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
IPR2024-00243

REMOTE DEPOSITION of

VIJAY K. MADISETTI, PH.D.,

Witness in the above-titled action, held on Tuesday, February 4, 2025, commencing at approximately 10:00 a.m. EST before Lori J. Goodin, RPR, CRR, RSA, California CSR #13959, Registered Professional Reporter, Certified Realtime Reporter, Realtime Systems Administrator, and Certified Shorthand Reporter, and Notary Public of the State of Florida, State of California, State of Maryland, District of Columbia, State of Delaware and Commonwealth of Pennsylvania.

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TUESDAY, FEBRUARY 4, 2025, 10:00 a.m. EST

PROCEEDINGS

* * *

Whereupon,

VIJAY K. MADISETTI, PH.D.,

a witness called for examination, having been first duly sworn, was examined and testified as follows:

* * *

EXAMINATION

MR. BISENIUS: We are here today regarding IPR Proceeding Number IPR 2024-00241 regarding U.S. Patent Number 10,687,743, and IPR Proceeding Numbers IPR 2024-00243 and IPR 2024-00244 regarding U.S. Patent Number 10,722,159.

BY MR. BISENIUS:

Q. Do you understand that you are under oath?

A. Yes.

Q. Is there any reason that you cannot give truthful and accurate testimony today?

A. There is no reason.

Q. To ensure clarity, I will define several terms that will be used throughout this deposition.

When I use the terms "patent owner" or "Masimo." I'm referring to Masimo Corporation, the patent owner in these proceedings.

Do you understand?

A. Yes.

Q. When I use the term "Apple" or "petitioner," I'm referring to Apple, Inc.

Do you understand?

A. Yes.

Q. When I use the term "the '743 patent." I'm referring to U.S. Patent Number 10,687,743.

Do you understand?

A. Yes.

Q. When I use the term "the '159

patent." I'm referring to U.S. Patent Number 10,722,159.

Do you understand?

A. Yes.

Q. When I use the acronym, POSITA, I'm referring to a person of ordinary skill in the art at the time of the alleged invention.

Do you understand?

A. Yes.

Q. For each of these proceedings, you have submitted two declarations, for a total of six declarations.

Is that correct?

A. I submitted three declarations before the institution and three declarations after the institution.

Q. Due to the number of proceedings and declarations, I will try to use the specific proceeding number and exhibit number when discussing any of your declarations.

But, please let me know if at any point you are unsure of which proceeding or which

document I am referring to.

A. Okay.

Q. Can you please describe how you prepared for today's deposition?

A. I reviewed my declaration, the exhibits, primarily Exhibit 2100, in these IPRs.

Q. Approximately how much time did you spend preparing for today's deposition?

A. I would say a few hours in the past few days, I think.

So, it was previously scheduled a couple of weeks ago, a couple of days then, a few hours each day. And a few hours yesterday.

Q. As part of your preparation to testify today, please identify each person you communicated with either in person or over video or phone conference.

A. I spoke with Attorney Daniel Kiang for a few hours and also with Attorney Doug Wentzel a couple of weeks ago.

Q. You mentioned that you reviewed your declarations, which are Exhibit 2100 in each

proceeding.

What other documents did you review in preparation for your deposition today?

A. I briefly reviewed, I think, some of the patents at issue.

Q. Are you referring to the '159 patent and the '743 patent?

A. Yes. And also briefly the, the patents that were cited as prior art.

Q. When were you first contacted by someone on behalf of Masimo?

MR. KIANG: Objection to the form.

THE WITNESS: For which matter, Counsel?

BY MR. BISENIUS:

Q. When you first began your relationship with Masimo, when were you first contacted by someone on behalf of Masimo?

A. With respect to this case or any other case or? I'm not sure what --

Q. I'm speaking in general. Not just this case.

A. It is probably 2017 or 2000 -- around that time frame.

Q. When were you first contacted by someone on behalf of Masimo with respect to the cases involving the '159 and '743 patents?

MR. KIANG: Objection to form.

THE WITNESS: Again, I don't remember the exact dates, but I first remember these patents around the time there was a case at the ITC.

But, I don't remember the exact dates.

BY MR. BISENIUS:

Q. You have presented testimony in the ITC investigation regarding the related '745 patent.

Is that correct?

A. I don't remember very clearly, but I believe so with respect to some of the related patents.

Q. Approximately how many cases have you worked on as an expert on behalf of Masimo?

MR. KIANG: Objection to form.

THE WITNESS: Probably three, three or four, over the past ten years.

BY MR. BISENIUS:

Q. When did you first become aware of the '743 patent?

A. I don't remember the exact date.

Q. Without revealing privileged communications, can you please describe the process by which you prepared your declaration?

For example, did you write every word throughout the entire process? Did counsel for the patent owner prepare first drafts that you revised? Or, was there a different process?

MR. KIANG: Objection to form. And objection to privilege.

Dr. Madisetti, you may answer the question to the extent that you do not reveal any communications with counsel.

THE WITNESS: Okay. So, typically with respect to the declarations, I have discussions with the counsel and I also have

templates that I use to prepare the declaration that I have used in other IPRs.

And, I create a first draft of that and then I work with the counsel to complete it.

The counsel provides editorial help making sure that all of the details are put in with respect to the references and how they are cited, all of the claims and everything else.

But, the opinions are mine and the technical opinions that are expressed in my declaration are mine and mine alone.

BY MR. BISENIUS:

Q. What percentage of the words in your declaration did you write in this case as opposed to merely reviewing words written by someone else?

A. As I said, I've authored similar reports in other cases with related patents. I don't know the exact percentage.

But, these opinions are mine. And

as I said, I worked on these reports together with the counsel who provided editorial assistance.

Q. What percentage of the arguments and theories for validity and other topics addressed in your declarations did you personally create as opposed to being told those arguments and theories by someone else?

MR. KIANG: Objection to form. Objection to privilege.

