations of Figs. 2 and 13 of Hochstedler). Notably, Apple and Dr. Cockburn also added “###”s to the figures to incorrectly suggest that there are measured values in those spaces. But again, Hochstedler does not show either parameter as a “measured value.” In fact, CO2 is blank in multiple locations in Figures 2 and 9. In contrast, when Hochstedler intended to show that a parameter is measured, Hochstedler showed those values in the figures (e.g., ECG, ART1, PA2). *See* EX1004, Figs. 2, 9.

105. Furthermore, Figures 2 and 13 also do not show the replacement of a measured value of SvO2 with a measured value of CO2 for similar reasons as Figures 2 and 9. There is no disclosure in Hochstedler of switching from displaying the measured value of one parameter to a previously undisplayed measured value of a different parameter.

106. Instead, a POSITA would have understood that Hochstedler's system detected a change in the system capabilities (e.g., SvO2 is not being monitored) and thus switched its layout to a different layout. To accomplish the display layout change from Fig. 2 to Fig. 13, a dialog box of proposed selections for changing a subgroup or sub-layout appears on Fig. 2, as shown in Fig. 12, reproduced below.



EX1004, Fig. 12 (annotation added).

107. Fig. 12 “illustrates the process by which a sub-layout may be switched.” EX1004, 8:56-57. “If the system 10 detects *a parameter switch* involving information displayed in a sub-layout, the system 10 generates a sub-layout dialog box 200 with a list of one or more preferred sub-layout configurations 202 If the

user selects the SWITCH TO SELECTED button 204, the sub layout 43 is replaced by a sub layout 210 (FIG. 13).” EX1004, 8:57-65.

108. As shown in Fig. 12, the dialog box appears after “[t]he current set of monitored parameters has changed.” EX1004, Fig. 12. A POSITA would therefore understand the system switches the layout from Fig. 2 to Fig. 13 to ensure the display shows all measured values. More specifically, the transition from Fig. 2 to Fig. 13 shows that the system detected a change to the parameters measured in a sub-layout, such as removal of the SvO2 sensor, and then prompted the user to select a sub-layout that removed SvO2 because it is no longer measured by the system. EX1004, Fig. 12, 8:57-65. Thus, a POSITA would understand that Hochstedler’s system is displaying all its measured values, not replacing a measured value of SvO2 with a measured value of CO2. Hochstedler does not disclose that its system would replace a measured value of a parameter with a measured value of another parameter.

109. Hochstedler does not disclose a device that displays measured values from two currently monitored parameters in the same display area like the claims require. The inventors of the ’223 Patent arrived at their solution because they were faced with the problem of how to display multiple parameters in a display area that was too small to show all measured values simultaneously. *See* EX1001, Abstract, 3:10-14, 10:6-12. Hochstedler, in contrast, does not have that problem. It discusses a GUI for a patient monitor using a “CRT display, flat panel display, or similar

device.” Those types of displays have large screens with ample screen real estate to display all measured parameters without having to pick and choose between them. Indeed, Hochstedler’s Figure 2 shows that numerous parameters can be displayed all at once.

110. Indeed, Hochstedler teaches that its system performs a “best guess” algorithm to choose display layouts that show all measured parameters. EX1004, 6:64-7:2. Hochstedler further explains that its system can be set such that “no switching will occur if the current layout set contains all of the parameters needed for the current set of system capabilities, but as soon as the current layout set is missing one, the system will make a layout switch using one of the layout switch algorithms.” *Id.*, 8:19-24. These disclosures inform a POSITA that Hochstedler’s system displays all monitored parameters at the same time.

111. Because Hochstedler is designed to display all parameters monitored by the system, and even promptly modifies its layout in pursuit of this goal, Hochstedler does not teach, suggest, or render obvious “the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured values based on an occurrence of an event, the event being the measured value of one of the first or second physiological parameters approaching one or more threshold values indicative of a worsening state of a patient,” as required by Claim 1.

2. Burnes Displays All Parameters Currently Measured By The Device

112. Burnes does not teach, suggest, or render obvious measuring a parameter that is not displayed. *See generally* EX1006. Burnes also does not teach or suggest replacing any measured values of a parameter with the measured values of another parameter. Burnes discloses “a graphical user interface (GUI) that displays summary data for multiple patients simultaneously.” EX1006, [0005]; Fig. 7 (reproduced below).

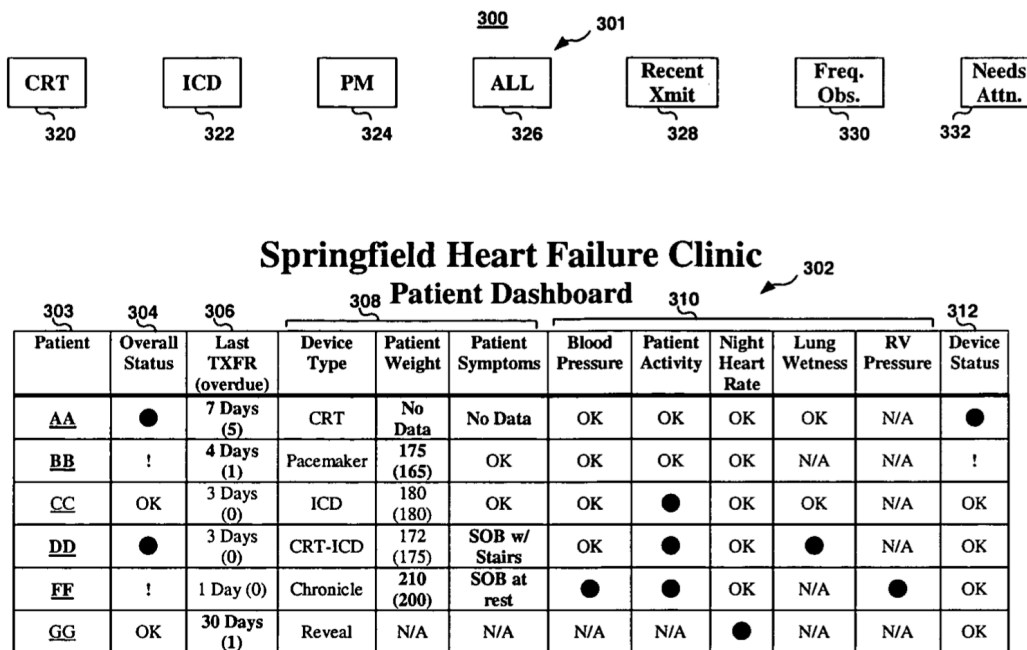


FIG. 7

EX1006, Fig. 7. A POSITA, in view of Figure 7 and Burnes generally, would have understood that Burnes discloses a display capable of displaying all monitored parameters *simultaneously*. In fact, Burnes is designed to display unmonitored

