UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,	) Case IPR 2024-00241
Petitioner,	)
v.	) Case IPR 2024-00243
MASIMO CORPORATION,	)
Patent Owner.	) Case IPR 2024-00244
	)

REMOTE DEPOSITION OF VIJAY K. MADISETTI, PH.D.

VOLUME I

February 4, 2025

10:00 a.m. Eastern Standard Time

Reported by: Lori J. Goodin, RPR, CLR, CRR,

RSA, California CSR #13959

DIGITAL EVIDENCE GROUP

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APPLE 1086
Apple v. Masimo
IPR2024-00244

1 REMOTE DEPOSITION of
2 VIJAY K. MADISETTI, PH.D.,
3 Witness in the above-titled action, held on
4 Tuesday, February 4, 2025, commencing at
5 approximately 10:00 a.m. EST before Lori J.
6 Goodin, RPR, CRR, RSA, California CSR #13959,
7 Registered Professional Reporter, Certified
8 Realtime Reporter, Realtime Systems
9 Administrator, and Certified Shorthand Reporter,
10 and Notary Public of the State of Florida, State
11 of California, State of Maryland, District of
12 Columbia, State of Delaware and Commonwealth of
13 Pennsylvania.
14
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19
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21
22

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3 WITNESS: VIJAY K. MADISETTI, PH.D.

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12 PREVIOUSLY MARKED EXHIBITS

13 FIRST REFERRAL

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22

1 TUESDAY, FEBRUARY 4, 2025, 10:00 a.m. EST
2
3 PROCEEDINGS
4 * * *
5 Whereupon,
6 VIJAY K. MADISETTI, PH.D.,
7 a witness called for examination, having been
8 first duly sworn, was examined and testified as
9 follows:
10 * * *
11 EXAMINATION
12
13 MR. BISENIUS: We are here today
14 regarding IPR Proceeding Number
15 IPR 2024-00241 regarding U.S. Patent
16 Number 10,687,743, and IPR Proceeding Numbers
17 IPR 2024-00243 and IPR 2024-00244 regarding
18 U.S. Patent Number 10,722,159.
19 BY MR. BISENIUS:
20 Q. Do you understand that you are under
21 oath?
22 A. Yes.

1 Q. Is there any reason that you cannot
2 give truthful and accurate testimony today?
3 A. There is no reason.
4 Q. To ensure clarity, I will define
5 several terms that will be used throughout this
6 deposition.
7 When I use the terms "patent owner"
8 or "Masimo." I'm referring to Masimo
9 Corporation, the patent owner in these
10 proceedings.
11 Do you understand?
12 A. Yes.
13 Q. When I use the term "Apple" or
14 "petitioner," I'm referring to Apple, Inc.
15 Do you understand?
16 A. Yes.
17 Q. When I use the term "the '743
18 patent." I'm referring to U.S. Patent
19 Number 10,687,743.
20 Do you understand?
21 A. Yes.
22 Q. When I use the term "the '159

1 patent." I'm referring to U.S. Patent
2 Number 10,722,159.
3 Do you understand?
4 A. Yes.
5 Q. When I use the acronym, POSITA, I'm
6 referring to a person of ordinary skill in the
7 art at the time of the alleged invention.
8 Do you understand?
9 A. Yes.
10 Q. For each of these proceedings, you
11 have submitted two declarations, for a total of
12 six declarations.
13 Is that correct?
14 A. I submitted three declarations
15 before the institution and three declarations
16 after the institution.
17 Q. Due to the number of proceedings and
18 declarations, I will try to use the specific
19 proceeding number and exhibit number when
20 discussing any of your declarations.
21 But, please let me know if at any
22 point you are unsure of which proceeding or which

1 document I am referring to.
2 A. Okay.
3 Q. Can you please describe how you
4 prepared for today's deposition?
5 A. I reviewed my declaration, the
6 exhibits, primarily Exhibit 2100, in these IPRs.
7 Q. Approximately how much time did you
8 spend preparing for today's deposition?
9 A. I would say a few hours in the past
10 few days, I think.
11 So, it was previously scheduled a
12 couple of weeks ago, a couple of days then, a few
13 hours each day. And a few hours yesterday.
14 Q. As part of your preparation to
15 testify today, please identify each person you
16 communicated with either in person or over video
17 or phone conference.
18 A. I spoke with Attorney Daniel Kiang
19 for a few hours and also with Attorney Doug
20 Wentzel a couple of weeks ago.
21 Q. You mentioned that you reviewed your
22 declarations, which are Exhibit 2100 in each

1 proceeding.
2 What other documents did you review
3 in preparation for your deposition today?
4 A. I briefly reviewed, I think, some of
5 the patents at issue.
6 Q. Are you referring to the '159 patent
7 and the '743 patent?
8 A. Yes. And also briefly the, the
9 patents that were cited as prior art.
10 Q. When were you first contacted by
11 someone on behalf of Masimo?
12 MR. KIANG: Objection to the form.
13 THE WITNESS: For which matter,
14 Counsel?
15 BY MR. BISENIUS:
16 Q. When you first began your
17 relationship with Masimo, when were you first
18 contacted by someone on behalf of Masimo?
19 A. With respect to this case or any
20 other case or? I'm not sure what --
21 Q. I'm speaking in general. Not just
22 this case.

1 A. It is probably 2017 or 2000 --
2 around that time frame.
3 Q. When were you first contacted by
4 someone on behalf of Masimo with respect to the
5 cases involving the '159 and '743 patents?
6 MR. KIANG: Objection to form.
7 THE WITNESS: Again, I don't
8 remember the exact dates, but I first
9 remember these patents around the time there
10 was a case at the ITC.
11 But, I don't remember the exact
12 dates.
13 BY MR. BISENIUS:
14 Q. You have presented testimony in the
15 ITC investigation regarding the related '745
16 patent.
17 Is that correct?
18 A. I don't remember very clearly, but I
19 believe so with respect to some of the related
20 patents.
21 Q. Approximately how many cases have
22 you worked on as an expert on behalf of Masimo?

1 MR. KIANG: Objection to form.
2 THE WITNESS: Probably three, three
3 or four, over the past ten years.
4 BY MR. BISENIUS:
5 Q. When did you first become aware of
6 the '743 patent?
7 A. I don't remember the exact date.
8 Q. Without revealing privileged
9 communications, can you please describe the
10 process by which you prepared your declaration?
11 For example, did you write every
12 word throughout the entire process? Did counsel
13 for the patent owner prepare first drafts that
14 you revised? Or, was there a different process?
15 MR. KIANG: Objection to form. And
16 objection to privilege.
17 Dr. Madisetti, you may answer the
18 question to the extent that you do not reveal
19 any communications with counsel.
20 THE WITNESS: Okay. So, typically
21 with respect to the declarations, I have
22 discussions with the counsel and I also have

1 templates that I use to prepare the
2 declaration that I have used in other IPRs.
3 And, I create a first draft of that
4 and then I work with the counsel to complete
5 it.
6 The counsel provides editorial help
7 making sure that all of the details are put
8 in with respect to the references and how
9 they are cited, all of the claims and
10 everything else.
11 But, the opinions are mine and the
12 technical opinions that are expressed in my
13 declaration are mine and mine alone.
14 BY MR. BISENIUS:
15 Q. What percentage of the words in your
16 declaration did you write in this case as opposed
17 to merely reviewing words written by someone
18 else?
19 A. As I said, I've authored similar
20 reports in other cases with related patents. I
21 don't know the exact percentage.
22 But, these opinions are mine. And

1 as I said, I worked on these reports together
2 with the counsel who provided editorial
3 assistance.
4 Q. What percentage of the arguments and
5 theories for validity and other topics addressed
6 in your declarations did you personally create as
7 opposed to being told those arguments and
8 theories by someone else?
9 MR. KIANG: Objection to form.
10 Objection to privilege.
11 Dr. Madisetti, you may answer the
12 question to the extent you do not reveal any
13 communications with counsel.
14 THE WITNESS: As I said, I have
15 discussed my opinions with the counsel and
16 these are my opinions in my declaration.
17 I don't remember the specifics of
18 that.
19 BY MR. BISENIUS:
20 Q. As part of your work on these IPRs
21 and the related ITC and District Court cases, did
22 you ever communicate in any way with Ammar

1 Al-Ali, the named inventor of the '159, '743
2 and '745 patents?
3 MR. KIANG: Objection to form.
4 THE WITNESS: Counsel, could you
5 please clarify what your question is? Which
6 matter? When? What are you asking about?
7 Because I believe he has authored
8 and been an inventor on many different
9 patents. And many of those patents were part
10 of different cases.
11 So, I'm unsure as to what
12 specifically you are asking for.
13 BY MR. BISENIUS:
14 Q. Well, I can take it into pieces.
15 Have you ever communicated directly
16 with Ammar Al-Ali, the inventor of these patents?
17 A. I don't -- in all cases -- there may
18 be a couple of conversations with him in
19 different cases.
20 In all cases, it was organized and
21 presided over by the attorneys from Knobbe. I
22 did not directly contact or communicate with the

1 inventors.
2 I also have reviewed their
3 deposition transcripts in other cases. I don't
4 remember specifically with respect to which
5 patents.
6 I have also been present, I think,
7 when they testified in different matters. Again,
8 I don't recall the specifics.
9 Q. Have you had a direct conversation
10 with Ammar Al-Ali?
11 A. As I said, it was always -- to the
12 extent I had any, maybe one or two. It would be
13 in the presence of counsel.
14 But, I don't recall the specifics
15 and in which case it was for.
16 Q. Did you rely on the information that
17 you received from Ammar Al-Ali in any way in
18 preparing your report or in forming your
19 opinions?
20 A. I don't believe I talked with
21 Mr. Ammar Al-Ali with respect to these IPRs. And
22 I don't think -- I may have cited some of the

1 testimony of his deposition transcripts, but
2 nothing from any direct communications.
3 Q. Approximately when did you begin
4 working on your most recent declarations for
5 these IPR proceedings?
6 A. Which IPR proceedings, Counsel?
7 Q. The IPR proceedings involved in this
8 deposition today.
9 So --
10 A. I see, so --
11 Q. Yes, involving the '743 and '159
12 patents.
13 A. Yes, that would be some time in the
14 fall of 2024, last year. So, some time in that
15 time frame, September, October, November time
16 frame.
17 Q. Did you have anyone, such as an
18 assistant, help you with your declarations for
19 these IPR proceedings?
20 A. No.
21 Q. Have you communicated with anyone
22 other than attorneys for the patent owner in

1 preparing your most recent declarations for these
2 IPR proceedings?
3 A. No.
4 Q. Have you communicated directly with
5 anyone at Masimo as part of your preparation of
6 your declarations in these IPR proceedings?
7 A. No.
8 Q. Prior to preparing your declarations
9 for these three proceedings, did you review any
10 of the declarations prepared by Dr. R. James
11 Duckworth for the IPR proceedings involving the
12 related '745 patent?
13 A. I may have reviewed some of
14 Dr. Duckworth's declarations.
15 I don't precisely recall which ones.
16 Q. Do you recall if there were any
17 statements made in any of Dr. Duckworth's prior
18 declarations that you reviewed that you disagree
19 with?
20 A. I don't -- sitting here, I don't
21 remember one way or the other. I don't believe I
22 did.

1 Q. Have you reviewed any of the
2 transcripts for depositions of Dr. Duckworth for
3 the IPR proceedings involving the related '745
4 patent?
5 A. I don't believe so.
6 Q. Have you had any direct
7 communication with Dr. Duckworth regarding these
8 IPR proceedings for the '743 and '159 patents?
9 A. I don't believe so.
10 Q. Did you know of Dr. Duckworth prior
11 to working on these cases?
12 A. I may have heard of his name over
13 the years. I don't recall precisely when.
14 Q. Do you recall if you have ever met
15 Dr. Duckworth in person?
16 MR. KIANG: Relevance.
17 THE WITNESS: I don't really
18 remember one way or the other. There were so
19 many matters and trials, I don't remember.
20 BY MR. BISENIUS:
21 Q. Do you currently have any opinions
22 about the '743 and '159 patents that are not

1 contained in your declarations?
2 MR. KIANG: Objection to form.
3 THE WITNESS: My opinions are in my
4 declaration. I don't have any additional
5 opinions sitting here today.
6 BY MR. BISENIUS:
7 Q. Has anything happened since you
8 prepared your declarations that changes any of
9 your opinions that you provided in the
10 declarations?
11 A. No.
12 Q. Are you currently aware of any
13 errors that exist in any of your three most
14 recent declarations for these proceedings?
15 A. No.
16 Q. During your career, approximately
17 how many times have you been retained as an
18 expert either testifying or nontestifying in a
19 patent proceeding?
20 A. I don't remember, Counsel.
21 Q. Would it be more than ten?
22 A. Yes.

1 Q. Would it be more than 20?
2 A. I think so over the past 20 years,
3 yes.
4 Q. Approximately how many times have
5 you been deposed as an expert in a patent
6 proceeding?
7 A. Again, I don't remember.
8 Q. Would it be more than 20?
9 A. I think so, yes.
10 Q. Would it be more than 30?
11 A. Yes.
12 Q. Would it be more than 50?
13 A. It can be, yes.
14 MR. BISENIUS: All right. I would
15 like to turn to the '159 patent now. This is
16 Exhibit 1001 in the 243 and 244 proceedings.
17 (Whereupon, previously marked
18 Apple Exhibit 1001,
19 first referral.)
20 THE WITNESS: Which one you said?
21 BY MR. BISENIUS:
22 Q. The '159 patent. This is

1 Exhibit 1001 in the 243 and 244 proceedings.
2 A. One second. Let me -- so I am in
3 the 243 folder. And then --
4 Q. The zip file labeled 243 is going to
5 be Patent Owner Exhibits.
6 A. Yes.
7 Q. The '159 patent should be outside of
8 those zip folders.
9 A. Oh, I see. Okay. So, it is exhibit
10 would be I think -- what is the 259? How do you
11 name that? Is it --
12 Q. It should be Exhibit 1001. Let
13 me --
14 A. Yeah, I got it. Okay.
15 Q. Okay. This is Patent
16 Number 10,722,159, correct?
17 A. Yes. It is Exhibit 10 -- it is
18 exhibit Apple 1001.
19 Q. All right. Have you read this
20 entire patent?
21 A. Yes.
22 Q. When is the most recent time that

1 you have read the entire '159 patent?
2 A. Over the past two, three weeks.
3 Q. Have you also separately read the
4 entire '743 patent?
5 A. Yes.
6 Q. Have you read the related '745
7 patent?
8 MR. KIANG: Objection as to scope.
9 THE WITNESS: Not recently.
10 BY MR. BISENIUS:
11 Q. Are you aware that the '159 patent
12 and the '743 patent share the same figures?
13 A. What was the question, Counsel?
14 Q. Are you aware that the '159 patent
15 and the '743 patent share the same figures?
16 A. So, the '159 has eight figures, and
17 they are described in Column 5. The '743 has
18 eight figures and they look similar.
19 So, I would say that they both have
20 eight figures and they look similar, but I would
21 defer to the disclosure of the figures in the
22 related specifications as the final answer to

1 your question.
2 I don't want to provide a high level
3 answer that they are the same. But I would say
4 that they both have eight figures, they look
5 similar, and defer to the specification.
6 Q. Are you aware that the '159 patent
7 and '743 patent both claim priority to the same
8 provisional patent application?
9 A. I understand that they both claim
10 priority to the provisional dated, the 430
11 provisional dated July 2nd, 2015. It is called
12 the Provisional Application Number 62-188430.
13 Q. And you agree that both the '159
14 patent and the '743 patent claim priority to that
15 provisional application, correct?
16 A. Yes. Based on the cover and based
17 on the specification, they both describe their,
18 the Provisional Application Number 62-188430 that
19 was filed on July 2nd, 2015.
20 Q. Are you aware that the '159 patent
21 and the '743 patent share substantially the same
22 specification?

1 A. Again, just like my previous answer.
2 I mean they have similar portions in the
3 specification. I have not done a line-by-line
4 comparison or a page-by-page comparison.
5 But, I will defer to the
6 specification themselves as opposed to offering a
7 blanket statement that I have not fully
8 confirmed.
9 They do share portions that are
10 similar.
11 Q. Is it your opinion that the
12 specification and figures of the '159 patent
13 enable a POSITA to practice the claims of
14 the '159 patent?
15 MR. KIANG: Objection, scope.
16 THE WITNESS: Are you referring to a
17 portion of my declaration, Counsel?
18 BY MR. BISENIUS:
19 Q. I am more generally referring to the
20 claims, the challenge claims, which is all of the
21 claims of the '159 patent.
22 Do you believe that the

1 specification in figures of the '159 patent
2 enable a POSITA to practice the claims of
3 the '159 patent?
4 MR. KIANG: Objection to scope.
5 THE WITNESS: Yeah, I don't think I
6 have offered a -- anything in my declaration
7 with respect to written description or
8 enablement or any of these other matters.
9 So, I would prefer -- I am not
10 comfortable answering it right now because
11 that is not something that I offered an
12 opinion in this matter.
13 Unless you can point to certain
14 portions of my declaration.
15 BY MR. BISENIUS:
16 Q. Let's turn to your declaration in
17 the IPR proceeding involving the '159 patent that
18 is IPR 2024-00243.
19 A. Okay.
20 Q. I am going to refer to that as
21 the 243 proceeding, so I can say it quicker.
22 A. Okay.

1 Q. So, your most recent declaration is
2 Exhibit 2100.
3 (Whereupon, previously marked
4 Apple Exhibit 2100,
5 first referral.)
6 BY MR. BISENIUS:
7 Q. So, turning for example to
8 Paragraph 28. Here you have stated, in the last
9 sentence you state, "I have interpreted each
10 claim term in accordance with the principles set
11 forth in this paragraph."
12 A. Which page are you looking at,
13 Counsel? Or which paragraph?
14 Q. On Page 15, going into Page 16,
15 Paragraph 28 of your most recent declaration,
16 Exhibit 2100, in the 243 proceeding.
17 A. Okay. Okay, I see. So, you are in
18 the section called Applicable Legal Standards.
19 Q. Yes. And specifically the
20 subsection labeled Claim Construction.
21 A. Okay.
22 Q. And here you said that you

1 "understand that the Patent Office generally
2 construes claim terms by giving them their
3 ordinary and customary meaning as they would have
4 been understood by a POSITA at the time of the
5 invention in view of the intrinsic record which
6 includes the patent specification and file
7 history."
8 Do you see that?
9 A. I do.
10 Q. And so, you have stated here that
11 you are interpreting the claim terms to have
12 their plain and ordinary meaning, but that this
13 was informed by the patent specification of the
14 patent. Correct?
15 A. Yes. That is the understanding I
16 have been given by counsel.
17 Q. And so my question is, is it your
18 opinion that the specification and figures of
19 the '159 patent enable a POSITA to practice the
20 claims of the '159 patent?
21 MR. KIANG: Objection to scope.
22 THE WITNESS: As I said, Counsel,

1 that is not what I was asked to provide an
2 opinion on in my declaration.
3 So, all I say here is the guidance
4 provided by the counsel. Because it is an
5 issued patent, I presume it is valid. And I
6 assume that all of the checkboxes are met.
7 So, that is the assumption that I
8 have utilized in my understanding of the
9 legal guidelines.
10 BY MR. BISENIUS:
11 Q. So you are unsure the if a POSITA
12 would have been unable to practice the claims of
13 the '159 patent --
14 MR. KIANG: Objection --
15 BY MR. BISENIUS:
16 Q. -- based on the specification and
17 figures?
18 MR. KIANG: Objection. Misstates
19 testimony.
20 THE WITNESS: As I said, Counsel, I
21 do not offer an opinion on that issue because
22 I was not asked to offer an opinion on this

1 issue in this matter.
2 If asked and allowed, I may do so in
3 the future.
4 But, for this declaration, for this
5 IPR, I do not offer any opinions on that.
6 Q. Well, I'm asking you today, do you
7 believe that the specification in figures of
8 the '159 patent enable a POSITA to practice the
9 claims of the '159 patent?
10 MR. KIANG: Objection to scope.
11 THE WITNESS: As I said, Counsel,
12 that is not an opinion that I offered in the
13 declaration. If asked and allowed, I may do
14 so in the future. But today I don't have an
15 opinion on that.
16 I believe that it is a valid patent.
17 It meets all of the requirements of the U.S.
18 Patent Office for a valid patent.
19 Other than that, I don't have the
20 specific, more detailed opinion because that
21 is not something I was asked to consider for
22 this particular declaration.

1 BY MR. BISENIUS:
2 Q. Is it your opinion that the
3 specification in figures of the '743 patent
4 enable a POSITA to practice the claims of
5 the '743 patent?
6 MR. KIANG: Objection to scope.
7 THE WITNESS: As I said, Counsel,
8 this is not an opinion that I expressed, that
9 I was asked to provide as a part of this
10 declaration.
11 But, if asked and allowed in the
12 future, I may so do so in other reports and
13 declarations.
14 But, sitting here today, it is not
15 an opinion that I offered as a part of these
16 proceedings, so I do not have an answer for
17 you.
18 BY MR. BISENIUS:
19 Q. So, you are allowed to answer this
20 question. There is nothing privileged indicated
21 by my question or the answer to this question.
22 So, you are permitted to answer this

1 question. Counsel for Masimo can move to have it
2 struck from the record later on, if it is found
3 to be outside the scope. They can object.
4 But, you are permitted to answer the
5 question. And I am asking you this question.
6 A. I don't have --
7 Q. So, the question, is it your opinion
8 that the specification and figures of the '743
9 patent enable a POSITA to practice the claims of
10 the '743 patent?
11 MR. KIANG: Objection to scope and
12 objection to the manner in which counsel is
13 asking the question and badgering the
14 witness.
15 Counsel obviously understands that
16 the question is outside the scope.
17 THE WITNESS: As I understand, that
18 question was not something I was asked to
19 provide an opinion on. And I did not provide
20 an opinion on in my declaration unless you
21 can point to something in my declaration.
22 These are important legal matters.

1 These are important opinions that you must
2 carefully analyze and offer.
3 You cannot offer off-the-cuff
4 answers.
5 If asked and allowed to do so, I may
6 provide such answers in the detail that such
7 important questions merit.
8 But, sitting here today, I don't
9 have a detailed and precise answer for you.
10 As I said, I assume that it, being an issued
11 patent, that is presumed valid and therefore
12 checks all of the boxes.
13 BY MR. BISENIUS:
14 Q. Let's go back to your declaration
15 for the 243 proceeding involving the '159 patent,
16 Exhibit 2100.
17 I want to go a few paragraphs
18 earlier to Paragraph 25.
19 A. One second. Okay.
20 Q. Here you state, "In forming my
21 opinions in this declaration, I have also relied
22 upon my educational and professional experience.

1 "I understand that my analysis and
2 opinions should be made from the perspective of
3 one of ordinary skill in the art, i.e., a POSITA,
4 related to the '159 patent at the relevant time,
5 which is July 2nd, 2015."
6 Do you see that?
7 A. You are reading from Paragraph 25 in
8 my declaration.
9 Q. And so, you conducted your analysis
10 of the '159 and '743 patents from the perspective
11 of a POSITA; is that correct?
12 A. Yes.
13 Q. And all of your analysis is based on
14 what a POSITA would have understood regarding
15 what is recited in the claims of the '159
16 and '743 patents; is that correct?
17 A. Yes.
18 Q. So, I'm asking you, would a POSITA
19 have understood how to implement the
20 physiological monitoring device recited by the
21 claims of the '159 patent?
22 MR. KIANG: Objection to scope.

1 THE WITNESS: As I said, Counsel, I
2 was not asked to offer a specific opinion on
3 that issue with respect to written
4 description or enablement and other such
5 issues you are asking me about which I
6 understand are not usually covered in IPRs.
7 But, as I said, I assume that
8 because the Patent Office has issued this
9 patent and it is a valid patent, the
10 presumption is that it checks all of the
11 boxes. I don't have anything else at this
12 point because it is not part of my opinions I
13 was asked to give in this particular matter.
14 BY MR. BISENIUS:
15 Q. You gave an opinion on Claim 8 of
16 the '159 patent; is that correct?
17 A. Are you referring to a particular
18 paragraph, Counsel?
19 Q. Well, for example, turning to
20 Page 51 of the '243 proceeding, declaration
21 Exhibit 2100.
22 A. One second. Page 51, you said?

1 Q. Page 51, yes. At the bottom. Just
2 above Paragraph 81.
3 A. Okay. One second. Okay. I am on
4 Page 51. At the bottom which is the part of the
5 section, saying that, "determining oxygen
6 saturation at the wrist would not have been
7 obvious to a POSITA," Claims 18 and 17.
8 Section D on Page 51.
9 Q. It is Claims 8 and 17, correct?
10 A. Claims 8 and 17.
11 Q. And so you have analyzed Claims 8
12 and 17 of the '159 patent from the perspective of
13 a POSITA; is that correct?
14 A. I have analyzed Claims 8 and 17 in
15 this particular section to show that determining
16 oxygen saturation at the wrist would not have
17 been obvious to a POSITA.
18 Q. And so in analyzing those claims,
19 you were putting yourself in a position of a
20 POSITA and what a POSITA understood.
21 Is that correct?
22 A. I was describing that in the context

1 of the prior art references, that are called
2 Iwamiya, I-W-A-M-I-Y-A, and Sarantos,
3 S-A-R-A-N-T-O-S.
4 Q. So, turning to Claim 8 of the '159
5 patent, it is in Column 16 of the '159 patent.
6 If you want to turn there and let me know when
7 you get there.
8 A. Okay. Which patent, '159?
9 Column 16.
10 Q. Correct.
11 A. Okay. Yes.
12 Q. So here Claim 8 states, "The
13 physiological monitoring device of Claim 1,
14 wherein the physiological parameter comprises
15 oxygen saturation."
16 Do you see that?
17 A. I do.
18 Q. So, because you have analyzed
19 Claim 8 from the perspective of a POSITA, I'm
20 asking you, would a POSITA have known how to
21 implement the physiological monitoring device
22 claimed by Claim 8 to measure oxygen saturation?

1 MR. KIANG: Objection to form and
2 scope.
3 THE WITNESS: As I said, that is not
4 an opinion I offered with respect to
5 the '159. I do not -- unless you are
6 referring to a particular portion of the
7 declaration.
8 I was referring to my understanding
9 of our POSITA would understand the
10 disclosures of the prior art references,
11 Iwamiya and Sarantos. And that they don't
12 disclose determining oxygen saturation at the
13 user's wrist.
14 Q. So, you are unsure if a POSITA would
15 have been able to implement the physiological
16 monitoring device of Claim 8 to measure oxygen
17 saturation; is that correct?
18 MR. KIANG: Objection, misstates
19 testimony. And objection to scope.
20 THE WITNESS: I disagree with your
21 characterization of my testimony. I am
22 simply saying I have not analyzed the '743

1 and the '159 with respect to written
2 description nor enablement or other such
3 issues which I understand are outside the
4 scope of IPRs.
5 I was referring to the disclosures
6 of the prior art patents and other material
7 that were discussed in my declaration, that
8 they don't disclose that claim step.
9 BY MR. BISENIUS:
10 Q. You stated in your declarations that
11 you have analyzed the claims from the perspective
12 of a POSITA; is that correct?
13 A. I analyzed them in the context of
14 the prior art references which were in this
15 particular section, Iwamiya and Sarantos.
16 And I specifically said that
17 determining oxygen saturation in Sarantos and
18 Iwamiya would not have been -- would not be
19 disclosed in Iwamiya or Sarantos.
20 Q. And in analyzing the claims of
21 the '159 and '743 patents from the perspective of
22 a POSITA, you were considering all of the

1 knowledge that a person of ordinary skill in the
2 art at the time would have had in this field; is
3 that correct?
4 A. I would just defer to the
5 description of a POSITA. And I understand that a
6 POSITA would understand that the disclosures of
7 Iwamiya and Sarantos would not disclose measuring
8 oxygen saturation, for the reasons I discussed in
9 my declaration.
10 Q. Okay. So, my question to you is:
11 Thinking from the perspective of a POSITA at the
12 relevant time frame in the year 2015, would a
13 person of ordinary skill in the art at the time,
14 having all of the knowledge of a person of
15 ordinary skill in the art at the time, have known
16 how to implement the physiological monitoring
17 device of Claim 8 to measure oxygen saturation?
18 MR. KIANG: Objection to form.
19 Objection to scope.
20 THE WITNESS: I mean, as I said in
21 this -- with respect to the '159 and '743
22 patents, that the inventors had -- the

1 inventors themselves performed research into
2 various techniques for measuring and
3 determining these parameters.
4 So, Mr. Ammar Al-Ali, for example,
5 would be -- was involved with carrying out
6 such determinations and calculations at the
7 time frame of this particular invention as a
8 part of his work at Masimo.
9 But, I am not aware of, I am not --
10 the evidence that I cite shows that a POSITA
11 would not understand -- would not understand
12 the disclosures of Sarantos and Iwamiya and
13 other prior art references to disclose such a
14 determination as claimed.
15 BY MR. BISENIUS:
16 Q. I would like to stick with the '159
17 patent. And could you please turn to Column 8.
18 A. Okay.
19 Q. And specifically I would like to
20 talk about the paragraph starting at Line 32 of
21 Column 8.
22 Could you please read that paragraph

1 to yourself and let me know when you've finished?
2 A. This paragraph is referring to
3 Figure 4A that I'm trying to look at. And --
4 okay. I have reviewed the paragraph and I have
5 looked at the figure.
6 Q. All right. Could you now open
7 the '743 patent and I want to direct you to the
8 same location, Column 8, Line 32.
9 A. Okay.
10 Q. Would you agree that the paragraph
11 starting at Column 8, Line 32 of the '743 patent
12 is identical to the paragraph starting at
13 Column 8, Line 32 of the '159 patent?
14 A. Yes. It looks substantially
15 similar.
16 Q. Would you agree that your answers
17 with respect to this paragraph in the '159 patent
18 would apply equally to this paragraph in the '743
19 patent?
20 MR. KIANG: Objection to form.
21 THE WITNESS: About what, Counsel?
22 My answers about what?

1 They are different patents. They
2 are different claims. And I'm not sure what
3 you are specifically asking.
4 BY MR. BISENIUS:
5 Q. I'm just trying to save us some time
6 today so I don't have to repeat every single
7 question about both patents.
8 But, if you would like me to ask
9 every question about the same identical paragraph
10 in the two patents, I can do that.
11 Which would you prefer?
12 A. As I said, they are different
13 patents, different claims. So, I would prefer
14 you to be more specific if you can.
15 Q. All right. So, turning to
16 paragraph, the paragraph starting at Column 8,
17 Line 32 of the '159 patent, this paragraph is
18 describing a light-absorbing detector filter 306.
19 Is that correct?
20 A. Yes.
21 Q. This paragraph also mentions that
22 there is an opening 402 in the light-absorbing

1 detector filter 306.
2 Is that correct?
3 A. It says that, "The light-absorbing
4 detector filter 306 is a planar surface having an
5 opening 402, through which the emitted light may
6 pass," dot, dot, dot.
7 Q. So, this paragraph describes that
8 the emitted light may pass through the
9 opening 402 in the light-absorbing detector
10 filter 306 after being attenuated by the tissue
11 measurement site 102. Is that correct?
12 A. The specification says that, "The
13 light-absorbing detector filter 306, which is
14 also depicted in Figure 4A, is a planar surface
15 having an opening 402 through which the emitted
16 light may pass after being attenuated by the
17 tissue measurement site 102."
18 I notice you are avoiding the
19 language "a planar surface having an opening."
20 So, I defer to the language in the specification
21 that confirms that it is a planar surface having
22 an opening 402.

1 Q. Does the '159 patent describe what
2 material the light-absorbing detector filter 306
3 is made from?
4 A. I believe I will again defer to the
5 specification itself. And I have not memorized
6 the specification so I will rely on whatever is
7 disclosed.
8 Q. So, you are not aware of if the '159
9 patent describes what material the
10 light-absorbing detector filter 306 is made from?
11 A. As I said, I will -- I have not
12 memorized the entire patent and I will defer to
13 the language in the specification and whatever
14 else it relies upon as a part of the intrinsic
15 record. But, I don't have it memorized.
16 Q. Does the '159 patent describe the
17 light-absorbing detector filter 306 as being
18 opaque or translucent or transparent?
19 A. Again, Counsel, I think I would
20 again rely on the specification and its attendant
21 disclosures and the intrinsic record for that. I
22 have not memorized that.