Dr. Madisetti, you may answer the question to the extent you do not reveal any communications with counsel.

THE WITNESS: As I said, I have discussed my opinions with the counsel and these are my opinions in my declaration.

I don't remember the specifics of that.

BY MR. BISENIUS:

Q. As part of your work on these IPRs and the related ITC and District Court cases, did you ever communicate in any way with Ammar

Al-Ali, the named inventor of the '159, '743 and '745 patents?

MR. KIANG: Objection to form.

THE WITNESS: Counsel, could you please clarify what your question is? Which matter? When? What are you asking about?

Because I believe he has authored and been an inventor on many different patents. And many of those patents were part of different cases.

So, I'm unsure as to what specifically you are asking for.

BY MR. BISENIUS:

Q. Well, I can take it into pieces.

Have you ever communicated directly with Ammar Al-Ali, the inventor of these patents?

A. I don't -- in all cases -- there may be a couple of conversations with him in different cases.

In all cases, it was organized and presided over by the attorneys from Knobbe. I did not directly contact or communicate with the

inventors.

I also have reviewed their deposition transcripts in other cases. I don't remember specifically with respect to which patents.

I have also been present, I think, when they testified in different matters. Again, I don't recall the specifics.

Q. Have you had a direct conversation with Ammar Al-Ali?

A. As I said, it was always -- to the extent I had any, maybe one or two. It would be in the presence of counsel.

But, I don't recall the specifics and in which case it was for.

Q. Did you rely on the information that you received from Ammar Al-Ali in any way in preparing your report or in forming your opinions?

A. I don't believe I talked with Mr. Ammar Al-Ali with respect to these IPRs. And I don't think -- I may have cited some of the

testimony of his deposition transcripts, but nothing from any direct communications.

Q. Approximately when did you begin working on your most recent declarations for these IPR proceedings?

A. Which IPR proceedings, Counsel?

Q. The IPR proceedings involved in this deposition today.

So --

A. I see, so --

Q. Yes, involving the '743 and '159 patents.

A. Yes, that would be some time in the fall of 2024, last year. So, some time in that time frame, September, October, November time frame.

Q. Did you have anyone, such as an assistant, help you with your declarations for these IPR proceedings?

A. No.

Q. Have you communicated with anyone other than attorneys for the patent owner in

preparing your most recent declarations for these IPR proceedings?

A. No.

Q. Have you communicated directly with anyone at Masimo as part of your preparation of your declarations in these IPR proceedings?

A. No.

Q. Prior to preparing your declarations for these three proceedings, did you review any of the declarations prepared by Dr. R. James Duckworth for the IPR proceedings involving the related '745 patent?

A. I may have reviewed some of Dr. Duckworth's declarations.

I don't precisely recall which ones.

Q. Do you recall if there were any statements made in any of Dr. Duckworth's prior declarations that you reviewed that you disagree with?

A. I don't -- sitting here, I don't remember one way or the other. I don't believe I did.

Q. Have you reviewed any of the transcripts for depositions of Dr. Duckworth for the IPR proceedings involving the related '745 patent?

A. I don't believe so.

Q. Have you had any direct communication with Dr. Duckworth regarding these IPR proceedings for the '743 and '159 patents?

A. I don't believe so.

Q. Did you know of Dr. Duckworth prior to working on these cases?

A. I may have heard of his name over the years. I don't recall precisely when.

Q. Do you recall if you have ever met Dr. Duckworth in person?

MR. KIANG: Relevance.

THE WITNESS: I don't really remember one way or the other. There were so many matters and trials, I don't remember.

BY MR. BISENIUS:

Q. Do you currently have any opinions about the '743 and '159 patents that are not

contained in your declarations?

MR. KIANG: Objection to form.

THE WITNESS: My opinions are in my declaration. I don't have any additional opinions sitting here today.

BY MR. BISENIUS:

Q. Has anything happened since you prepared your declarations that changes any of your opinions that you provided in the declarations?

A. No.

Q. Are you currently aware of any errors that exist in any of your three most recent declarations for these proceedings?

A. No.

Q. During your career, approximately how many times have you been retained as an expert either testifying or nontestifying in a patent proceeding?

A. I don't remember, Counsel.

Q. Would it be more than ten?

A. Yes.

Q. Would it be more than 20?

A. I think so over the past 20 years, yes.

Q. Approximately how many times have you been deposed as an expert in a patent proceeding?

A. Again, I don't remember.

Q. Would it be more than 20?

A. I think so, yes.

Q. Would it be more than 30?

A. Yes.

Q. Would it be more than 50?

A. It can be, yes.

MR. BISENIUS: All right. I would like to turn to the '159 patent now. This is Exhibit 1001 in the 243 and 244 proceedings.

(Whereupon, previously marked Apple Exhibit 1001, first referral.)

THE WITNESS: Which one you said?

BY MR. BISENIUS:

Q. The '159 patent. This is

Exhibit 1001 in the 243 and 244 proceedings.

A. One second. Let me -- so I am in the 243 folder. And then --

Q. The zip file labeled 243 is going to be Patent Owner Exhibits.

A. Yes.

Q. The '159 patent should be outside of those zip folders.

A. Oh, I see. Okay. So, it is exhibit would be I think -- what is the 259? How do you name that? Is it --

Q. It should be Exhibit 1001. Let me --

A. Yeah, I got it. Okay.

Q. Okay. This is Patent Number 10,722,159, correct?

A. Yes. It is Exhibit 10 -- it is exhibit Apple 1001.

Q. All right. Have you read this entire patent?

A. Yes.

Q. When is the most recent time that

you have read the entire '159 patent?

A. Over the past two, three weeks.

Q. Have you also separately read the entire '743 patent?

A. Yes.

Q. Have you read the related '745 patent?

MR. KIANG: Objection as to scope.

THE WITNESS: Not recently.