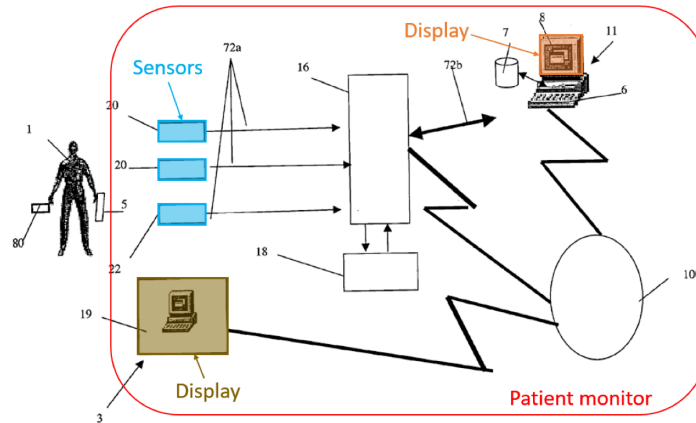
parameters (shown in Figure 7 as “N/A”), indicating a preference by the system for displaying all possible parameters. *Id.*, Fig. 7; *see also id.* ¶55 (indicating that the summary table may display “N/A” “or other similar meaning notation ... to indicate that the parameter value is not available.”)

113. Far from teaching that any measured values should be replaced with measured values from a different parameter, Burnes discloses a way to present *more* information from *multiple patients* simultaneously.

3. Naghavi Displays All Parameters Currently Measured By The Device

114. A POSITA would have recognized that Naghavi does not disclose monitoring a parameter that is not displayed. *See generally* EX1005. Naghavi also fails to disclose replacing (removing) a monitored parameter from its display. *Id.* Instead of removing a parameter, Naghavi uses a large display, such as a computer monitor, with enough display space to simultaneously display all parameters currently monitored by the system. *See* EX1005, Abstract, Fig. 1, ¶11, ¶58.

115. As illustrated below, Apple’s obviousness combination relies on the computer monitor disclosed by Naghavi.



Pet., 18 (Apple’s annotations of EX1005, Fig. 1).

116. Naghavi describes its system as having an “easy-to-access” and “user friendly GUI” with a “*single* visual display of displayed items comprising menus, health objects, icons, and options.” EX1005, ¶58. A POSITA, in view of this disclosure, would have understood that Naghavi disclosed a display capable of displaying all parameters currently measured by the system.

4. The Naghavi-Hochstedler-Burnes Combination Does Not Disclose Replacing One Measured Value With Another Measured Value

117. As discussed above, Naghavi, Hochstedler, and Burnes do not disclose or suggest replacing on the display the measured value of one parameter with the measured value of another parameter. Instead, the only reference that Apple relies upon to show a “replacement” does not actually replace a measured value with another measured value. Hochstedler does not disclose or suggest using the same display area to show two currently monitored parameters. Because none of the

references discloses this feature, the combination of the references also cannot disclose this feature.

118. Additionally, because each of the references have large displays, the references are able to show all measured parameters without picking and choosing between parameters. *See supra* Sections IX.B.1-3. Thus, none of these references suggest the solution that the '223 Patent described, which was how to display multiple parameters in a display area that was too small to show all of them at the same time.

5. Apple And Dr. Cockburn Did Not Cite Any Disclosure Of Replacing One Measured Value With Another Measured Value

119. Apple argues that the Naghavi-Hochstedler-Burnes combination discloses Limitation [1b] because “[w]hen a parameter that is not displayed in [an] initial layout (*e.g.*, the second parameter) changes in severity, the layout changes such that the value of that second parameter is displayed, thus servig as an alarm bringing the parameter change to the attention of clinical staff.” Pet., 28-29. Apple explained that a parameter “changes in severity” when it becomes “out of range or near out of range,” and that this change in severity is the “event” that triggers the replacement. Pet., 28; EX1003, ¶¶75-78. Thus, Apple’s argument is premised on the supposed ability of the combination to measure a parameter that is not displayed in order to determine that undisplayed parameter “changes in severity.”

120. Indeed, Apple repeatedly argues the Naghavi-Hochstedler-Burnes combination performs the alleged replacement when an undisplayed parameter becomes out-of-range or near out of range:

“For example, in the combination, when a parameter that is ***not displayed*** in a current layout becomes (near) out of range, it would have been obvious to change the layout to include a block for that parameter, as shown by Hochstedler.”

Pet., 12.

“A change in the severity of parameter can indicate a health status change that may require close monitoring, and automatic layout switching would enable caregiver monitoring of changing parameters even if they are ***not displayed*** on a main screen.”

Pet., 14.

“A POSITA would have recognized that ***not all parameters must be displayed on a main layout***, nor should they crowd a single layout, so long as those parameters that change in severity can be displayed/highlighted to the clinician to enable proper attention and care.... By ***displaying certain parameters only when necessary***, the amount of displayed information is maintained at a manageable level...”

Pet., 15.

121. Dr. Cockburn similarly relies on the supposed disclosure of monitoring a parameter that is not displayed in order to determine when an event occurs.

“For instance, when a ***parameter that is not displayed*** in a current layout changes to become “out of range” (or to approach an out of range value), this triggers an alarm, as taught by Burnes. ... Based on the teachings of Hochstedler, this change in the parameter that is ***not currently displayed*** also causes the display layout to change to a new layout that does display information about that out of range parameter. ... This implementation allows parameters that are alarming to be made

easily visible to the user monitoring the patient, even if that parameter is ***not otherwise displayed.***”

EX1003, ¶38.

“[T]he automatic replacement of one layout with another provides a prioritized display in which the most important information (for instance, information that is changing because of a change in a health status of the patient) is displayed in favor of other, less relevant information (for instance, information that is static and thus of less immediate clinical importance).”