1 Q. Looking specifically at this
2 paragraph that starts at Line 32 of Column 8, is
3 there any description of what material the
4 light-absorbing detector filter 306 is made from?
5 A. As I said, I rely on the entire
6 specification and one should rely on the entire
7 specification and the intrinsic record.
8 So, I cannot say one way or the
9 other as to a particular paragraph and what else
10 it refers to, because I believe that the
11 specification provides examples. And these
12 examples and its description may be related to
13 other portions of the specification as well.
14 So, I do not have a specific answer
15 to you without reviewing everything.
16 Q. Is there any description in the '159
17 patent of the opening 402 including a material
18 that light passes through?
19 MR. KIANG: Objection to form.
20 THE WITNESS: As I said, Counsel,
21 these are -- the specification speaks for
22 itself. I cannot pretend to memorize dozens

1 of pages of fine text.
2 It clearly says here that the
3 light-absorbing detector filter 306 is a
4 planar surface having an opening 402.
5 And it goes to continue and describe
6 many different aspects and different
7 embodiments and so on.
8 BY MR. BISENIUS:
9 Q. So, I'm asking you, would you
10 understand the opening 402 in the planar surface
11 to have a material that light passes through?
12 A. You are asking me about 402?
13 Q. Yes. The opening 402.
14 A. And what is your question, Counsel?
15 Q. Would you understand the opening 402
16 to have a material that light passes through?
17 A. I understand that, as described
18 here, that the planar surface having an
19 opening 402 through which emitted light may pass
20 after being attenuated.
21 All of the -- this is what this line
22 described says. I don't have anything else to

1 add.
2 Q. So, my question is would you
3 understand the opening 402 to be required to
4 include material or would it be empty space or
5 could it be both?
6 A. And now you are talking about issues
7 like infringement, about issues like opening and
8 what an opening is.
9 I understand that Apple has offered
10 other opinions in other matters that are
11 discussed in my declaration with respect to what
12 it means by opening.
13 So, I certainly defer to what I
14 discussed in my declaration that -- for example,
15 in Paragraph 54, I offer an opinion that in the
16 Delaware litigation, Apple and its expert,
17 Dr. Sarrafzadeh argued that the plain and
18 ordinary meaning of opening means empty space and
19 so on.
20 So, I do address that issue in my
21 declaration. And I discuss that issue in
22 Paragraphs 53, 54, 55, 56 and so on.

1 Q. Okay. So, with respect to the term
2 "opening" in the claims, do you believe that that
3 term requires there to be an empty space or do
4 you believe that term requires there to be
5 material in the opening?
6 Or, would both empty space and a
7 transparent material satisfy that claim term?
8 MR. KIANG: Objection to scope.
9 THE WITNESS: As I said, Counsel,
10 you are again straying outside my
11 declaration.
12 I was commenting that the claims of
13 the '159 and the '743 must be practiced.
14 I was remarking that under Apple's
15 Delaware construction of an opening, Iwamiya
16 does not have an opening. I did not offer my
17 own construction. I was just responding to
18 what Apple said in other proceedings which I
19 believe are inconsistent with its positions
20 here.
21 BY MR. BISENIUS:
22 Q. So, let's turn to Paragraph 53 of

1 your exhibit -- of your declaration Exhibit 2100
2 in the 243 proceeding involving the '159 patent.
3 A. In the 243?
4 Q. 243 proceeding, Exhibit 2100,
5 Paragraph 53.
6 A. Okay.
7 Q. Here you are addressing Elements 1.4
8 and 1.5 and 19.5 of the '159 patent. Is that
9 correct?
10 A. This is part of Section 8. And
11 under the heading called A, I describe my
12 opinions with respect to the Iwamiya-Sarantos
13 combination failing to disclose Limitations 1.4
14 and 1.5 and 19.5 under Apple's proposed
15 construction in the Delaware litigation.
16 Q. So, here you are addressing part of
17 the claim language that states, "Wherein an
18 opening defined in the dark-colored coating is
19 configured to allow at least a portion of light
20 reflected from the tissue to pass through the
21 surface."
22 Do you see that?

1 A. I refer to Claim 1 and 19 having a
2 limitation that there is "a surface comprising a
3 dark-colored coating, the surface positioned
4 between the plurality of detectors and the
5 tissue, when the physiological monitoring device
6 is in use, wherein an opening defined in the
7 dark-colored coating is configured to allow at
8 least a portion of light reflected from the
9 tissue to pass through the surface."
10 Q. And so, you have analyzed this claim
11 element. It discusses an opening defined in the
12 dark-colored coating.
13 What I'm asking you is, do you
14 understand the opening to require empty space?
15 Do you understand the opening to require a
16 material positioned in the opening? Or would
17 both satisfy this claim element?
18 MR. KIANG: Objection to scope.
19 THE WITNESS: Again, I'm -- Counsel,
20 you are going outside of my declaration.
21 I'm saying here that Apple's
22 position is inconsistent with its own

1 positions in the Delaware litigation where
2 Dr. Sarrafzadeh argued that the plain and
3 ordinary meaning of opening means empty
4 space.
5 And he explained that the opening
6 that is filled with solid material such as
7 closed windows and solid lenses cannot --
8 that is filled with solid materials such as
9 closed windows and solid lenses cannot
10 satisfy the claim limitation, Exhibit 2037 in
11 Paragraph 479.
12 What I remarked here in
13 Paragraphs 54 and 55 is that Apple's
14 positions in this IPR and the related IPRs is
15 inconsistent with what its own expert said in
16 other quotes. I was not offering my own
17 opinions here.
18 BY MR. BISENIUS:
19 Q. So, you have no opinion on what the
20 term "opening defined in the dark-colored
21 coating" means?
22 MR. KIANG: Objection --

1 THE WITNESS: As I said, I did not
2 offer a specific construction in my opinion.
3 That I was pointing out the inconsistencies.
4 And as I described in my
5 declaration, opening, under any construction
6 of the term proposed for Apple, is not
7 present in Iwamiya or Sarantos or the
8 combination.
9 MR. KIANG: For the record the
10 Realtime transcript does not correctly state
11 my objection. My objection was objection to
12 scope and misstates testimony.
13 BY MR. BISENIUS:
14 Q. In your opinion would an opening
15 that is empty space satisfy the claimed opening
16 defined in the dark-colored coating?
17 MR. KIANG: Objection to scope.
18 THE WITNESS: Again, are you asking
19 me to provide a specific claim construction
20 opinion?
21 BY MR. BISENIUS:
22 Q. I'm not asking you for a specific

1 claim construction.
2 I'm asking you if this would fall
3 within the scope of the claim or outside of the
4 scope of the claim.
5 So, would an opening that is empty
6 space fall within the scope of the claimed
7 opening defined in the dark-colored coating?
8 A. As I said, Counsel, I was -- in my
9 declaration, I was describing Apple's own
10 inconsistent positions. I was not offering a
11 specific construction of openings.
12 I believe that in the Delaware
13 litigation I had offered such opinions in my
14 reports there.
15 But, I don't recall specifics.
16 Q. In your opinion, would an opening
17 that includes a transparent or translucent
18 material satisfy the claim that opening is
19 defined as a dark-colored coating?
20 MR. KIANG: Objection to scope.
21 THE WITNESS: As I said again,
22 Counsel, I have not offered specific opinions

1 on infringement or a particular product or a
2 particular term in general.
3 I have referred to, in my
4 declaration, specifically the combinations of
5 prior art, Iwamiya and Sarantos. My opinions
6 are restricted to the prior art references
7 that I have discussed.
8 I have not provided a general
9 opinion that is applicable to validity or
10 infringement or any other aspect.
11 I have simply opined on what I
12 referred to as the prior art grounds, Iwamiya
13 and Sarantos and other such references and
14 how they do not invalidate the claims.
15 BY MR. BISENIUS:
16 Q. Do you know what the term "opening"
17 defined in the dark-colored coating means in the
18 scope of the '159 patent?
19 A. As I said, Counsel, my opinions are
20 in the declaration. I am unsure about what you
21 are asking. I have answered your questions
22 repeatedly.

1 You are asking something that, as I
2 said I, did not offer a general construction of
3 the term. I applied what I understand are my
4 opinions with respect to the disclosures of the
5 grounds asserted by Apple.
6 Q. So, you don't know if an opening
7 that is empty space would fall within the scope
8 of the claimed opening defined in the
9 dark-colored coating, correct?
10 MR. KIANG: Objection, misstates
11 testimony.
12 THE WITNESS: As I said, I don't
13 offer an opinion on this issue -- my personal
14 opinion on this issue in this declaration.
15 If asked and allowed, I may do so in
16 the future. In other reports I may have
17 authored such opinions. I don't recall.
18 But, in this particular declaration,
19 I am willing here to discuss opinions in my
20 declaration, not materials that was related
21 to other matters that I do not recall.
22 BY MR. BISENIUS:

1 Q. I am asking you about your opinions
2 in this declaration because you are directly
3 addressing this claim term, "opening defined in
4 the dark-colored coating."
5 And so can you tell me would empty
6 space fall within the scope of these opening
7 defined in the dark-colored coating?
8 MR. KIANG: Objection, misstates
9 testimony and objection to scope.
10 THE WITNESS: As I said, Counsel, my
11 opinions are in the declaration. I stand by
12 them. I believe I have nothing else to add.
13 All I've said is that a person of
14 ordinary skill in the art would not
15 understand the disclosures of Iwamiya or
16 Sarantos or the combination to disclose the
17 claimed opening in the manner claimed, for
18 example, as in the limitation that we were
19 discussing, for the reasons that I mentioned.
20 BY MR. BISENIUS:
21 Q. You have no opinion about whether or
22 not the opening defined in the dark-colored

1 coating requires that the opening be an empty
2 space; is that correct?
3 A. As I said, Counsel, I am here to
4 discuss my declaration. I have not offered
5 independent opinions on certain claim terms,
6 independent of the prior art that I have
7 discussed.
8 Therefore, I am not -- I don't have
9 an opinion on that issue as a part of this
10 particular declaration.
11 I may have provided such opinions in
12 other reports which I don't specifically recall
13 in which context. But, here, sitting here today,
14 I don't wish to offer a general opinion that is
15 not in my declaration.
16 Q. So, you have no opinion about
17 whether or not the opening defined in the
18 dark-colored coating requires that the opening
19 include material; is that correct?
20 MR. KIANG: Objection, misstates
21 testimony. Objection to scope, asked and
22 answered.

1 THE WITNESS: I said, Counsel, this
2 is not -- I have not offered a general
3 opinion on the claim term outside the context
4 of the prior art that I have analyzed in this
5 particular matter.
6 In other reports and in other
7 matters, I may have offered a more detailed
8 analysis. I don't specifically recall the
9 specifics.
10 But, with respect to these
11 declarations in these IPRs, I have disputed
12 and observed that Iwamiya and Sarantos do not
13 have the opening that Apple itself contended
14 was the correct construction of opening
15 through its experts, and thus it was
16 inconsistent.
17 And, I don't have anything specific
18 to add as a general matter, other than to say
19 that the entire limitation is not met for
20 several other reasons as well, which are
21 described in my declaration, with respect to
22 Iwamiya and Sarantos and the combinations.

1 BY MR. BISENIUS:
2 Q. Looking at Paragraph 54 of
3 Exhibit 2100 in the 243 proceeding, you are
4 discussing statements of Apple's expert in the
5 Delaware litigation; is that correct?
6 A. I was referring to the inconsistent
7 positions of both Apple and its expert in the
8 Delaware litigation, where they both argued that
9 the plain and ordinary meaning of opening means
10 empty space.
11 Q. Do you agree or disagree with this
12 interpretation from Apple's expert in the
13 District Court litigation?
14 MR. KIANG: Objection to scope.
15 THE WITNESS: As I said, I don't
16 have an opinion on that issue as part of this
17 IPR, Counsel.
18 BY MR. BISENIUS:
19 Q. So, you are not sure if this is a
20 correct claim interpretation or not?
21 MR. KIANG: Objection, misstates
22 testimony.

1 THE WITNESS: I don't have an
2 opinion on that issue, Counsel. All I have
3 said is that Apple and its expert have
4 provided inconsistent definitions between
5 different courts in the sworn testimony, for
6 example, through Dr. Sarrafzadeh.
7 BY MR. BISENIUS:
8 Q. And you have no opinion on whether
9 or not that interpretation described in
10 Paragraph 54 is correct or incorrect; is that
11 true?
12 MR. KIANG: Objection, misstates
13 testimony. Asked and answered.
14 THE WITNESS: As I said, Counsel, as
15 a part of this IPR, this declaration, which
16 is not connected to the Delaware litigation,
17 I do not have a specific opinion on that
18 issue as a part of this declaration that I am
19 being deposed on.
20 BY MR. BISENIUS:
21 Q. Let's move forward to Page 49 of
22 this same declaration, Exhibit 2100, in the 243

1 proceeding.
2 A. One second. Page 49.
3 Q. Correct.
4 A. Okay. Page 49.
5 Q. This page has Paragraphs 76 and 77;
6 is that correct?
7 A. This is part of Section C that
8 describes that Iwamiya and Sarantos combination
9 does not have an opening defined in the
10 dark-colored coating that allows light to pass
11 through the surface, addressing Claims 1 and 19.
12 Q. So, here you are opining on the
13 claim term "opening defined in the dark-colored
14 coating."
15 Is that correct?
16 A. To be precise I am saying that the
17 Iwamiya-Sarantos combination does not disclose an
18 opening defined as in the dark-colored coating
19 configured to allow light to pass through the
20 surface.
21 Q. How can you be so sure of that
22 opinion when you don't know what the term

1 "opening defined in the dark-colored coating"
2 means?
3 MR. KIANG: Objection, misstates
4 testimony.
5 THE WITNESS: Again, you are saying
6 I do not know. I said I do not specifically
7 offer opinion on certain terms.
8 I have applied the plain and
9 ordinary meaning of these terms in the
10 context of the claim language in the context
11 of the specific combinations of Iwamiya and
12 Sarantos.
13 And in Paragraph 76, I point out
14 that Apple identifies the light shielding
15 frame 18 as a recited surface.
16 However, in the Apple's alleged
17 Iwamiya-Sarantos combination, light does not
18 pass through the light shielding frame 18 and
19 therefore does not pass through the surface.
20 BY MR. BISENIUS:
21 Q. Do you know what the term "opening
22 defined in the dark-colored coating" means in the

1 context of the '159 patent?
2 A. As I said, from the description in
3 the specification, the specification provides
4 examples, for example, Figure 4A, where it says
5 that there is a light-absorbing detector
6 filter 306, which is depicted in Figure 4A, is a
7 planar surface having an opening 402 to which the
8 emitted light may pass after being attenuated by
9 the tissue measurement site.
10 So, the specification provides
11 examples. And I have used the claim language
12 here to show that the Iwamiya-Sarantos
13 combination, in which Apple has identified the
14 light shielding frame as the surface, does not
15 satisfy this limitation, because light does not
16 pass through the light shielding frame 18 that
17 Apple has identified, and therefore it does not
18 pass through the surface as required in the
19 limitation.
20 Q. In the example you were just
21 discussing, this example was in Column 8 of
22 the '159 patent; is that correct?

1 A. Yes.
2 Q. In this example, is the opening
3 required to include material?
4 A. As I said, I do not offer a specific
5 opinion again on opening, on what it covers, what
6 it does not.
7 I note that Apple has provided
8 inconsistent opinions. Its expert has provided
9 inconsistent opinions in other matters under
10 sworn testimony.
11 So, I just wanted to remind the
12 Board as to that.
13 Q. So, you just stated that this
14 example informs what a POSITA would have
15 understood about the claim term "opening defined
16 in the dark-colored coating"; is that correct?
17 A. All I said was it provides an
18 example.
19 Q. And so I'm asking you in this
20 specific example, is the opening 402 required to
21 include material?
22 A. As I said, I don't have a specific

1 opinion on that issue. I have referred to my
2 opinions with respect to Apple's asserted prior
3 grounds -- priority grounds in the IPRs.
4 I don't wish to offer on other
5 opinions that are part of other cases with
6 respect to infringement or otherwise.
7 Q. Do you understand this example in
8 Column 8 of the '159 patent?
9 A. I reviewed it in light of the
10 specification. I understand it in the context of
11 what it is describing and in the context of how
12 it describes Figure 4A, which is an example.
13 Q. So, I'm asking you in this example,
14 is there any description of the opening 402
15 including material?
16 A. As I said, I would defer to the
17 specification itself. I don't have a specific
18 opinion on the material issue.
19 I understand you are fishing for
20 grounds of infringement or noninfringement, but I
21 don't have a specific opinion in this particular
22 declaration on that --

1 Q. I'm actually specifically --
2 A. -- unless you can point to something
3 in the declaration.
4 Q. Yes. I'm specifically talking about
5 Paragraphs 76 through 80 of your declaration,
6 Exhibit 2100, in the 243 proceeding.
7 A. Okay.
8 Q. Here you have given --
9 A. So, let me get there. This is the
10 first time you have mentioned those paragraphs.
11 Q. We were literally just talking about
12 them about ten minutes ago.
13 A. Let's get to that. 76. Okay. So,
14 that is a different section from what we are
15 right now.
16 And that is Section C that says that
17 Iwamiya-Sarantos combination does not have an
18 opening defined in the dark-colored coating that
19 allows light to pass through the surface.
20 So, this is talking about the
21 Iwamiya-Sarantos combination.
22 Q. Correct. But we are talking about

1 the claim language "opening defined in the
2 dark-colored coating" from the '159 patent. Is
3 that correct?
4 A. You are not reading the complete
5 limitation. "That allows light to pass through
6 the surface."
7 So, whatever the construction of
8 opening may be, the dispute that is raised here
9 is that whatever Apple points to as its
10 structure, which is the light shielding frame,
11 does not have an opening, whatever the
12 construction of opening may be, that allows light
13 to pass through its surface because the light
14 shielding frame never passes light through it.
15 So, independent of the construction
16 of opening, whatever it may be, that issue is
17 secondary to the bigger problem that Apple has
18 that I believe is fatal to its combination that
19 the structure that it has identified, which is
20 the light shielding frame, has no light passing
21 through the surface.
22 Q. Okay. So, in the full context of

1 all of the claim language, does the opening
2 defined in the dark-colored coating that allows
3 light to pass through the surface require there
4 to be material within the opening?
5 MR. KIANG: Objection to scope.
6 Asked and answered.
7 THE WITNESS: As I described before,
8 it does not matter at this stage of this IPR.
9 There is Apple's own arguments in
10 this particular IPR are inconsistent and also
11 different from what it argued before the
12 Delaware court.
13 My opinions are that this limitation
14 is not met for several reasons, in addition
15 to whatever Apple chooses as its flavor of
16 the month for this construction.
17 It also fails because Iwamiya's
18 combination -- in the Iwamiya-Sarantos
19 combination, light does not pass through the
20 light shielding frame 18, and therefore this
21 limitation is not met because it does not
22 pass through the surface aspect of this

1 limitation for Claims 1 and 14, as I describe
2 in Paragraph 76.
3 BY MR. BISENIUS:
4 Q. So, you have no opinion about
5 whether or not the opening defined in the
6 dark-colored coating that allows light to pass
7 through the surface requires there to be material
8 in the opening or not; is that correct?
9 MR. KIANG: Objection. Misstates
10 testimony. Asked and answered. And
11 objection to scope.
12 THE WITNESS: As I described before,
13 it is my opinion that Apple has provided
14 contradicting testimony on this issue.
15 Irrespective of what Apple chooses its
16 definition of open to be, there are several
17 other reasons that I provide in my
18 declaration.
19 For example, in Section C, starting
20 on Page 49, Paragraph 76, 77 and so on, where
21 I clearly state that Apple's identification
22 of the light shielding frame, which is the

1 claimed surface as alleged by Apple, cannot
2 meet this limitation, because light does not
3 pass through that light shielding frame 18.
4 And therefore the entire limitation
5 is not met for at least this additional
6 reason, irrespective of what "opening" may or
7 may not cover.
8 BY MR. BISENIUS:
9 Q. Returning to the example you were
10 discussing in Column 8 of the '159 patent,
11 specifically at the paragraph starting at
12 Line 32.
13 A. This is the example that you raised,
14 Counsel. Not me.
15 Q. Do you believe that the opening 402
16 discussed in this paragraph and the paragraphs
17 afterwards provides support for the claimed
18 opening defined in the dark-colored coating?
19 MR. KIANG: Objection to scope.
20 THE WITNESS: As I said, I would let
21 the specification speak for itself. I
22 believe that these different embodiments are

1 consistent with the claims as issued.
2 I don't have specific, more detailed
3 analysis of each and every embodiment in my
4 declaration.
5 I don't believe that I cite
6 Figure 4A specifically in my report.
7 BY MR. BISENIUS:
8 Q. So, I understand you are letting the
9 specification speak for itself. I'm trying to
10 relate the claim term specifically to examples in
11 the specification.
12 And you stated earlier that you
13 couldn't give an opinion on whether or not the
14 claimed opening in the dark-colored coating would
15 require there to be empty space or if it would
16 require there to be material.
17 But that you could relate it to some
18 examples.
19 And so I'm asking you, does this
20 example in paragraph -- in Column 8 discussing
21 the opening 402 provide support for the claimed
22 opening in the dark-colored coating?

1 MR. KIANG: Objection. Misstates
2 testimony. Objection to scope.
3 THE WITNESS: First of all, I do not
4 agree with your characterization of my
5 opinions on this issue.
6 I said that I do not offer a
7 specific construction of opening myself.
8 Irrespective of whatever the correct
9 construction would be or should be, there are
10 several reasons why I discuss in my
11 declaration that that limitation with respect
12 to passing through the surface fails for the
13 identified structures by Apple.
14 I also discussed Apple's
15 inconsistent positions in various courts. To
16 the extent that I am asked to offer a
17 specific analysis of this example, I may do
18 so in the future.
19 But as of this point, I don't wish
20 to offer an opinion that is not part of my
21 declaration given that this is an important
22 legal matter.

1 BY MR. BISENIUS:
2 Q. Can you identify any examples in
3 the '159 patent specification that provide
4 support for the claimed opening defined in the
5 dark-colored coating that allows light to pass
6 through the surface?
7 MR. KIANG: Objection to scope.
8 THE WITNESS: As I said, Counsel,
9 that is not something that I was asked to
10 offer an opinion in the declaration. And I
11 would defer to the specification and the
12 intrinsic evidence and other statements that
13 are typical of claim construction analysis.
14 But, that is not something that I
15 was asked to do as a part of the declarations
16 in this matter.
17 BY MR. BISENIUS:
18 Q. Going back to your most recent
19 declaration in the 243 proceeding, Exhibit 2100.
20 I want to go back to Paragraph 28 that we were
21 discussing earlier.
22 A. One second, Counsel. 28, 2-8?

1 Q. Correct.
2 A. Okay.
3 Q. And here you are discussing the fact
4 that you have applied the plain and ordinary
5 meaning of the claim terms as they would have
6 been understood by a POSITA at the time of the
7 invention in view of the intrinsic record which
8 includes the patent specification and the file
9 history.
10 So, would you agree that the patent
11 specification provides guidance to a POSITA on
12 how to interpret the claim terms?
13 A. I would agree that this is the legal
14 guidance that I was provided with. I'm not here
15 to argue a legal issue.
16 I am here on technical matters. So,
17 this is the guidance I have been provided by the
18 counsel with respect to applicable legal
19 standards.
20 Q. When you were considering how the
21 claim terms -- sorry, scratch that.
22 When you were considering the scope

1 of the claim terms with respect to the cited
2 prior art, were you considering how a POSITA
3 would have understood those claim terms in light
4 of the specification?
5 A. As I said, Counsel, I have provided
6 my opinions in the declaration, and the
7 declaration I believe contains my complete
8 opinions.
9 Anything that is not in my
10 declaration is not part of my opinions in this
11 particular matter. So, I would defer to whatever
12 is in my declaration as my opinions and the
13 statement of my complete opinions.
14 I hope you are not wishing to elicit
15 opinions that are not in my declaration.
16 Q. Well, I'm trying to understand. In
17 this first sentence of Paragraph 28, you stated,
18 "I understand that in assessing the patentability
19 of a patent claim, the Patent Office generally
20 construes claim terms by giving them their
21 ordinary and customary meaning as they would have
22 been understood by a POSITA at the time of the

1 invention in view of the intrinsic record, patent
2 specification and file history."
3 Do you see that?
4 A. That is again the legal guidance I
5 was provided by the counsel.
6 I don't have anything else to add
7 there, but that paragraph was provided to me by
8 the legal counsel.
9 Q. And I'm asking you: Did you apply
10 this standard when you were conducting your
11 analysis in your declarations?
12 A. I applied the legal guidance and --
13 from a technical point of view. I provided an
14 analysis with respect to the prior art.
15 Q. And so, was your understanding of
16 the claim terms based on your understanding of
17 the patent specification?
18 A. As I said, Counsel, I analyzed and
19 provided my complete opinions in my declaration.
20 Anything not there is not what I am offering an
21 opinion on today.
22 MR. KIANG: Counsel, we have been

1 going about 90 minutes. Do you want to take
2 a break?
3 MR. BISENIUS: Sure, we can take a
4 break. Yeah, let's take say 5 minutes, 35
5 after the hour.
6 THE WITNESS: Let's take ten
7 minutes.
8 MR. BISENIUS: 40 after.
9 THE WITNESS: Yes.
10 MR. BISENIUS: All right.
11 (Recess taken -- 11:31 a.m.)
12 (After recess -- 11:41 a.m.)
13 BY MR. BISENIUS:
14 Q. Continuing with Paragraph 28 in your
15 declaration in the 243 proceeding.
16 So, earlier you stated you applied
17 this legal standard in your declaration; is that
18 correct?
19 A. I applied the guidance that was
20 provided.
21 Q. And so is it correct that you are
22 interpreting the claim terms in view of the

1 patent specification?
2 A. I am following the full guidance
3 provided by the counsel.
4 Q. That is a yes or no question.
5 In interpreting the claim terms, are
6 you interpreting them in view of the patent
7 specification?
8 A. I am interpreting as offered in the
9 guidance, Counsel, the whole paragraph.
10 And based on a intrinsic record, as
11 understood by a POSITA in view of the intrinsic
12 record, the patent specification and the filing
13 stream and everything else.
14 So, I will apply the entire
15 description of Paragraph 28.
16 Q. And you have offered opinions about
17 the claim term, opening defined in the
18 dark-colored coating, with respect to the prior
19 art; is that correct?
20 A. I have only described the claim
21 limitations with respect to that limitation.
22 I have said that Apple offered

1 inconsistent arguments before different courts.
2 In sworn testimony before the Delaware Court,
3 Apple's own expert utilized a different
4 construction than what Apple is applying here.
5 But, in any case, whatever the
6 construction of opening, there are additional
7 reasons that I identified that the limitation is
8 not met, for example, because the structure that
9 Apple has identified does not actually have light
10 passing through a surface as also required by
11 that claim limitation.
12 Q. So, in your analysis in
13 Paragraphs 76 through 80 of your 243 declaration,
14 when considering the prior art with respect to
15 the claim term, opening defined in the
16 dark-colored coating that allows light to pass
17 through the surface, did you consider the
18 specification of the '159 patent?
19 A. I offered an opinion based on my
20 analysis of the prior art combination based on
21 the knowledge of a POSITA. I also analyzed it
22 based on the legal guidance that I was provided.

1 Q. Can you identify any examples in
2 the '159 patent specification that provides
3 support for the claimed opening defined in the
4 dark-colored coating that allows the light to
5 pass through the surface?
6 MR. KIANG: Objection, asked and
7 answered.
8 THE WITNESS: I think and as I have
9 described, all of my opinions are in my
10 declaration. That is not a specific opinion
11 I was asked to offer and I did not provide
12 such an identification.
13 The specification, if asked and
14 allowed, I may do so in the future.
15 But at this point, my declaration
16 contains all of my opinions that I have. I
17 will let the specifications speak for itself.
18 BY MR. BISENIUS:
19 Q. Did you consider any examples in the
20 specification when determining the scope of the
21 claim term, opening defined in the dark-colored
22 coating, with respect to your analysis in your

1 declaration?
2 A. I have not offered a specific
3 opinion on the examples in the specification.
4 My opinions are captured in my
5 declaration. And, I don't have any new opinions
6 with respect to specific embodiments in the '159
7 or the '743 themselves.
8 All of my opinions are in my
9 declaration.
10 Q. The question I asked is slightly
11 different. I'm not asking if you have any
12 opinions on the examples in the specification.
13 I'm asking, did you consider any
14 examples in the '159 patent specification when
15 forming your opinion about the scope of the term,
16 opening defined in the dark-colored coating?
17 MR. KIANG: Objection to scope.
18 Objection --
19 THE WITNESS: As I said, I did not
20 discuss any opinions. I reviewed the patent.
21 I have not discussed any opinions with
22 respect to embodiments other than the

1 opinions that I offered in my declaration.
2 So, I don't have anything to say
3 there.
4 MR. KIANG: Objection to scope and
5 asked and answered.
6 BY MR. BISENIUS:
7 Q. So, is it correct that you did not
8 consider any examples in the '159 patent
9 specification when forming your opinion of the
10 scope of the term, opening defined in the
11 dark-colored coating, in your analysis?
12 MR. KIANG: Objection to scope.
13 Misstates testimony.
14 THE WITNESS: I said, Counsel, that
15 I did not offer any opinions with respect to
16 examples. I reviewed the entire
17 specification. I followed the legal
18 guidance.
19 But I did not offer any opinions
20 with respect to examples in the
21 specification.
22 But, I followed all legal guidance.

1 I followed -- as I described, all of my
2 opinions that I have to say in this matter
3 are in my declaration.
4 I don't wish to offer any new
5 opinions.
6 BY MR. BISENIUS:
7 Q. Can you identify any example in
8 the '159 patent specification that you considered
9 when forming your opinion regarding the scope of
10 the claim term, opening defined in the
11 dark-colored coating?
12 MR. KIANG: Objection to scope.
13 Asked and answered.
14 THE WITNESS: As I said, Counsel, I
15 have not offered a specific opinion as to
16 which examples support which portion of the
17 claim.
18 This is not a claim construction
19 declaration. I was referring and rebutting
20 specific opinions that Apple and its experts
21 provided in this IPR and providing a
22 technical analysis.

1 I was not treating this as a claim
2 construction brief.
3 I believe that whatever the
4 construction of opening does not matter,
5 because there are far more serious problems
6 with Apple's grounds for the reasons that I
7 describe at -- even whatever the construction
8 of opening may be in the Iwamiya-Sarantos
9 combination, for example, light does not pass
10 through the light shielding frame 18, that
11 Apple has identified as the surface.
12 And, the limitation, pass through
13 the surface, is not practiced is one of the
14 many of the additional reasons why this
15 combination is unavailing.
16 BY MR. BISENIUS:
17 Q. Do you understand what the claim
18 term "an opening defined in the dark-colored
19 coating is configured to allow at least a portion
20 of light reflected from the tissue to pass
21 through the surface" means?
22 A. I described that in my opinion, in

1 my, in my declaration.
2 Q. And I'm asking, can you identify any
3 examples from the patent specification that
4 informed your opinion as to the scope of that
5 claim term?
6 A. I rely on the entire specification
7 and the legal guidance that I was provided. And
8 I have not offered a specific opinion with
9 respect to that issue and therefore I cannot
10 offer a new opinion here.
11 So, I relied on the specification,
12 the legal guidance and everything else that I
13 describe.
14 If asked and allowed, I may do so in
15 the future, but this is not a claim construction
16 declaration.
17 Q. So, just to be clear, you cannot
18 identify any single example in the '159 patent
19 specification that informs your opinion of what
20 the claim term "an opening defined in the
21 dark-colored coating is configured to allow at
22 least a portion of light reflected from the

1 tissue to pass through the surface" means?
2 MR. KIANG: Objection, misstates
3 testimony.
4 THE WITNESS: I disagree with that
5 wholeheartedly. I said I did not offer an
6 opinion like a claim construction declaration
7 which identifies all of the examples and
8 every embodiment and how they support a
9 particular meaning of a claim term or not.
10 That is not an opinion that I was
11 asked to give.
12 So, if you are asking me to give me
13 a new opinion that is not in my declaration,
14 that is not something that I am prepared to
15 do.
16 But, what I do offer an opinion is
17 that whatever the construction of an opening,
18 this limitation is not met for several other
19 reasons that I identify in my declaration.
20 BY MR. BISENIUS:
21 Q. So, you are saying you have no
22 opinion on what that claim term means?