BY MR. BISENIUS:

Q. Are you aware that the '159 patent and the '743 patent share the same figures?

A. What was the question, Counsel?

Q. Are you aware that the '159 patent and the '743 patent share the same figures?

A. So, the '159 has eight figures, and they are described in Column 5. The '743 has eight figures and they look similar.

So, I would say that they both have eight figures and they look similar, but I would defer to the disclosure of the figures in the related specifications as the final answer to

your question.

I don't want to provide a high level answer that they are the same. But I would say that they both have eight figures, they look similar, and defer to the specification.

Q. Are you aware that the '159 patent and '743 patent both claim priority to the same provisional patent application?

A. I understand that they both claim priority to the provisional dated, the 430 provisional dated July 2nd, 2015. It is called the Provisional Application Number 62-188430.

Q. And you agree that both the '159 patent and the '743 patent claim priority to that provisional application, correct?

A. Yes. Based on the cover and based on the specification, they both describe their, the Provisional Application Number 62-188430 that was filed on July 2nd, 2015.

Q. Are you aware that the '159 patent and the '743 patent share substantially the same specification?

A. Again, just like my previous answer. I mean they have similar portions in the specification. I have not done a line-by-line comparison or a page-by-page comparison.

But, I will defer to the specification themselves as opposed to offering a blanket statement that I have not fully confirmed.

They do share portions that are similar.

Q. Is it your opinion that the specification and figures of the '159 patent enable a POSITA to practice the claims of the '159 patent?

MR. KIANG: Objection, scope.

THE WITNESS: Are you referring to a portion of my declaration, Counsel?

BY MR. BISENIUS:

Q. I am more generally referring to the claims, the challenge claims, which is all of the claims of the '159 patent.

Do you believe that the

specification in figures of the '159 patent enable a POSITA to practice the claims of the '159 patent?

MR. KIANG: Objection to scope.

THE WITNESS: Yeah, I don't think I have offered a -- anything in my declaration with respect to written description or enablement or any of these other matters.

So, I would prefer -- I am not comfortable answering it right now because that is not something that I offered an opinion in this matter.

Unless you can point to certain portions of my declaration.

BY MR. BISENIUS:

Q. Let's turn to your declaration in the IPR proceeding involving the '159 patent that is IPR 2024-00243.

A. Okay.

Q. I am going to refer to that as the 243 proceeding, so I can say it quicker.

A. Okay.

Q. So, your most recent declaration is Exhibit 2100.

(Whereupon, previously marked Apple Exhibit 2100, first referral.)

BY MR. BISENIUS:

Q. So, turning for example to Paragraph 28. Here you have stated, in the last sentence you state, "I have interpreted each claim term in accordance with the principles set forth in this paragraph."

A. Which page are you looking at, Counsel? Or which paragraph?

Q. On Page 15, going into Page 16, Paragraph 28 of your most recent declaration, Exhibit 2100, in the 243 proceeding.

A. Okay. Okay, I see. So, you are in the section called Applicable Legal Standards.

Q. Yes. And specifically the subsection labeled Claim Construction.

A. Okay.

Q. And here you said that you

"understand that the Patent Office generally construes claim terms by giving them their ordinary and customary meaning as they would have been understood by a POSITA at the time of the invention in view of the intrinsic record which includes the patent specification and file history."

Do you see that?

A. I do.

Q. And so, you have stated here that you are interpreting the claim terms to have their plain and ordinary meaning, but that this was informed by the patent specification of the patent. Correct?

A. Yes. That is the understanding I have been given by counsel.

Q. And so my question is, is it your opinion that the specification and figures of the '159 patent enable a POSITA to practice the claims of the '159 patent?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, Counsel,

that is not what I was asked to provide an opinion on in my declaration.

So, all I say here is the guidance provided by the counsel. Because it is an issued patent, I presume it is valid. And I assume that all of the checkboxes are met.

So, that is the assumption that I have utilized in my understanding of the legal guidelines.

BY MR. BISENIUS:

Q. So you are unsure the if a POSITA would have been unable to practice the claims of the '159 patent --

MR. KIANG: Objection --

BY MR. BISENIUS:

Q. -- based on the specification and figures?

MR. KIANG: Objection. Misstates testimony.

THE WITNESS: As I said, Counsel, I do not offer an opinion on that issue because I was not asked to offer an opinion on this

issue in this matter.

If asked and allowed, I may do so in the future.

But, for this declaration, for this IPR, I do not offer any opinions on that.

Q. Well, I'm asking you today, do you believe that the specification in figures of the '159 patent enable a POSITA to practice the claims of the '159 patent?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, Counsel, that is not an opinion that I offered in the declaration. If asked and allowed, I may do so in the future. But today I don't have an opinion on that.

I believe that it is a valid patent. It meets all of the requirements of the U.S. Patent Office for a valid patent.

Other than that, I don't have the specific, more detailed opinion because that is not something I was asked to consider for this particular declaration.

BY MR. BISENIUS:

Q. Is it your opinion that the specification in figures of the '743 patent enable a POSITA to practice the claims of the '743 patent?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, Counsel, this is not an opinion that I expressed, that I was asked to provide as a part of this declaration.

But, if asked and allowed in the future, I may so do so in other reports and declarations.

But, sitting here today, it is not an opinion that I offered as a part of these proceedings, so I do not have an answer for you.

BY MR. BISENIUS:

Q. So, you are allowed to answer this question. There is nothing privileged indicated by my question or the answer to this question.

So, you are permitted to answer this

question. Counsel for Masimo can move to have it struck from the record later on, if it is found to be outside the scope. They can object.

But, you are permitted to answer the question. And I am asking you this question.

A. I don't have --

Q. So, the question, is it your opinion that the specification and figures of the '743 patent enable a POSITA to practice the claims of the '743 patent?

MR. KIANG: Objection to scope and objection to the manner in which counsel is asking the question and badgering the witness.

Counsel obviously understands that the question is outside the scope.