Id., ¶44.

“The combination system, though, ***does not necessarily display all parameters*** on a single screen, at least in cases when more parameters are being monitored than there are spaces to display those parameters in the display layout. A POSITA would have been motivated to implement the system to be able to automatically display a previously ***undisplayed parameter*** that changes to become out of range, *e.g.*, such that the caregiver can readily monitor that parameter and attend to the patient as needed. For instance, this approach allows for parameters that are ***not displayed*** on a default layout to be displayed when warranted, such as when a change in their value indicates a need for clinical attention.”

Id., ¶49.

“[A] POSITA would have recognized that ***not all parameters necessarily need to be displayed*** on a main (*e.g.*, default) layout. For instance, parameters that are less relevant to a patient’s condition or that are less likely to change in severity do not necessarily need to be constantly displayed.”

Id., ¶50.

“By ***displaying*** these parameters ***only when necessary***, the amount of information presented as a default to the clinician is maintained at a manageable level...”

Id., ¶50.

“When the value of a parameter that is ***not displayed*** in that initial layout (e.g., the second parameter) changes in severity, the layout changes (e.g., from the FIG. 2 layout to a different layout, such as one based on Hochstedler’s FIG. 9 or 13).”

Id., ¶78.

122. Thus, Apple apparently agrees that the claims require monitoring an undisplayed parameter. But at minimum, Apple argues that the Naghavi-Hochstedler-Burnes combination discloses the claim limitation by replacing a measured value when it determines that an undisplayed parameter has changed in severity. But as discussed above, none of these references disclose monitoring an undisplayed parameter. *See supra* Sections IX.B.1-5. None of the references disclose using the same display area to show two currently measured parameters.

123. Neither Apple’s Petition nor Dr. Cockburn’s declaration identify any disclosure in any of Naghavi, Hochstedler, and Burnes of monitoring a parameter in the background. Moreover, Dr. Cockburn confirmed he did not rely on Burnes to disclose monitoring a parameter that is not displayed. EX2043, 61:21-62:14. Dr. Cockburn also confirmed he did not identify any disclosure from Hochstedler of monitoring a parameter that is not disclosed. *Id.*, 62:15-18. Dr. Cockburn also could not identify any portion of Naghavi that disclosed monitoring a parameter that is not displayed. *Id.*, 62:19-64:6. Thus, Apple and Dr. Cockburn simply assumed that the combination monitors an undisplayed parameter and checks whether it changes in severity.

124. Apple’s proposed combination therefore does not meet the limitation “the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured values based on an occurrence of an event, the event being the measured value of one of the first or second physiological parameters approaching one or more threshold values indicative of a worsening state of a patient.”

C. A POSITA Would Not Be Motivated To Combine Naghavi, Hochstedler And Burnes

125. Naghavi, Hochstedler and Burnes do not disclose using the same screen area to display two currently measured parameters. Thus, a POSITA would have had no motivation to combine the references to replace a measured value of one parameter with the measured value of another parameter other than hindsight based on the ’223 Patent. Further, Apple and Dr. Cockburn allege that a POSITA would have been motivated to combine (1) Naghavi and Hochstedler (Pet. 13-14) and (2) Naghavi, Hochstedler, and Burnes (Pet. 14-15). Pet., 13-15; EX1003, ¶¶41-52. I disagree for the reasons below.

1. Apple’s Motivations To Combine Naghavi And Hochstedler (Without Burnes) Are Irrelevant And Contrary to the References

126. Apple and Dr. Cockburn allege that a POSITA would have been motivated to combine the display icons and health objects disclosed in Naghavi with the layouts disclosed in Hochstedler. Pet., 13-14; EX1003, ¶¶41-46. However, Apple

and Dr. Cockburn fail to provide any reason why a POSITA would have replaced one currently measured value of a parameter with a currently measured value of a different parameter in the same screen area, when this is not disclosed in either Naghavi or Hochstedler (or Burnes). In addition, Apple's motivations are directed at an alleged POSITA's motivation to combine *only* Naghavi and Hochstedler, and not with Burnes, despite relying on all three references for all Grounds.

127. Apple asserts the combination of Naghavi and Hochstedler, in the absence of Burnes, would result in a system capable of automatically replacing the layout in a manner that would (1) allow the GUI to “change[] with the needs of users and the stage of medical treatment” and “ensure display of clinically relevant information,” (2) “prioritize[] display of important information rather than other, less relevant information,” and (3) have been a mere application of “known techniques” by a “known system” to yield predictable results. Pet., 13-14.

128. Apple's proposed arguments regarding Naghavi and Hochstedler, even if correct, do not render obvious replacing a measured value of one parameter with the measured value of a different parameter, as required by all claims. Apple's first argument that a POSITA would have been motivated to combine the references in a manner that would allow the GUI to change with the needs of the user to ensure the display of clinically relevant information does not result in a system that replaces a currently measured value of a parameter with the currently measured value of a

different parameter. *See supra* Sections IX.B.1-4. Apple’s arguments about allowing the GUI to change the needs of the user and the stage of medical treatment and ensuring display of “clinically relevant information” do not provide a reason to continue monitoring a parameter that is no longer displayed. On the contrary, ensuring display of clinically relevant information would have been cautioned against replacing a currently monitored parameter because the system could display all currently measured clinically relevant parameters. *See supra* Sections IX.B.1-4. As such, Apple and Dr. Cockburn’s first identified motivation would not provide motivation for a POSITA to combine the references to arrive at the claimed invention.

129. Apple’s second argument that a POSITA would have been motivated to combine the references to prioritize displaying important information over less relevant information is unsupported by Naghavi and Hochstedler (and Burnes). In support of this argument, Apple and Dr. Cockburn rely on Hochstedler at 1:49-50 and Naghavi at [0063]. However, Naghavi and Hochstedler do not disclose, teach, or suggests that any measured parameters are “less relevant” and do not need to be displayed, such that a POSITA would have understood that the parameter (s) can be removed from display. Prioritizing display of information might suggest a reason to show a particular parameter, but it does not provide a reason to remove another measured parameter from display. Indeed, as explained above, that is directly contrary to Hochstedler’s teachings that its system displays all currently monitored

parameters and will switch to a layout that does so if it detects a parameter is missing. *See supra* Section IX.B.1; EX1004, 6:64-7:2, 8:19-24. As with Apple’s first argued motivation, prioritizing the display of important information would not have provided a POSITA with a reason to replace (and thereby remove) a currently monitored parameter from the display. Indeed, Hochstedler continues to display parameter blocks that are not monitored. *Supra* Section IX.B.1.; Fig. 2 (showing unmonitored parameter blocks like “GAS”). Thus, Hochstedler shows information that is even less clinically relevant on its display.