1 MR. KIANG: Objection, misstates
2 testimony.
3 THE WITNESS: I disagree. I don't
4 offer an opinion in this particular
5 declaration in this IPR as to the specific
6 meaning beyond the plain and ordinary meaning
7 and my dispute that whatever the meaning that
8 may eventually -- that term may be construed,
9 it is, it is not -- there is a problem with
10 Apple's prior art, even if that term is
11 construed one way or the other, because there
12 are other problems with respect to passing
13 through the surface limitation that I
14 describe in Paragraphs 76 onwards.
15 So, I don't offer an opinion on that
16 in my declaration.
17 BY MR. BISENIUS:
18 Q. Returning to the example in
19 Paragraph 8 starting at Line 32 of the '159
20 patent. Let me know when you get there.
21 A. Okay. I am there.
22 Q. Does this example include any

1 description of a dark-colored coating?
2 A. You are referring to Column 6,
3 Lines 32 to -- sorry.
4 Q. I am referring to Column 8 --
5 A. Column 8 --
6 Q. The example that starts at Line 32
7 and continues on for a few paragraphs.
8 I'm wondering --
9 I'm asking you if there is any
10 discussion of a dark-colored coating in this
11 example?
12 A. So, I'm looking at Lines 32
13 through 53. I don't see the word "coating" or
14 something there explicitly.
15 But again, I would have to review
16 the entire specification and see how this is
17 describing it, whether it is leveraging off other
18 embodiments.
19 I cannot offer a definitive answer,
20 but I don't see the English word "coating" in
21 Lines 32 through 54.
22 Q. Looking at the next paragraph that

1 starts at Line 54, the first sentence describes
2 that "The top surface of the light-absorbing
3 material 306 (facing the tissue measurement site
4 102 and the emitter 302) is coated with a
5 material that absorbs light such as, for example,
6 black pigment."
7 Do you see that?
8 A. Yes.
9 Q. Would you consider that discussion
10 in the '159 patent specification to be an example
11 of the claimed dark-colored coating?
12 MR. KIANG: Objection to scope.
13 THE WITNESS: As I said again, I
14 mean you are referring to this as a claim
15 construction declaration. I have not offered
16 a specific opinion about which example
17 support which claims.
18 So, I don't wish to offer any new
19 opinions today.
20 BY MR. BISENIUS:
21 Q. So, you are not sure if this
22 discussion of a material that absorbs light, such

1 as for example black pigment, is an example of
2 the claimed dark-colored coating; is that true?
3 MR. KIANG: Objection, misstates
4 testimony.
5 THE WITNESS: As I said, Counsel,
6 you are using terms like don't know and
7 unable to find out or do not agree.
8 I mean I don't agree with those
9 characterizations.
10 I said I did not offer any opinion
11 as to which examples in the specification
12 support which claim.
13 This is not a claim construction
14 declaration. I have offered all of my
15 opinions and I have fully supported them as a
16 part of my declaration in these IPRs.
17 BY MR. BISENIUS:
18 Q. Do you understand that a POSITA
19 would need to know the scope of a claim term in
20 order to determine whether or not a prior art
21 reference disclosed that claim term?
22 A. I am not sure what you are asking,

1 Counsel. I have said in my report, in my
2 Paragraph 76 that whatever the construction of
3 opening, the fact that the claim requires through
4 the surface -- pass through the surface, makes
5 that issue a secondary issue, because the
6 limitation is not met for several other reasons
7 that are described in Paragraphs 76 through 80.
8 And --
9 Q. So, you have no opinion as to
10 whether or not the material that absorbs light
11 such as, for example, black pigment described in
12 Column 8 is an example of the claim dark-colored
13 coating; is that correct?
14 MR. KIANG: Objection to scope.
15 Misstates testimony.
16 THE WITNESS: I said that I applied
17 the full legal guidance and I applied the
18 plain and ordinary meaning of the claims in
19 my declaration.
20 I don't offer an analysis of which
21 embodiment corresponds and supports to which
22 claim limitation.

1 As I have said, the claim limitation
2 of whatever the construction of opening,
3 whatever the construction, the claim language
4 has to be met.
5 And I describe how the combinations
6 of Iwamiya and Sarantos, in Paragraphs 76
7 onwards in my declaration, do not satisfy
8 that limitation in Claims 1 and 14.
9 That the combination does not have
10 an opening defined in the dark-colored
11 coating that allows light to pass through the
12 surface, because there is no pass through the
13 surface in the structure of the light
14 shielding frame that Apple has identified as
15 a part of the Iwamiya combination.
16 BY MR. BISENIUS:
17 Q. Going back to the previous paragraph
18 in Column 8 the paragraph that starts at Line 32.
19 This paragraph describes that the
20 opening 402 is an opening in the light-absorbing
21 detector filter 306; is that correct?
22 A. Well, what are you reading from?

1 Q. I'm looking at the paragraph
2 starting at Line 32 of Column 8.
3 A. Okay.
4 Q. This paragraph describes that the
5 opening 402 is an opening in the light-absorbing
6 detector filter 306; is that correct?
7 A. You are again missing the portion
8 that deals with the planar surface like you did
9 before.
10 It says here that, "The
11 light-absorbing detector filter 306, which is
12 also depicted in Figure 4A in a top view, is a
13 planar surface having an opening 402 through
14 which the emitted light may pass after being
15 attenuated by the tissue measurement site."
16 That is the full sentence in
17 Column 8, Lines 32 to 36.
18 You conveniently omit each and every
19 time the words "planar surface" having an
20 opening.
21 Q. Okay. Then is the planar surface
22 the same as the light-absorbing detector

1 filter 306? Is it a component of the
2 light-absorbing detector filter 306? Or is it
3 something different from the light-absorbing
4 detector filter 306?
5 A. I don't know.
6 THE WITNESS: Mr. Kiang, we can't
7 hear you. You are very low.
8 MR. KIANG: Objection to scope.
9 THE WITNESS: Okay, that is better.
10 So, what is your question, Counsel?
11 I'm not sure I understood your question.
12 BY MR. BISENIUS:
13 Q. Well, here it says the
14 light-absorbing detecting filter 306 is a planar
15 surface and so -- but you seem to think that they
16 are different.
17 So I'm asking you: Is the planar
18 surface a different component from the
19 light-absorbing detecting filter 306? Is the
20 planar surface coextensive with the
21 light-absorbing detector filter 306? Or is the
22 planar surface a component of the light-absorbing

1 detector filter 306?
2 A. As the language says here, it says
3 that the light-absorbing detector filter 306 is a
4 planar surface having an opening 402 through
5 which emitted light may pass.
6 MR. KIANG: Same objection.
7 THE WITNESS: Yeah, Mr. Kiang, if
8 you speak louder, because I can't hear you,
9 either.
10 MR. KIANG: Okay. Let me check my
11 microphone settings. Is this any better?
12 THE WITNESS: Yeah. I think you are
13 moving back. That is the problem.
14 MR. KIANG: I will get closer to the
15 mic.
16 THE WITNESS: Thanks.
17 BY MR. BISENIUS:
18 Q. Does this example describe an
19 opening in the material that absorbs light that
20 is separate from the opening 402 in the
21 light-absorbing detector filter 306 that is a
22 planar surface?

1 A. I don't have a specific opinion on
2 that, Counsel.
3 Q. So, you are not sure if this
4 opening 402 is an opening in the material that
5 absorbs light or not?
6 A. As I said, I don't offer an opinion
7 on specific examples. And, I don't wish to
8 create new opinions on the fly without adequately
9 reviewing the specification and examples from
10 matters that may have been several weeks or
11 months ago.
12 So, I will defer to what is in my
13 declaration as a full statement of my opinions
14 and not -- and, therefore, I cannot offer an
15 opinion on something that is not in my
16 declaration.
17 Q. I would like to turn to Column 9 of
18 the '159 patent, specifically the paragraph
19 starting at Line 31.
20 Can you please read that paragraph
21 to yourself and let me know when you are
22 finished.

1 A. Yes, I have looked at the portions
2 from Line 30 through 40.
3 Q. I wanted you to read the entire
4 paragraph of Column 9. It goes from Lines 31
5 to 51.
6 A. Oh, including Figure 4B, I see.
7 Q. Correct.
8 A. Okay, I have reviewed that.
9 Q. This paragraph is continuing to
10 discuss the example in Figures 4A and 4B; is that
11 correct?
12 A. It does discuss Figures 4A and 4B.
13 And the discussion of Figure 4A and 4B is in many
14 places in the specification.
15 But, this paragraph does mention 4A,
16 and 4B.
17 Q. This paragraph mentions that the
18 light-absorbing detector filter 306 has "a top
19 surface coated with a light absorbing material."
20 Do you see that?
21 A. Which lines?
22 Q. Starting at Line 32.

1 A. I see that.
2 Q. And it goes on to state that, "The
3 light absorbing material can be black opaque
4 material, or coating or any other dark color or
5 coating configured to absorb light."
6 Is that correct?
7 A. Yes. That is what you are reading
8 from Lines 34 to 36 of Column 9.
9 Q. And this paragraph is discussing the
10 opening in the light-absorbing detector
11 filter 306; is that correct?
12 A. It is talking about the surface. It
13 is saying the light-absorbing detector filter 306
14 is illustrated having a top surface coated with a
15 light absorbing material. The light absorbing
16 material can be a black opaque material coating
17 or any other dark color.
18 So, it is referring to the
19 filter 306 having a top surface coated with the
20 light absorbing material.
21 Q. Is the opening 402 an opening in the
22 dark-colored material, an opening in the

1 light-absorbing detector 306, or both?
2 MR. KIANG: Objection to scope.
3 THE WITNESS: As I said, the
4 specification speaks for itself. It shows
5 here that there is a light-absorbing detector
6 filter 306 that has a top surface coated with
7 the light absorbing material. And then there
8 is a rectangular opening 402 that is
9 positioned as shown.
10 So that -- so it shows that the
11 opening is passing through the surface of the
12 light-absorbing detector filter in this
13 example.
14 BY MR. BISENIUS:
15 Q. Is the opening 402 an example of the
16 claimed opening defined in the dark-colored
17 coating?
18 MR. KIANG: Objection to --
19 THE WITNESS: I am not sure -- I
20 didn't hear the objection, Counsel.
21 MR. KIANG: Objection to scope.
22 THE WITNESS: Yeah. As I said these

1 are different examples of the embodiments,
2 Counsel, an embodiment of the specification.
3 I'm not sure what your question is
4 asking.
5 BY MR. BISENIUS:
6 Q. I'm asking if the opening 402
7 provides an example of the claimed opening
8 defined in the dark-colored coating.
9 MR. KIANG: Same objection.
10 THE WITNESS: As I said, I don't
11 offer specific opinions on different
12 examples. All I will admit is that these are
13 embodiments in the specification. The claim
14 language must be understood as per the legal
15 guidance.
16 BY MR. BISENIUS:
17 Q. Is the light absorbing material that
18 can be a black opaque material or coating or any
19 other dark color or coating, described in this
20 example, an example of the claimed dark-colored
21 coating?
22 A. I'm not sure what you are asking.

1 Q. So, the claims recite a dark-colored
2 coating.
3 I'm wondering if the light absorbing
4 material described in this example is an example
5 of the claimed dark-colored coating or if it is
6 something different?
7 A. Again, I don't offer a specific
8 claim construction opinion, Counsel.
9 You are continuously asking me about
10 opinions that are not in my declaration.
11 Q. Is the opening 402 in the
12 light-absorbing detector filter 306 coextensive
13 with the opening in the light absorbing material
14 in this example?
15 MR. KIANG: Objection to form.
16 THE WITNESS: As I said, I don't
17 offer a specific opinion on that, on this
18 example in my declaration, Counsel.
19 The specification speaks for itself.
20 I cannot interpret all possible
21 meanings of this specification examples on
22 the fly.

1 It is not something that I discussed
2 in my declaration.
3 BY MR. BISENIUS:
4 Q. Is there any discussion in this
5 example of an opening in the light-absorbing
6 material that is different from or otherwise
7 distinct from the opening 402?
8 MR. KIANG: Objection to form.
9 THE WITNESS: As I said, I don't
10 have an answer on that issue. I have not
11 analyzed each and every example and how it
12 relates to the claims.
13 You are referring to the
14 specification of the patents themselves.
15 My -- that is not something I offered
16 opinions on in this, in this declaration.
17 BY MR. BISENIUS:
18 Q. I would like to turn to Column 3 of
19 the '159 patent. Towards the bottom, the
20 paragraph starting at Line 61 that continues on
21 to Column 4.
22 Could you please read that entire

1 paragraph to yourself and let me know when you
2 have finished?
3 A. You are referring to Column 3 that
4 goes on to Column 4?
5 Q. Yes, starting, the paragraph that
6 starts at Line 61 of Column 3 and then continues
7 on in to Column 4.
8 Could you please read that
9 paragraph?
10 A. Okay. I have reviewed that in
11 Columns 3 and 4 of the '159 patent.
12 Q. This paragraph is once again
13 describing the light-absorbing detector filter;
14 is that correct?
15 A. It is providing some embodiments,
16 discussing certain embodiments. And saying in
17 some embodiments -- it provides certain sizes.
18 It refers to at least three or four different
19 embodiments that refer to different sizes and
20 shapes, I believe.
21 There is a rectangular shape, a
22 square shape and other shapes.

1 Q. In comparing the specification to
2 Claim 1 of the '159 patent, do you believe that
3 the light-absorbing detector filter described
4 here provides support for the claimed surface
5 recited in Claim 1?
6 A. I don't have an opinion on that
7 issue, Counsel. That is not an opinion I offered
8 in my declaration.
9 I believe I applied my opinions
10 consistent with the legal guidance that was
11 provided, but that is not an opinion that appears
12 in my declaration. To the extent --
13 MR. KIANG: Objection --
14 THE REPORTER: Sorry. I missed the
15 objection.
16 THE WITNESS: Yeah, we can't hear
17 you, Mr. Kiang.
18 MR. KIANG: I'm sorry, Doctor
19 Madisetti. You started answering. I didn't
20 want to cut you off.
21 THE WITNESS: Okay, okay. Because
22 we can't hear you.

1 Yeah, as I said, I mean, this is --
2 I have not written this declaration to
3 discuss every example in this specification
4 and how it relates to each claim.
5 I defer to the language in the
6 specification for what it discloses.
7 My opinions are with respect to the
8 validity challenges, and those are the
9 opinions that are in my declaration.
10 So, I cannot answer your question on
11 the fly without a full consideration.
12 If asked and allowed to do so, I may
13 do that in the future. But not now.
14 BY MR. BISENIUS:
15 Q. Did you consider the descriptions of
16 the light-absorbing detector filter in the
17 specification of the '159 patent when forming
18 your opinion on the scope of the claimed surface
19 recited in Claims 1 and 19?
20 A. As I said, I reviewed the entire
21 specification. I reviewed the legal guidance
22 that was provided. I looked at the intrinsic

1 evidence and all of that.
2 And then I provided my analysis as
3 described in the guidance by applying the plain
4 and ordinary meaning.
5 And I have provided opinions, and I
6 have provided opinions in my declaration.
7 Q. I'm asking: Did you specifically
8 consider the descriptions of the light-absorbing
9 detector filter when forming your opinion of the
10 scope of the claimed surface?
11 A. I have considered the entire
12 specification and the intrinsic evidence as for
13 the legal guidance and offered my opinions.
14 I just have not offered an opinions
15 on these examples. And I do not wish to remember
16 these on the fly.
17 I believe that everything in the
18 specification was consistent with what my
19 understanding of the claims was.
20 But, I don't have, I don't have -- I
21 have not memorized the specification nor
22 memorized my analysis because that was not the

1 focus of my declaration.
2 Q. Going back to the claim language on
3 Column 15. I want to talk about Claim 1.
4 A. One second. Column 15. Okay.
5 Q. Specifically the element that starts
6 at Line 45. This element starts out "A surface
7 comprising a dark-colored coating."
8 Do you see that?
9 A. Yes.
10 Q. So, my question is, does the
11 light-absorbing detector filter described in
12 the '159 patent provide support for the claimed
13 surface comprising a dark-colored coating? Is it
14 something different from the claimed surface
15 comprising a dark-colored coating or do you not
16 know?
17 MR. KIANG: Objection to scope.
18 THE WITNESS: Again, Counsel, you
19 are asking me about specific examples that I
20 have not offered an opinion on, as how or if
21 and why they support a particular portion of
22 the specification.

1 I understand that in an IPR you
2 don't look at written description or
3 enablement and other such issues.
4 I have focused correctly so on the
5 matters raised by Apple which I believe it is
6 burden to do so.
7 And I have responded in full with
8 the basis for my opinions in my declaration.
9 And, that is not one of the opinions that I
10 offered, so I don't feel comfortable
11 providing an opinion on the fly.
12 BY MR. BISENIUS:
13 Q. Can you identify any examples in
14 the '159 patent specification that inform your
15 opinion of the scope of the term "a surface
16 comprising a dark-colored coating"?
17 MR. KIANG: Objection to scope.
18 Asked and answered.
19 THE WITNESS: I don't -- I would
20 rely on whatever is in my declaration,
21 Counsel. I don't believe I have analyzed
22 each and every example or certain examples to

1 show how they support a particular claim.
2 So, I don't have an opinion here,
3 sitting here today, as a part of my
4 declaration.
5 If asked and answered, if asked and
6 allowed, I may do so in the future, should
7 this be raised at some point.
8 But, at this point, these are not
9 part of my opinions.
10 BY MR. BISENIUS:
11 Q. So, you cannot identify any examples
12 in the '159 patent specification that informed
13 your opinion as to the scope of the claim term "a
14 surface comprising a dark-colored coating."
15 Is that correct?
16 MR. KIANG: Objection, misstates
17 testimony. Objection to scope.
18 THE WITNESS: I would disagree with
19 the characterization. I said I did not offer
20 an opinion on each and every example and how
21 it supports each claim, because I don't
22 believe that is the purpose of my

1 declaration.
2 My opinions are in my declaration.
3 And this is not an opinion that was included
4 in the declaration.
5 If asked and allowed, I may do so in
6 the future.
7 BY MR. BISENIUS:
8 Q. So, I'm not asking you about every
9 example in the specification. I'm just asking if
10 you can identify any example, just one example in
11 the specification that would -- that informed
12 your opinion of the scope of the term "a surface
13 comprising a dark-colored coating"?
14 A. As I said, if it is not in my --
15 MR. KIANG: Objection to scope.
16 THE WITNESS: If it is not in my
17 declaration, it is not an opinion that I
18 offered here.
19 If you refer to a particular portion
20 of my declaration, I would be glad to answer
21 the question.
22 BY MR. BISENIUS:

1 Q. Yeah, I'm referring to Paragraph 76
2 to 80 of your Exhibit 2100 in the 243 proceeding.
3 Here you have given an opinion about
4 the scope of the claim term "opening defined in
5 the dark-colored coating," and you have said
6 that, you know, your opinion is not just based on
7 the term "opening defined in the dark-colored
8 coating."
9 That it also requires that the light
10 is allowed to pass through the surface.
11 And so, now I'm asking you about the
12 surface and what examples in the specification
13 informed your opinion on the scope of what the
14 claim surface is.
15 So, I'm asking you, can you identify
16 any examples in the '159 patent specification
17 that support the claimed surface?
18 MR. KIANG: Objection to form.
19 Objection, misstates testimony. Objection to
20 scope.
21 THE WITNESS: You have
22 mischaracterized my opinions and you have

1 mischaracterized my declaration.
2 In this paragraph I was referring to
3 the Iwamiya-Sarantos combination does not
4 have the opening defined in the dark-colored
5 coating that allows light to pass through the
6 surface.
7 And, I specifically described that
8 the plain language of the claim itself, the
9 surrounding claim language confirms this
10 interpretation of the claims.
11 A surface comprising a dark-colored
12 coating a POSITA would understand that the
13 surface and coating are distinct claim
14 elements. The surface comprises a coating,
15 but the coating and the surface are not one
16 and same, because the coating, like paint,
17 has to be applied to a surface.
18 It does not exist on its own without
19 some structure.
20 So, therefore, additionally, the
21 claim limitation requiring an opening defined
22 in the dark-colored coating rather than an

1 opening defined in the surface.
2 So, therefore, the limitation then
3 requires an opening to be configured to allow
4 light to pass through the surface. That a
5 POSITA would understand the claim requires
6 light to pass through the surface that the
7 coating is applied on.
8 And, Apple's evidence does not
9 support this with respect to its prior art
10 combinations.
11 BY MR. BISENIUS:
12 Q. I would like to turn to Figure 4A of
13 the '159 patent. Can you identify any component
14 or components in this figure that correspond to
15 the claimed surface comprising a dark-colored
16 coating?
17 MR. KIANG: Objection to form.
18 Objection to scope.
19 THE WITNESS: I would defer to the
20 specification to provide the necessary
21 support. I don't have a specific opinion
22 other than the support from the specification

1 and the intrinsic evidence.
2 BY MR. BISENIUS:
3 Q. Do you know if any of the components
4 depicted in Figure 4A provide support for the
5 claimed surface comprising a dark-colored
6 coating?
7 MR. KIANG: Objection to scope.
8 Counsel, I think you have been asking a
9 variation of this question at least 40 times
10 now.
11 THE WITNESS: As I said, Counsel, I
12 believe that the specification and the
13 intrinsic evidence fully supports the plain
14 and ordinary meaning of the claims.
15 I have not offered a specific claim
16 construction discussion that discusses each
17 and every example or many of these examples,
18 because that was not the purpose of my
19 understanding.
20 That an IPR doesn't look at written
21 description or enablement at this stage. I
22 don't have a specific opinion at this point

1 in my declaration in this current matter.
2 But, that does not, that does not
3 mean that it is an admission that the support
4 is not there.
5 I fully intend to rely on the
6 specification and other intrinsic evidence,
7 if asked and allowed to offer such opinions
8 at any point.
9 BY MR. BISENIUS:
10 Q. So, you believe that there is
11 support in the specification for the claimed
12 surface comprising a dark-colored coating; is
13 that correct?
14 MR. KIANG: Objection to scope.
15 THE WITNESS: As I said, it was not
16 an opinion that I offered. I believe that
17 because the patent has issued, it checks all
18 of the boxes and it is presumed to be valid,
19 and validity includes written description and
20 enablement support.
21 So, therefore, I believe the U.S.
22 Patent Office to have done the correct job,

1 at least in that regard.
2 With respect to my own opinions, I
3 don't have the specific opinions in my
4 declaration as it stands today in this IPR.
5 But, to the extent I'm asked and
6 allowed, I may do such an analysis in the
7 future. I just don't have such an opinion
8 now.
9 BY MR. BISENIUS:
10 Q. So, sitting here today, you are
11 unaware of any examples in the '159 patent
12 specification that supports the claimed surface
13 comprising the dark-colored coating; is that
14 correct?
15 MR. KIANG: Objection to scope.
16 Asked and answered and over 40 times now.
17 THE WITNESS: I disagree with your
18 question. You used specifically the words
19 "unaware, I don't know," and others, to
20 characterize my responses. That is
21 completely untrue.
22 I have never used the word "unaware"

1 or not -- do not know.
2 I have simply said, I have not
3 provided such opinions in my report because I
4 presume the patent is valid for the reasons
5 of written description and enablement.
6 I believe that for those reasons at
7 least that this was fully supported.
8 To the extent you wanted me to
9 provide my own analysis, it is not a part of
10 this declaration.
11 MR. BISENIUS: I would like to turn
12 to the '743 patent, Exhibit 1001, in the 241
13 proceeding.
14 (Whereupon, previously marked
15 Apple Exhibit 1001,
16 first referral.)
17 THE WITNESS: Okay.
18 BY MR. BISENIUS:
19 Q. I would like to specifically start
20 in Column 8, Line 32 of the '743 patent
21 specification.
22 Let me know when you are there.

1 A. I am there.
2 Q. This paragraph describes, "A
3 light-absorbing detector filter 306"; is that
4 correct?
5 A. In Line 32, it is describing, "A
6 light-absorbing detector filter 306, which is
7 depicted in Figure 4A, is a planar surface having
8 an opening 402 through which the light -- through
9 which the emitted light may pass after being
10 attenuated by the tissue measurement site 102 in
11 an embodiment."
12 Q. Is the opening 402 an opening in the
13 light-absorbing detector filter 306 an opening in
14 the dark-colored coating on the surface of
15 light-absorbing detector filter 306, or both?
16 MR. KIANG: Objection, form, asked
17 and answered.
18 THE WITNESS: As I said, Counsel,
19 this example is clearly describing in the
20 language that is not -- that is not what you
21 used to describe it.
22 I rely on the language in the

1 specification itself. I don't believe I
2 offered an opinion on this particular
3 embodiment. I don't have a specific opinion
4 on that particular question which I believe
5 requires me to look at the patent and
6 memorize it or understand it.
7 So, I don't have a specific answer
8 or an opinion for you today as a part of my
9 declaration because it is not part of my
10 current declaration in the 7 -- in the, in
11 the IPR for the '159 patent -- sorry, for
12 the '743 patent -- is this the '743 or
13 the '159?
14 '159, sorry.
15 BY MR. BISENIUS:
16 Q. Sorry, I am discussing the '743
17 patent, now.
18 A. Yeah, okay, it is not part of my
19 opinions with respect to the '743 patent.
20 Q. Would you agree that your answers
21 regarding the light-absorbing detector filter and
22 the opening in the dark-colored coating discussed

1 with respect to the '159 patent apply equally to
2 the '743 patent?
3 MR. KIANG: Objection to form.
4 Objection to scope. I incorporate all
5 objections to previous questions.
6 THE WITNESS: As I said, I think my
7 answers will be substantially the same. I
8 have not analyzed these examples for the
9 purpose of my declaration.
10 I believe that the patent is
11 presumed valid. I believe that there is a
12 written description. That there is
13 enablement in all of these, because the
14 examiners have reviewed it for this issue.
15 I believe that it is presumed valid.
16 I don't have a specific opinion on these in
17 my declaration, save for the '159 or
18 the '743.
19 So, if asked and allowed for all of
20 your questions, I may provide an answer in
21 the future after I fully consider the issues.
22 But, for the time being, these

1 opinions are not in my declaration in this
2 IPR, so I cannot offer you an opinion. That
3 doesn't mean I do not know. That doesn't
4 mean I don't want to. I just don't want to
5 rush a new opinion on the fly.
6 BY MR. BISENIUS:
7 Q. Turning to Column 15 of the '743
8 patent, I want to talk about the claim language
9 here.
10 The element starting at Line 53 of
11 the '743 patent starts out --
12 A. Let me go to that --
13 Q. Yes, let me know when you are there.
14 A. '743.
15 Q. So, I uploaded the '743 patent to
16 the share site this morning. So, if you download
17 it --
18 A. Okay. I got lost here. Let me go
19 to -- where is the '743 in your uploaded thing?
20 Q. It doesn't really have a good order.
21 The way I'm looking at it, it is on
22 the very first page, it is the first document.

1 A. For me it says '159, that one.
2 Q. Perhaps refresh in the Box.
3 A. No, I downloaded them and unzipped
4 them, so maybe that is the problem.
5 Q. Yes, I added a file -- I added
6 the '743 patent this morning. So, depending
7 on --
8 A. Oh, I downloaded yesterday. I see.
9 Okay. So, let me open my copy of it.
10 Okay. I have opened it.
11 Q. Okay. I want to talk about the
12 claim element in Column 15 starting at Line 53.
13 A. Okay.
14 Q. This element starts, "A surface
15 comprising a dark-colored coating."
16 Do you see that?
17 A. So, we are looking at Claim 1 of
18 the '743?
19 Q. Correct.
20 A. And in Line Number 52 it says, "A
21 surface comprising a dark-colored coating." Yes.
22 Q. Can you identify any examples in

1 the '743 patent specification that provide
2 support for the claimed surface?
3 MR. KIANG: Objection to scope.
4 Asked and answered.
5 THE WITNESS: So, if I understand
6 you right you are asking me what are the
7 examples in the specification of the '743
8 that show different examples of the surface.
9 BY MR. BISENIUS:
10 Q. Correct.
11 A. Okay. And, I think that I answered
12 that before. I said that I did not identify all
13 of the different examples and analyze each
14 example. We are the patent owner. We know our
15 patent, I guess.
16 So, it was a rebuttal for the
17 grounds raised by Apple and its expert. And I
18 provided opinions in a fulsome way that rebutted
19 the opinions.
20 And I did not see this as a way to
21 offer written description support nor enablement
22 support, because that is not what I was asked to

1 do.
2 Q. So, before we were talking about
3 the '159 patent. And I asked you if you agreed
4 that your answers from that line of questioning
5 regarding the claimed surface and the claimed
6 dark-colored coating would apply equally to
7 the '743 patent.
8 And you didn't really agree so that
9 is why I am asking what sounds like the same
10 questions again.
11 But if you would agree that your
12 answers to that line of questioning apply equally
13 to the '743 patent, then we can move on.
14 MR. KIANG: Is there a question
15 pending?
16 BY MR. BISENIUS:
17 Q. I'm wondering if you agree that your
18 answers to the line of questioning that we just
19 had with respect to the '159 patent regarding the
20 surface, the dark-colored coating, and the
21 opening in the dark-colored coating would apply
22 equally to the '743 patent?

1 MR. KIANG: Objection to scope.
2 Objection to form. I incorporate all
3 previous objections regarding questioning
4 about the '159 patent.
5 THE WITNESS: I mean to the extent
6 that you are stating that the questions are
7 for the same examples and the same type of
8 questions.
9 As I said, it is not that -- my
10 answer is that I have not offered an opinion
11 in my declaration that identifies how each
12 example offers written description support or
13 enablement support for the claims of both of
14 these patents.
15 That was not the purpose of my
16 declaration. So, in that sense, it is not
17 that I don't know the answer. It is not that
18 I can't give an answer. It is just that it
19 is an opinion that is not expressed in my
20 declaration, and I don't want to generate one
21 on the fly.
22 So, therefore, in that context, my

1 answers with respect to the '159 and the '743
2 would be similar.
3 MR. BISENIUS: We are getting to
4 close to an hour. I don't know what time
5 zone you are in, but would you want to break
6 for lunch now or maybe do a more brief break?
7 MR. KIANG: I defer to the witness.
8 It is 9:30 where I am.
9 THE WITNESS: So, I think, let us
10 do -- I don't know where you are, Counsel.
11 MR. KIANG: I am in California.
12 THE WITNESS: Oh, sorry, not you.
13 MR. BISENIUS: I am in the central
14 time zone but I can wait. I want to
15 accommodate your schedule.
16 THE WITNESS: No, no. I mean I
17 think that, I think maybe half an hour should
18 be fine. And the court reporter, is that
19 fine with you? Because you are doing also
20 hard work.
21 THE REPORTER: Thank you. That is
22 fine. Thank you.

1 THE WITNESS: Okay. So, half an
2 hour time.
3 MR. BISENIUS: So, say 33 minutes.
4 Reconvene at ten after the hour?
5 THE WITNESS: Sounds good.
6 MR. BISENIUS: Thank you.
7 (Recess taken -- 12:37 p.m.)
8 (After recess -- 1:11 p.m.)
9 BY MR. BISENIUS:
10 Q. All right. I would like to continue
11 with the '159 patent. Could you please turn to
12 Figure 3?
13 Could you please explain what is
14 being depicted in Figure 3 of the '159 patent?
15 MR. KIANG: Objection to form.
16 THE WITNESS: Figure 3 represents an
17 embodiment that is a side view of a
18 three-dimensional oximetry sensor.
19 BY MR. BISENIUS:
20 Q. Can you please describe the
21 components of the pulse oximetry sensor shown in
22 Figure 3?

1 A. Column 7, Lines 4 through -- 4
2 through -- yeah, 4 through Columns 8 and portions
3 of 9, they cover the various descriptions of the
4 components in this exemplary embodiment.
5 Q. Figure 3 shows an emitter 302 as
6 part of the pulse oximetry sensor; is that
7 correct?
8 A. Column 7 confirms that the 3D
9 sensor 300 includes an emitter 302, a light
10 diffuser 304, a light-absorbing detector
11 filter 306, a light concentrator 308 and a
12 detector 310 in this embodiment.
13 Q. The emitter 302 is a light source
14 that emits light that is attenuated through
15 tissue such as the skin of a person; is that
16 correct?
17 A. What are you referring to? I'm not
18 sure what your question is.
19 Q. I'm looking at, there is a
20 description in Column 7, starting at Line 30.
21 A. Okay. So, it is referring here that
22 "The emitter 302 can serve as a source of optical

1 radiation transmitted towards the tissue
2 measurement site 102."
3 Q. Would the term "optical radiation"
4 include visible light?
5 A. It describes here in Line 35 that in
6 an embodiment the emitter 302 includes the set of
7 optical sources that are capable of emitting
8 visible and near infrared optical radiation.
9 So, in some embodiments the
10 emitter 302 transmits optical radiation of red
11 and infrared wavelengths at approximately
12 650 nanometers and approximately 940 nanometers,
13 respectively.
14 Q. When the '159 patent uses the term
15 "optical radiation" it is referring to light; is
16 that correct?
17 A. I am not sure what you are asking,
18 Counsel. It has enough examples here and I rely
19 on the specification itself.
20 It describes the emitter 302 can
21 include one or more sources of optical radiation
22 such as LEDS, laser diodes, incandescent bulbs,

1 frequency-selective filters.
2 And, in another embodiment it could
3 be emitting visible and near infrared optical
4 radiation. So, it depends on what the
5 specification describes.
6 Q. When it refers to visible optical
7 radiation, it is referring to visible light; is
8 that correct?
9 A. As an example, yes. It would
10 measure -- it would refer to both the visible --
11 if you commonly call it as light, for example,
12 red.
13 Q. Would the optical radiation of the
14 650-nanometer wavelength be in the visible or
15 invisible range?
16 A. It was generally in the visible
17 range.
18 Q. Would the optical radiation of the
19 940-nanometer wavelength be in the visible or
20 nonvisible range?
21 A. It is typically the infrared which
22 is a nonvisible.