THE WITNESS: As I understand, that question was not something I was asked to provide an opinion on. And I did not provide an opinion on in my declaration unless you can point to something in my declaration.

These are important legal matters.

These are important opinions that you must carefully analyze and offer.

You cannot offer off-the-cuff answers.

If asked and allowed to do so, I may provide such answers in the detail that such important questions merit.

But, sitting here today, I don't have a detailed and precise answer for you. As I said, I assume that it, being an issued patent, that is presumed valid and therefore checks all of the boxes.

BY MR. BISENIUS:

Q. Let's go back to your declaration for the 243 proceeding involving the '159 patent, Exhibit 2100.

I want to go a few paragraphs earlier to Paragraph 25.

A. One second. Okay.

Q. Here you state, "In forming my opinions in this declaration, I have also relied upon my educational and professional experience.

"I understand that my analysis and opinions should be made from the perspective of one of ordinary skill in the art, i.e., a POSITA, related to the '159 patent at the relevant time, which is July 2nd, 2015."

Do you see that?

A. You are reading from Paragraph 25 in my declaration.

Q. And so, you conducted your analysis of the '159 and '743 patents from the perspective of a POSITA; is that correct?

A. Yes.

Q. And all of your analysis is based on what a POSITA would have understood regarding what is recited in the claims of the '159 and '743 patents; is that correct?

A. Yes.

Q. So, I'm asking you, would a POSITA have understood how to implement the physiological monitoring device recited by the claims of the '159 patent?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, Counsel, I was not asked to offer a specific opinion on that issue with respect to written description or enablement and other such issues you are asking me about which I understand are not usually covered in IPRs.

But, as I said, I assume that because the Patent Office has issued this patent and it is a valid patent, the presumption is that it checks all of the boxes. I don't have anything else at this point because it is not part of my opinions I was asked to give in this particular matter.

BY MR. BISENIUS:

Q. You gave an opinion on Claim 8 of the '159 patent; is that correct?

A. Are you referring to a particular paragraph, Counsel?

Q. Well, for example, turning to Page 51 of the '243 proceeding, declaration Exhibit 2100.

A. One second. Page 51, you said?

Q. Page 51, yes. At the bottom. Just above Paragraph 81.

A. Okay. One second. Okay. I am on Page 51. At the bottom which is the part of the section, saying that, "determining oxygen saturation at the wrist would not have been obvious to a POSITA," Claims 18 and 17. Section D on Page 51.

Q. It is Claims 8 and 17, correct?

A. Claims 8 and 17.

Q. And so you have analyzed Claims 8 and 17 of the '159 patent from the perspective of a POSITA; is that correct?

A. I have analyzed Claims 8 and 17 in this particular section to show that determining oxygen saturation at the wrist would not have been obvious to a POSITA.

Q. And so in analyzing those claims, you were putting yourself in a position of a POSITA and what a POSITA understood.

Is that correct?

A. I was describing that in the context

of the prior art references, that are called Iwamiya, I-W-A-M-I-Y-A, and Sarantos, S-A-R-A-N-T-O-S.

Q. So, turning to Claim 8 of the '159 patent, it is in Column 16 of the '159 patent. If you want to turn there and let me know when you get there.

A. Okay. Which patent, '159? Column 16.

Q. Correct.

A. Okay. Yes.

Q. So here Claim 8 states, "The physiological monitoring device of Claim 1, wherein the physiological parameter comprises oxygen saturation."

Do you see that?

A. I do.

Q. So, because you have analyzed Claim 8 from the perspective of a POSITA, I'm asking you, would a POSITA have known how to implement the physiological monitoring device claimed by Claim 8 to measure oxygen saturation?

MR. KIANG: Objection to form and scope.

THE WITNESS: As I said, that is not an opinion I offered with respect to the '159. I do not -- unless you are referring to a particular portion of the declaration.

I was referring to my understanding of our POSITA would understand the disclosures of the prior art references, Iwamiya and Sarantos. And that they don't disclose determining oxygen saturation at the user's wrist.

Q. So, you are unsure if a POSITA would have been able to implement the physiological monitoring device of Claim 8 to measure oxygen saturation; is that correct?

MR. KIANG: Objection, misstates testimony. And objection to scope.

THE WITNESS: I disagree with your characterization of my testimony. I am simply saying I have not analyzed the '743

and the '159 with respect to written description nor enablement or other such issues which I understand are outside the scope of IPRs.

I was referring to the disclosures of the prior art patents and other material that were discussed in my declaration, that they don't disclose that claim step.

BY MR. BISENIUS:

Q. You stated in your declarations that you have analyzed the claims from the perspective of a POSITA; is that correct?

A. I analyzed them in the context of the prior art references which were in this particular section, Iwamiya and Sarantos.

And I specifically said that determining oxygen saturation in Sarantos and Iwamiya would not have been -- would not be disclosed in Iwamiya or Sarantos.

Q. And in analyzing the claims of the '159 and '743 patents from the perspective of a POSITA, you were considering all of the

knowledge that a person of ordinary skill in the art at the time would have had in this field; is that correct?

A. I would just defer to the description of a POSITA. And I understand that a POSITA would understand that the disclosures of Iwamiya and Sarantos would not disclose measuring oxygen saturation, for the reasons I discussed in my declaration.

Q. Okay. So, my question to you is: Thinking from the perspective of a POSITA at the relevant time frame in the year 2015, would a person of ordinary skill in the art at the time, having all of the knowledge of a person of ordinary skill in the art at the time, have known how to implement the physiological monitoring device of Claim 8 to measure oxygen saturation?

MR. KIANG: Objection to form. Objection to scope.

THE WITNESS: I mean, as I said in this -- with respect to the '159 and '743 patents, that the inventors had -- the

inventors themselves performed research into various techniques for measuring and determining these parameters.

So, Mr. Ammar Al-Ali, for example, would be -- was involved with carrying out such determinations and calculations at the time frame of this particular invention as a part of his work at Masimo.