130. Apple’s third alleged motivation, that the combination is “merely the application of known techniques (multiparameter display) by a known system (a medical monitoring system) to yield predictable results (multiparameter display in a medical monitoring system),” similarly does not show a POSITA would have been motivated to combine Hochstedler, Naghavi, and Burnes. Pet., 14. First, Apple’s identified “predictable result” of “a multiparameter display in a medical monitoring system” would have motivated a POSITA to create a system that displays all currently measured parameters. This is contrary to the claims of the ’223 Patent, which require replacing a measured parameter and thereby removing the parameter from display. Apple’s “predictable result” does not address the claim limitation that requires replacing a currently measured value of one parameter with a currently measured value of a different parameter. Thus, Apple’s proposed argument does not

provide any motivation to a POSITA to combine Naghavi and Hochstedler in a manner that would result in replacing a currently measured value of one parameter with a currently measured value of different parameter in the same display area.

131. Additionally, neither Naghavi nor Hochstedler discloses replacing one currently measured value of a parameter with a currently measured value of a different parameter in the same display area. Therefore, even if Apple is correct that a POSITA would have had motivation to combine Naghavi and Hochstedler, the combination of the references would not result in the claims of the '223 Patent. Apple does not explain which reference provides the “multiparameter display” or which provides the “medical monitoring system.” Pet., 14. According to Apple, each of Naghavi and Hochstedler disclose both features. *See, e.g.*, Pet., 3-5, 10 (“[A]s taught by each of Naghavi, Hochstedler, and Burnes, parameters monitored by sensors are displayed on a GUI...”). There would have been no reason to combine references that both teach the same features.

132. Finally, I note that Dr. Cockburn’s declaration includes a different argument than what Apple argued in the Petition. EX1003, ¶45. In the Petition, Apple argued: “[T]his implementation is merely the application of known techniques (multiparameter display) by a known system (a medical monitoring system) to yield predictable results (multiparameter display in a medical monitoring system).” Pet., 14. In contrast, Dr. Cockburn argued: “[T]his combination is just the application of

known techniques (specifically, multiparameter display techniques such as the display layouts of Hochstedler) by an already-known system (specifically, a medical monitoring system such as Naghavi's), and it yields predictable results (specifically, a display of a medical monitoring system implementing those multiparameter display techniques)." EX1003, ¶45. Regardless, as I explained above, even if Naghavi and Hochstedler were combined, that would not result in a system that replaces a currently measured value of a parameter with a currently measured value of another parameter. Instead, Hochstedler teaches that its system changes display layouts to show all monitored parameters at the same time. *See supra* Section IX.B.1. Thus, combining Naghavi and Hochstedler would result in displaying all monitored parameters at the same time as Hochstedler taught. That does not satisfy the claim requirement of replacing a currently measured value of a parameter with a currently measured value of another parameter.

2. Apple's Motivations To Combine Are Contrary To The Teachings Of Naghavi, Hochstedler, And Burnes

133. Apple and Dr. Cockburn identify three alleged reasons why a POSITA would have been motivated to combine Naghavi, Hochstedler, and Burnes to arrive at the claims of the '223 Patent. Pet., 14-15; EX1003, ¶¶48-51. First, they allege that the combination would provide a "display that best suit[s] the condition of [the] patient" because "automatic layout switching would enable caregiver monitoring of changing parameters even if they are not displayed on a main screen." Pet., 14

(internal quotations and punctuation omitted); EX1003, ¶¶48-49. Second, they allege the combination would “relieve the data analysis burden placed on the clinician while enabling the clinician to maintain thorough patient care.” Pet., 15; EX1003, ¶50. Third, they allege the combination “is just the application of known techniques (specifically, changing a parameter display responsive to a change in parameter status) by an already-known system (specifically, a multiparameter monitoring and display system), and it yields predictable results (specifically a multiparameter monitoring and display system in which the parameter display changes responsive to a change in the status of a parameter).” EX1003, ¶51. I disagree. The three reasons identified by Apple and Dr. Cockburn are contrary to the teachings of Naghavi, Hochstedler, and Burnes.

a) **A POSITA Would Not Have Had Motivation To Replace A Currently Measured Parameter Because Naghavi, Hochstedler And Burnes Teach Displaying All Currently Measured Parameters**

134. Apple and Dr. Cockburn first allege the combination “would provide a display that best suits the condition of the patient.” Pet., 14 (internal quotations and punctuation omitted); EX1003, ¶48. Apple further argues that “automatic layout switching would enable caregiver monitoring of changing parameters even if they are not displayed on a main screen.” Pet., 14. Similarly, Dr. Cockburn argues that “[a] POSITA would have been motivated to implement the system to be able to automatically display a previously *undisplayed* parameter that changes to become

out of range” EX1003, ¶49. This alleged motivation fails because Naghavi, Hochstedler, and Burnes, alone or in combination, do not disclose using the same screen area to display to currently measured parameters. *See supra* Sections IX.B.1-4. Instead, these references disclose systems and displays designed to display all currently measured values on the display *simultaneously*. *Id.* A POSITA, in view of these references, simply would not have had any motivation to alter the systems to display a different currently measured value, thereby removing the measured value of the first parameter from the display.

135. Hochstedler would have emphasized to a POSITA the importance of displaying all currently measured parameters. As explained above, Hochstedler discloses a “best guess algorithm” which “assigns a perfect score to a layout set that monitors exactly the parameters monitored by the system,” and “[i]f the layout set contains extra parameters, the layout set is given a lesser score than that which matches perfectly, ***but it is given a higher score than any layout set that is missing parameters.***” EX1004, 6:61-7:2 (emphasis added). A POSITA would have recognized that this best guess algorithm is designed to optimize the layout of Hochstedler to display all currently measured parameters and avoid not displaying a parameter that could be measured by the system.