1 Q. So, continuing on with the
2 description of Figure 3, the detector 310 of the
3 pulse oximetry sensor captures and measures the
4 light that has been attenuated by the tissue of
5 the person using the devices; is that correct?
6 A. For example, in other embodiments it
7 describes that "The pulse oximetry system 800 can
8 measure analyte concentrations at least in part
9 by detecting optical radiation attenuated by
10 tissue at the measurement site 102."
11 I am referring to Column 12,
12 Figure 8, as an example.
13 Q. Is this detection of the light
14 attenuation performed by the detector 310?
15 A. The detector detects. And you are
16 saying that attenuation is done by the detector.
17 I'm not sure what your question is
18 asking.
19 Q. I'm asking if the detector 310
20 conducts the measurement of the attenuation of
21 the light through the person's tissue?
22 A. In certain examples, yes. It

1 discloses in the '159 that the detector measures,
2 the detector measures -- the detector measures
3 the light that has been attenuated by the tissue
4 measurement site.
5 Q. Could you please turn to Figure 3 of
6 the '743 patent. I want to compare that to
7 Figure 3 of the '159 patent.
8 A. Okay.
9 Q. Figure 3 of the '743 patent is the
10 same as Figure 3 of the '159 patent; is that
11 correct?
12 A. Yes. It looks substantially
13 similar.
14 Q. In the examples shown in Figure 3 of
15 the '743 patent and Figure 3 of the '159 patent,
16 the site that the light is being emitted into and
17 captured from is a person's finger; is that
18 correct?
19 A. At a high level, yes. This is a
20 finger sensor for the finger.
21 Q. All right. Moving ahead to Figure 5
22 of both patents, the '159 patent and the '743

1 patent. Would you agree that Figure 5 of
2 the '159 patent is the same as Figure 5 of
3 the '743 patent?
4 A. Yes, substantially similar. Again,
5 I would defer to the specification on how they
6 describe it.
7 Q. Figure 5 is showing another example
8 of a pulse oximetry sensor; is that correct?
9 MR. KIANG: Objection to form.
10 THE WITNESS: Which one are you
11 referring to?
12 BY MR. BISENIUS:
13 Q. Figure 5 of the '159 patent is
14 showing another example of a pulse oximetry
15 sensor; is that correct?
16 A. Figure 5.
17 MR. KIANG: Objection, form.
18 BY MR. BISENIUS:
19 Q. Figure 5.
20 A. It describes Figure 5 as "a top view
21 of a three-dimensional pulse oximetry sensor
22 according to an embodiment of the present

1 disclosure" again.
2 I'm reading from the specification,
3 Column 5.
4 Q. The pulse oximetry sensor shown in
5 Figure 5 measures light attenuation at a person's
6 finger; is that correct?
7 A. The Figure 5, the finger is an
8 example of the tissue measurement site, in
9 Figure 5.
10 Q. Would the pulse oximetry sensor of
11 Figure 5 be capable of measuring blood oxygen
12 saturation at a person's forehead?
13 A. I don't have an opinion on that
14 issue. I defer to the specification.
15 Q. Would the pulse oximetry sensor
16 depicted in Figure 5 be capable of measuring
17 blood oxygen saturation at a person's wrist?
18 MR. KIANG: Objection to scope.
19 THE WITNESS: As I said, I mean the
20 specification describes and uses terms "for
21 the wrist."
22 So, I would, I would say that while

1 I have not provided an analysis of a written
2 description or enablement, I believe that the
3 claims as issued are presumed valid and have
4 full support of the specification and the
5 intrinsic evidence and the claims explicitly
6 describe wrist.
7 BY MR. BISENIUS:
8 Q. So, I'm asking a slightly different
9 question.
10 Would the configuration depicted in
11 Figure 5 be capable of measuring pulse oxygen
12 saturation at the wrist or would modifications be
13 necessary?
14 MR. KIANG: Objection to scope.
15 THE WITNESS: I don't have an
16 opinion on that in my declaration.
17 As I said, I was not asked to offer
18 opinions as to written description of
19 enablement or other such topics.
20 I was -- my opinions are captured in
21 my declaration. That is not one of my
22 opinions that I was asked to offer.

1 BY MR. BISENIUS:
2 Q. So, you are not sure if the specific
3 configurations shown in Figure 5 of the '159
4 patent would be able to measure blood oxygen
5 saturation at the wrist; is that correct?
6 MR. KIANG: Objection, misstates
7 testimony. Objection to scope.
8 THE WITNESS: I would disagree with
9 that characterization. I said I didn't have
10 such an opinion. I believe that the
11 specification, because it is an issued
12 patent, would fully support the claims as
13 issued.
14 I just don't have an opinion in the
15 declaration in the current matter on that
16 issue.
17 But, if asked and allowed on these
18 and other issues that you asked me about, I
19 can certainly offer an opinion in the future,
20 but not as a part of this declaration which
21 these opinions are not present in.
22 BY MR. BISENIUS:

1 Q. So, you don't know whether or not
2 the pulse oximetry sensor shown in Figure 5 would
3 need to be modified in order to measure blood
4 oxygen saturation at the wrist; is that correct?
5 MR. KIANG: Objection, misstates
6 testimony. Objection to scope.
7 THE WITNESS: I don't offer any
8 opinion on that issue. If asked and allowed,
9 I may do so in the future, but not as a part
10 of this declaration.
11 BY MR. BISENIUS:
12 Q. So, today you have no opinion on
13 that; is that correct?
14 A. My opinion is that I have not
15 offered an opinion on that issue in my
16 declaration.
17 Q. Can you please turn to Figure 8 of
18 both the '159 and '743 patents.
19 Would you agree that Figure 8 of
20 the '159 patent is the same as Figure 8 of
21 the '743 patent?
22 A. They look substantially similar.

1 But, again, I would defer to the specification to
2 identify any differences.
3 Q. Can you explain what Figure 8 in
4 the '159 patent is showing?
5 A. It says that Figure 8 is "a block
6 diagram of an example pulse oximetry system
7 capable of noninvasively measuring one or more
8 blood analytes in a monitored patient according
9 to an embodiment of the disclosure."
10 Q. Is the pulse oximetry system of
11 Figure 8 a different representation of the pulse
12 oximetry sensor of Figure 3 or does it differ in
13 some significant way?
14 MR. KIANG: Objection to scope.
15 THE WITNESS: I don't have an
16 opinion on that issue in my declaration. I
17 don't have an opinion here today on that
18 issue, because there is no such opinion in my
19 declaration.
20 BY MR. BISENIUS:
21 Q. Could the pulse oximetry sensor
22 shown in Figure 3 be used in the system depicted

1 in Figure 8?
2 MR. KIANG: Objection to scope.
3 THE WITNESS: As I said, Counsel, I
4 am -- the specification speaks for itself.
5 It is a presumed valid patent.
6 I would rely on the teachings of the
7 specification itself and intrinsic record.
8 I just don't have an opinion
9 comparing these various embodiments with each
10 other, so I don't want to provide a new
11 opinion without careful consideration.
12 BY MR. BISENIUS:
13 Q. Could the pulse oximetry sensor
14 shown in Figure 5 be used in the system of
15 Figure 8?
16 MR. KIANG: Objection to scope.
17 THE WITNESS: I believe that all of
18 the figures work together with the
19 specification and I rely on the specification
20 itself.
21 I don't have an independent opinion
22 at this point, nor have I provided such an

1 opinion in my declaration. So I cannot
2 answer -- I cannot provide an opinion to you
3 at this point.
4 But, if asked and allowed, I may do
5 so in the future.
6 BY MR. BISENIUS:
7 Q. You stated that you have read
8 the '159 patent within the last couple of weeks,
9 correct?
10 A. I have briefly reviewed it, yes.
11 Q. Are there any portions of the '159
12 patent that you don't understand?
13 A. I am not sure as to what you are
14 asking.
15 Q. Did you understand everything stated
16 in the '159 patent when you reviewed it?
17 A. At the time I reviewed it in -- at
18 the time of my declaration, I reviewed it and I
19 understood the claims as having the plain and
20 ordinary meaning.
21 I don't have any opinions as to how
22 these various embodiments relate to the claims.

1 Q. So, you have no understanding of
2 whether or not the pulse oximetry sensor in
3 Figure 3 or the pulse oximetry sensor in Figure 5
4 could be used in the system shown in Figure 8; is
5 that correct?
6 MR. KIANG: Objection, misstates
7 testimony. Objection to form -- or, sorry,
8 objection to scope.
9 THE WITNESS: I disagree that that
10 is my opinion. I said that I did not view
11 this declaration as an exercise on claim
12 construction or written description or
13 enablement which I understand are beyond the
14 scope of the IPR.
15 The burden of the patent owner is to
16 provide a validity defense against the
17 assertions by the challenger, in this case
18 Apple. And that is what my declaration
19 focused on.
20 So, those -- my opinions are all
21 captured in my declaration. I did not
22 introduce any opinions that I was not asked

1 to offer.
2 BY MR. BISENIUS:
3 Q. Would a person of ordinary skill in
4 the art having all of the knowledge of a person
5 of ordinary skill in the art and having read
6 the '159 patent, know how to use the pulse
7 oximetry sensor Figure 3 or the pulse oximetry
8 sensor Figure 5 in these systems shown in
9 Figure 8?
10 A. I believe that because the patent
11 was issued and it is issued valid patent, it is
12 presumed to be valid. And I believe that it was
13 examined by the U.S. Patent Office and the claims
14 would allow, I believe, that at least that
15 evidence shows that all of the checkboxes have
16 been met, including those that you asked me
17 about.
18 I just don't have a specific
19 opinion, myself, on that issue.
20 Q. Okay. So I'm not asking you about
21 the validity of the claims. I'm talking about
22 the specific configurations in Figure 3 and

1 Figure 5.
2 And so I'm wondering, would a person
3 of ordinary skill in the art having read the '159
4 patent know how to use the pulse oximetry sensor
5 of Figure 3 or the pulse oximetry sensor of
6 Figure 5 in the system shown in Figure 8?
7 A. My answer is --
8 MR. KIANG: Objection, relevance.
9 THE WITNESS: My answer is that
10 because it is an issued patent that was
11 examined by the U.S. Patent Office, they
12 examine it for written description for
13 enablement and other patentability
14 considerations.
15 So, it is presumed to be valid, and
16 a person of ordinary skill in the art would
17 understand so.
18 I just don't have an independent
19 opinion in my declaration at this time. To
20 the extent I am asked to and allowed, I may
21 do so in the future. But that is in the
22 future, not as a part of my already submitted

1 declaration.
2 I believe further that such
3 discussions were not part of the IPR, so I
4 was not asked to offer such opinions.
5 BY MR. BISENIUS:
6 Q. So, you don't know whether or not a
7 person of ordinary skill would be able to utilize
8 the pulse oximetry sensor of Figure 3 or the
9 pulse oximetry sensor of Figure 5 in the system
10 shown in Figure 8; is that correct?
11 MR. KIANG: Objection, misstates
12 testimony. Objection, relevance and scope.
13 THE WITNESS: As I said, that is not
14 my testimony. My testimony is that I have
15 not offered such an opinion at this point in
16 my declaration because I believe that the
17 issues that you are raising go beyond the
18 scope of the IPR in the current legal matter.
19 And I was not asked to offer an
20 opinion on that issue.
21 To the extent I am asked and allowed
22 I may do so in the future.

1 But, it is not part of the current
2 declaration.
3 BY MR. BISENIUS:
4 Q. You are being asked. I'm asking you
5 right now: Can the pulse oximetry sensor from
6 Figure 5 be used in the system of Figure 8?
7 Would a POSITA know how to do that?
8 MR. KIANG: Objection to scope.
9 THE WITNESS: As I said, I was
10 meaning that it was asked by the court to do
11 so, and allowed by the court.
12 So, I have not been asked or asked
13 by the court.
14 BY MR. BISENIUS:
15 Q. Are you refusing to answer this
16 question of whether or not a POSITA would know
17 how to use the pulse oximetry sensor of Figure 3
18 or the pulse oximetry sensor of Figure 5 in the
19 system of Figure 8?
20 MR. KIANG: Objection to scope.
21 Objection, misstates testimony.
22 THE WITNESS: To -- in response to

1 your question as to whether a person of
2 ordinary skill in the art would be able to
3 use the invention, I said already the answer
4 is yes, because the U.S. Patent Office
5 examined the patents at length and issued it
6 and allowed the claims.
7 And as a part of the checkboxes,
8 they check for the description, which is
9 position for the invention and for the
10 enablement and for all such criteria. I
11 myself have not done an independent analysis
12 because I was not asked to do so.
13 And I am not able to develop an
14 opinion on the fly, because this is an
15 important issue and one that requires
16 consideration which I will do if asked and
17 allowed by the court.
18 BY MR. BISENIUS:
19 Q. You do realize that I ask you the
20 questions. The court doesn't ask you questions.
21 That that is what this deposition is.
22 So, I'm asking you, do you know if a

1 POSITA would be able to implement the pulse
2 oximetry of Figure 5 in the system of Figure 8?
3 MR. KIANG: I'm objecting to the
4 manner in which counsel is taking this
5 deposition, including the fact that he is
6 badgering the witness. He has also asked the
7 question repeatedly. And the witness has
8 answered the question repeatedly.
9 Counsel is advised to keep questions
10 within the scope of direct examination.
11 THE WITNESS: As I said, Counsel, I
12 believe that the answer is yes, a person of
13 ordinary skill in the art would understand it
14 based on at least the fact that the patent
15 was examined by a qualified team of U.S.
16 patent examiners and by the U.S. Patent
17 Office.
18 And, therefore, the part of the
19 check the box, they check for written
20 description enablement.
21 So, I believe the answer is yes.
22 And I have been responsive.

1 What I have said is I don't have an
2 independent opinion on that issue at this
3 point. And it is not part of my declaration.
4 BY MR. BISENIUS:
5 Q. Figure 8 shows that the light is
6 being emitted into and captured from the person's
7 finger; is that correct?
8 A. Again, I would rely on the
9 specification to describe Figure 8. And Figure 8
10 is described as a pulse oximetry system example
11 that is capable of noninvasively measuring one or
12 more blood analytes in a monitored patient
13 according to an embodiment. So, it says a
14 monitored patient. It does not explicitly
15 mention the figure or otherwise.
16 Q. Looking at Figure 8, what is being
17 shown by the label 102?
18 A. It can be, given the specification
19 of the -- given the specification of -- the
20 specification of the '159 patent, it refers to a
21 monitored patient. So, while it shows an example
22 of a finger, one of ordinary skill in the art

1 could understand that it could be the wrist or
2 something else.
3 So, it is consistent with the
4 disclosures in the specification. But again, I
5 would rely on the complete specification to
6 support any answer. And this is not something
7 that I specifically call out in my declaration as
8 to the scope or the limitation of written
9 description or enablement.
10 But, the language in the
11 specification is clear enough. It is monitored
12 patient. It is not limited to a finger,
13 similarly with the '743.
14 I would rely on the entire
15 specification as a whole and the intrinsic
16 evidence.
17 Q. What happens to the light that is
18 emitted by the emitters 804?
19 MR. KIANG: Objection to form.
20 THE WITNESS: I think there is a
21 description of Figure 8 in Column 12. I will
22 defer to that. That says that, to that

1 column, Column 12 and 13, that describes what
2 the process is, but that is not something
3 that I have memorized.
4 I would rely on the descriptions in
5 Columns 12, 13, and 14, for a fulsome
6 description of Figure 8.
7 BY MR. BISENIUS:
8 Q. The light emitted by the
9 emitters 804 passes through the tissue of the
10 monitored patient; is that correct?
11 MR. KIANG: Objection to form.
12 THE WITNESS: What was your
13 question, Counsel?
14 BY MR. BISENIUS:
15 Q. Looking at Figure 8 and the related
16 description --
17 A. Uh-huh.
18 Q. -- is it correct that the light
19 emitted by the emitters 804 passes through the
20 tissue of the monitored patient?
21 MR. KIANG: Objection to form.
22 THE WITNESS: I would say that it

1 describes Figure 8 as an example pulse
2 oximetry system capable of noninvasively
3 measuring one or more blood analytes in a
4 monitored patient.
5 So, it is not invasively measuring
6 one or more blood analytes in a monitored
7 patient.
8 BY MR. BISENIUS:
9 Q. I'm asking specifically of the light
10 emitted by emitters 804.
11 That light passes through the tissue
12 of the monitored patient; is that correct?
13 MR. KIANG: Objection to form.
14 THE WITNESS: I'm not sure I
15 understand your question, Counsel.
16 BY MR. BISENIUS:
17 Q. Do the detectors 806 -- sorry.
18 Does the detector 806 in Figure 8
19 detect light that has been emitted by the
20 emitters 804?
21 A. As described in Column 12, "The
22 pulse oximetry system 800 can measure analyte

1 concentrations at least in part by detecting
2 optical radiation attenuated by tissue at
3 measurement site 102."
4 And "The measurement site 102 can be
5 any location on a patient's body such as a
6 finger, foot, earlobe, wrist, forehead or the
7 like."
8 Q. And what I'm asking is: Is it the
9 detector 806 that detects the light that has
10 attenuated through the patient's tissue?
11 A. It says in Column 6 -- sorry,
12 Column 12, Lines 60 onwards, it says, "The
13 detector 806 captures and measures light from the
14 tissue measurement site 102. For example, the
15 detector 806 can capture and measure light
16 transmitted from the emitter 804 that has been
17 attenuated or reflected from the tissue at the
18 measurement site 102."
19 So it would be attenuated or
20 reflected. And the detector can output a
21 detector signal responsive to the light captured
22 and measured.

1 "The detector 806 can be implemented
2 using one or more photodiodes, photo transmitters
3 or the like."
4 So, it refers to both reflective and
5 transmissive type of light used in this pulse
6 oximetry. So the -- so as I mentioned earlier,
7 there is a clear disclosure of all types of pulse
8 oximeters that include embodiments that would
9 cover, that would cover the wrist and other,
10 forehead, as well as the finger and so on.
11 Q. What is the difference between light
12 that has been attenuated through the tissue and
13 light that has been reflected by the tissue?
14 A. For example -- as an example, it
15 describes here that sometimes again it is a
16 nonlimiting example. A reflection light could be
17 something that is reflected and that is commonly,
18 as an example could be a reflective pulse
19 oximeter. And an attenuation could be something
20 like a transmissive pulse oximeter, but again
21 these terms as used in the specification of
22 the '159 confirmed that the wrist and the

1 forehead and the finger all are within the scope
2 of this particular set of embodiments of
3 nonlimiting embodiments.
4 Q. What portions of a patient's body
5 would a light transmissive pulse oximetry sensor
6 typically be used at?
7 A. As I said, I don't have a specific,
8 a specific description. I am relying on the
9 specification here for, for its disclosures. And
10 it discloses that it can be used in the context
11 of the '159 and '743, how it can be used.
12 Q. Can you give me an example of any
13 location on a patient's body at which a
14 transmissive pulse oximetry sensor could be used?
15 A. Again, these are examples, and I
16 don't mean to be limiting in any particular
17 manner.
18 And in my declaration itself, I
19 discuss in the introductory sections that, for
20 example, in Paragraph 37, I say that, "A pulse
21 oximeter with photo detector and light emitters
22 are placed on opposite sides of the tissue is

1 known as a transmittance pulse oximeter, while
2 the pulse oximeter that has a photo detector and
3 light emitters on the same side of the tissue is
4 known as a reflectance pulse oximeter." So, I
5 provide some examples there.
6 But again these are high level
7 examples. And the specification fully reflects
8 what is disclosed in the '159 and the '743.
9 Q. And what I'm asking is can you give
10 any examples? Not a limited example. Just any
11 nonlimiting example of an area on a patient's
12 body where you would use a transmittive pulse
13 oximetry sensor.
14 A. The examples -- again, nonlimiting
15 examples would be the finger. They could be the
16 ear.
17 Q. Can you give some nonlimiting
18 examples of areas on a patient's body where you
19 would use a reflective pulse oximetry sensor?
20 A. For example, a reflectance pulse
21 oximetry sensor could be used in areas such as
22 the forehead or the wrist.

1 Q. Continuing with Figure 8, Figure 8
2 shows a user interface 812.
3 Do you see that?
4 A. Okay.
5 Q. Is the user interface 812 part of
6 the pulse oximetry sensor?
7 A. I would -- in this example I would
8 rely on the specification. I don't remember what
9 the specification specifically calls out, but I
10 would defer to the language in the specification
11 and the intrinsic record.
12 Q. Can you review the description of
13 the user interface 812 in the specification and
14 let me know whether or not it is part of the
15 pulse oximetry sensor?
16 For example, descriptions of the
17 user interface 812 are in Column 13, the
18 paragraph starting at Line 33, there is a few
19 mentions of it there.
20 There is mentions at the bottom of
21 Column 13 and going into Column 14.
22 A. I don't have an opinion on the fly,

1 Counsel. That is not part of my report. So, I
2 would just defer to the specification. I don't
3 have a specific opinion on that.
4 Q. So, you don't know if the user
5 interface 812 is part of the pulse oximetry
6 sensor or not?
7 MR. KIANG: Objection, relevance.
8 THE WITNESS: As I said, as I said,
9 I don't have an opinion on this as a part of
10 this declaration.
11 In other cases, other matters, other
12 reports, I don't know if I have commented on
13 those issues.
14 But at this point, as a part of this
15 declaration, I don't have an opinion on that
16 issue. I refer to the specification of
17 the '159 or the '743 to describe what did
18 cover.
19 BY MR. BISENIUS:
20 Q. Can you give any examples of
21 information that would be displayed by the user
22 interface 812?

1 MR. KIANG: Objection, relevance.
2 THE WITNESS: I don't have an
3 opinion on that, Counsel, sitting here as a
4 part of my declaration.
5 BY MR. BISENIUS:
6 Q. So, you are incapable of reviewing a
7 half of a column of the '159 patent and answering
8 any questions about the user interface 812; is
9 that correct?
10 MR. KIANG: Objection, misstates
11 testimony. And again objection to the manner
12 in which counsel is taking this deposition,
13 including harassing the witness.
14 THE WITNESS: As I said, Counsel, I
15 would -- I think both of us would be
16 comfortable if I did not introduce new
17 opinions. I am not planning to introduce any
18 new opinions. And you are continuously
19 inviting me to offer opinions on things that
20 I have not opined on.
21 So, this is not something that I
22 have discussed in my declaration, and

1 therefore I don't want to offer an opinion on
2 this important legal matter on the fly.
3 So, I will defer to whatever is in
4 the declaration.
5 Of course, if asked by the court and
6 allowed, I may do so in the future. But at
7 this part and this declaration, I have not
8 offered such an opinion.
9 BY MR. BISENIUS:
10 Q. Did you consider any design
11 considerations that would be included within
12 including a user interface and a pulse oximetry
13 sensor when forming your opinions in any of your
14 declarations?
15 MR. KIANG: Objection, relevance.
16 THE WITNESS: I don't understand
17 your question at all.
18 BY MR. BISENIUS:
19 Q. Well, the Figure 8 shows that the
20 system includes a user interface 812.
21 I'm wondering if you considered any
22 of the design considerations that would go into

1 including a user interface in a pulse oximetry
2 sensor when you formed any of your opinions in
3 your declarations?
4 A. I'm -- I have proffered an opinion
5 on the claims in the prior art.
6 I'm not sure if Figure 8 is -- are
7 you saying Figure 8 is a claim? I'm just saying
8 Figure 8 is an embodiment. I refer to the
9 claims. I analyze the claims; I looked at the
10 asserted grounds from Apple and offered some
11 opinions.
12 So I'm not sure if you are referring
13 to a claim that has the term user interface and
14 please point me to that.
15 So, for example, there is a claim
16 that talks about a touchscreen interface to
17 provide visual feedback and all of that.
18 Is that what you are asking me
19 about? I'm not sure what you are asking me
20 about.
21 Q. Well, I'm asking you about the user
22 interface example in Figure 8. But if you want

1 to talk about the user interface recited in the
2 claims.
3 Would you consider the user
4 interface 812 in Figure 8 to be an example of the
5 user interface recited in the claims?
6 MR. KIANG: Objection, relevance.
7 THE WITNESS: I don't have a, I
8 don't have a specific opinion on that issue
9 because I would just rely on the
10 specification.
11 That is not something I have offered
12 an opinion on. And I don't want to create a
13 new opinion today.
14 BY MR. BISENIUS:
15 Q. So, you have not considered any of
16 the design considerations that would be included
17 with including a visual display or a touchscreen
18 display in a pulse oximetry monitor when forming
19 your opinions in your declaration; is that
20 correct?
21 MR. KIANG: Objection. Misstates
22 testimony. Objection to scope and relevance.

1 THE WITNESS: I would disagree with
2 that characterization. My opinions are very
3 clear. The basis for my opinions are clear
4 in my declaration.
5 I do not want to characterize them
6 in any way in the manner that you describe
7 them in your question.
8 BY MR. BISENIUS:
9 Q. Figure 8 shows the system divided
10 into two main portions, a sensor 801 and a
11 monitor 809.
12 Do you see that?
13 A. Where did you see that self-serving
14 language about two different divisions and all of
15 that? I'm not sure.
16 Q. What is the sensor 801 in Figure 8?
17 A. As I said, I mean I would defer to
18 the description in the exemplary embodiment.
19 Q. What is the monitor 809 in Figure 8?
20 A. Again, it is an exemplary
21 embodiment. It is some sort of described in a
22 nonlimiting manner in the specification.

1 Q. Are the sensor 801 and the
2 monitor 809 two components of the same device or
3 are they separate devices?
4 MR. KIANG: Objection, relevance,
5 objection, scope.
6 THE WITNESS: As I said, this is not
7 an opinion that I offered in my declaration.
8 I believe that you are referring to other
9 matters at issue which are not part of this
10 IPR.
11 So, I don't have an opinion in this
12 particular IPR about issues such as those.
13 BY MR. BISENIUS:
14 Q. So, you can't answer any questions
15 about the system in Figure 8 of the '159 patent,
16 correct?
17 MR. KIANG: Objection, misstates
18 testimony.
19 THE WITNESS: As I said, I disagree
20 with your question.
21 I said that I did not offer an
22 opinion on how Figure 8 limits the claims or

1 illustrates the claims or otherwise. I was
2 not asked to do that.
3 I offered specific opinions with
4 respect to the validity challenges raised by
5 the challenger, Apple. And I provided a
6 fulsome opinion. And that is all I am
7 opining today on.
8 BY MR. BISENIUS:
9 Q. What functions are performed by the
10 signal processor 810 in Figure 8?
11 A. I will defer again to the
12 specification.
13 Q. What form does the network
14 interface 816 in Figure 8 take?
15 A. I don't have a specific opinion on
16 that. I will defer to the specification and the
17 intrinsic record and the claims themselves.
18 Q. Can you give any examples of what
19 forms the network interface 816 would take in the
20 system Figure 8?
21 MR. KIANG: Objection to scope.
22 THE WITNESS: As I said, the

1 specification itself describes certain
2 nonlimiting examples of network interfaces in
3 Column 14.
4 But that is again from a quick
5 search. I have not done a search of the full
6 patent specification to memorize it.
7 But, as nonlimiting examples, it
8 could include a serial bus port, a universal
9 serial bus, wireless interface, such as WiFi.
10 It could include an ethernet port or
11 any other suitable communication device and
12 so on, as described in Column 14.
13 But beyond that, I don't have a
14 specific comprehensive and limiting answer.
15 BY MR. BISENIUS:
16 Q. Turning to the claim language in
17 Claim 19 of the '159 patent. I want to talk
18 about the element that starts at Column 18,
19 Line 5.
20 Let me know when you get there.
21 A. Okay. Yes. I am there.
22 Q. So, this element starts, "A

1 processing device configured to wirelessly
2 receive physiological parameter data from the
3 physiological monitoring device, where the
4 processing device comprises a user interface, a
5 storage device and a network interface."
6 Do you see that?
7 A. I do now.
8 Q. Does the processing device recited
9 in this element receive any support from any of
10 the components of Figure 8?
11 MR. KIANG: Objection, relevance.
12 Objection to scope.
13 THE WITNESS: As I said, Counsel, I
14 don't have an opinion on the written
15 description nor enablement.
16 I understand that your focus is on.
17 But, those are not part of my declaration. I
18 don't want to be invited to offer opinions on
19 the fly.
20 My opinions is about -- my opinions
21 are captured in my declaration and this is
22 not one of them.

1 BY MR. BISENIUS:
2 Q. Can you identify any examples in the
3 specification of the '159 patent that support the
4 claim recitation of a processing device?
5 MR. KIANG: Objection, scope.
6 Objection, relevance.
7 Reminding counsel that this
8 deposition is limited to the scope of
9 Madisetti's direct examination.
10 THE WITNESS: As I said, I would
11 rely on the specification. I don't have
12 anything else on that. I don't have, I have
13 not offered an opinion on the metes and
14 bounds on what it means, nor what it does or
15 anything else.
16 I have applied the plain and
17 ordinary meaning and looked at the prior art
18 reference and grounds.
19 I don't offer any independent
20 opinion on the examples in the specification
21 with respect to written description or
22 enablement or other aspects that I believe

1 the U.S. Patent Office has already cleared
2 and checked the box when it issued and
3 allowed the claims.
4 BY MR. BISENIUS:
5 Q. Can you identify any examples of the
6 claimed physiological monitoring device in
7 the '159 patent specification?
8 MR. KIANG: Objection to form.
9 Objection, relevance. Scope.
10 THE WITNESS: As I said, again,
11 these are different portions of the claim.
12 And, I believe that they are fully supported
13 in this specification in the intrinsic record
14 by the virtue that the Patent Office found it
15 valid. And a presumed valid patent checks
16 the box under written description and
17 enablement.
18 But I have not offered an
19 independent opinion because I understand
20 these are outside the scope of the IPRs and
21 correctly so. I focused instead on the
22 challenges raised by Apple's grounds of

1 alleged prior art.
2 BY MR. BISENIUS:
3 Q. In forming your opinions in your
4 declarations in these proceedings, did you
5 consider the design considerations that would go
6 into including a network interface having
7 wireless communication capabilities into a pulse
8 oximetry sensor?
9 MR. KIANG: Objection to scope.
10 Objection, relevance. Again, this is outside
11 the scope of Madisetti's direct testimony.
12 THE WITNESS: As I said, Counsel,
13 these are not opinions I was asked to
14 provide. I don't wish to offer such opinions
15 on the fly.
16 I believe that the patent fully
17 supports all of these different features by
18 the fact that it was allowed and issued and
19 presumed valid.
20 My declaration focused on the
21 challenges raised by Apple, and written
22 description enablement were not those.

1 BY MR. BISENIUS:
2 Q. In forming your opinions in your
3 declarations in these proceedings, did you
4 consider the design constraints that would go
5 into including a touchscreen interface into a
6 pulse oximetry sensor?
7 MR. KIANG: Objection to scope.
8 Objection to relevance.
9 THE WITNESS: Counsel, I rely on
10 everything in my declaration as support of my
11 opinions for the validity challenges.
12 But, to the extent you are asking me
13 to look at the specification and offer
14 opinions as to how the specification supports
15 enablement or written description, that is
16 not what I was asked to do.
17 So, I did not offer such opinions at
18 this time.
19 BY MR. BISENIUS:
20 Q. I would like to turn to Column 16 of
21 the '159 patent.
22 A. Okay.

1 Q. Sorry. Column 12, Line 16.
2 A. Okay.
3 Q. Can you please read the first
4 sentence of this paragraph at Line 16 of
5 Column 12 out loud?
6 A. It says that, "The measurement site
7 can be any location on the patient's body, such
8 as the finger, foot, earlobe, wrist, forehead or
9 the like."
10 Q. I was actually looking at the
11 sentence before that that starts at Line 16 of
12 the '159 patent that starts out, "The pulse
13 oximetry system 800."
14 A. Oh. "The pulse oximetry system 800
15 can measure analyte concentrations at least in
16 part by detecting optical radiation attenuated by
17 the tissue at a measurement site 102. The
18 measurement site can be any location on a
19 patient's body such as a finger, foot, earlobe,
20 wrist, forehead or the like."
21 Q. These analyte concentrations are
22 used to determine physiological parameters; is

1 that correct?
2 MR. KIANG: Objection to form.
3 Misstates testimony.
4 THE WITNESS: Again, I don't have a
5 specific opinion on that question. I'm not
6 sure what you are asking.
7 I would defer to the language in the
8 specification.
9 BY MR. BISENIUS:
10 Q. I'm asking you -- so this says that
11 the pulse oximetry system 800 can measure analyte
12 concentrations, correct?
13 A. That is what it says in Line 16.
14 Q. And I'm asking you: Are those
15 measured analyte concentrations used to determine
16 physiological parameters?
17 A. That is what it --
18 MR. KIANG: Objection to form.
19 Objection, misstates the document.
20 THE WITNESS: As I said, that is a
21 portion of an exemplary embodiment in a
22 particular portion of the specification.