But, I am not aware of, I am not -- the evidence that I cite shows that a POSITA would not understand -- would not understand the disclosures of Sarantos and Iwamiya and other prior art references to disclose such a determination as claimed.

BY MR. BISENIUS:

Q. I would like to stick with the '159 patent. And could you please turn to Column 8.

A. Okay.

Q. And specifically I would like to talk about the paragraph starting at Line 32 of Column 8.

Could you please read that paragraph

to yourself and let me know when you've finished?

A. This paragraph is referring to Figure 4A that I'm trying to look at. And -- okay. I have reviewed the paragraph and I have looked at the figure.

Q. All right. Could you now open the '743 patent and I want to direct you to the same location, Column 8, Line 32.

A. Okay.

Q. Would you agree that the paragraph starting at Column 8, Line 32 of the '743 patent is identical to the paragraph starting at Column 8, Line 32 of the '159 patent?

A. Yes. It looks substantially similar.

Q. Would you agree that your answers with respect to this paragraph in the '159 patent would apply equally to this paragraph in the '743 patent?

MR. KIANG: Objection to form.

THE WITNESS: About what, Counsel? My answers about what?

They are different patents. They are different claims. And I'm not sure what you are specifically asking.

BY MR. BISENIUS:

Q. I'm just trying to save us some time today so I don't have to repeat every single question about both patents.

But, if you would like me to ask every question about the same identical paragraph in the two patents, I can do that.

Which would you prefer?

A. As I said, they are different patents, different claims. So, I would prefer you to be more specific if you can.

Q. All right. So, turning to paragraph, the paragraph starting at Column 8, Line 32 of the '159 patent, this paragraph is describing a light-absorbing detector filter 306.

Is that correct?

A. Yes.

Q. This paragraph also mentions that there is an opening 402 in the light-absorbing

detector filter 306.

Is that correct?

A. It says that, "The light-absorbing detector filter 306 is a planar surface having an opening 402, through which the emitted light may pass," dot, dot, dot.

Q. So, this paragraph describes that the emitted light may pass through the opening 402 in the light-absorbing detector filter 306 after being attenuated by the tissue measurement site 102. Is that correct?

A. The specification says that, "The light-absorbing detector filter 306, which is also depicted in Figure 4A, is a planar surface having an opening 402 through which the emitted light may pass after being attenuated by the tissue measurement site 102."

I notice you are avoiding the language "a planar surface having an opening." So, I defer to the language in the specification that confirms that it is a planar surface having an opening 402.

Q. Does the '159 patent describe what material the light-absorbing detector filter 306 is made from?

A. I believe I will again defer to the specification itself. And I have not memorized the specification so I will rely on whatever is disclosed.

Q. So, you are not aware of if the '159 patent describes what material the light-absorbing detector filter 306 is made from?

A. As I said, I will -- I have not memorized the entire patent and I will defer to the language in the specification and whatever else it relies upon as a part of the intrinsic record. But, I don't have it memorized.

Q. Does the '159 patent describe the light-absorbing detector filter 306 as being opaque or translucent or transparent?

A. Again, Counsel, I think I would again rely on the specification and its attendant disclosures and the intrinsic record for that. I have not memorized that.

Q. Looking specifically at this paragraph that starts at Line 32 of Column 8, is there any description of what material the light-absorbing detector filter 306 is made from?

A. As I said, I rely on the entire specification and one should rely on the entire specification and the intrinsic record.

So, I cannot say one way or the other as to a particular paragraph and what else it refers to, because I believe that the specification provides examples. And these examples and its description may be related to other portions of the specification as well.

So, I do not have a specific answer to you without reviewing everything.

Q. Is there any description in the '159 patent of the opening 402 including a material that light passes through?

MR. KIANG: Objection to form.

THE WITNESS: As I said, Counsel, these are -- the specification speaks for itself. I cannot pretend to memorize dozens

of pages of fine text.

It clearly says here that the light-absorbing detector filter 306 is a planar surface having an opening 402.

And it goes to continue and describe many different aspects and different embodiments and so on.

BY MR. BISENIUS:

Q. So, I'm asking you, would you understand the opening 402 in the planar surface to have a material that light passes through?

A. You are asking me about 402?

Q. Yes. The opening 402.

A. And what is your question, Counsel?

Q. Would you understand the opening 402 to have a material that light passes through?

A. I understand that, as described here, that the planar surface having an opening 402 through which emitted light may pass after being attenuated.

All of the -- this is what this line described says. I don't have anything else to

add.

Q. So, my question is would you understand the opening 402 to be required to include material or would it be empty space or could it be both?

A. And now you are talking about issues like infringement, about issues like opening and what an opening is.

I understand that Apple has offered other opinions in other matters that are discussed in my declaration with respect to what it means by opening.

So, I certainly defer to what I discussed in my declaration that -- for example, in Paragraph 54, I offer an opinion that in the Delaware litigation, Apple and its expert, Dr. Sarrafzadeh argued that the plain and ordinary meaning of opening means empty space and so on.

So, I do address that issue in my declaration. And I discuss that issue in Paragraphs 53, 54, 55, 56 and so on.

Q. Okay. So, with respect to the term "opening" in the claims, do you believe that that term requires there to be an empty space or do you believe that term requires there to be material in the opening?

Or, would both empty space and a transparent material satisfy that claim term?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, Counsel, you are again straying outside my declaration.

I was commenting that the claims of the '159 and the '743 must be practiced.

I was remarking that under Apple's Delaware construction of an opening, Iwamiya does not have an opening. I did not offer my own construction. I was just responding to what Apple said in other proceedings which I believe are inconsistent with its positions here.

BY MR. BISENIUS:

Q. So, let's turn to Paragraph 53 of

your exhibit -- of your declaration Exhibit 2100 in the 243 proceeding involving the '159 patent.