136. Dr. Cockburn acknowledged that he did not consider Hochstedler’s teaching that its system will change the layout “as soon as the current layout set is

missing [a parameter]” (EX1004, 8:19-24) in his obviousness analysis. EX2043, 87:5-88:10. By failing to consider this disclosure in Hochstedler, Apple and Dr. Cockburn failed to recognize that the system disclosed in Hochstedler is designed to ensure that all currently measured parameters are displayed. Further, because Dr. Cockburn failed to consider this disclosure in Hochstedler, Dr. Cockburn does not explain why a POSITA would have modified Hochstedler to leave any currently measured parameter undisplayed.

137. Dr. Cockburn assumes that the combination of Naghavi, Hochstedler, and Burnes “does not necessarily display all parameters on a single screen” when “more parameters are ... monitored than there are spaces to display those parameters.” EX1003, ¶49. However, Dr. Cockburn does not provide any citation from Naghavi, Hochstedler, or Burnes that teaches, discloses, or suggests that any of these systems would have been unable to display all currently measured parameters. As I explained above, those references all display all their currently monitored parameters. *See supra* Sections IX.B.1-4.

138. During reexamination of the ’223 patent, the Examiner rejected a similar motivation argument. The Examiner explained “there would be no motivation to simply replace the first parameter with the second, as it would contradict the direct teaching in the reference of allowing the user to see the entirety of the patient’s

condition.” EX1020, 6-7. The Examiner ultimately concluded that “[n]o other art of record teaches this feature.” *Id.*

139. As with Al-Ali, replacing once currently measured value of a parameter with another parameter contradicts Hochstedler’s disclosures of displaying all measured parameters, and change the layout “as soon as the current layout set is missing [a parameter].” EX1004, 8:19-24. Similarly, both Naghahi and Burnes fail to teach, disclose, or suggest that replacing one parameter with another parameter would have been desirable. Dr. Cockburn does not provide any reason why the Naghavi, Hochstedler, and Burnes combination should be treated any differently from the Examiner’s explanation that “there would be no motivation to simply replace the first parameter with the second” when the references can display all currently measured parameters.

140. Dr. Cockburn’s alleged motivation to combine Naghavi, Hochstedler, and Burnes assumes a POSITA would be capable of identifying the clinically relevant parameters, in order to modify the display to conform to a patient’s condition, thereby removing “redundant” or less “relevant” information. Pet., 15. This assumption depends entirely on the declaration of Dr. Cockburn. But Dr. Cockburn did not cite any evidence for his assertion that a POSITA would have concluded that some parameters would be “less relevant” to a clinician. EX1003, ¶¶38, 43, 44, 49, 50.

141. Dr. Cockburn is also incorrect about what a POSITA would have understood. A POSITA would have understood that a clinician would select which parameters to measure based on which parameters were clinically relevant. When a clinician has selected a parameter to monitor, the clinician expects to see that parameter displayed on the monitor. Indeed, that is consistent with Hochstedler's teachings which emphasize changing layouts to display all monitored parameters simultaneously. EX1004, 8:19-24. A POSITA would not have been deciding which parameters are less clinically relevant. Rather, a POSITA would have been designing the user interface to address the needs of the user (the clinician). A clinician would not have had motivation to replace a measured value of a parameter with the measured value of another parameter because replacing a parameter, thereby removing the parameter from the display, is contrary to the needs and expectations of clinicians and the teachings of the references. In view of the teachings of Hochstedler, Naghavi, and Burnes, a POSITA would not have been motivated to selectively display parameters, and instead would have been motivated to create a system capable of displaying all parameters.

b) Apple's Suggestion To Replace A Measured Value To Relieve The Data Analysis Burden Is Unsupported

142. Apple and Dr. Cockburn's second alleged motivation is that the combination would "relieve the data analysis burden placed on the clinician while enabling the clinician to maintain thorough patient care." Pet., 15; EX1003, ¶50. Dr.

Cockburn alleges “a POSITA would have recognized that not all parameters necessarily need to be displayed on a main (e.g., default) layout.” EX1003, ¶50. Dr. Cockburn cites no evidence in support of this statement and his opinion is contrary to the references.

143. First, Apple and Dr. Cockburn argue Burnes describes that clinicians have a “mounting task in tracking and analyzing each patient’s data in order to recognize events or conditions of clinical importance or concern” and that there is a need to “relieve the data analysis burden placed on the clinician.” EX1003, ¶50 (citing EX1006, ¶4); Pet., 15. However, Burnes does not teach that any measured values should ever be *replaced*, and thereby *removed*, as a way to relieve the data analysis burden. Instead, Burnes teaches a way in which all the information for *multiple patients* can be displayed simultaneously in one organized chart:

Springfield Heart Failure Clinic

308 Patient Dashboard

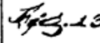
303 Patient	304 Overall Status	306 Last TXFR (overdue)	308 Device Type	Patient Weight	Patient Symptoms	Blood Pressure	310 Patient Activity	Night Heart Rate	Lung Wetness	RV Pressure	312 Device Status
<u>AA</u>	●	7 Days (5)	CRT	No Data	No Data	OK	OK	OK	OK	N/A	●
<u>BB</u>	!	4 Days (1)	Pacemaker	175 (165)	OK	OK	OK	OK	N/A	N/A	!
<u>CC</u>	OK	3 Days (0)	ICD	180 (180)	OK	OK	●	OK	OK	N/A	OK
<u>DD</u>	●	3 Days (0)	CRT-ICD	172 (175)	SOB w/ Stairs	OK	●	OK	●	N/A	OK
<u>FF</u>	!	1 Day (0)	Chronicle	210 (200)	SOB at rest	●	●	OK	N/A	●	OK
<u>GG</u>	OK	30 Days (1)	Reveal	N/A	N/A	N/A	N/A	●	N/A	N/A	OK

EX1006, Fig. 7, ¶5. Indeed, Burnes discloses that “[t]he GUI displays summary data received from the processor for *multiple patients simultaneously* allowing a clinician to *easily scan summary data for a given patient group*.” EX1006, ¶5. Thus, Burnes does not provide any motivation to replace any measured values of a parameter with measured values of a different parameter. Instead, Burnes teaches how to *increase* the amount of information displayed to the clinician, even displaying unmeasured parameters using “N/A” or similar entries.