1 I did not tie each and every
2 exemplary embodiment to the claim language.
3 I don't have a specific opinion on that
4 issue.
5 BY MR. BISENIUS:
6 Q. So, you are not sure if the analyte
7 concentrations described here are used to
8 determine a physiological parameter; is that
9 correct?
10 A. I don't have an opinion on that --
11 MR. KIANG: Objection to form.
12 THE WITNESS: I don't have an
13 opinion on that issue with respect to this
14 language in the exemplary embodiment.
15 It is not something I was asked to
16 offer an opinion on.
17 BY MR. BISENIUS:
18 Q. Have you ever designed a pulse
19 oximetry sensor?
20 A. Yeah, yes.
21 Q. But you are not sure if measurement
22 of analyte concentrations is used to determine

1 physiological parameters in such a sensor?
2 MR. KIANG: Objection, same.
3 THE WITNESS: As I said, different
4 methods, different procedures, different
5 contexts, different products.
6 It all depends what is disclosed,
7 what is not.
8 None of the prior art reference is
9 disclosed meaning a pulse oximetric value.
10 BY MR. BISENIUS:
11 Q. So, you are not sure if analyte
12 concentrations would be used to determine
13 physiological parameters or not?
14 MR. KIANG: Objection, misstates
15 testimony.
16 THE WITNESS: As I said, I don't
17 offer an opinion on this embodiment.
18 I have been asked to offer an
19 opinion on the challenges raised by Apple.
20 And I believe those are my opinions in my
21 declaration.
22 These are not things I was asked to

1 offer an opinion on, with respect to written
2 description of enablement and other validity
3 features which I assumed are presumed valid
4 because the patent are reviewed by a team of
5 qualified examiners.
6 BY MR. BISENIUS:
7 Q. In your declarations you have given
8 opinions on whether certain prior art references
9 describe successful measurement of physiological
10 parameters such as blood oxygen saturation; is
11 that correct?
12 A. I have not seen a single prior art
13 reference cited by Apple or its combination that
14 I believe disclosed a determine.
15 Q. But you also can't explain how
16 analyte concentrations would have been used to
17 determine any physiological parameter; is that
18 correct?
19 MR. KIANG: Objection to form.
20 THE WITNESS: I was not asked to
21 offer an opinion on that issue with respect
22 to the specification of the patents

1 themselves.
2 I was referring to my opinions with
3 respect to the prior art grounds alleged by
4 Apple.
5 BY MR. BISENIUS:
6 Q. You are an expert in physiological
7 sensors; is that correct?
8 A. Yes.
9 Q. But sitting here today, you can't
10 tell me whether or not analyte concentrations can
11 be used to measure physiological parameters?
12 A. As I said, my opinions here are
13 strictly based on the validity challenges. I
14 don't have other opinions.
15 Q. You really have no idea whether or
16 not analyte concentrations could have been used
17 to determine physiological parameters as of the
18 time of the '159 patent?
19 A. I have not seen any evidence --
20 MR. KIANG: Object to form.
21 THE WITNESS: I have not seen
22 evidence presented by the petitioner. I have

1 reviewed objective criteria. I have looked
2 at -- I have cited to various documents and
3 evidence that shows that at the wrist, which
4 was specifically called out by the claims,
5 that that --
6 BY MR. BISENIUS:
7 Q. Continue in paragraph in Column 12
8 of the '159 patent.
9 It lists a number of measurement
10 sites, correct? Finger, foot, earlobe, wrist,
11 forehead; do you see that?
12 MR. KIANG: Counsel, I think you cut
13 me off. I had an objection to the previous
14 question. Objection to form.
15 MR. BISENIUS: Sorry. I will repeat
16 this question.
17 BY MR. BISENIUS:
18 Q. Looking at Column 12 of the
19 paragraph, starting at Line 16 in the second
20 sentence, it discusses that various locations can
21 be used on the patient that includes finger,
22 foot, earlobe, wrist, forehead or the like.

1 Is that correct?
2 A. Which line was it?
3 Q. That is the paragraph that starts at
4 Line 16.
5 A. Oh, yeah, yeah. Okay. Okay, I got
6 it.
7 Q. So, you agree that it is describing
8 various locations including the finger, foot,
9 earlobe, wrist, and forehead, correct?
10 A. Or the like, yes.
11 Q. And so my question is, are the
12 analyte concentrations described in this
13 paragraph used to determine one or more
14 physiological parameters?
15 MR. KIANG: Objection to form.
16 Misstates the document.
17 THE WITNESS: Again, I would let the
18 specification speak for itself.
19 I don't have a comment on this
20 particular portion of the specification.
21 That changes the language.
22 BY MR. BISENIUS:

1 Q. If a POSITA were using a fingertip
2 pulse oximetry sensor and the sensor determined
3 analyte concentrations for the patient, would a
4 POSITA know how to determine the user's heart
5 rate, the patient's heart rate from that
6 information?
7 MR. KIANG: Objection to form.
8 Unintelligible.
9 MR. BISENIUS: I can re-ask.
10 BY MR. BISENIUS:
11 Q. If a POSITA were using a fingertip
12 sensor on a patient and that fingertip sensor
13 measured analyte concentrations, would a POSITA
14 know how to use that information to determine the
15 patient's heart rate?
16 MR. KIANG: Same objections.
17 THE WITNESS: I'm not sure. I'm
18 not -- sorry. I have not offered such an
19 opinion in my declaration by relating the
20 embodiment of Figure 8 to, to what could or
21 could not be enabled or provided as a written
22 description for the patent.

1 That is not something I was asked to
2 do and I have not done that. So, I don't
3 want to offer a new opinion here.
4 BY MR. BISENIUS:
5 Q. If a POSITA were to use a fingertip
6 pulse oximetry sensor on a patient and that
7 sensor measured analyte concentrations, would a
8 POSITA know how to determine blood oxygen
9 saturation using those analyte concentrations?
10 MR. KIANG: Objection to form.
11 Unintelligible.
12 THE WITNESS: To which specification
13 are you looking at once again, just as a
14 reminder?
15 BY MR. BISENIUS:
16 Q. I'm on the '159 patent, Column 12,
17 starting -- the paragraph starting at Line 16.
18 A. I think I described that in my
19 declaration for the '159. I have an analysis in
20 Section D, starting in Paragraph 81 that says,
21 "Determining oxygen saturation at the wrist would
22 not have been obvious to a POSITA."

1 Claims 8 and 17.
2 And I go through a detailed analysis
3 of the basis for my opinions starting in
4 Paragraph 82, onwards.
5 So, that says that --
6 Q. So, I'm asking a different question.
7 A. Uh-huh.
8 Q. Your analysis here relates to
9 Claims 8 and 17.
10 A. Yes.
11 Q. But there are other claims of
12 the '159 patent and the '743 patent that do not
13 require determination of blood oxygen
14 concentration at the wrist.
15 Is that correct?
16 A. Which claims are those?
17 Q. For example, Claim 1 of the '159
18 patent or Claim 1 of the '743 patent do not
19 require that the measurement site be the wrist;
20 is that correct?
21 A. So, what is your question then?
22 Q. Well, I will go back to Column 12,

1 the paragraph starting at Line 16.
2 So, my question was about
3 measurement at the finger because this paragraph
4 gives a bunch of different examples of locations.
5 So, my question is: A POSITA using
6 a fingertip pulse oximetry sensor on a patient
7 and the pulse oximetry sensor measures analyte
8 concentrations, would a POSITA be able to
9 calculate the blood oxygen saturation based on
10 those measured analyte concentrations?
11 MR. KIANG: Objection to form.
12 Unintelligible.
13 THE WITNESS: As I said, I don't
14 have an opinion on that issue, Counsel,
15 unless you can point to something. I have
16 focused on certain opinions in my declaration
17 and I have not offered such a statement in my
18 declaration to my -- best of my knowledge
19 unless you can point something to me.
20 BY MR. BISENIUS:
21 Q. Had you designed an optical pulse
22 oximetry sensor prior to 2015?

1 A. Yes.
2 Q. And in designing that optical pulse
3 oximetry sensor, did the sensor measure analyte
4 concentrations?
5 A. What do you mean by analyte
6 concentrations?
7 Q. I'm using the term as it is used in
8 the '159 patent. It states, "The pulse oximetry
9 system 800 can measure analyte concentrations at
10 least in part by detecting optical radiation
11 attenuated by tissue at a measurement site."
12 I'm wondering if when you designed
13 an optical pulse oximetry sensor prior to 2015,
14 did it measure analyte concentrations, as that
15 term was used in the '159 patent?
16 A. I have not offered an opinion on how
17 that term is used and what that term -- and how
18 that term -- what that term covers and doesn't
19 cover. So, I don't have an opinion on that
20 issue.
21 Q. So you are unaware of what the term
22 "analyte concentrations" means in the context of

1 the '159 and '743 patent; is that correct?
2 MR. KIANG: Objection, misstates
3 testimony.
4 THE WITNESS: As always, you used
5 the word "don't know" and "unaware."
6 All I said is I have offered an
7 opinion and I have not offered an opinion on
8 what the scope is and what it covers and
9 doesn't cover.
10 I don't have an answer to the
11 question because that is not an opinion I
12 have considered.
13 MR. BISENIUS: We have been going
14 about an hour and ten minutes. Might be a
15 good time for another break.
16 THE WITNESS: Okay.
17 (Recess taken -- 2:20 p.m.)
18 (After recess -- 2:31 p.m.)
19 BY MR. BISENIUS:
20 Q. I would like to go to the background
21 section of the '159 patent. I'm looking at
22 Column 1. And I'm going to start part way

1 through a paragraph. I want to start at the
2 sentence that starts at Line 61 of Column 1.
3 Let me know when you are there.
4 A. Okay.
5 Q. This recites that, "The sensor has
6 an emitter that transmits optical radiation of
7 one or more wavelengths into a tissue site and a
8 detector that responds to the intensity of the
9 optical radiation after absorption by pulsatile
10 arterial blood flowing within the tissue site."
11 Do you see that?
12 A. Could you remind me which line you
13 read from?
14 Q. That was the sentence in Column 1,
15 starting at Line 61.
16 A. Okay. In the sensor that has an
17 emitter. Okay. I see. What is -- I'm reading
18 that. Okay.
19 Q. And then the next sentence states,
20 "Based upon this response, a processor determines
21 the relative concentrations of oxygenated
22 hemoglobin and deoxygenated hemoglobin."

1 Do you see that?
2 A. So, it says, "in the blood so as to
3 derive oxygen saturation," on Column 2.
4 Q. Correct. Would you consider
5 oxygenated hemoglobin to be an analyte as that
6 term is used in the '159 patent?
7 MR. KIANG: Objection, foundation.
8 THE WITNESS: I don't have an
9 opinion on that issue, Counsel.
10 BY MR. BISENIUS:
11 Q. Would you consider deoxygenated
12 hemoglobin to be an analyte, as that term is used
13 in the '159 patent?
14 MR. KIANG: Objection, foundation.
15 THE WITNESS: As I said, the
16 specification speaks for itself. I don't
17 wish to link up or connect without further
18 analysis.
19 So, I don't have an opinion right
20 now.
21 BY MR. BISENIUS:
22 Q. Prior to 2015, had you ever designed

1 a pulse oximeter that determined relative
2 concentrations of oxygenated hemoglobin and
3 deoxygenated hemoglobin in a patient's blood?
4 A. I don't recall. I don't recall what
5 was done.
6 Q. Would a POSITA have known to measure
7 relative concentrations of oxygenated hemoglobin
8 and deoxygenated hemoglobin in an optical pulse
9 oximetry sensor prior to the '159 patent?
10 A. I think my opinions are captured in
11 my declaration. I don't have any additional
12 opinions on that issue.
13 So, if you are referring to a
14 portion of my declaration, I would like to know
15 what you are asking.
16 Q. Sure. I am asking you these
17 questions because I'm trying to clarify the
18 opinions that you stated in your declaration.
19 So, for example, if we turn to your
20 declaration, Exhibit 2100, in the 243 proceeding.
21 A. Uh-huh.
22 Q. Starting -- the section starting at

1 Paragraph 81. This is on the bottom of Page 51.
2 Let me know when you get there.
3 A. So, Page 51.
4 Q. Page 51, the section starting with
5 Paragraph 81.
6 A. Okay. I am on Page 81.
7 Q. And in these paragraphs, you have
8 given a number of opinions regarding what a
9 POSITA would have understood from the disclosures
10 of Sarantos and the corroborating references
11 cited by the petition and by Dr. Anthony and his
12 declaration.
13 And so I'm asking to clarify a few
14 things about your opinions here regarding what a
15 POSITA would have known about measuring of blood
16 oxygen saturation.
17 So, turning to the disclosure of
18 the '159 patent. Again, I'm talking about the
19 background section of the '159 patent.
20 I'm asking you: Would a POSITA have
21 understood that prior to 2015 an optical pulse
22 oximetry system would have determined relative

1 concentrations of oxygenated hemoglobin and
2 deoxygenated hemoglobin?
3 A. With respect to Paragraph 81, it is
4 about determining oxygen saturation at the wrist
5 would not have been obvious to a POSITA.
6 So, I'm talking about specifically
7 at the wrist there. And it is my opinion that
8 determining oxygen saturation at the wrist as
9 opposed to determining oxygen saturation from
10 convention locations like the finger or the
11 forehead would not have been obvious to a POSITA
12 in 2015.
13 And then I go into how Iwamiya and
14 Sarantos don't disclose measuring oxygen
15 saturation at all. And they are teaching away
16 from measuring oxygen saturation.
17 Q. Yeah. And going further down to
18 Paragraph 110. Let me know when you get there.
19 A. Okay. Okay. 110. Uh-huh.
20 Q. Here you stated that you reviewed
21 six references cited in the petition. And you
22 state in second sentence, "Instead those

1 references at most reported detecting a PPG
2 signal or a modulation ratio."
3 Can you describe what information
4 would have been included in such PPG signals?
5 A. It depends on the reference. I
6 don't -- I would have to look at each reference.
7 I don't believe that any of those, any of those
8 references actually determined oxygen saturation
9 at the wrist.
10 Q. So, in the next sentence you state,
11 "But detecting a PPG signal or obtaining a
12 modulation ratio is not a determination of oxygen
13 saturation."
14 And so, I'm asking you, what
15 information is included in a PPG signal and how
16 does that differ from the information included in
17 actual determination of oxygen saturation?
18 A. A PPG signal just is a signal that
19 refers to some sort of, for example, a volume of
20 blood or something like that.
21 It is not anything more than that.
22 Q. What information is included in a

1 modulation ratio?
2 A. I don't know and I mean those
3 references you look at are hardly anything.
4 I mean it just seems to refer to
5 some sort of ratio volumes of some kind. But,
6 there is no determination of oxygen saturation,
7 let alone supporting measurements as described.
8 Q. So, you described that you had
9 developed pulse oximetry sensors -- sorry.
10 You described you developed optical
11 pulse oximetry sensors prior to 2015 that could
12 measure blood oxygen saturation; is that correct?
13 A. Yes.
14 Q. In those pulse oximeters, did the
15 sensor determine relative concentrations of
16 oxygenated hemoglobin and deoxygenated
17 hemoglobin?
18 A. I don't remember exactly what was
19 done. It was complicated algorithm. I don't
20 remember.
21 Q. Do you remember what information was
22 measured in the patients in order to determine

1 blood oxygen saturation?
2 A. I don't remember, no.
3 Q. Returning to Column 12, the
4 paragraph we were discussing before the break,
5 starting at Line 16?
6 A. Column 12?
7 Q. Yes. Column 12, Line 16.
8 A. Uh-huh.
9 Q. This is discussing the pulse
10 oximetry system 800, correct?
11 A. Column 16?
12 Q. Sorry. Column 12, Line 16.
13 A. Okay. 16 was the claims, yes.
14 Column 12. Yes. So, I'm in Column 12, Line 16.
15 Okay.
16 Q. And this section of the '159 patent
17 is discussing the pulse oximetry system 800 of
18 Figure 8.
19 Is that correct?
20 A. It is describing an embodiment of
21 Figure 8, it appears, but it could be referring
22 to others as well.

1 So, at this, in this location, it
2 seems to be referring to 8.
3 Q. And those paragraphs states that,
4 "The measurement location could be any location
5 on a patient's body such as a finger, foot,
6 earlobe, wrist, forehead or the like." Correct?
7 A. Yes. You are reading from Lines 18
8 through 20.
9 Q. Can you identify any discussion in
10 the '159 patent of design considerations for a
11 pulse oximeter that measures blood oxygen
12 saturation at the wrist that differ from design
13 considerations for a pulse oximeter that measures
14 blood oxygen saturation at a person's finger?
15 MR. KIANG: Objection to scope.
16 THE WITNESS: I don't have an
17 opinion on that in my report, Counsel. I
18 will rely on the specification as well as the
19 intrinsic file record.
20 But, that is not an opinion I
21 provided in my report.
22 BY MR. BISENIUS:

1 Q. I understand that you haven't
2 provided that opinion in your report.
3 What I'm asking you this because I'm
4 trying to clarify the comments in your report,
5 specifically about measuring blood oxygenation at
6 the wrist. And you give a lot of opinions
7 specifically about alleged difficulties of
8 measuring blood oxygen saturation at the wrist.
9 And so I'm asking you, because I'm
10 trying to clarify your statements there, if
11 the '159 patent itself has any discussion of
12 design considerations for a pulse oximeter that
13 measures blood oxygen saturation at the wrist
14 that differ from design considerations for a
15 pulse oximeter that measures blood oxygen
16 saturation at a person's finger?
17 MR. KIANG: Objection, form.
18 Objection, scope.
19 THE WITNESS: As I said, Counsel, it
20 is not an opinion I offer because I was
21 assuming that I was offering an opinion with
22 respect to Apple's validity and challenges.

1 And my opinions are fully captured in my
2 declaration.
3 I have not yet to offer any new
4 opinions.
5 BY MR. BISENIUS:
6 Q. So, sitting here today, you are
7 unaware of any discussion in the '159 patent of
8 design considerations for a pulse oximeter that
9 measures blood oxygen saturation at the wrist
10 that differ from design considerations for a
11 pulse oximeter that measures blood oxygen
12 saturation at a person's finger?
13 MR. KIANG: Objection, misstates
14 testimony. Objection to scope.
15 THE WITNESS: I disagree. I show
16 that -- I was not asked to offer an opinion
17 with respect to the specification of these
18 patents.
19 I did not. But as I describe in my
20 declaration, Ammar Al-Ali was experimenting
21 with this in 2014/'15 time frame.
22 I have reviewed testimony of Apple

1 witnesses. I have reviewed all of the
2 sources at the site to support my opinions
3 that, that there is a lot of industry
4 skepticism. There is a lot of failure.
5 There is long-felt and unmet need.
6

10 I also cite to the two references
11 that a POSITA would not have been motivated
12 to combine, Iwamiya and Sarantos, in this
13 regard.
14 And, further, neither Iwamiya nor
15 Sarantos discloses measuring oxygen
16 saturation. And determining oxygen
17 saturation at the wrist would not have been
18 obvious as regards to Claims 8 and 17.
19 So, those are the opinions that are
20 described. I don't analyze the specification
21 nor was I asked to.
22 BY MR. BISENIUS:

1 Q. In the pulse oximetry sensors --
2 sorry let me start over.
3 In the optical pulse oximetry sensor
4 that you designed prior to 2015, what locations
5 of a patient's body were used to determine blood
6 oxygen saturation?
7 A. I believe it was the forehead.
8 Q. So, can we agree that prior to 2015,
9 it was possible to measure blood oxygen
10 saturation at a patient's forehead?
11 A. I have no opinion on that, Counsel.
12 It was just part of the design. I don't know if
13 it was successful, if it was a product, if it was
14 launched, if it passed any approvals. I don't
15 know.
16 Q. Are you aware of any optical pulse
17 oximeters that could measure blood oxygen
18 saturation at the forehead prior to 2015?
19 A. I don't remember if they have been
20 commercialized or not. I don't know for sure.
21 Q. Are you aware of any optical pulse
22 oximeters that could measure blood oxygen

1 saturation at a user's finger prior to 2015?
2 A. The finger, yes. I have seen
3 examples of products that, that were
4 commercialized, I think, for a finger.
5 Q. So, can we agree that a person of
6 ordinary skill in the art would have known that
7 was possible to measure blood oxygen saturation
8 at a patient's finger prior to 2015?
9 A. I don't -- as I said, these are
10 different products, different designs. They
11 don't have to -- I am not offering an opinion
12 that they practice the limitations of the claims
13 in the manner the limitations were written.
14 Q. But you agree that there were
15 devices that existed in the world prior to 2015
16 that could use an optical sensor to measure blood
17 oxygen saturation at the finger; is that correct?
18 A. As I said, I mean at a high level,
19 they don't -- I have done no analysis to show
20 they do that in the manner claimed.
21 Q. Would you agree that a pulse
22 oximeter that measures blood oxygen saturation at

1 the finger would have different design
2 considerations from a pulse oximeter that
3 measures blood oxygen saturation at the wrist?
4 MR. KIANG: Objection to form.
5 THE WITNESS: As I said, a wrist is
6 a very difficult scenario. And I have cited
7 evidence that, in my declaration, that as of
8 2015 --
9 BY MR. BISENIUS:
10 Q. So, you have stated today --
11 A. -- as of 2015 determining oxygen
12 saturation at the wrist would not have been
13 obvious as of July of 2015.
14 Q. So, you have stated today that prior
15 to July 2015, it was possible to measure blood
16 oxygen saturation at the wrist.
17 You have opined in your declarations
18 that a POSITA would not have known how to measure
19 a blood oxygen saturation at the wrist prior
20 to -- sorry. Let me start that over.
21 You stated earlier today that prior
22 to July 2015, it was possible to measure blood

1 oxygen saturation at the finger, but you have
2 opined in your declarations that a person of
3 ordinary skill would not have known how to
4 measure blood oxygen saturation at the wrist.
5 And so what I'm asking you is: Are
6 there different design considerations for
7 measuring blood oxygen saturation at the finger
8 from measuring blood oxygen saturation at the
9 wrist?
10 A. You have mischaracterized my
11 testimony. I never said that you could design a
12 pulse oximeter as in the claims for the finger in
13 the manner claimed using, using -- sorry.
14 I have not said that it was obvious
15 to design a pulse oximeter, even for a finger, in
16 the manner claimed.
17 Q. I'm asking you something different.
18 I'm asking you about the manner --
19 A. And so, let us be very clear that it
20 is my opinion that the claims are valid. That it
21 would not be obvious to combine Iwamiya and
22 Sarantos and any of the Apple's grounds in any of

1 these petitions to render any of the claims
2 obvious, specifically with respect to Claims 11,
3 19 and 24.
4 I offer this opinion that
5 determining oxygen saturation at the wrist would
6 not have been obvious as of July 2015.
7 Q. So, I'm asking you something
8 different. I'm not asking if the specific
9 claimed pulse monitoring device recited in the
10 claims was known prior to 2015.
11 Clearly you would not agree to that.
12 What I'm asking you is something
13 much simpler.
14 That, optical pulse oximetry sensors
15 that measure blood oxygen saturation at the
16 finger were known prior to 2015, correct?
17 A. In different ways. Not in the claim
18 manner.
19 Q. What I'm asking you is, is there any
20 discussion in the '159 patent regarding design
21 considerations for a pulse oximeter that measures
22 blood oxygen saturation at the wrist that differ

1 from design considerations for a pulse oximeter
2 that measures blood oxygen saturation at a
3 person's finger?
4 A. Well --
5 MR. KIANG: Objection to form.
6 THE WITNESS: As I said, Counsel, I
7 don't have an opinion on that based on the
8 specification in my declaration.
9 And I was not asked to offer that
10 opinion. I assume that because the patent is
11 valid it had written description and it was
12 enabled.
13 And these are matters outside the
14 preview of the IPR.
15 So, my opinions were focused on the
16 validity challenges raised by Apple, and my
17 opinions are captured in my report along with
18 the basis.
19 You continuously ask me about
20 examples in the specification that I have not
21 offered an opinion on.
22 BY MR. BISENIUS:

1 Q. So, you cannot identify any
2 discussion in the '159 patent of design
3 considerations for a pulse oximeter that measures
4 blood oxygen saturation at the wrist that differ
5 from design considerations for a pulse oximeter
6 that measures blood oxygen saturation at a
7 person's finger?
8 MR. KIANG: Objection, misstates
9 testimony.
10 THE WITNESS: As always, you have
11 mischaracterized my testimony. I said I was
12 not asked to offer an opinion on that because
13 I assumed that an issued patent is presumed
14 valid and had all of the necessary support
15 for written description and for enablement
16 and other challenges.
17 I focused, instead, on the validity
18 art.
19 And, so, I'm surprised you keep
20 asking me for the entire day on questions
21 that are about opinions that are not part of
22 my reports.

1 BY MR. BISENIUS:
2 Q. I'm trying to clarify because you
3 give a lot of opinions in your report about the
4 specific difficulty of measuring blood oxygen
5 saturation at the wrist.
6 And, you have a lot of emphasis on
7 how it is very difficult to measure blood oxygen
8 saturation at the wrist in comparison to other
9 locations such as the finger or forehead. You
10 give these opinions in your declaration.
11 And so what I'm asking you is: Does
12 the '159 patent itself identify any of those
13 design considerations for measuring blood oxygen
14 saturation at the wrist that would differ from
15 design considerations for measuring blood oxygen
16 saturation at the finger or forehead?
17 A. As I said --
18 MR. KIANG: Sorry. I am hearing a
19 lot of static.
20 THE WITNESS: Yeah, I know --
21 MR. KIANG: Now I can't hear you at
22 all, Dr. Madisetti.

1 MR. BISENIUS: Yeah, I can't hear
2 you, either.
3 Let's go off the record until we get
4 this figured out.
5 THE REPORTER: Off the record.
6 (Whereupon, a discussion off the
7 record took place.)
8 BY MR. BISENIUS:
9 Q. Go ahead. Or would you like me to
10 re-ask the question?
11 A. Yes, please do. That way it is
12 clear.
13 Q. All right. So, going back to
14 Paragraph 81 of your declaration. In the 243
15 proceeding, in the second sentence there you
16 state, "However, determining oxygen saturation at
17 the wrist as opposed to determining oxygen
18 saturation from the conventional locations like
19 the finger or forehead would not have been
20 obvious to a POSITA in 2015."
21 So, would you agree that there are
22 some aspects to measuring blood oxygen saturation

1 at the wrist that differ from measuring blood
2 oxygen saturation at the finger or forehead?
3 A. The way I structure the declaration
4 is, first of all, the next section I show that
5 neither Iwamiya nor Sarantos disclose measuring
6 oxygen saturation nor can they measure oxygen
7 saturation.
8 Second, that there would be no
9 motivation for a POSITA to combine Iwamiya and
10 Sarantos.
11 Third, I describe that evidence
12 from, from -- as well as from Apple and other
13 companies, that cite from, Paragraphs 94, 95, 96,
14 onwards, including Apple's own engineers, like
15 Mr. Mannheimer and others, that this is going to
16 be a challenge. That my first reaction when
17 actually hearing it was internally was my head
18 rolling my eyes and thinking good luck with that.
19 So, when you have a Ph.D. at Apple
20 who worked on this for years, saying that you
21 can't do it at the wrist, all of these provide
22 supporting evidence.

1 I don't offer any opinion about how
2 the wrist would differ from the finger and
3 everything else from the specification.
4 Q. So, based on your personal
5 knowledge, you are not sure if measuring blood
6 oxygen saturation at the wrist would differ from
7 measuring at the finger or forehead?
8 A. As I said, I don't offer an opinion
9 in this particular case in this particular
10 section on my -- based on my personal
11 experiments.
12 I rely on the evidence that is
13 cited. So, I'm not here to offer a new opinion,
14 however inviting that question may be.
15 Q. I'm not asking for a new opinion.
16 I'm trying to clarify your statement in the
17 second sentence of Paragraph 81.
18 You state, "Determining oxygen
19 saturation at the wrist as opposed to determining
20 oxygen saturation from conventional locations,
21 like the finger or forehead, would not have been
22 obvious to a POSITA in 2015."

1 And so --
2 A. Rely on ---
3 Q. The question is: Is it correct that
4 there are different aspects to measuring blood
5 oxygen saturation at the wrist than there are to
6 measuring blood oxygen saturation at the finger
7 or forehead?
8 A. I used the evidence that are cited
9 in that section. Nothing more.
10 Q. Would a POSITA have been aware that
11 the finger and forehead were conventional
12 locations for determining oxygen saturation prior
13 to 2015?
14 A. As I said, I don't offer such an
15 opinion and certainly not in the manner claimed.
16 So, in my opinion all of the claims
17 are novel, including the claims that don't
18 require the wrist.
19 Q. I'm asking you because you have
20 given a very long opinion here and in your other
21 two declarations regarding what a POSITA would
22 have known and what a POSITA would have

1 understood from the references.
2 And so I'm asking you: Would a
3 POSITA have considered the finger and the
4 forehead to be conventional locations for
5 determining oxygen saturation prior to 2015?
6 A. In the context of the claimed
7 inventions, the answer is no, I did not for the
8 manner claimed.
9 Q. I am not asking about the manner
10 claimed. I'm asking just about blood oxygen
11 saturation determination in general. Would a
12 POSITA have considered the finger and forehead to
13 be conventional locations for determining blood
14 oxygen saturation prior to July 2015?
15 A. I have not offered such an opinion.
16 Q. So, you don't know whether or not a
17 POSITA would have considered the finger or
18 forehead to be a conventional location for
19 determining oxygen saturation prior to July 2015?
20 MR. KIANG: Objection, misstates
21 testimony.
22 THE WITNESS: As I said, I disagree

1 with your question. All I'm saying is I have
2 not offered that opinion. It is not -- I was
3 not asked to offer that opinion. I rely on
4 other evidence in Section D, as in David, in
5 my declarations.
6 BY MR. BISENIUS:
7 Q. And that is -- now you have stated
8 here that the finger and the forehead are
9 conventional locations for determining oxygen
10 saturation in 2015.
11 Is that correct?
12 A. I see the sentence in its entirety
13 that determining oxygen saturation at the wrist
14 as opposed to determining oxygen saturation at
15 conventional locations in the finger or forehead
16 would not have been obvious to a POSITA in 2015.
17 I do not say anything about a finger or forehead
18 being obvious.
19 Q. I'm not asking if it is obvious.
20 I'm asking if a POSITA would have considered the
21 finger or the forehead to be conventional
22 locations for determining oxygen saturation prior

1 to July 2015?
2 A. People have used the finger in --
3 for design of other types of pulse oximeters in
4 the past, but they would be different and not
5 relevant to the asserted claims here.
6 MR. KIANG: Objection to form.
7 BY MR. BISENIUS:
8 Q. The follow-up to is: What are the
9 different design considerations for measuring
10 oxygen saturation at the wrist that differ from
11 design considerations for measuring oxygen
12 saturation at the finger or forehead?
13 A. I have not provided an opinion in my
14 report here and I rely only on the evidence that
15 I cite.
16 So, for this report I have not
17 provided any additional evidence as to the
18 differences.
19 MR. KIANG: Dr. Madisetti, can you
20 boost your microphone again a little bit?
21 You are a bit quiet compared to everyone
22 else.

1 THE WITNESS: Okay. Let me do that.
2 I will try this.
3 MR. BISENIUS: Are there any
4 differences -- sorry. Let me know when you
5 are ready. I didn't realize you were
6 repositioning your earphones.
7 THE WITNESS: Yeah, I am trying to.
8 One second, let me see where my Zoom window
9 is. Okay. --
10 I have a space heater running here
11 so maybe that is the problem.
12 MR. BISENIUS: All right. I think
13 we stayed on the record. Sorry.
14 BY MR. BISENIUS:
15 Q. We are continuing with Paragraph 81.
16 Would a POSITA have been aware of differences in
17 measuring pulse oxygen saturation at the wrist
18 compared to measuring pulse oxygen saturation at
19 the finger or forehead?
20 A. All I'm saying here is that
21 determining oxygen saturation at the wrist would
22 not have been obvious. Nothing else.

1 Q. Okay. But you have compared
2 measuring oxygen saturation at the wrist to
3 measuring oxygen saturation at the finger or
4 forehead in this sentence.
5 So what I'm asking you is can you
6 identify any discussion in the '159 patent of
7 design considerations for a pulse oximeter that
8 measures blood oxygen saturation at the wrist
9 that differ from design considers for a pulse
10 oximeter that measures blood oxygen saturation in
11 a person's finger or forehead?
12 A. As I said, Counsel, that is not what
13 I was asked to do.
14 I assume that the patent had
15 sufficient written description and it had
16 enablement. So, I did not offer an opinion on
17 that, and I don't want to offer a new opinion
18 here.
19 So, that is not an opinion that I
20 offered in my declaration.
21 Q. So sitting here today, you cannot
22 identify any portions of the '159 patent that

1 discuss design considerations for a pulse
2 oximeter that measures blood oxygen saturation at
3 the wrist that differ from design considerations
4 for measuring blood oxygen saturation at the
5 person's finger or forehead; is that correct?
6 MR. KIANG: Objection, misstates
7 testimony. Asked and answered.
8 THE WITNESS: I said, sir, that it
9 was not something I was asked to do. It was
10 not an opinion that I formulated. It is not
11 an opinion that I put in my report.
12 So, if asked and allowed, I may do
13 so in the future.
14 But, sitting here today, I have not
15 formed an opinion on that issue. I was not
16 asked to do that.
17 All I'm saying here is that
18 determining oxygen saturation at the wrist
19 would not have been obvious to a POSITA.
20 BY MR. BISENIUS:
21 Q. So, once again, you have compared
22 determining oxygen saturation at the wrist to

1 determining oxygen saturation at the finger or
2 forehead in this paragraph.
3 What are the differences in
4 performance constraints between a finger-based
5 pulse oximetry sensor or a forehead-based pulse
6 oximetry sensor when compared to a wrist-based
7 pulse oximetry sensor that a POSITA would have
8 been aware of?
9 A. I talk about the problems with the
10 wrist. I don't offer a comparative analysis of
11 other areas.
12 As I said, there is no admission on
13 my part that any of the claims, the wrist or the
14 non-wrist claims are obvious for the reasons I
15 cite in my declaration.
16 I don't offer any further analysis.
17 Q. Did you consider any design
18 considerations or performance constraints that
19 would have differed between a finger-based pulse
20 oximetry sensor or forehead-based pulse oximetry
21 sensor to that of a wrist-based pulse oximetry
22 sensor when forming your opinions in your

1 declaration?
2 MR. KIANG: Objection to form. You
3 can answer. And foundation.
4 THE WITNESS: As I said, Counsel,
5 all of the evidence that I cite is in my
6 report. Nothing more. Even
7 Mr. Mannheimer -- Dr. Mannheimer says that my
8 first reaction when actually hearing upon
9 being hired, Apple tasked Dr. Mannheimer to
10 [redacted]
12 Exhibit 28, Dr. Mannheimer
13 testified. My first reaction when hearing
14 this was head rolling my eyes and thinking
15 good luck with that, as he thought of his
16 experience with past clients. And he said he
17 doesn't know if this can be done.
18 That is all I am relying upon and
19 among other evidence, that is all.
20 He says that --
21 Q. So, you are not sure that --
22 A. No, no. Wait a second.