A. In the 243?

Q. 243 proceeding, Exhibit 2100, Paragraph 53.

A. Okay.

Q. Here you are addressing Elements 1.4 and 1.5 and 19.5 of the '159 patent. Is that correct?

A. This is part of Section 8. And under the heading called A, I describe my opinions with respect to the Iwamiya-Sarantos combination failing to disclose Limitations 1.4 and 1.5 and 19.5 under Apple's proposed construction in the Delaware litigation.

Q. So, here you are addressing part of the claim language that states, "Wherein an opening defined in the dark-colored coating is configured to allow at least a portion of light reflected from the tissue to pass through the surface."

Do you see that?

A. I refer to Claim 1 and 19 having a limitation that there is "a surface comprising a dark-colored coating, the surface positioned between the plurality of detectors and the tissue, when the physiological monitoring device is in use, wherein an opening defined in the dark-colored coating is configured to allow at least a portion of light reflected from the tissue to pass through the surface."

Q. And so, you have analyzed this claim element. It discusses an opening defined in the dark-colored coating.

What I'm asking you is, do you understand the opening to require empty space? Do you understand the opening to require a material positioned in the opening? Or would both satisfy this claim element?

MR. KIANG: Objection to scope.

THE WITNESS: Again, I'm -- Counsel, you are going outside of my declaration.

I'm saying here that Apple's position is inconsistent with its own

positions in the Delaware litigation where Dr. Sarrafzadeh argued that the plain and ordinary meaning of opening means empty space.

And he explained that the opening that is filled with solid material such as closed windows and solid lenses cannot -- that is filled with solid materials such as closed windows and solid lenses cannot satisfy the claim limitation, Exhibit 2037 in Paragraph 479.

What I remarked here in Paragraphs 54 and 55 is that Apple's positions in this IPR and the related IPRs is inconsistent with what its own expert said in other quotes. I was not offering my own opinions here.

BY MR. BISENIUS:

Q. So, you have no opinion on what the term "opening defined in the dark-colored coating" means?

MR. KIANG: Objection --

THE WITNESS: As I said, I did not offer a specific construction in my opinion. That I was pointing out the inconsistencies.

And as I described in my declaration, opening, under any construction of the term proposed for Apple, is not present in Iwamiya or Sarantos or the combination.

MR. KIANG: For the record the Realtime transcript does not correctly state my objection. My objection was objection to scope and misstates testimony.

BY MR. BISENIUS:

Q. In your opinion would an opening that is empty space satisfy the claimed opening defined in the dark-colored coating?

MR. KIANG: Objection to scope.

THE WITNESS: Again, are you asking me to provide a specific claim construction opinion?

BY MR. BISENIUS:

Q. I'm not asking you for a specific

claim construction.

I'm asking you if this would fall within the scope of the claim or outside of the scope of the claim.

So, would an opening that is empty space fall within the scope of the claimed opening defined in the dark-colored coating?

A. As I said, Counsel, I was -- in my declaration, I was describing Apple's own inconsistent positions. I was not offering a specific construction of openings.

I believe that in the Delaware litigation I had offered such opinions in my reports there.

But, I don't recall specifics.

Q. In your opinion, would an opening that includes a transparent or translucent material satisfy the claim that opening is defined as a dark-colored coating?

MR. KIANG: Objection to scope.

THE WITNESS: As I said again, Counsel, I have not offered specific opinions

on infringement or a particular product or a particular term in general.

I have referred to, in my declaration, specifically the combinations of prior art, Iwamiya and Sarantos. My opinions are restricted to the prior art references that I have discussed.

I have not provided a general opinion that is applicable to validity or infringement or any other aspect.

I have simply opined on what I referred to as the prior art grounds, Iwamiya and Sarantos and other such references and how they do not invalidate the claims.

BY MR. BISENIUS:

Q. Do you know what the term "opening" defined in the dark-colored coating means in the scope of the '159 patent?

A. As I said, Counsel, my opinions are in the declaration. I am unsure about what you are asking. I have answered your questions repeatedly.

You are asking something that, as I said I, did not offer a general construction of the term. I applied what I understand are my opinions with respect to the disclosures of the grounds asserted by Apple.

Q. So, you don't know if an opening that is empty space would fall within the scope of the claimed opening defined in the dark-colored coating, correct?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: As I said, I don't offer an opinion on this issue -- my personal opinion on this issue in this declaration.

If asked and allowed, I may do so in the future. In other reports I may have authored such opinions. I don't recall.

But, in this particular declaration, I am willing here to discuss opinions in my declaration, not materials that was related to other matters that I do not recall.

BY MR. BISENIUS:

Q. I am asking you about your opinions in this declaration because you are directly addressing this claim term, "opening defined in the dark-colored coating."

And so can you tell me would empty space fall within the scope of these opening defined in the dark-colored coating?

MR. KIANG: Objection, misstates testimony and objection to scope.

THE WITNESS: As I said, Counsel, my opinions are in the declaration. I stand by them. I believe I have nothing else to add.

All I've said is that a person of ordinary skill in the art would not understand the disclosures of Iwamiya or Sarantos or the combination to disclose the claimed opening in the manner claimed, for example, as in the limitation that we were discussing, for the reasons that I mentioned.

BY MR. BISENIUS:

Q. You have no opinion about whether or not the opening defined in the dark-colored

coating requires that the opening be an empty space; is that correct?

A. As I said, Counsel, I am here to discuss my declaration. I have not offered independent opinions on certain claim terms, independent of the prior art that I have discussed.

Therefore, I am not -- I don't have an opinion on that issue as a part of this particular declaration.

I may have provided such opinions in other reports which I don't specifically recall in which context. But, here, sitting here today, I don't wish to offer a general opinion that is not in my declaration.

Q. So, you have no opinion about whether or not the opening defined in the dark-colored coating requires that the opening include material; is that correct?

MR. KIANG: Objection, misstates testimony. Objection to scope, asked and answered.

THE WITNESS: I said, Counsel, this is not -- I have not offered a general opinion on the claim term outside the context of the prior art that I have analyzed in this particular matter.