144. Dr. Cockburn next argues that “avoiding display of redundant information is a key aspect of Hochstedler’s objective—which is, generally, to display the set of parameters that is appropriate for a given situation.” EX1003, ¶50. However, Hochstedler does not disclose “avoiding display of redundant information.” Indeed, Dr. Cockburn admitted that Hochstedler does not discuss “redundant” information. EX2043, 86:10-19.

145. Dr. Cockburn’s opinion is contrary to Hochstedler’s teaching that its system will change the layout “as soon as the current layout set is missing [a parameter].” EX1004, 8:19-24. Hochstedler would rather display a layout showing extra unused parameters than use a layout with missing a parameter. *Id.*, 6:61-7:5 (describing how a layout that displays extra unmonitored parameters is given a better score for the “best guess algorithm” than any layout that is missing a parameter). Similarly, the system of Hochstedler would rather display duplicative information,

Value of second parameter



146. Apple’s second motivation is also premised on the unsupported assumption that the combination system monitors undisplayed parameters. EX1003, ¶50 (“[A] POSITA also would have recognized that if one of the parameters that is not displayed do change in severity ... it is important to display them....”); *id.* (“By

displaying these parameters *only when necessary*, the amount of information presented as a default to the clinician is maintained at a manageable level....”). But as discussed above, none of Naghavi, Hochstedler, and Burnes disclose monitoring and not displaying a parameter. *See supra* Section IX.B.

c) **Apple’s Generic Motivation Does Not Address The Claim Limitations**

147. Third, Apple and Dr. Cockburn allege the combination “is merely the application of known techniques (changing a parameter display responsive to a change in parameter status) by known system (a multiparameter monitoring and display system), to yield predictable results (a multiparameter monitoring and display system in which the parameter display changes responsive to a parameter change). Pet., 15; EX1003, ¶51. Even if this motivation were correct, it does not demonstrate any reason to use the same display area to show two differently current measured parameters by replacing one with the other.

148. Apple’s generic statement fails to address both the claim limitation and the combination of Naghavi, Hochstedler, and Burnes. The claim limitation at issue is not merely “changing a parameter display responsive to a change in parameter status.” Pet., 15. The limitation is “the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured values based on an occurrence of an event.” Apple’s mischaracterization of “changing a parameter display responsive to a change in parameter status” is so

generic and broad that it even captures a mere change in color for a parameter display or even updating the measured value of a parameter on the display (e.g., heart rate changes from 60 to 85). Apple’s argument does not address the specific claim limitation.

149. Moreover, the claim requirement of replacing a currently measured value of a parameter with the currently measured value of another parameter based on an event was not a “known technique,” as Apple and Dr. Cockburn mischaracterized it. That was the limitation that Apple and Dr. Cockburn attempted to reconstruct using *three references*. Apple’s and Dr. Cockburn’s generic statement does not even explain why the three references would have been combined. Instead, they improperly characterized the limitation as a “known technique” when, in fact, they attempted to piece that limitation together with select portions of Naghavi, Hochstedler, and Burnes.

150. Apple’s proposed motivation fails to address *why* a POSITA would have allegedly combined Naghavi, Hochstedler, and Burnes. Instead, Apple’s argument, at best, alleges that two references would have been combined, but does not identify which reference discloses the allegedly “known technique,” and which reference discloses the allegedly “known system.”

151. Even assuming Hochstedler disclosed replacing one measured value with another measured value (which, in my understanding as a POSITA, it does not),

the display change in Hochstedler is done to adjust for a change in the system (*e.g.*, a sensor being added/removed), not an “event” consistent with the claims of the ’223 Patent. Similarly, even assuming Burnes and Naghavi disclose making display changes based on an event, neither Burnes nor Naghavi even suggests replacing one measured value with another measured value based on an event. This replacement would be contrary to the teachings of Naghavi, Hochstedler, and Burnes. Apple fails to explain why a POSITA would combined the alleged replacement in Hochstedler with a parameter approaching or exceeding a threshold.

D. Claim 4 Would Not Have Been Obvious

152. Claim 4 requires “the common display area is configured to default to displaying [one of] the measured value[s] of the first or second [physiological] parameter[s].” Apple relies upon Hochstedler for this limitation. Pet., 32. However, Hochstedler does not teach, suggest, or render obvious this limitation.

153. Apple argues that Hochstedler “includes ‘a default selection button.’” Pet., 32. Apple further argues that a POSITA would have understood or found it obvious that the “GUI has a default layout.” *Id.* However, Hochstedler does not teach, suggest, or render obvious a default layout. Hochstedler describes default *settings*, not default *layouts*:

When configuring the system 10, the user may specify that the ***system 10 does nothing in response to a system change*** (which is a ***default setting*** and referred to herein as Option 1).

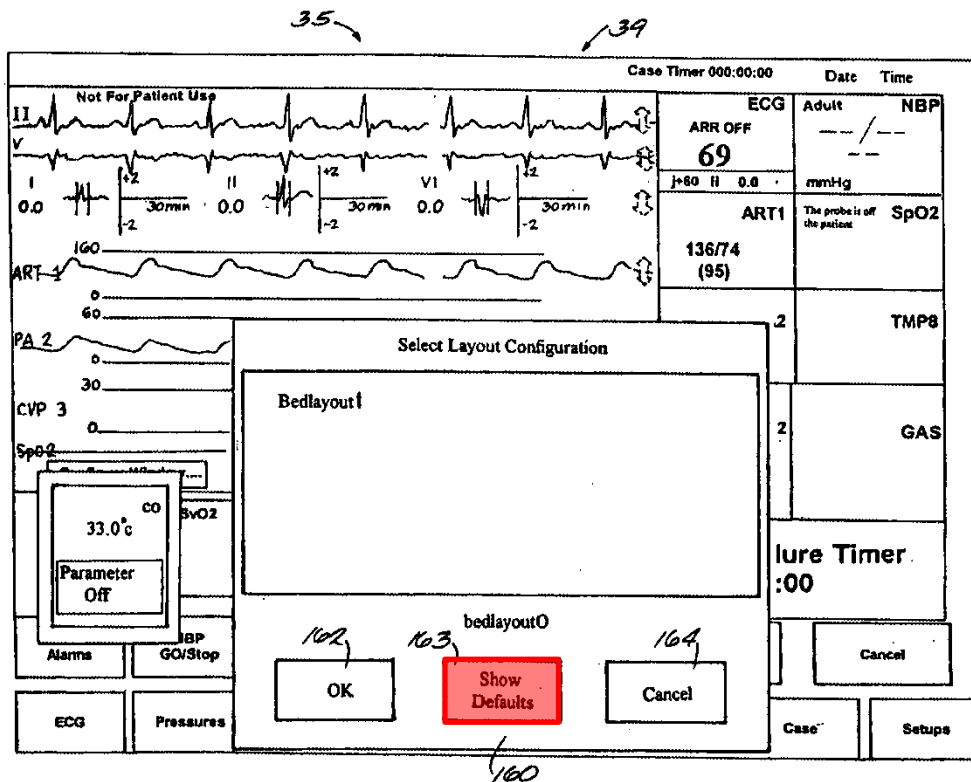
EX1004, 5:39-42 (emphasis added).