1 Dr. Mannheimer -- that is why I was answering
2 this question. Dr. Mannheimer also explained
3 that while measuring oxygen saturation at the
4 wrist would be challenging.
5 He testified, so the wrist is
6 enormously different from a physiological
7 perspective than a fingertip or the forehead or
8 the ear, the more conventional sites for pulse
9 [redacted]
11 There is a lot of large blood
12 vessels in the field. There are tendons right
13 below the skin. Just a lot of very heterogeneous
14 environment that differs enormously from the more
15 conventional sites and the signal is enormously
16 weak. Exhibit 2080 and so on.
17 And, Dr. Mannheimer had previously
18 operated on much more conventional sites as he
19 calls them, like the finger or forehead. And the
20 wrist is just an incredibly different beast.
21 So, I cite to Dr. Mannheimer to
22 provide support for that. I mean, you are asking

1 me what is in the specification and all of that.
2 I provide fulsome evidence here.
3 Q. Looking again at Figure 8 of
4 the '159 patent. As you stated earlier, in the
5 actual picture shown in Figure 8, it is showing
6 that the tissue of the measured patient is at the
7 patient's finger; is that correct?
8 A. No. It refers to everywhere. It
9 refers to the wrist. It refers to everywhere in
10 the specification. It is only an example. As
11 you can see in Figure 8 in the text of the
12 specification, it says that it will be in the
13 other locations including the wrist.
14 Q. Does the '159 patent identify any
15 changes that would need to be made to the pulse
16 oximetry system 800 shown in Figure 8 to measure
17 blood oxygen saturation at the patient's wrist
18 rather than at the patient's finger?
19 A. It is the same question all over
20 again, Counselor.
21 As I said, it was not something I
22 was asked to do. I assumed the patent is valid,

1 has written description. That is a different
2 challenge, different court.
3 Q. So, sitting here today --
4 A. In the IPR, I mean you have asserted
5 certain prior art and I have responded to that.
6 And, the declaration consists of all of those
7 opinions that I intend to rely upon, not new
8 opinions that you asked me about written
9 description or enablement.
10 Q. So, sitting here today, you are
11 unaware of any discussion in the '159 patent of
12 changes that would need to be made to the pulse
13 oximetry system 800 of Figure 8 to measure blood
14 oxygen saturation at the patient's wrist rather
15 than at the finger; is that correct?
16 MR. KIANG: Objection, misstates
17 testimony. Asked and answered.
18 THE WITNESS: As I said, it was not
19 an opinion I was asked for, and I did not
20 offer such an opinion. If asked and allowed,
21 I may do so in the future.
22 But, sitting here today, it is an

1 opinion that is not in my declaration. And
2 because I was not asked to provide that, I
3 assume the patent was valid and had full
4 written description and enablement and other
5 support.
6 BY MR. BISENIUS:
7 Q. I'm asking you the question right
8 now.
9 A. I don't have an answer.
10 Q. And I'm not asking you about
11 enablement of the claims. That is not what the
12 question is.
13 I'm asking you: Is there discussion
14 in the '159 patent specification of changes that
15 would need to be made to the pulse oximetry
16 system 800 to measure blood oxygen saturation at
17 the wrist rather than at the finger?
18 A. As I said I was not asked to offer
19 an opinion on the issue. I did not. If asked
20 and allowed, I may do so in the future but not
21 here.
22 Q. So, you are refusing to answer this

1 question?
2 MR. KIANG: Objection, misstates the
3 testimony.
4 THE WITNESS: No.
5 BY MR. BISENIUS:
6 Q. You said you could answer it in the
7 future but you won't answer it here?
8 A. Because I have not considered the
9 specification. I have not memorized it. I have
10 not looked at the relevant inquiry. I have not
11 looked at all of the support.
12 It takes time. It takes a lot of
13 effort to understand these issues.
14 And it is not something in my
15 report, so I don't want to speak something on the
16 fly.
17 Q. I would like to turn specifically to
18 Column 2 of the '159 patent. Looking at the,
19 near the bottom, I want to talk about the
20 sentence that starts at Line 58.
21 A. Are we back to the patent, or --
22 Q. Yes, I'm in the '159 patent,

1 Column 2. Let me know when you get there.
2 A. Okay. '159 patent, Column 2. Okay.
3 Q. The sentence starting at Line 57
4 states, "The tissue measurement site can include
5 such as, for example, a finger, a wrist or the
6 like."
7 Do you see that?
8 A. Which line?
9 Q. Line 57.
10 A. Okay, uh-huh.
11 Q. Does this paragraph discuss any
12 design considerations that would differ between
13 measuring blood oxygen saturation at the finger
14 compared to the wrist?
15 A. As I said, Counsel, you have to read
16 the entire specification and all of the different
17 patents and applications that are incorporated by
18 reference in their entirety.
19 It talks about in Column 2, Lines 15
20 through 25, it refers to other applications from
21 Masimo that are incorporated that are referenced
22 here in the entirety.

1 So it requires a fulsome analysis.
2 I can't really answer these
3 questions because these are -- these have to be
4 looked in the wholistic manner, in the light of
5 the whole intrinsic record.
6 So, I don't have an answer for you.
7 Q. I would like to go to Column 1 again
8 in the Background section. I want to talk about
9 the paragraph that starts at Line 53.
10 This paragraph is in the Background
11 section of the '159 patent; is that correct?
12 A. This is in Column 1?
13 Q. Column 1 --
14 A. And by background, I hope that you
15 don't view that as an admission that this is
16 prior art. It is not.
17 Q. So, looking at the second sentence
18 of this paragraph, the sentence that starts at
19 Line 56.
20 A. Okay.
21 Q. This is discussing a sensor attached
22 externally to the patient output signals.

1 Do you see that?
2 A. Reading from Line 55 and 56.
3 Q. Looking at Line 56, it states,
4 "Pulse oximetry relies on a sensor attached
5 externally to the patient to output signals."
6 Do you see that?
7 A. Yes, from Line 56 and 57.
8 Q. And it states that these signals can
9 be used to determine a percent value of arterial
10 oxygen saturation; is that correct?
11 A. Yes, Line 58.
12 MR. KIANG: Objection, misstates the
13 document.
14 THE WITNESS: I, if you are reading
15 the paragraph from Lines 58 through 65, I'm
16 going to let the specification say what it is
17 reading.
18 Why do you summarize it?
19 BY MR. BISENIUS:
20 Q. It states, "A percent value for" --
21 sorry.
22 It states, "Pulse oximetry relies on

1 a sensor attached externally to the patient to
2 output signals indicative of various
3 physiological parameters such as a patient's
4 blood constituents and/or analytes including for
5 example a percent value for arterial oxygen
6 saturation."
7 So my question is just, this is
8 describing that the signals from the sensor can
9 be used to determine arterial oxygen saturation,
10 correct?
11 A. I mean I would defer to the language
12 in the specification itself. I don't have any
13 comments on this or alternate interpretations.
14 Q. So, you can't even agree with me
15 that this is saying that signals are used to
16 determine blood oxygen saturation?
17 A. As I said, I mean I would be
18 comfortable with the language in the patent. The
19 inventor is the best description of the invention
20 so why would you summarize it differently?
21 Q. In the next sentence it states that,
22 "The sensor as has an emitter that transmits

1 optical radiation of one or more wavelengths into
2 a tissue site."
3 Do you see that?
4 A. You are reading from Line 60
5 through 62?
6 Q. Correct. So, this paragraph appears
7 to be stating that blood oxygen saturation can be
8 measured using a single wavelength of light; is
9 that correct?
10 A. I don't agree.
11 MR. KIANG: Objection, misstates the
12 document.
13 BY MR. BISENIUS,
14 Q. Well, it says that it could measure
15 the physiological parameter using a single
16 wavelength of light, correct?
17 A. I do.
18 MR. KIANG: Objection, misstates the
19 document.
20 BY MR. BISENIUS:
21 Q. What do you understand from the
22 recitation of one or more wavelength?

1 Do you understand that to require
2 multiple wavelengths?
3 A. As I said, I don't agree with your
4 analysis.
5 Q. Do you understand the sentence to
6 state that one wavelength could be used at the
7 tissue site?
8 A. As I said, I don't see that.
9 Q. So, do you understand the term "one
10 or more wavelengths" to require more than one
11 wavelength?
12 A. I see the disclosure of multiple
13 wavelengths.
14 There could be multiple emitters.
15 Again, it depends on the specification. I don't
16 wish to comment on something that requires more
17 analysis.
18 There could be more than one
19 emitter. The emitter could be emitting different
20 wavelengths. It could be configured in one way
21 or the other.
22 I mean, I don't know. So, I cannot

1 comment on some unrelated portion of the
2 specification that you cherry pick.
3 Q. Could we at least agree that the
4 section of the '159 patent is talking about an
5 optical sensor?
6 A. I mean, I would defer to the
7 language of the claim of the specification
8 itself.
9 I don't wish to summarize it in any
10 other way.
11 And, that --
12 Q. So, you can't tell me if this
13 paragraph is talking about an optical sensor?
14 MR. KIANG: Objection, misstates
15 testimony.
16 THE WITNESS: I said that this -- I
17 would defer to the language in the
18 specification as describing what it
19 describes. Nothing more.
20 BY MR. BISENIUS:
21 Q. Is this paragraph discussing an
22 optical sensor; yes or no?

1 A. This describes -- for example, it
2 describes a sensor for, for example, it could be
3 for -- it says "The practical application of this
4 technique is pulse oxymetry which uses a
5 noninvasive sensor to measure oxygen and pulse
6 rate among other physiological parameters."
7 So, it could be measuring pulse
8 rate, for example.
9 Q. It states that the sensor had --
10 A. Using one wavelength.
11 Q. It states that, "The sensor has an
12 emitter that transmits optical radiation of one
13 or more wavelengths."
14 Is that correct?
15 A. You are reading from Paragraph 61?
16 Q. Correct. And then the next sentence
17 which we talked about earlier states that, "Based
18 upon this response," that uses one or more
19 wavelengths, "a processor determines the relative
20 concentrations of oxygenated hemoglobin and
21 deoxygenated hemoglobin in the blood so as to
22 derive oxygen saturation."

1 Do you see that?
2 A. I don't see that. You inserted the
3 language "one or more wavelengths."
4 Q. Are you incapable of reading
5 sentences in context with each other? It says in
6 the sentence right before it that the sensor
7 emits one or more wavelengths.
8 MR. KIANG: I object to the manner
9 in which counsel is taking this deposition.
10 That was a badgering question and it was
11 harassing -- and is harassing our witness.
12 I would ask counsel please stop that
13 and conduct this deposition in a more
14 professional manner.
15 BY MR. BISENIUS:
16 Q. This paragraph is discussing a
17 sensor, correct?
18 A. It is discussing several embodiments
19 in different cases under different context.
20 That sentence could be for the case
21 where it has multiple wavelengths.
22 So, as I said, it defines different

1 options like pulse rate, pulse oximetry. It
2 defines oxygen saturation.
3 It is trying to provide in the
4 background different types of scenarios. In some
5 scenarios it uses two wavelengths. And one of
6 ordinary skill in the art would understand in the
7 context of the background and the section that it
8 is describing what is used.
9 Because it sometimes says and/or
10 pulse rate. For example, in Column 2, Lines,
11 Lines 15 through 18, it refers that the monitor
12 process the signal to provide a numerical readout
13 of physiological parameters such as oxygen
14 saturation and/or pulse rate.
15 So, if it is a pulse rate, it would
16 have one wavelength, for example. But again,
17 this is part of the specification and it means
18 what it means to one of ordinary skill in the
19 art.
20 Q. In the sentence that starts on
21 Line 65 it starts, "Based upon this response."
22 What is the term "this response"

1 referring to?
2 A. It refers to the beginning of the
3 paragraph where it could be either for oxygen
4 saturation or pulse rate, and it also refers to
5 various other potential embodiments.
6 So, I would not limit it to just one
7 or two sentences that are convenient. And it
8 also uses the word "or." It does not say that
9 the emitter transmits optical radiation of one
10 wavelength. It says one or more.
11 So, this sentence is talking about
12 more. So, it very well applies to more
13 wavelengths.
14 Q. So, the -- you agree that when it
15 says based upon this response, it is referring to
16 the response of a detector that responds, in the
17 previous sentence; is that correct?
18 A. No. That is a whole paragraph. You
19 read it in the context of all of the paragraph.
20 So, it talks earlier about the
21 Beer-Lambert law. It refers to Equations 1
22 and 2. It says the minimum number of wavelengths

1 is one and two, is required. So, minimum number
2 is required to solve them. It refers to in
3 Line 50.
4 So, it is a whole different section.
5 And then it says, one or more
6 wavelengths. So, one of ordinary skill in the
7 art would understand that to the extent that it
8 is talking about oxygen saturation, it would be
9 two wavelengths.
10 So, everything is consistent. So, I
11 disagree with your characterization.
12 Q. Earlier when I asked you what is the
13 term "this response" referring to, you said it
14 could be either for oxygen saturation or pulse
15 rate.
16 Are you saying --
17 A. Are --
18 Q. Are you saying the response is the
19 oxygen saturation or the response is the pulse
20 rate?
21 Or are you saying the response is in
22 the context of one of those measurements?

1 A. It can be in the context. Again, I
2 would refer to the specification.
3 I don't have a fulsome and a final
4 opinion for you. These are opinions on the fly
5 that are potentially limited only to certain
6 embodiments and nonlimiting.
7 So, as I said, in my opinion, this
8 is read as multiple wavelengths for pulse
9 oxygenation, for pulse oximetry and a single
10 wavelength for a pulse rate.
11 Q. So, in Line 65 when the sentence
12 starts out, "Based upon this response," the term
13 "this response" is referring to a previously
14 recited response.
15 What is that response?
16 A. As I said, it refers to whether it
17 is a pulse measurement or an oxygen measurement.
18 And earlier in the section say on line, line --
19 it could be starting in the background, for
20 example, it starts all of the way back to
21 Line 53, for example.
22 Q. So, in your opinion the response is

1 the blood oxygen saturation itself?
2 A. No, no. That is not what I said. I
3 said that it could do calculations in many
4 different ways. And, it could use one wavelength
5 for pulse rate and two wavelengths for pulse
6 oxygenation, for pulse oximetry values.
7 Q. So, is the response the wavelength?
8 I'm asking you what is the term
9 "this response" referring to?
10 A. I don't have an opinion on that in
11 this embodiment. I don't know. I have not
12 offered an opinion on that. Again, going to the
13 specification in detail and understand that I
14 have not memorized it.
15 And it has to be read in context of
16 all of the other documents that are incorporated
17 in entirety.
18 I mean you spend your entire
19 deposition on talking about things that are not
20 in my opinion or in my declaration.
21 Q. I want to talk about Column 10 of
22 the '159 patent.

1 A. Okay.
2 Q. The paragraph starting at Line 40
3 specifically. This paragraph is discussing
4 Figures 7A and 7B, correct?
5 A. It says, "Figure 7A and 7B are
6 simplifying." So, I don't know. I'm just
7 reading it from here based on your question.
8 It says, "Figure 7A and 7B are
9 simplified schematic side and top views of a 3D
10 reflective pulse oximetry sensor according to an
11 embodiment."
12 Q. This paragraph states that, "Any
13 flat surface on the patient, including but not
14 limited to, the patient's wrist is suitable for
15 using this configuration of Figures 7A and 7B to
16 determine blood oxygen saturation." Is that
17 correct?
18 A. The specification says what it does,
19 Counsel. I don't wish to characterize it in any
20 other way.
21 Q. Can the configuration shown in
22 Figures 7A and 7B be used to determine blood

1 oxygen saturation at the wrist?
2 A. I have no opinion other than what
3 the specification is saying, what it says.
4 Q. So, you don't know if the embodiment
5 shown in Figures 7A and 7B can be used to
6 determine blood oxygen saturation at the wrist?
7 A. I'm, saying here on Line 47 or 48
8 that it says, for example, at the wrist. But
9 again, I have no -- I am not offering an opinion
10 on this issue, because I was not asked to offer
11 an opinion on written description and enablement.
12 And I assume the patent is valid.
13 And I was responding to the challenges in an IPR
14 which doesn't cover these issues.
15 So, I don't have an opinion on this
16 at this point.
17 Q. This paragraph describes an
18 adjustment from the configuration as used for
19 pulse oximetry of the finger by placing the
20 emitter and the detector on the same side as the
21 housing; is that correct?
22 A. Again, I would defer to the language

1 in the specification as it discloses it. I don't
2 have any other comments.
3 Q. What language in the specification
4 would that be?
5 A. I don't know. I mean I am answering
6 your question.
7 So, if you are reading in the
8 specification in the record, that is fine with
9 me. I don't want to, I don't want to abridge or
10 characterize the specification in any other way.
11 Q. So, you don't know what adjustments
12 are described in the '159 patent between
13 Figures 7A and 7B to measure pulse oxygen
14 saturation at the wrist as compared to measuring
15 it at the finger?
16 MR. KIANG: Objection, misstates
17 testimony.
18 THE WITNESS: As I said, I was not
19 asked to offer an opinion on the
20 specification of the '159 and the '743, which
21 I assume are presumed valid and have a
22 certain written description and enablement

1 support because they were issued by the U.S.
2 Patent Office.
3 And I was asked instead to rebut the
4 allegations by the challenger, which I did.
5 These are not part of my opinion, so
6 I don't have opinions at this point at this
7 issue.
8 BY MR. BISENIUS:
9 Q. So, sitting here today you cannot
10 tell me any differences between the pulse
11 oximetry sensor of Figures 7A and 7B when
12 compared to the pulse oximetry sensor of
13 Figure 3; is that correct?
14 A. I said I was not asked to look at
15 that issue and I didn't offer an opinion on this
16 issue. This requires time and effort and a full
17 evaluation of the specification and everything
18 that it includes.
19 I was not asked to do that.
20 If asked and allowed to do that in
21 the future, I may do so. But at this point, I
22 don't have an opinion because I was not asked to

1 do that.
2 Q. Can you look at Figure 3 of the '159
3 patent. I want you to look at that and compare
4 it to Figure 7A, kind of side by side, if you
5 can.
6 Can you identify one difference in
7 the configuration between the pulse oximetry
8 sensor in Figure 3 and the pulse oximetry sensor
9 in 7A?
10 MR. KIANG: Objection, scope.
11 THE WITNESS: Figure 7A is different
12 from Figure 3.
13 BY MR. BISENIUS:
14 Q. Can you identify one of those
15 differences in the configuration of the sensor
16 itself?
17 A. I don't want to do it on the fly. I
18 said they look different to me. I don't have any
19 further answer.
20 Q. Earlier you discussed the
21 differences between a transmittive pulse oximetry
22 sensor and a reflective pulse oximetry sensor.

1 Is the pulse oximetry sensor in
2 Figure 3 a transmittive pulse oximetry sensor or
3 a reflective pulse oximetry sensor?
4 A. As I said, I don't agree with your
5 characterization of my opinions as part of your
6 question.
7 So, please ask me a straight
8 question about Figures 3 and Figure 4 or whatever
9 figures without saying I agreed to something
10 which I did not.
11 Q. Do you know the difference between a
12 transmittive pulse oximetry sensor and a
13 reflective pulse oximetry sensor?
14 A. I said in one case, a typical
15 example of a transmittive one would be something
16 on the finger. And something that is reflective
17 would be something on the forehead or the wrist.
18 Q. Is the pulse oximetry sensor of
19 Figure 3 a transmittive pulse oximetry sensor or
20 a reflective pulse oximetry sensor?
21 A. I don't have an opinion on that
22 issue because I believe that the specification

1 describes that these are exemplary embodiments
2 and they can be applied to the wrist as well and
3 so on.
4 So, I don't have a full opinion at
5 this point.
6 Q. Is the pulse oximetry --
7 A. I was not asked to -- I was not
8 asked to offer an opinion on this issue.
9 Q. Is the pulse oximetry sensor of
10 Figure 7A a transmittive pulse oximetry sensor or
11 a reflective pulse oximetry sensor?
12 A. Again, this nonlimiting embodiment
13 appears to be -- again, I don't have a full final
14 opinion on this.
15 It appears to be some sort of
16 reflective sensor.
17 But again I am not sure. All I'm
18 saying is that it is not an opinion that I offer
19 as part of my declaration.
20 If asked and allowed, I may offer a
21 fulsome opinion later. But I don't have an
22 opinion on this, other than a guess.

1 MR. BISENIUS: We are almost an hour
2 and I'm about to change to a different line
3 of questioning. It might be a good time for
4 another break. Should we do ten minutes
5 again?
6 THE WITNESS: Yes.
7 (Recess taken -- 3:35 p.m.)
8 (After recess -- 3:44 p.m.)
9 BY MR. BISENIUS:
10 Q. I would like to go back to your most
11 recent declaration in the 243 proceeding which is
12 Exhibit 2100.
13 And specifically I want to start at
14 Page 62.
15 A. Okay.
16 Q. In this section, Subsection 3, you
17 are discussing measurement of oxygen saturation
18 in a person's wrist.
19 Is that correct?
20 A. I'm saying that a POSITA would not
21 have had reasonable expectation of success in
22 determining oxygen saturation at the wrist as

1 of 2015.
2 Q. So, on the next page in this section
3 in Paragraph 98, you stated that you believe
4 that, "A POSITA would not have had a reasonable
5 expectation of success in modifying the prior art
6 to determine oxygen saturation from the wrist as
7 of July 2015."
8 Do you see that?
9 A. In which paragraph?
10 Q. Paragraph 98. This is in the second
11 sentence of Paragraph 98.
12 A. Oh, but. You mean but, that is the
13 one? Starting with, "but their testimony"?
14 Q. Yes.
15 A. So, I say "But the testimony of
16 Apple engineers further confirms that a POSITA
17 would not have had reasonable expectation of
18 success in modifying the prior art to determine
19 oxygen saturation from the wrist as of
20 July 2015." And I go through the various
21 opinions that I discussed earlier.
22 Q. Did you review any materials other

1 than the testimony of the Apple engineers when
2 forming this opinion?
3 A. I relied on whatever I put in my
4 report.
5 Q. Can you identify what materials
6 other than the testimony of Apple engineers that
7 you relied on in forming this opinion?
8 A. I talked about FitBit, I believe,
9 that -- where was that? Yeah, FitBit in
10 Paragraph 95.
11 I talked about FitBit not being able
12 to do anything in this area. And the research
13 director called it a pretty hard technical
14 problem, Exhibit 2088.
15 Then in 2014, I referred to this
16 company called Withings. And Withings could not
17 measure oxygen from the wrist. And they called
18 it -- the reviewer called it seriously annoying,
19 Exhibit 2095.
20 Then I rely on a number of other
21 engineers from Apple. And Mannheimer relies on
22 his past experience as well. So, I bring in that

1 based on his past experience with other
2 consulting companies that he has worked with.
3 And, so on.
4 I mean, I have provided a lot of
5 evidence. So, these are the ones that stand out.
6 There could be other ones that I did not cite
7 right now.
8 Q. Is it your opinion that Apple
9 engineers encountered obstacles with including a
10 pulse oximetry sensor within a wrist-worn Apple
11 watch?
12 A. It is an opinion that
13 Dr. Mannheimer, who is an Apple engineer, said it
14 couldn't be done.
15 Q. Can you identify any specific
16 obstacles discussed by the Apple engineers with
17 respect to including a pulse oximetry sensor in
18 the wrist-worn Apple watch?
19 A. I mean, they, they hired Dr. Paul
20 Mannheimer because nothing worked. And then he
21 had extensive experience in the industry with the
22 Ph.D.

1 And, he also spent 20 years
2 designing pulse oximeters at one of Masimo's
3 major competitors. So, he was asked to design
4 this oxygen features, and he said I don't think
5 it can be done.
6 And he described why it was so
7 difficult because there were a lot of tendons, a
8 lot of large blood vessels, very heterogeneous
9 environment, and the signal is enormously weak.
10 So, he did identify all of these
11 technical issues based on his industry
12 experience.
13 Q. Can you identify any discussion in
14 the '159 patent specification or the '743 patent
15 specification regarding overcoming tendons right
16 below the skin, very heterogeneous environment
17 that differs enormously from conventional sites,
18 a weak signal or any of these other obstacles
19 that you have identified?
20 A. As I said, I was not asked to offer
21 such an opinion. I did not -- there is a lot of
22 applications incorporated by reference in the

1 specifications of these patents.
2 A lot of them to Masimo's earlier
3 technology called SET, which is recognized as one
4 of the best in the world.
5 So, I did really have not studied
6 that issue because I was not asked to. Because I
7 assumed, like everyone does, that if a patent was
8 issued, it is presumed valid and has written
9 description and enablement which is not
10 challenged at the IPR.
11 So, I was focusing and was asked to
12 focus on the challenges through the grounds as
13 stated by Apple.
14 Q. So, sitting here today you can't
15 identify any portions of the '159 patent or '743
16 patent that describe overcoming obstacles such as
17 tendons right below the skin, a very
18 heterogeneous environment or a weak signal?
19 A. As I said, I was not asked to offer
20 such an opinion. I did not. If asked and
21 allowed, I may do so in the future.
22 But, I did not. I was not asked to

1 do it. So, I do not have opinions on that.
2 So, you are asking me to give an
3 opinion on the fly. So, I said I do not have an
4 opinion on that. That is considered and careful
5 enough in such an important matter.
6 Q. So, sitting here right now you are
7 not aware of any discussion in the '159 patent
8 or '743 patent of overcoming those obstacles
9 described in Paragraph 99 of your declaration; is
10 that correct?
11 MR. KIANG: Objection, asked and
12 answered.
13 THE WITNESS: I disagree with that
14 characterization. I said I was not asked to
15 offer an opinion and I did not offer an
16 opinion because I assumed that the Patent
17 Office checked its box and assumed that
18 enablement and written description challenges
19 were met.
20 I did not offer an opinion because I
21 was not asked to do that. If asked and
22 allowed, I may do so at some other point.

1 BY MR. BISENIUS:
2 Q. So, you believe that you could
3 review the '159 patent and the '743 patent to
4 determine if it discusses overcoming those
5 obstacles.
6 But you are not aware of any
7 discussion of overcoming those obstacles right
8 now; is that correct?
9 A. That is not my answer --
10 MR. KIANG: Objection. --
11 BY MR. BISENIUS:
12 Q. Well, you said that you could
13 perform the analysis if asked to do so in the
14 future.
15 So, I'm asking, do you believe that
16 you could review those specifications of the '159
17 patent and the '743 patent to determine if there
18 is a discussion of overcoming those obstacles.
19 But right now you are unaware of any
20 discussion in the '159 patent or '743 patent of
21 overcoming those obstacles; is that correct?
22 A. I disagree. I say that I don't have

1 an opinion on that issue. I don't admit that I
2 am unaware.
3 All I'm saying is that I don't have
4 an opinion on that issue right now. I would need
5 to do an analysis and offer an opinion if asked
6 and allowed.
7 But, given the U.S. Patent Office
8 fully examined this application, they issued it
9 and allowed it, I would assume that written
10 description and enablement are all met. And that
11 is not a proper venue to challenge for the IPR.
12 Q. I wasn't asking about enablement,
13 just to clarify, but we can move on.
14 I want to talk about the next
15 paragraph in the same declaration for the 243
16 proceeding, Paragraph 100.
17 A. One second. Okay.
18 Q. In Paragraph 100, you discuss
19 statements made by Dr. Stephen Waydo. Is that
20 correct?
21 A. Yes.
22 Q. And Dr. Waydo mentions that a

1 [redacted]

4 Is that correct?

5 A. That is one of the things that he

6 [redacted] And as

8 a leader of the team, he was intimidated and he

9 found it extremely challenged.

10 [redacted]

15 And, then he said in general it is a

16 very difficult area to do physiological

17 measurements.

18 And he said it would take something

19 like 30,000 hours.

20 Q. In these statements that you have

21 quoted from Dr. Waydo in Paragraph 100, what does

22 [redacted]

1 A. These would be things like motion
2 and things like very low availability of blood
3 supply, like perfusion.
4 Q. Would these artifacts affect the
5 accuracy of the measurement?
6 A. [redacted]
12 A. No, I think --
13 MR. KIANG: Objection --
14 [redacted]
[redacted]. KIANG: Objection, foundation.

1 Objection, speculation.
2 And I also object to the manner in
3 which this deposition is being conducted to
4 the extent that counsel is asking the witness
5 questions about a document that is not being
6 presented to the witness.
7 BY MR. BISENIUS:
8 Q. Is there any discussion in the '159
9 patent or the '743 patent of how to correct for
10 artifacts for measuring blood oxygen saturation
11 at the wrist?
12 A. As I said, Counsel, I don't have an
13 opinion on that in my declaration because I was
14 not asked to offer an opinion on that.
15 I believe that the patent has full
16 written description support and enablement
17 support because it is issued by the Patent
18 Office.
19 But, I was not asked to offer an
20 opinion on that issue and I don't have an opinion
21 sitting here today.
22 Q. Continuing on to the next paragraph

1 of your declaration, Paragraph 101.
2 You discuss statements made by
3 Dr. Tao Shui in this paragraph.
4 Is that correct?
5 A. Yes, he is also an Apple engineer.
6 Q. Here in these statements that you
7 have quoted from Dr. Shui, he states that the
8 issue of performing pulse oximetry at the wrist
9 is noise and interference; is that correct?
10 A. He said it is a very challenging
11 position. The wrist is well known for its lack
12 of signals.
13 So, it is a very, very weak signal,
14 or no signal at all. [redacted] Exhibit 2082.
18 Q. Did you read all of the testimony of
19 Dr. Waydo included in Exhibit 2078?
20 A. Yes. I also heard him testify at
21 some of the trials.
22 Q. Did you read all of the testimony

1 from Dr. Shui in Exhibit 2082?
2 A. I believe so. I have also heard
3 Dr. Mannheimer testify.
4 Q. So, continuing with Paragraph 101
5 and these statements from Dr. Shui, in the
6 context of pulse oximetry, what do you understand
7 the terms, noise and interference, to mean?
8 MR. KIANG: Objection.
9 THE WITNESS: I looked add --
10 MR. KIANG: Objection, foundation.
11 Objection, speculation. Counsel is asking
12 the witness to answer questions about a
13 document that is not being presented to the
14 witness.
15 MR. BISENIUS: You can open an
16 Exhibit 2082. It is in the trove of
17 documents I gave you today, so if you would
18 like to review any of these underlying
19 documents that you cited to in your report, I
20 invite you to.
21 If you need to look at Exhibit 2082
22 or Exhibit 2078 or any of the other exhibits

1 that you cited to, they are available.
2 THE WITNESS: Okay. I will look at
3 them.
4 BY MR. BISENIUS:
5 Q. And so the question here is --
6 A. So, let me look at Exhibit 2082.
7 2082.
8 Q. And so my question, just to repeat
9 it, is: In the context of pulse oximetry, what
10 do you understand the terms, noise and
11 interference, to mean?
12 A. So, in this specific context he is
13 referring to I believe external noise and
14 interference. And this could include motion,
15 interference due to other types of ambient
16 signals.
17 And the fact that the hand is always
18 moving. Things like that. Compared to what he
19 defines as the most challenging part is the lack
20 of a signal.
21 Q. When you said other types of ambient
22 signals, would environmental light be -- fall in

1 that category of other types of ambient signals?
2 A. I mean, there could be a lot of
3 other degradations.
4 I believe that his main concern was
5 the lack of a signal. And when there is a lack
6 of a signal or an extremely low signal, even the
7 smallest amount of external degradation like
8 motion or any other types of noise, can make it
9 unsolvable on the wrist.
10 If you had a loud signal you could
11 handle certain degradations like external noise
12 and interference.
13 But if the signal is already so
14 small, it will drown it.
15 And so his main concern is that
16 there is no signal and the fact it is well known.
17 Not just within Apple. He confirm goes it is
18 well known outside Apple.
19 Q. So, this external noise and
20 interference and ambient signals would affect the
21 accuracy of the reading; is that correct?
22 A. Because it is particularly small.