In other reports and in other matters, I may have offered a more detailed analysis. I don't specifically recall the specifics.

But, with respect to these declarations in these IPRs, I have disputed and observed that Iwamiya and Sarantos do not have the opening that Apple itself contended was the correct construction of opening through its experts, and thus it was inconsistent.

And, I don't have anything specific to add as a general matter, other than to say that the entire limitation is not met for several other reasons as well, which are described in my declaration, with respect to Iwamiya and Sarantos and the combinations.

BY MR. BISENIUS:

Q. Looking at Paragraph 54 of Exhibit 2100 in the 243 proceeding, you are discussing statements of Apple's expert in the Delaware litigation; is that correct?

A. I was referring to the inconsistent positions of both Apple and its expert in the Delaware litigation, where they both argued that the plain and ordinary meaning of opening means empty space.

Q. Do you agree or disagree with this interpretation from Apple's expert in the District Court litigation?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, I don't have an opinion on that issue as part of this IPR, Counsel.

BY MR. BISENIUS:

Q. So, you are not sure if this is a correct claim interpretation or not?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: I don't have an opinion on that issue, Counsel. All I have said is that Apple and its expert have provided inconsistent definitions between different courts in the sworn testimony, for example, through Dr. Sarrafzadeh.

BY MR. BISENIUS:

Q. And you have no opinion on whether or not that interpretation described in Paragraph 54 is correct or incorrect; is that true?

MR. KIANG: Objection, misstates testimony. Asked and answered.

THE WITNESS: As I said, Counsel, as a part of this IPR, this declaration, which is not connected to the Delaware litigation, I do not have a specific opinion on that issue as a part of this declaration that I am being deposed on.

BY MR. BISENIUS:

Q. Let's move forward to Page 49 of this same declaration, Exhibit 2100, in the 243

proceeding.

A. One second. Page 49.

Q. Correct.

A. Okay. Page 49.

Q. This page has Paragraphs 76 and 77; is that correct?

A. This is part of Section C that describes that Iwamiya and Sarantos combination does not have an opening defined in the dark-colored coating that allows light to pass through the surface, addressing Claims 1 and 19.

Q. So, here you are opining on the claim term "opening defined in the dark-colored coating."

Is that correct?

A. To be precise I am saying that the Iwamiya-Sarantos combination does not disclose an opening defined as in the dark-colored coating configured to allow light to pass through the surface.

Q. How can you be so sure of that opinion when you don't know what the term

"opening defined in the dark-colored coating" means?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: Again, you are saying I do not know. I said I do not specifically offer opinion on certain terms.

I have applied the plain and ordinary meaning of these terms in the context of the claim language in the context of the specific combinations of Iwamiya and Sarantos.

And in Paragraph 76, I point out that Apple identifies the light shielding frame 18 as a recited surface.

However, in the Apple's alleged Iwamiya-Sarantos combination, light does not pass through the light shielding frame 18 and therefore does not pass through the surface.

BY MR. BISENIUS:

Q. Do you know what the term "opening defined in the dark-colored coating" means in the

context of the '159 patent?

A. As I said, from the description in the specification, the specification provides examples, for example, Figure 4A, where it says that there is a light-absorbing detector filter 306, which is depicted in Figure 4A, is a planar surface having an opening 402 to which the emitted light may pass after being attenuated by the tissue measurement site.

So, the specification provides examples. And I have used the claim language here to show that the Iwamiya-Sarantos combination, in which Apple has identified the light shielding frame as the surface, does not satisfy this limitation, because light does not pass through the light shielding frame 18 that Apple has identified, and therefore it does not pass through the surface as required in the limitation.

Q. In the example you were just discussing, this example was in Column 8 of the '159 patent; is that correct?

A. Yes.

Q. In this example, is the opening required to include material?

A. As I said, I do not offer a specific opinion again on opening, on what it covers, what it does not.

I note that Apple has provided inconsistent opinions. Its expert has provided inconsistent opinions in other matters under sworn testimony.

So, I just wanted to remind the Board as to that.

Q. So, you just stated that this example informs what a POSITA would have understood about the claim term "opening defined in the dark-colored coating"; is that correct?

A. All I said was it provides an example.

Q. And so I'm asking you in this specific example, is the opening 402 required to include material?

A. As I said, I don't have a specific

opinion on that issue. I have referred to my opinions with respect to Apple's asserted prior grounds -- priority grounds in the IPRs.

I don't wish to offer on other opinions that are part of other cases with respect to infringement or otherwise.

Q. Do you understand this example in Column 8 of the '159 patent?

A. I reviewed it in light of the specification. I understand it in the context of what it is describing and in the context of how it describes Figure 4A, which is an example.

Q. So, I'm asking you in this example, is there any description of the opening 402 including material?

A. As I said, I would defer to the specification itself. I don't have a specific opinion on the material issue.

I understand you are fishing for grounds of infringement or noninfringement, but I don't have a specific opinion in this particular declaration on that --

Q. I'm actually specifically --

A. -- unless you can point to something in the declaration.

Q. Yes. I'm specifically talking about Paragraphs 76 through 80 of your declaration, Exhibit 2100, in the 243 proceeding.

A. Okay.

Q. Here you have given --

A. So, let me get there. This is the first time you have mentioned those paragraphs.

Q. We were literally just talking about them about ten minutes ago.

A. Let's get to that. 76. Okay. So, that is a different section from what we are right now.

And that is Section C that says that Iwamiya-Sarantos combination does not have an opening defined in the dark-colored coating that allows light to pass through the surface.

So, this is talking about the Iwamiya-Sarantos combination.

Q. Correct. But we are talking about

the claim language "opening defined in the dark-colored coating" from the '159 patent. Is that correct?

A. You are not reading the complete limitation. "That allows light to pass through the surface."

So, whatever the construction of opening may be, the dispute that is raised here is that whatever Apple points to as its structure, which is the light shielding frame, does not have an opening, whatever the construction of opening may be, that allows light to pass through its surface because the light shielding frame never passes light through it.