While the weightings tab 85 provides a mechanism to adjust the weightings of components, the system 10 does not permit a user to remove any of the components from the selected layout using the weightings tab. If no global or group-wide weights have been assigned for the particular event being configured, the system 10 assigns **default weights of “1” to every component in the layout**. The user may then specify or adjust each component’s weight.

Id., 7:63-8:3 (emphasis added).

FIG. 8 illustrates an implementation of Option 3 where a pop-up list or dialog box 160 is presented to the user showing the user that the overall layout is about to be changed to a new bed layout, Bedlayout1. Generically, the layouts listed in the dialog box 160 and other choices listed in the dialog boxes discussed below are referred to as “selections.” The dialog box 160 includes an accept mechanism in the form of an OK button 162 to confirm the switch, **a default selection button 163**, and a CANCEL button 164 to cancel the layout switch.

Id., 8:30-38 (emphasis added).



Id., Fig. 8.

154. As shown in the excerpts above, Hochstedler describes default *settings*, not a default *layout*. For example, Hochstedler has default weights for different parameters and GUI components. *Id.*, 7:7-11. The weights are used in an algorithm based on the sensors available to select the “layout with the highest weighted score.” *Id.*, 7:7-14. Hochstedler also describes that a default setting can include doing nothing to change the layout if the system changes, e.g. a sensor is added or removed. *Id.*, 5:39-42. As shown in Fig. 8 above, a user can select the “Show Defaults” option on the GUI to view the system defaults. *Id.*, Fig. 8, 8:36-38. Hochstedler never teaches, suggests, or renders obvious a default *layout*.

155. Hochstedler also teaches away from using a default layout. Rather, Hochstedler’s system uses a weighted algorithm to dynamically recommend layouts based on the configuration of the system. *Id.*, 6:50-8:9. There is no default layout, but rather layouts that are selected based on the system arrangement and an algorithm. Hochstedler, therefore, does not teach, suggest, or render obvious “the common display area is configured to default to displaying one of the measured values of the first or second physiological parameters.”

E. Claim 13 Would Not Have Been Obvious

156. Claim 13 requires “the common display area changes from displaying one of the measured values of the first or second physiological parameter to displaying the other of the measured values based on an occurrence of an event, the event being the measured value of one of the first or second physiological parameters approaching one or more threshold values indicative of a worsening state of a patient.”

157. As explained above in Section VII, a POSITA would have understood that the claim term “changes” should be interpreted similar to the term “replaced.” Regardless, Apple does not treat “changes” differently than “replaced.” Apple’s argument for Claim 13 refers back to its argument for Claim 1 and relies on the same theory that Naghavi-Hochstedler-Burnes “replac[es] display of the first parameter value with the second parameter value.” Pet., 35-36; EX1003, ¶95. For at least the

reasons discussed above for Claim 1, Apple fails to show that Naghavi-Hochstedler-Burnes discloses or renders obvious Claim 13.

F. Claims 15-17 Would Not Have Been Obvious

158. Claim 15 requires “the common display area, the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured values of the first or second physiological parameters based on an occurrence of an event, the event being one of the measured values of the first or second physiological parameters alarming.” Apple labels this limitation as Limitations [15b] and [15c]. For 15[b] (through “occurrence of an event”), Apple relies on its arguments for Limitation [1b]. For Limitation [15c], Apple relies on its arguments for Limitation [1c], and alleges that a second parameter value becoming “out of range” or “near out of range” is “alarming,” consistent with Limitation 15[c].

159. Apple’s argument for Claim 15 relies upon the same Naghavi, Hochstedler, and Burnes combination for Claim 1. Pet., 37-38. Thus, Apple fails to show that Claim 15 and dependent Claims 16-17 would have been obvious for at least the same reasons discussed above for Claim 1. *See supra* Sections IX.A-C

G. Claims 18-20 Would Not Have Been Obvious

160. Claim 18 requires “in the common display area, the display of one of the measured values of the first or second physiological parameters is replaced with the other of the measured values of the first or second physiological parameters

automatically based on which is a more critical one of the measured values of the first or second physiological parameters.” While Claims 1 and 13 require the event to be one of the parameters “approaching one or more threshold values indicative of a worsening state of a patient,” and Claim 15 requires the parameter to be “alarming,” Claim 18 requires that the replacing occurs “based on which is a more critical” of the parameters.

161. Apple’s argument for Claim 18 relies on the same combination of Naghavi, Hochstedler, and Burnes for Claim 1. Pet., 39. For at least the reasons discussed above for Claim 1, Apple fails to show that Claim 18 would have been obvious. *See supra* Sections IX.A-C.

162. Moreover, Apple also fails to show that the references or their combination teach, suggest, or render obvious replacing the parameter “based on which is a more critical” of the parameters. Apple argues that a “parameter (e.g., the second parameter) becoming (near) out of range indicates that the second parameter is a more critical one of the parameters, e.g., compared to a parameter that has not changed.” Pet., 39 (citing EX1003, ¶109) (emphasis omitted). However, just because one parameter becomes out-of-range or near-out-of-range does not mean that parameter is “more critical” than another parameter. For example, if a currently displayed parameter is already out of range, it could be more critical than an undisplayed parameter that becomes near-out-of range. Additionally, a particular

parameter could also be critical for a particular medical procedure regardless of whether other parameters become out of range. For example, a patient's respiratory rate or heart rate may be critical during anesthesia, regardless of whether other parameters are near out of range. None of the references disclose determining which parameter is "more critical" than the other. Moreover, there would have been no need to determine which parameter is more critical than the other because Naghavi, Hochstedler, and Burnes display all of the monitored parameters at the same time. There is no need to determine which one parameter is more critical than another parameter.