1 Because there is a lack of a signal at the wrist.
2 Q. In forming your opinions in your
3 declarations, did you consider any other portions
4 of the Apple employees' testimony other than what
5 you have identified in your declarations?
6 A. I reviewed the entire -- I provided
7 some selected excerpts. But, I did review the
8 entire testimony. I heard it in many trials.
9 Q. In forming your opinions in your
10 declarations, did you consider whether any of the
11 obstacles faced by the Apple engineers were due
12 to the specific form factors and other
13 functionality included in the Apple watch?
14 A. First of all, you seem to be
15 repeating the word "obstacles." These are not
16 obstacles. These were very difficult. They were
17 extremely challenging.
18 Q. What term would you like to use?
19 A. Dr. Mannheimer, Dr. Mannheimer
20 referred to rolling his eyes and saying you can't
21 do that, type of difficulties. Lack of a signal.
22 So, using the word "obstacle" is

1 sort of minimizing the level of anguish and
2 concern that his engineers raised about the
3 impossibility of the task.
4 It was not done. There were no
5 products. Masimo, the leader in this area, was
6 one of the first to be able to do it.
7 Q. Would you prefer to use the term
8 "challenges" or "difficulties"?
9 A. Again, I'm, all I said was -- I said
10 what I said. You seem to be using these as
11 somewhat in a very pedestrian manner as something
12 that is a minor hindrance. It is not.
13 It is a grave challenge. It was not
14 done before, no one had done it. Engineers at
15 Apple itself would have viewed all of these
16 references that Apple now cites in the IPR. Say
17 it can't be done. It is impossible. There is no
18 signal.
19 Q. I will reframe the question then.
20 In forming your opinions in your
21 declarations, did you consider whether any of the
22 challenges, difficulties or obstacles that you

1 describe in your declarations were specific to
2 the form factors and functionality of the Apple
3 watch?
4 A. I think I explained that in my --
5 that those form factors and constraints came
6 later. And I explained that with my reliance on
7 certain design documentation that showed that the
8 form and the industrial design, they only came
9 later in the design process.
10 I believe that I discussed that
11 somewhere in my reliance on Exhibit 2085 that the
12 Board's decision in earlier IPRs, for example,
13 the 2022-01291. [redacted]

1 [redacted]

14 Q. I would like to turn to your
15 declaration in the 241 proceeding involving
16 the '743 patent.
17 Once again, it is Exhibit 2100 in
18 that proceeding.
19 A. Which patent? It was the '743?
20 Q. '743 patent, yes.
21 A. Okay, okay.
22 Q. On the 241 proceeding, specifically.

1 A. 241. Let me see. Yes. I got that.
2 Q. All right. I would like to talk
3 about Paragraph 78 of that declaration. Let me
4 know when you are there.
5 A. Yes, I am at 78.
6 Q. There is an annotated figure in this
7 paragraph. Do you see that?
8 A. Yes.
9 Q. Does this figure come from the '743
10 patent?
11 A. It is annotated. I believe it -- it
12 is annotated. So it, let me make sure. I
13 believe it does, but let me check on that. Where
14 are my patents?
15 So, this is a caricature that mimics
16 the claims. So, I'm trying to figure out where
17 exactly -- which portion of the figures it may
18 have been accepted from.
19 This is more like an illustration of
20 the claims.
21 Q. So, this image did not come from
22 the '743 patent itself; is that correct?

1 A. No, it reflects the teachings, I
2 believe, of the claims.
3 And it, I believe, may have --
4 Q. So, this figure did not come from
5 the '159 patent either; is that correct?
6 A. This is referring to the plain
7 language of the claim, that says as a part of my
8 analysis. And, it reflects the, some aspects of
9 the claim language viewed in light of the
10 specification.
11 Q. What portions of the '743
12 specification informed your opinion when creating
13 this figure?
14 A. Primarily the claims. And so, I
15 cite -- I may have used this figure in a previous
16 report, either at the ITC or some other place.
17 So, I'm unclear as to how this came
18 about, but it is intended to reflect the language
19 of the claims.
20 Q. Do you recall if you created this
21 figure or if it was provided to you by someone
22 else?

1 A. I believe I created this in
2 collaboration with the attorneys for a previous
3 matter, maybe ITC or something like that.
4 Q. Outside of the claim language of
5 the '743 patent, can you identify any support in
6 the specification for this figure in
7 Paragraph 78?
8 A. I have not, I have not done that, I
9 believe, in the declaration, so I don't have the
10 opinion ready for you.
11 Q. So, you are unaware of any portion
12 of the '743 patent that actually describes this
13 configuration in the figure you have created in
14 Paragraph 78; is that correct?
15 A. That is not correct. What I said is
16 that I believe that this is a depiction of the
17 claim language.
18 I was not asked -- I did not try to
19 identify the portions in the specification for
20 this figure. That is all I'm saying. I'm not
21 saying -- I am not saying that they could not be
22 done or not there.

1 But, I believe that I was focusing
2 on the claim language.
3 Q. So, when creating this depiction in
4 Paragraph 78 you did not consider the disclosures
5 of the specification of the '743 patent; is that
6 correct?
7 A. I disagree. I said that I created
8 this figure in a previous report after looking at
9 the claims in light of the specification and
10 inferred that this illustrates the claims in the
11 manner that I can explain to the ALJ.
12 Q. So, I'm asking you what portions of
13 the specification informed your opinions when
14 creating this depiction shown in Paragraph 78?
15 A. I believe that it was the claims and
16 I don't recall the specific portions.
17 Q. I want to go back to your 243
18 declaration for the '159 patent.
19 A. So, what does that mean, 243? 243.
20 Okay. Yes, '159, okay.
21 Q. Paragraph 78 in this declaration as
22 well.

1 A. Okay. One second. Paragraph 78.
2 Q. This paragraph --
3 A. One second, sir. Let me get there.
4 Oh, sorry. Oh, yeah, okay. 78. Uh-huh.
5 Q. This paragraph includes the same
6 figure that we were just discussing with respect
7 to Paragraph 78 of your 241 declaration; is that
8 correct?
9 A. Yes.
10 Q. Is it correct that this figure does
11 not appear in the '159 patent?
12 A. This, the actual figure is an
13 annotation, annotated description of how one of
14 ordinary skill in the art would understand the
15 claim language. And I believe it is consistent
16 with the specification.
17 But it is not an explicit figure in
18 the specification. It is intended to be
19 demonstrative that describes how a POSITA would
20 understand the language of the claim.
21 Q. Can you identify any portions of
22 the '159 patent specification that informed your

1 opinions when creating this figure?
2 A. I don't recall. I remember
3 reviewing the specification and the patent and
4 the intrinsic record and I believe it is
5 consistent. I just don't recall.
6 Q. Is the claimed opening in the
7 dark-colored coating shown in this figure?
8 A. So, this is describing that the
9 surface, comprising a dark-colored coating, and
10 the surface position between the plurality of
11 detectors and the tissue, wherein an opening
12 defined in the dark-colored coating is configured
13 to allow a portion of light reflected from the
14 tissue to pass through the surface.
15 So, the surface is shown in blue and
16 the coating is shown in black. And then there is
17 this opening that allows the light to pass
18 through the surface.
19 So, the arrow in the middle is the
20 light that is passing through the opening in the
21 black through the blue, and the blue is the
22 surface.

1 Q. Can you identify any descriptions in
2 the '159 or '743 patents of the opening depicted
3 in this figure?
4 A. I believe we reviewed that portion
5 and the portion that talked about the surface in
6 an embodiment as well earlier today that actually
7 said that you had to go through the pass through
8 the surface.
9 And, this is consistent with the
10 claim language.
11 Q. Are you referring to the opening 402
12 that is discussed in Column 8 of the '159 patent?
13 A. Yes. It was in Column 8. And it
14 was referring to Lines 32 to 35 where it said in
15 this example, a nonlimiting example, "The
16 light-absorbing detector filter 306 which is also
17 depicted in Figure 4A in a top view is a planar
18 surface having an opening 402 through which the
19 emitted light may pass after being attenuated by
20 the tissue measurement site." So that is an
21 example of the opening as well.
22 And then other embodiments are there

1 with respect to the coating and all of that.
2 But, I have not cited specific
3 portions of the specification. That was --
4 Q. But you believe --
5 A. -- I don't recall --
6 Q. Sorry --
7 A. -- I don't recall which portions of
8 the specification I relied upon, but at the time
9 I recreated how the understanding of the claims
10 in view of the line eyes of the POSITA.
11 Q. So, you believe that the opening 402
12 described in Column 8 is depicted in this figure
13 you included in Paragraph 78 of your declaration;
14 is that correct?
15 MR. KIANG: Objection, misstates the
16 testimony.
17 THE WITNESS: As I said, that, it
18 describes that there is a surface. And it
19 describes how the light goes through the
20 surface and the surface is part of the light
21 absorbing filter.
22 So, that is consistent with my

1 diagram here in Paragraph 78 that the surface
2 has to have the light going through it and
3 the coating has the opening as shown in
4 black.
5 MR. BISENIUS: I would like to
6 switch to talking about the Sarantos
7 reference. This is U.S. Patent
8 Number 9,392,946 and it is Exhibit 1005 in
9 each of the proceedings.
10 (Whereupon, previously marked
11 Apple Exhibit 1005,
12 first referral.)
13 BY MR. BISENIUS:
14 Q. Please let me know when you find
15 that.
16 A. Okay. One second. What is the
17 exhibit number?
18 Q. 1005.
19 A. Yeah. Okay.
20 Q. Can you please turn to Figure 2 of
21 Sarantos?
22 A. Figure 2.

1 Q. Figure 2 is showing a wrist-worn
2 sensor; is that correct?
3 A. Figure 2 is a heart rate sensor or a
4 pulse rate sensor. It is not calculating any or
5 deriving any oxygen saturation.
6 Q. That wasn't my question. This is
7 showing a wrist-worn sensor, correct?
8 A. It is a wrist-worn sensor for just
9 pulse rate or heart rate.
10 Q. All right. Turning to the
11 specification. I want to talk about Column 7,
12 Line 12.
13 A. Okay.
14 Q. So, the paragraph starting at
15 Line 12 of Column 7 is discussing Figure 2. Is
16 that correct?
17 A. Yes. It is referencing Figure 2.
18 Q. And, this paragraph describes that
19 the invention of Sarantos is a "wristband-type
20 wearable fitness monitor 200 that incorporates a
21 PPG sensor."
22 Do you see that?

1 A. Yes, it is just a heart rate or a
2 pulse rate sensor.
3 Q. And this paragraph goes on to
4 describe that this wrist-worn monitoring device
5 includes two light sources and a photo detector;
6 is that correct?
7 A. It is for heart rate, yes. It is a
8 pulse rate sensor. And, it is teaches a way
9 against pulse oximetry or oxygen saturation.
10 Q. That wasn't my question.
11 Does Sarantos describe the
12 wrist-worn sensor as having two light sources?
13 A. It -- Sarantos describes a heart
14 rate or a pulse rate sensor with two light
15 sources.
16 But, these light sources are
17 specifically not designed or teach away from
18 using pulse oximetry.
19 Q. And the wrist-worn monitoring device
20 includes a photo detector as well; is that
21 correct?
22 A. It includes a non-square photo

1 detector in this embodiment.
2 Q. Going back in Sarantos a bit to
3 Column 3. I want to talk about the paragraph
4 that starts at Line 58 of Column 3.
5 A. Okay.
6 Q. And in the second sentence of this
7 paragraph it states, "In some such
8 implementations, the plurality of light-emitting
9 devices may include at least two light-emitting
10 devices that predominantly emit light of
11 different wavelengths."
12 Do you see that?
13 A. You are reading from Lines 58
14 through 62?
15 Q. Correct. Why would someone want to
16 implement a physiological sensor to include two
17 light-emitting devices that emit light at
18 different wavelengths?
19 MR. KIANG: Objection, speculation.
20 THE WITNESS: What are you referring
21 to?
22 BY MR. BISENIUS:

1 Q. Well, this portion of Sarantos
2 discusses that there is two different
3 light-emitting devices and that the two
4 light-emitting devices emit light at
5 predominantly different wavelengths.
6 So, I'm asking you, you know,
7 looking at it from the perspective of a POSITA,
8 during the relevant time frame, why would a
9 POSITA want to implement a physiological sensor
10 to include two light-emitting devices that emit
11 light at different wavelengths?
12 MR. KIANG: Same objection.
13 THE WITNESS: So, in Sarantos,
14 Sarantos is heart rate sensor. And it is
15 specifically designing -- it is a pulse rate
16 sensor.
17 So, it is not really -- it teaches
18 away from measuring any oxygen saturation
19 calculation.
20 So, it uses this high aspect ratio
21 photo detector elements. So, it refers to
22 primarily light sources that emit green,

1 green light which are wavelengths in the
2 range of 500 nanometers and so on.
3 And it is primarily for measuring
4 heart rate. So, it does not -- it actually
5 confirms that it is not tailored for use in
6 other spectrums such as red or infrared,
7 Sarantos in Column 18, Lines 35 to 41.
8 So, a POSITA would understand that
9 Sarantos teaches away from using red or
10 infrared so therefore that is a dead giveaway
11 that it is not for pulse oxygenation.
12 It is primarily using green. And
13 green is used for heart rate or pulse rate.
14 And the reason it may have more than one of
15 these wavelengths, for example, green
16 wavelengths that are between 500 and 550
17 nanometer is not really described.
18 BY MR. BISENIUS:
19 Q. Would a POSITA have known how to
20 determine pulse rate using an optical sensor
21 having only one wavelength of light during the
22 relevant time frame?

1 A. I don't have an opinion on that,
2 Counsel. I was looking at Sarantos, and Sarantos
3 talks about a specific type of detector, a hard
4 detector of high aspect ratio. In the context of
5 Sarantos, it appears that they were trying to
6 maximize certain detection capabilities.
7 But other than that I cannot offer a
8 general opinion.
9 Q. I would like to turn back to your
10 declaration from the 243 proceeding,
11 Paragraph 48, specifically.
12 A. 243. Okay. '159 patent. Okay.
13 Q. Correct.
14 A. Okay. So, which paragraph, sir?
15 Q. Paragraph 48.
16 A. 48. Okay.
17 Q. So, here you are discussing the
18 level of ordinary skill in the relevant art,
19 correct?
20 A. Yes.
21 Q. And in Paragraph 48 you have quoted
22 the Board's adopted definition for a POSITA; is

1 that correct?
2 A. Yes.
3 Q. Have you applied this definition of
4 POSITA in your analysis in your reports?
5 A. Yes.
6 Q. And this states in part, "The person
7 would have had a Bachelor of Science degree in an
8 academic discipline emphasizing the design of
9 electrical, computer or software technologies in
10 combination with training or at least one or
11 two years of related work experience, with
12 capture and processing of data or information
13 including, but not limited to, physiological
14 monitoring technologies."
15 Do you see that?
16 A. Yes.
17 Q. So, my question to you is kind of
18 divorced from the specific device of Sarantos.
19 What I was asking was, would a
20 person of ordinary skill in the art have known
21 that you can use a single wavelength of light to
22 determine pulse rate in a patient?

1 A. I don't have an opinion on that
2 specification.
3 Q. Would a person of ordinary skill in
4 the art have considered optical determination of
5 pulse rate to require more than one wavelength of
6 light?
7 A. I believe, for example, in Sarantos
8 it does disclose a pulse rate with more than one
9 wavelength of light.
10 I believe that Sarantos confirms
11 that you can use two wavelengths if needed.
12 Q. Can you identify what portion of
13 Sarantos discusses using two wavelengths to
14 determine pulse rate?
15 A. Pulse rate and heart rate.
16 Q. Correct. I'm using those terms
17 interchangeably.
18 A. Yes.
19 So, for example, it talks about --
20 so, it describes here that in Column 3, I believe
21 we discussed that earlier, that in some
22 implementations you can have a plurality of

1 light-emitting devices that may include at least
2 two light-emitting devices that predominantly
3 emit light in different wavelengths.
4 Q. Does this portion of Sarantos
5 describe using those light-emitting devices that
6 emit light at two predominantly different
7 wavelengths to measure heart rate or pulse rate?
8 A. Yes. The entire specification of
9 Sarantos is about heart rate and pulse rate.
10 It actually dissuades against,
11 teaches away against any other form of
12 measurements, types of measurements, for example,
13 by explicitly saying that the invention is not to
14 be applied for -- is not for use in other
15 spectrums such as red or infrared, among other
16 reasons.
17 So, it is finding the light sources
18 is between 500 and 600 which include yellow light
19 and some orange light and things like that.
20 Q. So, are you talking about Column 18,
21 the paragraph starting at Line 35; is that where
22 you are?

1 A. Yeah, around Lines 35 to 40 talks
2 about green and, and it also talks about 500 to
3 600, which is yellow and light orange.
4 And, it is again for heart rate.
5 And it clearly says that this is not designed for
6 red or infrared which is the signature in this
7 case for blood oxygen.
8 Q. When it is discussing the light and
9 the wavelength for 500 nanometers to
10 550 nanometers, does it actually say that it
11 emits light at two different wavelengths within
12 that range at the same time?
13 A. It does mentions different colors.
14 It talks about yellow orange and green, so one
15 would understand that these are different
16 wavelength.
17 Q. But does it actually describe the
18 device having different light sources that emit
19 the light at the different wavelength within
20 those ranges or is it just contemplating
21 different possible wavelengths for the light
22 sources?

1 A. I believe that earlier portions
2 confirm that it would have, you would have
3 multiple wavelength.
4 Given the size and the aspect ratio,
5 the length may be three times more than the
6 width. And the claims seem to say at least 2.8
7 times longer than -- no, between 2 and 1, and 5
8 and 1.
9 So, it would make sense to have, I
10 guess, multiple emitters.
11 But again, that is not something
12 that I fully offered an opinion on.
13 Q. Can you identify any disclosures in
14 Sarantos that talk about advantages of measuring
15 pulse rate or heart rate using two different
16 wavelengths of light?
17 MR. KIANG: Objection to scope.
18 THE WITNESS: As I said, Counsel, it
19 is not something that I offered a specific
20 opinion on.
21 But, as I said, that is not
22 something that I offered an opinion on. If

1 asked and allowed, I may do so in the future.
2 But at this point I don't have that
3 opinion in my declaration, I believe.
4 BY MR. BISENIUS:
5 Q. I would like to go back a few
6 columns to Column 13.
7 A. Which reference?
8 Q. In Sarantos, sticking with Sarantos.
9 A. Okay, Column 13.
10 Q. Column 13.
11 A. Uh-huh, okay.
12 Q. I am -- there is a really long
13 paragraph here, the second half of Column 13. I
14 am about halfway down it, starting at the
15 sentence that starts around Line 53, 54.
16 A. Okay.
17 Q. This is discussing the sensor,
18 Figure 2; is that correct?
19 A. As I said, I, you are asking me
20 questions on the fly, so I am not able to answer
21 them right away. I would defer to the
22 specification.

1 Q. Well, the sentence literally says
2 Figure 2 in it. I'm just trying to confirm that
3 we are talking about Figure 2.
4 A. Which sentence?
5 Q. The sentence starting at Lines 53
6 and 54 of Column 13.
7 A. Okay. It says, "For example, the
8 light source 108 on the left side of Figure 2 may
9 be a green LED and the light source 108 on the
10 right side may be a red or infrared LED."
11 Q. So, this is contemplating light
12 sources of two different wavelengths and one of
13 them could be in the infrared range.
14 Is that correct?
15 A. It says here that the light
16 source 108 on the right may be a red or infrared
17 wavelength LED. That is all I can see. Nothing
18 else.
19 Q. Going to a few sentences earlier in
20 this, paragraph, up to Lines 39 and 40. The
21 sentence that starts at Line 39 going into
22 Line 40 is discussing green light spectrum,

1 correct?
2 A. I'm not sure.
3 Q. You are not sure if this sentence
4 that starts at Line 39 of Column 13 of Sarantos
5 discusses green light spectrum?
6 A. Oh, it is saying, "for example, it
7 may be desirable to utilize an LED that
8 predominantly emits light in the green light
9 spectrum for the purposes of detecting heart
10 rate."
11 So, it is talking about the
12 advantages of an LED with the green light
13 spectrum.
14 So, I'm not sure what it is saying
15 here. It is talking about the advantages of
16 green light in certain, in certain conditions.
17 Q. And this sentence is talking about
18 detecting heart rate; is that correct?
19 A. It talks about advantages of green
20 light for the purpose of detecting heart rate,
21 yes.
22 Q. And then the next sentence discusses

1 detecting "other physiological parameters besides
2 heart rate such as blood oxygenation levels."
3 Do you see that?
4 A. It indicates, it is a may. And it
5 does not say it is doing it. It is says may.
6 Q. And then the next sentence describes
7 that in such situations, it may be desirable to
8 utilize an LED that predominantly emits light in
9 the red or infrared spectrum for such purposes;
10 is that correct?
11 A. It is just talking about what is
12 aspirational maybe and says it is desirable in
13 certain scenarios.
14 It doesn't say it utilizes or
15 proposes that, because later on it says that the
16 invention is not for red and infrared.
17 Q. And then the next sentence starting
18 at Line 49 states, "Thus, it may be desirable to
19 include separate light-emitting devices that are
20 each able to emit light" -- sorry. Let me start
21 over.
22 "Thus it may be desirable to include

1 separate light-emitting devices that are each
2 able to emit different wavelengths of light.
3 Each light-emitting device may be used to supply
4 light for a different type of
5 photoplethysmographic measurement."
6 So, here in this section where it is
7 discussing other types of physiological
8 parameters such as blood oxygen levels, it is
9 actually expressly describing using two different
10 wavelengths of light; is that correct?
11 A. Where does it say blood oxygen
12 level? It does not.
13 It says that these may be used
14 for -- it says that in such situations it may be
15 desirable to use an LED, but then later on it
16 says that this invention is not designed for red
17 and infrared.
18 Q. When it says in such situations,
19 what situations is it referring to?
20 A. It is talking about, say, if it
21 is -- if you wanted to do other stuff in addition
22 to heart rate.

1 So, it seems to be saying that you
2 could use -- you may be able to use different
3 wavelengths of light.
4 But it does not say that the system
5 uses these wavelength because it says later that
6 this invention is not designed for red and
7 infrared.
8 Q. What other stuff is it referring to
9 in this section?
10 A. These are various possibilities of
11 using different light sources for different types
12 of measurements.
13 So, it talks -- the invention is
14 about heart rate and pulse rate and not for red
15 and infrared measurements which are teaching away
16 from oxygenation.
17 It is just talking various
18 possibilities of using different types of
19 emitters but in the context of HAR, or H-A-R, it
20 clearly says that, in the sentence that we read
21 earlier, that they are not tailored for other --
22 for use -- for example, in Column 18 that we

1 looked at earlier, Lines 45 through 52, say that
2 these are not tailored for use in other spectrums
3 such as red or infrared.
4 So, this would teach away to a
5 POSITA that it is only focused on heart rate for
6 green and yellow.
7 Q. So, continuing with the sentence at
8 Line 47 of Column 13 in Sarantos. When it says
9 in such situations, is it referring to situations
10 where it is measuring heart rate?
11 A. It is talking about multiple
12 light-emitting devices, why one would think of
13 various multiple light-emitting devices.
14 But, it is not clear what it is
15 saying because it is not clear what it is trying
16 to say.
17 Q. So, when the sentence states, "It
18 may in such situations be desirable to utilize an
19 LED," dot, dot, dot, you are unsure of what
20 situations Sarantos is referring to?
21 A. No, I'm sure that it is not
22 oxygenation because you are -- you cannot have an

1 LED that emits light in red or infrared. You
2 need both of them, so it uses the word "or."
3 So, therefore it cannot be
4 oxygenation.
5 Q. So, when Sarantos expressly says
6 that the techniques may also be used to measure
7 other physiological parameters besides heart rate
8 such as blood oxygenation levels, and then starts
9 the next sentence, "It may in such situations be
10 desirable to utilize an LED," dot, dot, dot, you
11 believe that the statement in such situations is
12 not referring to blood oxygen levels; is that
13 correct?
14 A. It cannot be because it clearly says
15 "or." It says red or infrared, so it is
16 referring to something else.
17 Q. So, what is the phrase, "in such
18 situations" referring to?
19 A. I don't know. It is something else.
20 It can't be blood oxygenation because it is
21 either red or infrared. That doesn't tell a
22 POSITA that it is contemplating using red or

1 infrared.
2 And given that it is teaching later
3 that it is not tailored for red or infrared, that
4 is confirming that it is not for oxygenation.
5 The title of the specification and the patent
6 itself talks about heart rate and pulse rate.
7 Q. So, even though Sarantos expressly
8 says that its techniques may also be used to
9 measure other physiological parameters besides
10 heart rate such as blood oxygenation levels and
11 then the very next sentence states, "It may, in
12 some situations, be desirable to use an LED that
13 predominantly emits light in red or infrared
14 spectrum for such purposes."
15 The term "in such situations" is not
16 referring to blood oxygen level is your opinion,
17 is that correct?
18 A. I mean it explicitly discloses that
19 you can't emit for oxygenation because it talks
20 about red or infrared. It doesn't say both.
21 So, that would tell a POSITA that
22 this is not for blood oxygenation. This is more

1 aspiration for other parameters.
2 Q. So, a POSITA would understand that
3 you would need to use red and infrared light to
4 measure blood oxygen levels?
5 A. A POSITA wouldn't understand that
6 why -- how and why would red or infrared alone be
7 used.
8 And they would wouldn't understand
9 it to be referring to blood oxygenation levels.
10 Q. My question is slightly different.
11 Is it your understanding that a
12 POSITA would know that red and infrared light
13 would be needed to measure blood oxygen levels?
14 A. As I said, one would understand that
15 you cannot measure that -- one would understand
16 that based on this disclosure that using just one
17 wavelength would not -- either red or infrared --
18 would not be sufficient to calculate blood oxygen
19 levels.
20 Q. Why would using only an infrared
21 spectrum light be insufficient for determining
22 blood oxygen levels?

1 A. I mean, I am not sure what you are
2 asking, but all I can say is that as a part of
3 the calculations, you require red and infrared as
4 emitters.
5 Q. So, my question is --
6 A. That itself is not sufficient but it
7 is a portion of the equation.
8 Q. So, a person of ordinary skill would
9 know that you would need to use both red and
10 infrared LEDs to determine blood oxygen levels;
11 is that correct?
12 A. No. I said that you would -- a
13 person of ordinary skill in the art would
14 understand that a disclosure of a single
15 wavelength here of red or infrared, green, is not
16 sufficient.
17 Q. Okay, so --
18 A. Any type of analysis with the
19 exception of pulse rate.
20 Q. So, why would a POSITA consider use
21 of only infrared wavelength light to be
22 insufficient for measuring blood oxygen levels?

1 A. I don't know. He seems to refer to
2 pulse rate here only.
3 So, they are talking only about one
4 wavelength here.
5 Q. And you believe that "Techniques may
6 also be used to measure other physiological
7 parameters besides heart rate, such as blood
8 oxygen levels," means that he is only talking
9 about heart rate?
10 A. I mean, there is nothing else. It
11 is aspirational. It says may. It doesn't show
12 how it is done. It doesn't show any calculation.
13 It doesn't show -- and it also confirms it by
14 saying using only one LED of one wavelength.
15 So, it means a different type of
16 parameters. And, further, you would know that it
17 clearly teaches away from red and infrared, in
18 other sections. For example, Column 18 and
19 Column 8.
20 MR. BISENIUS: All right. I'm about
21 to change locations. We have going for about
22 an hour and ten minutes. It might be a good

1 time for a break.
2 (Recess taken -- 4:55 p.m.)
3 (After recess -- 5:04 p.m.)
4 BY MR. BISENIUS:
5 Q. All right. Continuing with Sarantos
6 Exhibit 1005. I want to go back to Column 18,
7 the paragraph starting at Line 35.
8 A. Okay.
9 Q. This paragraph is distinguishing
10 light in the wavelengths of 500 to 550 nanometers
11 and 500 to 600 nanometers used for measuring
12 heart rate from other wavelengths used in
13 measuring blood oxygen levels; is that correct?
14 A. I mean it says what it says, so I
15 don't wish to characterize it in a different
16 language.
17 Q. Does this paragraph state that light
18 in the wavelength range of 500 to 550 nanometers
19 would be suitable for measuring heart rate?
20 A. This paragraph says that the
21 invention, the aspect ratios and the dimensional
22 values here are not for the use in other

1 spectrums such as red or infrared.
2 So, it -- while it says that if you
3 can use red or infrared, but it discourages. And
4 says that this invention be cannot be used in
5 those spectra. This is primarily for green. It
6 is mainly for green and teaches away against red
7 or infrared.
8 Q. It does state that you would use
9 light of a wavelength of 660 nanometers for
10 measuring blood oxygen levels; is that correct?
11 A. It refers to them in contrast. So
12 it doesn't say it; it contrasts it against heart
13 rate which is green.
14 Then it says that this invention is
15 not for those. So, one would understand that
16 this is has not been covered by the heart rate
17 embodiments and the invention -- the inventive
18 aspects of Sarantos.
19 They would not use Sarantos for
20 these others.
21 Q. This paragraph expressly discusses
22 red wavelength light of 660 nanometers; is that

1 correct?
2 A. The way I would say that is that it
3 says that those are not covered in the invention.
4 They are not part of the invention.
5 To the extent it mentions red, it
6 says these are not covered. So, it says they are
7 out of the boundary of the invention.
8 It tells a POSITA that hey, those --
9 if you are trying to use red or infrared, don't
10 look here, go away.
11 Q. It says that red wavelengths such as
12 660-nanometer wavelengths would be most effective
13 for measuring blood oxygen levels; is that
14 correct?
15 A. It says what it says. I mean all
16 I'm saying is that it does not say that the
17 invention does that.
18 It is just offering some sort of
19 statements here. It clearly shows that you don't
20 apply this HAR invention for red or infrared or
21 anything.
22 Q. So, it is your opinion that this

1 paragraph of Sarantos does not discuss any
2 relationship between red wavelengths of light and
3 measuring blood oxygen levels?
4 MR. KIANG: Objection, misstates
5 testimony.
6 THE WITNESS: That is not what I
7 said. I said this paragraph tells that if
8 you are looking to use red or infrared, in
9 any context, or if you are trying to use it
10 for blood oxygenation with red or infrared or
11 whatever, it is not covered by this
12 invention.
13 BY MR. BISENIUS:
14 Q. Does this paragraph discuss using
15 red wavelengths of light such as 660 nanometers
16 to measure blood oxygen levels?
17 A. Not as part of this invention. You
18 can do it somewhere else. Don't use Sarantos, it
19 says if you are looking to use red or infrared as
20 a part of oxygen calculation or anything.
21 Q. Is that because blood oxygen
22 calculations would require red wavelengths of

1 light?
2 A. Nothing. I mean I'm just telling
3 you what the paragraph says. It says if you are
4 trying to use red or infrared, then don't come
5 here.
6 Q. So, you are telling me you can't
7 read the plain language where it says that
8 techniques for measuring blood oxygen levels may
9 be most effective using light of dramatically
10 different wavelengths such as the red
11 wavelengths, e.g., 660 nanometers.
12 Can you show me where it includes
13 language along the lines as don't use this
14 reference for measuring blood oxygen levels,
15 don't come here, do not measure blood oxygen
16 level?
17 MR. KIANG: Objection --
18 THE WITNESS: All of those are
19 captured in line --
20 MR. KIANG: Hold on a second, I have
21 an objection here. Objection, again, to the
22 manner in which counsel is taking this

1 deposition. Counsel is badgering the
2 witness. These are argumentative questions.
3 Again, counsel, if I see another
4 outburst like this, we may need to stop this
5 deposition and take it up with the court.
6 Again, objection to form. That was
7 at least three questions.
8 THE WITNESS: So, what I was
9 answering is that this section shows that you
10 shouldn't use this invention, Lines 48
11 through 52, if you are trying to do anything
12 with red or infrared or anything else.
13 That is all.
14 BY MR. BISENIUS:
15 Q. Where does it say that it is not
16 part of this invention?
17 A. It says in contrast. And it says
18 that the aspect of ratios and dimensional values
19 discussed herein are tailored based on green
20 yellow light spectrum and are not tailored for
21 using other spectrums such as red or infrared.
22 Q. You don't believe that it is

1 contrasting heart rate measurement to blood
2 oxygen level measurement?
3 A. No, it is just saying don't use this
4 techniques for red or infrared.
5 Q. Where does it say that?
6 A. That is what it tells me.
7 Q. So, it doesn't actually say don't
8 use this device for measuring blood oxygen
9 levels?
10 A. That statement tells that this
11 invention, Sarantos, is not for blood oxygen or
12 for red or infrared.
13 It is just used for green light,
14 yellow light, for heart rate.
15 Q. I want to go back to Column 2 of
16 the '159 patent.
17 A. '159? Okay.
18 Q. I'm looking at the paragraph that
19 starts at Line 50 of Column 2 and goes on to the
20 top of Column 3.
21 Do you see that?
22 A. Line 50, 5-0?

1 Q. Yes.
2 A. Okay.
3 Q. This is in the Summary section of
4 the '159 patent, correct?
5 A. Yes.
6 Q. Can you read that paragraph to
7 yourself and let me know when you are done?
8 A. Okay.
9 Q. Does this paragraph of the '159
10 patent disclose wavelengths that are suitable for
11 measuring blood oxygen saturation specifically at
12 the wrist?
13 A. It does mention wrist on Line
14 Number 58.
15 Q. Does it mention any specific
16 wavelengths to use for measuring oxygen at the
17 wrist?
18 A. It does mention in Column 6 that
19 with respect to the Beer-Lambert law that is
20 referenced in Column 1.
21 Q. Do any of those additional sections
22 that you have just mentioned disclose wavelengths

1 that are suitable for measuring blood oxygen
2 saturation specifically at the wrist?
3 A. It does mention at the wrist as I
4 pointed to you.
5 I mean again, I have not offered
6 specific enablement and written description
7 opinions with respect to the patents that have
8 been challenged, because I believe that they are
9 valid patents and examined by the Patent Office
10 and checked all of the boxes.
11 Q. Does the paragraph starting at
12 Line 50 of Column 2 mention any specific
13 wavelengths?
14 A. I read the specification. I mean,
15 you can't just cherry pick a particular few
16 lines.
17 So, you have to read the patent and
18 specification.
19 Q. I'm being clear that I'm asking just
20 about the single paragraph starting at Line 50 of
21 Column 2.
22 Does that paragraph mention any

1 specific wavelengths?
2 A. Again, as I said, you read it in the
3 context of the discussion that it is continuing.
4 It is just a summary.
5 And, so it refers to the other
6 sections that it summarizes. And therefore it
7 refers to the Beer-Lambert law which it confirms
8 is based on the red and infrared in Column 6,
9 Line 15 through 18.
10 Q. Can you identify where it discusses
11 red and infrared light specifically in Column 6?
12 A. Yes. It talks about the
13 Beer-Lambert's laws. And it refers to the
14 phenomena of multiple scattering. It refers to
15 the use of red and infrared. There are different
16 departments that can cause problems with
17 measurements.
18 Q. This section of Column 6 is talking
19 about Figure 1 of the '159 patent; is that
20 correct?
21 A. No, it is talking about -- it is a
22 detailed description that the earlier section

1 summarized.
2 Q. Would a POSITA know from this
3 disclosure at the top of Column 6 of red and
4 infrared wavelengths, to use those wavelengths in
5 a wrist-based pulse oximeter?
6 A. Again, this was not something that I
7 was asked to offer an opinion on. And I believe
8 that the Patent Office did its good job, written
9 description, checked the box, enablement, checked
10 the box, other boxes.
11 And I was not asked to offer those
12 opinions. I was asked to offer opinions about
13 Apple's validity challenges. And, that is what I
14 did.
15 Q. Let's turn to column -- I want to
16 turn to Column 10, Line 40. We talked about this
17 paragraph earlier.
18 Can you please read the entire
19 paragraph to yourself and let me know when you
20 are done?
21 A. Which exhibit?
22 Q. I'm still in the '159 patent,

1 Column 10, Line 40.
2 A. Okay. I have read that.
3 Q. Yes, can you please read that
4 paragraph to yourself and let me know when you
5 are done.
6 A. Okay, I have read it.
7 Q. Is there any discussion in this
8 paragraph of wavelengths that are suitable for
9 measuring blood oxygen saturation specifically at
10 the wrist?
11 A. It does mention wrist and it also
12 talks about other sections that this is
13 referencing.
14 But again, I don't offer a complete
15 opinion in my declaration because that is not
16 something I was asked to do. So.
17 Q. Is there any discussion of specific
18 wavelengths in Paragraph 40 -- or, sorry, in the
19 paragraph starting at Line 40?
20 A. As I said, I believe so. It
21 references other paragraphs. But, I don't offer
22 a fulsome opinion because it is not my job in

1 this declaration is not something I was asked to
2 do.
3 Q. What other paragraphs do you believe
4 it is referencing?
5 A. I refer to the entire specification.
6 I did mention the Column 6, Column 2, the
7 Beer-Lambert's laws and others. But, I don't
8 really --
9 Q. So --
10 A. I don't believe anything. I was
11 just offering you some guesses as to where you
12 may find additional support. It is not an
13 opinion that I offer in my report. You are
14 eliciting report -- new opinions that I did not
15 consider.
16 So, I would not agree to you citing
17 these as statements made or admissions I made.
18 Because statements of the '159 in the
19 specification written description and enablement
20 questions are not something I offered in my
21 reports.
22 Q. Looking at the discussion of the

1 Beer-Lambert law in Column 6 and the discussion
2 of red and infrared photons, would a POSITA have
3 understood that this disclosure was suitable for
4 determining wavelengths of light to use for
5 measuring pulse oximetry at the wrist?
6 A. I have no opinion on that. I
7 understand that you are trying to fill in the
8 gaps for the determining step and looking for
9 potential fillers, but I don't have an opinion on
10 that.
11 Q. Let's turn to Column 7, Line 30.
12 A. Okay. I am looking at Column 7,
13 Line 30.
14 Q. So, Column 7, Line 30, could you
15 please read that paragraph to yourself and let me
16 know when you are finished?
17 A. Yes, I am reading it. Okay.
18 Q. This paragraph discusses emitting
19 red and infrared wavelengths at approximately
20 650 nanometers and approximately 940 nanometers;
21 is that correct?
22 A. You are talking about Lines 38

1 to 40.
2 Q. Do you agree that this disclosure of
3 using 650-nanometer and 940-nanometer wavelengths
4 of light would be sufficient for a POSITA to
5 identify the correct wavelengths for measuring
6 blood oxygen saturation at the wrist?
7 MR. KIANG: Objection to scope.
8 THE WITNESS: I have no opinions on
9 that.
10 BY MR. BISENIUS:
11 Q. Would you agree that the
12 660-nanometer wavelength of light disclosed by
13 Sarantos falls within the range discussed in
14 the '159 patent?
15 A. Again, I would just refer to the
16 disclosure of the '159. I would not characterize
17 it in any other way.
18 Q. Earlier you stated that a POSITA
19 would know you could not use a single wavelength
20 of light to determine blood oxygen saturation; is
21 that correct?
22 A. I was referring only to the

1 disclosures in Sarantos. It was not a general
2 statement.
3 Q. Well in general, in the optical
4 pulse oximetry sensors, prior to July 2015, would
5 a POSITA have known to use two different
6 wavelengths of light in such an optical sensor?
7 A. Again, I'm not making a general
8 statement, Counsel. I was referring to the
9 grounds faced by Apple, so I don't have an
10 opinion on that.
11 Q. Were you aware of how finger-based
12 pulse oximeters worked prior to July of 2015?
13 A. I didn't offer a specific opinion.
14 I mean there are many different ways probably,
15 but I don't have a specific opinion that I put
16 about finger based.
17 Q. So, you can't, here today, discuss
18 any aspects of finger-based pulse oximetry prior
19 to 2015; is that correct?
20 A. No, I'm not sure what you are
21 asking. I mean, you are -- you seem to be
22 looking for some, some statements of certain kind

1 without pointing to anything in the declaration
2 and pointing to only the original patent
3 specifications.
4 MR. KIANG: Objection, misstates
5 testimony.
6 BY MR. BISENIUS:
7 Q. All right. Let's go to your
8 declaration in the 243 proceeding. I'm at
9 Paragraph 83.
10 A. Which proceeding?
11 Q. The 243 proceeding.
12 A. Okay. Okay. Which paragraph?
13 Q. And Paragraph 83. So, it starts at
14 the bottom of Page 52.
15 A. Paragraph 83. Okay.
16 Q. So, towards the end of this
17 paragraph on Page 53, the third to the last
18 sentence you state, "But oxygen saturation is not
19 performed using red or infrared light. It uses
20 both red and infrared light."
21 Do you see that?
22 A. Yes.

1 Q. So, would a POSITA at the time have
2 known that blood oxygen saturation is detected
3 using red and infrared light?
4 A. What a POSITA would know is that it
5 uses red and infrared. That is all. Nothing
6 more.
7 But it does not disclose a
8 measurement. Just the use does not disclose a
9 measurement.
10 Q. Would a POSITA have known what
11 wavelengths of red and infrared light to use in a
12 pulse oximeter prior to July of 2015?
13 A. They would know that they would use
14 red and infrared, but they use it. Use is not
15 sufficient for a disclosure of measurement.
16 MR. BISENIUS: Let's talk about the
17 Iwamiya patent. This is Exhibit 1004 in the
18 proceedings.
19 (Whereupon, previously marked
20 Apple Exhibit 1004,
21 first referral.)
22 THE WITNESS: Okay.

1 BY MR. BISENIUS:
2 Q. You understand when I say Iwamiya,
3 I'm referring to Exhibit 1004, correct?
4 A. Yes, it is the U.S.
5 Patent 8,670,819.
6 Q. Can you please turn to Column 8 of
7 Iwamiya.
8 THE WITNESS: How much time have we
9 on the record, Counsel?
10 MR. KIANG: We -- let's see. We are
11 around, close to six and a half hours right
12 now. A little bit less than six and a half.
13 THE WITNESS: So, how much is that,
14 6 hours 28?
15 MR. KIANG: Well, I would have to
16 calculate it. Let me see.
17 THE WITNESS: Uh-huh, okay.
18 Please go on, Counsel. Where I was
19 going, to Column 8?
20 BY MR. BISENIUS:
21 Q. Column 8 -- well, actually let's go
22 back to Column 5. Column 5 between Lines 50

1 and 55 --
2 A. One second. I was never at
3 Column 5. So, you mentioned go back there. So I
4 did not. So, okay. Column 5.
5 Q. Column 5 between Lines 50 and 55
6 includes a header, Identifying a First
7 Embodiment. Is that correct?
8 A. Yes.
9 Q. And Column 14 between Lines 50
10 and 55 identifies a Second Embodiment; is that
11 correct?
12 A. The word "Second Embodiment" is
13 present in, in Column 14 around Line 53 or so,
14 54.
15 Q. So, would you agree that Column 8
16 falls within the portion identified as the First
17 Embodiment?
18 A. I'm not sure what you are asking.
19 Q. I'm just asking because there is
20 section titles here. First Embodiment in
21 Column 5, Second Embodiment in Column 14.
22 I'm asking to confirm that Column 8

1 falls within the section titled First Embodiment;
2 is that correct?
3 A. I can't confirm. I have to read the
4 specification. I mean, are you saying that -- I
5 mean, I'm not sure what you are asking. It may
6 be features -- there are features that are
7 analogous to these various embodiments. And
8 there may be portions of the specification that
9 are the same across multiple embodiments, so I'm
10 not sure.
11 Q. Are you aware of portions of the
12 First Embodiment and the Second Embodiment that
13 are analogous between the two embodiments?
14 A. Yes. I highlighted some of them.
15 For example, the, I have highlighted the -- which
16 patent are we on? Which IPR are we on?
17 Q. This is -- well, I'm talking about
18 Iwamiya, which is relevant to the 241 and the 243
19 proceedings.
20 A. 243, all right. So, I was saying
21 that -- for example, I was saying that a POSITA
22 in Paragraph 61 of the 243, I was saying that "a

1 POSITA would have understood that the holder
2 portion 43 in Iwamiya's other embodiments is an
3 analogous structure to the light shielding
4 frame 18 in Iwamiya's first embodiment.
5 "The use of a different reference
6 numeral 43 versus 18 does not end the analysis.
7 Indeed, Iwamiya he repeatedly used different
8 reference numerals for structures that are same
9 or similar between its various embodiments."
10 They refer to light unit -- emitting
11 unit 6 and light emitting units 31, annular light
12 guide unit 7, and annular light guide unit 32,
13 light receiving unit 9 and light receiving unit
14 33.
15 They also explain that the light
16 receiving unit 33 is similar to the light
17 receiving unit 9 from the first embodiment.
18 A POSITA therefore would have
19 understood that these structures to be the same
20 or at least similar despite the reference -- the
21 difference in reference numerals and other such
22 arguments that I make in Paragraph 60, 61, 62 in

1 my Exhibit 2100 of the 243 IPR.
2 Q. Okay. I want to go back to Iwamiya
3 specifically, Exhibit 1004.
4 A. Okay.
5 Q. Column 8. I want to talk about the
6 paragraphs starting at Line 38.
7 Can you please read that paragraph
8 to yourself and let me know when you are
9 finished?
10 A. Which column?
11 Q. Column 8, starting at Line 38.
12 A. Okay.
13 Q. This paragraph discusses a light
14 shielding frame 18; is that correct?
15 A. It describes that there is an
16 optical filter 17. And this optical filter is
17 mounted on the lower side of the light shielding,
18 light shielding frame 18 to surround the light
19 receiving unit 9, referencing Figures 3 and 4 and
20 also Figure 8 in, in this section.
21 Q. Does this portion of Iwamiya
22 describe how the light shielding frame operates

1 to block light?
2 A. Which portion, Counsel?
3 Q. The portion starting at Line 38 of
4 Column 8.
5 A. I'm not -- it says here that --
6 again I'm not sure what you are asking.
7 Q. I'm asking if this portion of
8 Iwamiya describes how the light shielding frame
9 operates to block light?
10 A. Are you referring to a portion of my
11 declaration? Because in the IPR 2022, the 1291,
12 the Board found that Iwamiya provides no detail
13 concerning the structural configuration of the
14 frame 18 and simply identifies the frame as a
15 light shielding frame.
16 Q. So, specifically, referencing your
17 243 proceeding declaration, Paragraph 55, you
18 have recreated a portion of the petition that
19 shows a figure from Iwamiya having the light
20 shielding frame?
21 A. In Paragraph 55?
22 Q. 55.

1 A. Yeah, I have put in Apple's figure
2 from their petition.
3 Q. So, returning to Iwamiya itself, in
4 this portion of Column 8 that is discussing the
5 light shielding frame, does this portion of
6 Iwamiya describe what material is used for the
7 light shielding frame 18?
8 A. It doesn't mention -- I'm not sure
9 again. I'm not sure what you are asking.
10 Q. I'm asking if Iwamiya describes what
11 material is used for the light shielding
12 frame 18.
13 A. It is -- I have to read the
14 specification so I can't answer you. I have not
15 memorized the specification.
16 Q. Looking at Column 8, the paragraph
17 starting at Line 38, going on into the next two
18 paragraphs, through Line 60, is there any
19 discussion in those paragraphs of what material
20 is used for the light shielding frame 18?
21 A. As I said, I can't just look at a
22 portion and then make a decision on the fly.

1 Q. Are you aware of any description in
2 the -- in Iwamiya of a material that is used for
3 the light shielding frame 18?
4 A. As I said, I mean, the claim
5 limitations require a surface comprising a
6 dark-colored coating and other limitations.
7 I have provided a detailed analysis
8 that Iwamiya does not satisfy many of the
9 limitations, so I'm not sure what you are asking.
10 Q. Well, going back to your declaration
11 in the 243 proceeding.
12 A. Uh-huh.
13 Q. Going ahead a few more paragraphs.
14 In Paragraph 57, the heading just above that in
15 that section starting at Paragraph 57, you
16 discuss that it is your opinion that a POSITA
17 would not have been motivated to add a
18 dark-colored coating to Iwamiya's light shielding
19 frame.
20 And so I want to start by talking
21 about the light shielding frame in Iwamiya and
22 its properties and how that informed your opinion

1 here.
2 So, are you aware of any disclosure
3 in Iwamiya of a material used to implement the
4 light shielding frame 18?
5 A. In my opinion, Iwamiya, as Apple has
6 acknowledged, does not disclose the surface
7 comprising a dark-colored coating.
8 Q. Does Iwamiya discuss how the light
9 shielding frame performs its light blocking
10 functionality?
11 A. As I described, "The Board found
12 Iwamiya provides no detail containing the
13 structural configuration of frame 18 and simply
14 identifies the frame as a light shielding frame
15 which is a function description, apart from the
16 word "frame."
17 So, that is what the Board seemed to
18 have found and concluded about certain aspects.
19 And, so, if you look at
20 Paragraph 60, "Iwamiya discloses some material
21 that provides the light shielding function.
22 Iwamiya describes, in relation to a similar

1 structure called holder portion," that "the
2 holder portion 43 of the light receiving unit 33
3 is formed of a metal with the light shielding
4 property such as aluminum. And its surface is
5 subject to the aluminate treatment to have a
6 reflection function."
7 "A POSITA would have found it
8 meaningful that Iwamiya used the same light
9 shielding terminology in both the light shielding
10 frame 18 and the light shielding function of the
11 material."
12 And they "would have understood that
13 Iwamiya already disclosed that metals such as
14 aluminum accomplishes the light shielding
15 function."
16 Iwamiya does speak to how its light
17 shielding function is achieved using a metal such
18 as aluminum. So, this is what I was talking
19 earlier of an analogous structure.
20 Q. So, I'm looking at your Paragraph 60
21 of your declaration in the 243 proceeding.
22 And I see where you have quoted

1 language from Iwamiya regarding the holder
2 portion 43 having a reflection function.
3 I don't see where you have
4 identified what portion of Iwamiya describes the
5 holder portion 43 as having a light blocking or
6 light shielding function.
7 Can you identify that portion of
8 Iwamiya?
9 A. So, we are referring to
10 Paragraph 59?
11 Q. I was looking at Paragraph 60. I
12 believe that is where you were --
13 A. Yes, so 59. Starts on 59, that a
14 POSITA would clearly understand the structure of
15 the frame 18 and its light shielding function.
16 A POSITA would have readily
17 understood that the light shielding function
18 frame is itself made of light shielding material
19 and is therefore opaque.
20 Additionally, Iwamiya already
21 discloses some material that provides the light
22 shielding function. And I cite here that Iwamiya

1 describes in relation to a similar structure
2 called a holder portion 43.
3 In other embodiments the holder
4 portion 43 of the light receiving unit is formed
5 of a metal with the light shielding properties
6 such as aluminum. And its surface is subject to
7 the aluminate treatment to have reflection
8 function, Column 18, Lines 61 through 65. See
9 also Column 28, 64 to Column 29, 5 and Column 39.
10 Q. You understand that the holder
11 portion 43 is not depicted in Figure 3, correct?
12 A. I know it is. It is analogous
13 structure. A POSITA would understand that to be
14 true.
15 Q. Let's go to Figure 13 of Iwamiya.
16 A. One second, which exhibit is that?
17 Q. It is Exhibit 1004.
18 A. Okay. So let me go to 1004.
19 Figure 13 or 14 or what?
20 Q. Figure 13, do you see the --
21 A. One second, let me go there
22 Figure 13.

1 Q. Do you see the holder portion 43 in
2 this figure?
3 A. I haven't got to the figure yet. I
4 have to rotate it first. Okay. So, I am on
5 Figure 13. What is the question?
6 Q. Do you see the holder portion 43
7 depicted in Figure 13?
8 A. One second. Actually, there is a
9 better version of this figure in my declaration.
10 Q. Okay.
11 A. On page, on Paragraph 62.
12 Q. This is great because I wanted to
13 talk about Figure 3 and Figure 13 together.
14 So, you see where the holder
15 portion 43 is in Figure 13. Correct?
16 A. Yes.
17 Q. And this has a substantially
18 different configuration from the light shielding
19 frame 18 of Figure 3; isn't that correct?
20 A. No. They are the same. They are
21 located in the same portion. They are the same
22 purpose. They call it the hold optical filter.

1 They are both describing as light shielding.
2 So, nothing in Iwamiya would suggest
3 to a POSITA the information of one embodiment
4 cannot be used in the other. And as a POSITA
5 would understand that Iwamiya's teachings with
6 respect to the holder portion 43 and its use of
7 metal to accomplish light shielding speak
8 directly to how the light shielding frame 18
9 would have been implemented.
10 "Indeed, Apple's petition conflated
11 the two structures." And further confirming to a
12 POSITA that Apple viewed them as a, a POSITA
13 would view them as analogous structures.
14 For example, petition at 14 where
15 Apple itself said "a POSITA would have known that
16 the light shielding frame 18 or a holder
17 portion 43 as disclosed by Iwamiya can be of
18 various proportions, materials, and a thin
19 surface could be coated."
20 So here I mean you are trying to
21 recant and step away from something that you
22 yourself said. And that is something that we

1 confirmed is an analogous structure.
2 So, it is a bit a little too late.
3 THE WITNESS: So, we have ten more
4 minutes, so --
5 MR. BISENIUS: Well, we have
6 21 hours for this deposition. We are
7 covering three cases.
8 MR. KIANG: I'm sorry. No, we do
9 not have 21 hours. We have agreed to two
10 days.
11 MR. BISENIUS: Okay. So, we have
12 14 hours.
13 MR. KIANG: And you are almost up at
14 the end of the first day.
15 BY MR. BISENIUS:
16 Q. Okay. Looking at Figure 13 in
17 comparison to Figure 3, the holder portion 43 is
18 many times thicker than the light shielding
19 frame 18 in Figure 3.
20 Is that correct?
21 A. No. They are analogous structures.
22 The figures are not drawn to scale. There is no

1 description that they are drawn to scale. They
2 are very similar.
3 Q. The light shielding frame 18 is
4 positioned in an angled orientation whereas the
5 holders 43 are vertical; is that correct?
6 A. Again, that is your view. These are
7 simplified figures. The angle is -- certainly
8 90 degrees is an angle as well.
9 I mean don't look for straws,
10 Counsel. You admitted they were analogous, and
11 the specification confirms they are analogous.
12 Q. Going back to Iwamiya Exhibit 1004.
13 Can you please turn to Column 6.
14 A. One second. I have looked on this
15 document, counterclockwise, okay. Column 6.
16 Okay.
17 Q. Can you please read the paragraph
18 starting at Line 62 that continues on to Column 7
19 to yourself and let me know when you are
20 finished.
21 A. Column 6, Line 16. From Line 16?
22 Q. 62.

1 A. Oh, 62. Okay.
2 Q. Is there any discussion of a light
3 shielding frame in this paragraph?
4 A. I have to look at the figures at the
5 same time which is causing the problem. I am
6 trying to put the figure on the side of the
7 column.
8 So, what is the question? I'm not
9 sure if I understand what is this -- why you are
10 pointing to this paragraph.
11 Q. I'm wondering if there is any
12 discussion of the light shielding frame 18 in
13 this paragraph.
14 A. As I said, I cannot answer on the
15 fly. I'm not sure if I reference this paragraph
16 in my declaration.
17 Q. So, you are not sure if this
18 paragraph talks about light shielding frame 18 or
19 not?
20 A. No, no. I'm not sure what you are
21 asking about this paragraph. I mean, we have to
22 refer to the other portions of the specification

1 that are describing this figure. So you just
2 point to five lines and say something. I'm not
3 sure what you are asking.
4 Q. I'm asking if this paragraph
5 discusses the light shielding frame 18?
6 A. I don't have an opinion on that
7 issue. I have to look at the entire
8 specification and see what this is referring to.
9 Q. Jumping ahead to Column 18, could
10 you please look at the paragraph that starts at
11 Line 61 and that continues on to Column 19 and
12 read that paragraph to yourself and let me know
13 when you are finished.
14 A. Which line?
15 Q. Line 61.
16 A. On Column 18?
17 Q. Correct.
18 A. Okay. Okay. I am reading that. It
19 talks about, it is formed with metal with the
20 light shielding property, the holder portion. It
21 talks of the holder portion. I think I referred
22 to this earlier.

1 Q. Is there any discussion of the light
2 shielding frame 18 in this paragraph?
3 A. Yes. They are analogous structures.
4 Q. Can you identify where it refers to
5 the light shielding frame 18 in this paragraph?
6 A. By referring to that common name,
7 light shielding, and the fact that Apple also
8 referred to them as analogous structures.
9 Q. Are you referring to the holder
10 portion 43?
11 A. I'm referring to the holder
12 portion 43, yes.
13 Q. So, in your opinion, the holder
14 portion 43 is identical to the light shielding
15 frame 18?
16 MR. KIANG: Objection, misstates
17 testimony.
18 THE WITNESS: It is analogous. It
19 is analogous and it is admitted by Apple in
20 its petition.
21 BY MR. BISENIUS:
22 Q. So, you believe that --

1 A. And, and I have identified the
2 grounds in my declaration to show that -- for
3 example, I think we discussed that a bit earlier
4 where Apple itself conflated the two terms and
5 described them in an analogous manner.
6 Q. Do you believe that all disclosures
7 in Iwamiya regarding the holder portion 43 apply
8 equally to the light shielding frame 18?
9 A. I'm referring to these two
10 embodiments that I discussed. I don't have a
11 specific opinion with respect to anything other
12 than Figures 3 and 13.
13 Q. Can you identify what aspects of the
14 holder portion 43 apply equally to the light
15 shielding frame 18?
16 A. As I said, I have discussed that in
17 Paragraphs 59, 60, 61, 62, and so on.
18 Q. How did you determine which
19 descriptions of the holder portion 43 apply to
20 the light shielding frame 18 and which do not?
21 A. As I said, you have to refer to my
22 declaration in those paragraphs. I think I would

1 rather read them into the record. I referred to
2 Paragraphs 59, 60, 61, 62, 63, 64, 65, 66, 67,
3 and so on.
4 Q. Looking at the paragraph at the
5 bottom of Column 18 in the sentence that starts
6 at Line 65, it states, "As illustrated in
7 Figures 13 and 14, the holder portion 43 is
8 formed to have the same thickness as that of the
9 light emitting unit 31, length of a vertical
10 direction, and is disposed in a central portion
11 of the diffusion reflection ring portion 35."
12 Do you see that?
13 A. You are reading from Columns 18 and
14 19 at the bottom and the top.
15 Q. Do you believe that this description
16 of the holder portion formed to have the same
17 thickness as that of the light emitting unit 31
18 applies equally to the light shielding frame 18
19 in Figure 3?
20 A. As I said, Counsel --
21 You had an objection.
22 MR. KIANG: Yes, objection to scope.

1 THE WITNESS: Yes, as I said, I mean
2 I am asking for stuff that is beyond and it
3 clearly shows the --
4 MR. KIANG: Dr. Madisetti, your
5 microphone was acting up.
6 THE WITNESS: Yes, this one also
7 went dead. I will have to use the laptop.
8 Okay, how many minutes do we have
9 left.
10 MR. KIANG: By my calculations about
11 ten minutes left.
12 MR. BISENIUS: We are getting the
13 feedback again.
14 THE REPORTER: I didn't hear the
15 whole answer, either.
16 MR. BISENIUS: Okay. Can we go off
17 the record until we fix this issue.
18 (Recess taken -- 5:59 p.m.)
19 (After recess -- 6:00 p.m.)
20 THE WITNESS: Okay. Maybe I will
21 give you the answer. And the answer is that
22 I did not explain this portion of the

1 specification in my declaration but my
2 declaration in paragraphs that I cited
3 earlier provides sufficient disclosure as to
4 why these structures are analogous.
5 And I also utilize Apple's own
6 statements where they admit, in my opinion,
7 that these structures are analogous.
8 BY MR. BISENIUS:
9 Q. So, what I am asking you is that you
10 have opined that based on this description of the
11 holder portion 43 that the description of using
12 aluminum would apply equally to the light
13 shielding frame 18.
14 I'm asking you would the additional
15 descriptions of the holder portion 43 having the
16 same thickness as the light emitting unit 31 also
17 be applied to the light shielding frame 18?
18 A. As I said counsel, these figures are
19 not to scale. One of ordinary skill in the art
20 would understand that, that they would apply and
21 they would be understood to be analogous
22 structures.

1 Q. I want to go to Column 28.
2 A. Of what?
3 Q. Of Iwamiya. Exhibit 1004.
4 A. One second. Column 28. Okay. And
5 which line?
6 Q. Line 64. Can you please read that
7 paragraph, it goes on to Column 29, to yourself
8 and let me know when you are done.
9 A. Okay.
10 Q. Is there any discussion of the light
11 shielding frame 18 in this paragraph?
12 A. I believe so. One would understand
13 the analogous structures and -- because they have
14 a description of the light shielding property,
15 and its use in the earlier -- in the same way the
16 light shielding, one would understand that a
17 metal such as aluminum with its surface subject
18 to aluminate treatment would apply also.
19 Q. This paragraph states the holder
20 portion 43 is also formed to have the same
21 thickness as that of the light emitting unit 31.
22 Do you believe that that description

1 of the holder portion 43 applies equally to the
2 light shielding frame 18?
3 MR. KIANG: Objection to scope.
4 THE WITNESS: As I said, that is not
5 an opinion that I offered, but my opinion is
6 that the light shielding frame of Figure 3 is
7 analogous to the holder portion of Figure 13
8 for the reasons that I discuss in my
9 declaration that I believe are also supported
10 in Apple's own petition.
11 BY MR. BISENIUS:
12 Q. How did you determine which
13 descriptions of the holder portion 43 apply to
14 the light shielding frame 18 and which
15 descriptions of the holder portion 43 did not
16 apply to the light shielding frame 18?
17 A. I didn't say about not applying.
18 I simply said that one would
19 understand the function. One would understand
20 the materials. One would understand they were
21 analogous.
22 Both of them have -- the patent

1 itself, the MEI uses multiple numerals for the
2 same structure in different embodiments.
3 So, one would understand that the
4 light shielding frame 18 and the holder portion
5 43 are analogous structures.
6 Q. But the light shielding frame is not
7 literally mentioned in this paragraph; is that
8 correct?
9 A. I disagree. The light shielding
10 function is clearly mentioned. And one of
11 ordinary skill in the art would understand that
12 that structure is analogous based on the
13 disclosures for the reasons that I discuss in my
14 declaration.
15 Q. So, if you believe that this
16 paragraph is discussing the light shielding
17 frame 18, my question is how do you determine
18 which aspects of the holder portion 43 applied to
19 the light shielding frame 18 and which do not?
20 A. I would understand that the
21 functions that are being carried over, the light
22 shielding function would be. For example, due to

1 the metal and the aluminum reflective material.
2 So, one of ordinary skill in the art
3 would understand that the light shielding
4 function and the holder portions would have
5 similar function and the function would be
6 utilizing the use of metal such as aluminum.
7 Q. I would like to go back to the '159
8 patent, Exhibit 1001 in the 743 and 744
9 proceedings.
10 A. Okay. Okay.
11 Q. Can you please turn to Column 8 of
12 the '159 patent.
13 A. Column 8?
14 Q. Yes.
15 A. Column 8. Okay. I am on Column 8.
16 Q. I want to talk about the paragraph
17 that starts at Line 54 and continues on to
18 Column 9.
19 Can you please read that paragraph
20 to yourself and let me know when you are
21 finished.
22 A. Column 8, which line?

1 Q. Line 54.
2 A. 54. Okay. I have reviewed the
3 paragraph starting in Line 64 -- sorry, 54, in
4 Column 8, all of the way to Line 10 in Column 9
5 of the '159 patent.
6 Q. This paragraph describes the effects
7 of multiple scattering and variations in path
8 lengths; is that correct?
9 A. I describe this in Paragraph 41 that
10 "The additional features of dark-colored coating
11 and the light block found in the claims are
12 important for measurement accuracy. The '159
13 patent explains the use of dark-colored coating
14 also address the multiple scattering problem
15 caused by light reflecting back and forth between
16 the user's tissue and the sensor."
17 So, I refer to that in Paragraph 41.
18 Q. So, would it be desirable to avoid
19 such multiple scattering?
20 MR. KIANG: Objection to form.
21 THE WITNESS: Are you using
22 hindsight or something? What are you trying

1 to say?
2 BY MR. BISENIUS:
3 Q. I'm talking about the knowledge of a
4 POSITA at the time of the '159 patent.
5 Would a POSITA have understood that
6 it would be desirable to avoid multiple
7 scattering?
8 A. As I said, that is not taught in any
9 of the references. You are using the teachings
10 of the '159 to find a way.
11 So, I believe that that is
12 hindsight, so I don't see anything in there.
13 Further, this is happening inside the sensor and
14 other things.
15 So, I'm not really -- I cannot agree
16 to that. I think you are using hindsight.
17 Q. So, it your opinion that a POSITA
18 would not have been aware of the concept of
19 multiple scattering prior to the '159 patent?
20 A. I'm not saying anything. I am
21 simply seeing here what is in Paragraph 41
22 that --

1 Q. So, you do not know if a POSITA
2 would have been aware of multiple scattering
3 prior to the '159 patent?
4 A. I say here that the '159 patent
5 explains that the conventional two-dimensional
6 approach results in a problem known as multiple
7 scattering.
8 And multiple scattering refers to a
9 phenomenon where red and IR photon pathlengths
10 vary through the tissue.
11 And so Al-Ali discovered that
12 implementing the claimed devices. So, it was
13 something that Al-Ali discovered.
14 Q. Do you believe that Al-Ali
15 discovered multiple scattering?
16 A. As described, how he describes it in
17 the '159 patent.
18 MR. KIANG: Counsel, the time is now
19 3:11, and we have exhausted seven hours for
20 the day.
21 MR. BISENIUS: We can stop and go
22 off the record.

1 (Whereupon, signature not having been waived,
2 the deposition suspended at 6:11 p.m.)
3 * * *
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