163. Thus, Apple fails to show that Claim 18 and dependent Claims 19-20 would have been obvious.⁴

H. Claims 21-22 Would Not Have Been Obvious

164. Claim 21 requires displaying "two physiological parameter measurements using a display location of a display," that is "generally capable of displaying a single physiological parameter measurement." Limitation [21pre]. Claim 21 also requires "replacing the display of the measured value of the first

⁴ I understand that Dependent Claim 19 is addressed in Apple's Ground 1B. Pet., 47-49. Apple's Ground 1B arguments do not resolve the deficiency with the base independent Claim 18.

physiological parameter with a display of a measured value of a second physiological parameter in the display location when a change in the measurement of the second physiological parameter indicates a worsening state of the patient.” Limitation [21b].

165. Thus like Claim 1, Claim 21 requires monitoring a second physiological parameter to determine when that parameter “indicates a worsening state of the patient,” even though the second physiological parameter is not displayed in the display location when the first physiological parameter is displayed. Apple’s arguments for Claim 21 rely on the same combination of Naghavi, Hochstedler, and Burnes for Claim 1. Pet., 40-42. For at least the reasons discussed above for Claim 1, Apple fails to show that any of the references or the combination teach, suggest, or render obvious this limitation in Claim 21. *See supra* Sections IX.A-C. Thus, Apple fails to show that Claims 21 and 22 would have been obvious.

X. GROUND 1B DOES NOT DEMONSTRATE OBVIOUSNESS

A. Claim 19 Would Not Have Been Obvious (Ground 1B)

166. Apple argues in Ground 1B that Claim 19 would have been obvious under the combination of Naghavi, Hochstedler, Burnes, and Hayashi. Claim 19 depends from Claim 18. As discussed above, Claim 18 would not have been obvious over Naghavi-Hochstedler-Burnes. Apple and Dr. Cockburn do not address the deficiency of Claim 18 with Hayashi. *See* Pet., 47-49; EX1003, ¶¶ 130-133; EX2043,

99:17-100:14. Thus, at least for the reasons explained above for Claim 18, Claim 19 would not have been obvious.

B. Claims 27, 32, 34, 36, 37, 42, 43, 44 Would Not Have Been Obvious

167. Apple argues in Ground 1B that Claim 27 would have been obvious over the combination of Naghavi, Hochstedler, Burnes, and Hayashi. Pet., 49-56. Claim 27 recites a “display capable of displaying a measured value of a first blood parameter ... or displaying a measured value of a second blood parameter.” Limitation [27a]. The claim further recites “the display of the measured value of the first blood parameter is replaced by the measured value of the second blood parameter when the second blood parameter passes an alarm threshold.” Limitation [27c]. Therefore, like Claim 1, Claim 21 requires monitoring the second blood parameter to determine when it “passes an alarm threshold,” even if the second parameter is not displayed when the first blood parameter is displayed.

168. Dr. Cockburn confirmed that Ground 1B does not rely on Hayashi to disclose replacing a measured value of one parameter with the measured value of another parameter. EX2043, 99:17-100:14. Thus, for the same reasons as discussed above for Claim 1, Claim 27 would not have been obvious over Naghavi-Hochstedler-Burnes-Hayashi. *See supra* Sections IX. Moreover, Claims 32, 34, 36, 37, 42, 43, and 44 which all depend from Claim 27 also would not have been obvious for the same reasons.

C. Claim 28 Would Not Have Been Obvious

169. Apple argues in Ground 1B that Claim 28 would have been obvious over the combination of Naghavi, Hochstedler, Burnes, and Hayashi. Pet., 56-59. Claim 28 recites “a display capable of displaying a measured value of a first blood parameter ... or displaying a measured value of a second blood parameter.” Limitation [28a]. Claim 28 further recites “wherein the display also changes from displaying the measured value of the first blood parameter to displaying the measured value of the second blood parameter when the second blood parameter passes an alarm threshold.” Limitation [28c]. Like Claim 1, Claim 28 requires monitoring the second blood parameter to determine when it “passes an alarm threshold” even if the second blood parameter is not displayed when the first blood parameter is displayed.

170. As discussed above, “changes” should be interpreted similarly as “replaced.” *See supra* Section VII.D. Regardless, Apple relies on the same argument that Naghavi-Hochstedler-Burnes allegedly replaces a measured value to disclose Claim 28’s requirement. *See* Pet., 57; EX1003, ¶157. Dr. Cockburn confirmed that Ground 1B does not rely on Hayashi to disclose replacing a measured value of one parameter with the measured value of another parameter. EX2043, 99:17-100:14. For at least the reasons discussed above for Claim 1, Claim 28 would not have been obvious over Naghavi-Hochstedler-Burnes-Hayashi. *See supra* Section IX.

XI. GROUND 1C DOES NOT DEMONSTRATE OBVIOUSNESS

171. Apple argues in Ground 1C that Claims 42-44 would have been obvious over the combination of Naghavi, Hochstedler, Burnes, Hayashi, and Mortz.⁵ Pet., 72-75. Claims 42-44 depend from Claim 27. Apple adds Mortz for the dependent claim limitations in Claims 42-44. Pet., 56-59. However, Apple does not argue that Mortz discloses “the display of the measured value of the first blood parameter is replaced by the measured value of the second blood parameter when the second blood parameter passes an alarm threshold,” as recited in independent Claim 27. Pet., 56-59; EX2043, 100:15-101:13. Thus, for at least the reasons discussed for Claim 1, Claims 42-44 would not have been obvious over Naghavi-Hochstedler-Burnes-Hayashi-Mortz.

XII. CONCLUSION

172. For at least the foregoing reasons, it is my opinion that Apple fails to show that the challenged claims would have been obvious to a POSITA at the time of the invention of the '223 Patent.

⁵ While Apple lists Claim 32 in its heading and table of contents for Ground 1C (Pet., i, 69), Apple does not address Claim 32 under Ground 1C in its Petition or Cockburn’s declaration. *See* Pet., 69-75; EX1003, ¶¶192-209.

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