So, independent of the construction of opening, whatever it may be, that issue is secondary to the bigger problem that Apple has that I believe is fatal to its combination that the structure that it has identified, which is the light shielding frame, has no light passing through the surface.

Q. Okay. So, in the full context of

all of the claim language, does the opening defined in the dark-colored coating that allows light to pass through the surface require there to be material within the opening?

MR. KIANG: Objection to scope. Asked and answered.

THE WITNESS: As I described before, it does not matter at this stage of this IPR.

There is Apple's own arguments in this particular IPR are inconsistent and also different from what it argued before the Delaware court.

My opinions are that this limitation is not met for several reasons, in addition to whatever Apple chooses as its flavor of the month for this construction.

It also fails because Iwamiya's combination -- in the Iwamiya-Sarantos combination, light does not pass through the light shielding frame 18, and therefore this limitation is not met because it does not pass through the surface aspect of this

limitation for Claims 1 and 14, as I describe in Paragraph 76.

BY MR. BISENIUS:

Q. So, you have no opinion about whether or not the opening defined in the dark-colored coating that allows light to pass through the surface requires there to be material in the opening or not; is that correct?

MR. KIANG: Objection. Misstates testimony. Asked and answered. And objection to scope.

THE WITNESS: As I described before, it is my opinion that Apple has provided contradicting testimony on this issue. Irrespective of what Apple chooses its definition of open to be, there are several other reasons that I provide in my declaration.

For example, in Section C, starting on Page 49, Paragraph 76, 77 and so on, where I clearly state that Apple's identification of the light shielding frame, which is the

claimed surface as alleged by Apple, cannot meet this limitation, because light does not pass through that light shielding frame 18.

And therefore the entire limitation is not met for at least this additional reason, irrespective of what "opening" may or may not cover.

BY MR. BISENIUS:

Q. Returning to the example you were discussing in Column 8 of the '159 patent, specifically at the paragraph starting at Line 32.

A. This is the example that you raised, Counsel. Not me.

Q. Do you believe that the opening 402 discussed in this paragraph and the paragraphs afterwards provides support for the claimed opening defined in the dark-colored coating?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, I would let the specification speak for itself. I believe that these different embodiments are

consistent with the claims as issued.

I don't have specific, more detailed analysis of each and every embodiment in my declaration.

I don't believe that I cite Figure 4A specifically in my report.

BY MR. BISENIUS:

Q. So, I understand you are letting the specification speak for itself. I'm trying to relate the claim term specifically to examples in the specification.

And you stated earlier that you couldn't give an opinion on whether or not the claimed opening in the dark-colored coating would require there to be empty space or if it would require there to be material.

But that you could relate it to some examples.

And so I'm asking you, does this example in paragraph -- in Column 8 discussing the opening 402 provide support for the claimed opening in the dark-colored coating?

MR. KIANG: Objection. Misstates testimony. Objection to scope.

THE WITNESS: First of all, I do not agree with your characterization of my opinions on this issue.

I said that I do not offer a specific construction of opening myself. Irrespective of whatever the correct construction would be or should be, there are several reasons why I discuss in my declaration that that limitation with respect to passing through the surface fails for the identified structures by Apple.

I also discussed Apple's inconsistent positions in various courts. To the extent that I am asked to offer a specific analysis of this example, I may do so in the future.

But as of this point, I don't wish to offer an opinion that is not part of my declaration given that this is an important legal matter.

BY MR. BISENIUS:

Q. Can you identify any examples in the '159 patent specification that provide support for the claimed opening defined in the dark-colored coating that allows light to pass through the surface?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, Counsel, that is not something that I was asked to offer an opinion in the declaration. And I would defer to the specification and the intrinsic evidence and other statements that are typical of claim construction analysis.

But, that is not something that I was asked to do as a part of the declarations in this matter.

BY MR. BISENIUS:

Q. Going back to your most recent declaration in the 243 proceeding, Exhibit 2100. I want to go back to Paragraph 28 that we were discussing earlier.

A. One second, Counsel. 28, 2-8?

Q. Correct.

A. Okay.

Q. And here you are discussing the fact that you have applied the plain and ordinary meaning of the claim terms as they would have been understood by a POSITA at the time of the invention in view of the intrinsic record which includes the patent specification and the file history.

So, would you agree that the patent specification provides guidance to a POSITA on how to interpret the claim terms?

A. I would agree that this is the legal guidance that I was provided with. I'm not here to argue a legal issue.

I am here on technical matters. So, this is the guidance I have been provided by the counsel with respect to applicable legal standards.

Q. When you were considering how the claim terms -- sorry, scratch that.

When you were considering the scope

of the claim terms with respect to the cited prior art, were you considering how a POSITA would have understood those claim terms in light of the specification?

A. As I said, Counsel, I have provided my opinions in the declaration, and the declaration I believe contains my complete opinions.

Anything that is not in my declaration is not part of my opinions in this particular matter. So, I would defer to whatever is in my declaration as my opinions and the statement of my complete opinions.

I hope you are not wishing to elicit opinions that are not in my declaration.

Q. Well, I'm trying to understand. In this first sentence of Paragraph 28, you stated, "I understand that in assessing the patentability of a patent claim, the Patent Office generally construes claim terms by giving them their ordinary and customary meaning as they would have been understood by a POSITA at the time of the

invention in view of the intrinsic record, patent specification and file history."

Do you see that?

A. That is again the legal guidance I was provided by the counsel.

I don't have anything else to add there, but that paragraph was provided to me by the legal counsel.

Q. And I'm asking you: Did you apply this standard when you were conducting your analysis in your declarations?

A. I applied the legal guidance and -- from a technical point of view. I provided an analysis with respect to the prior art.

Q. And so, was your understanding of the claim terms based on your understanding of the patent specification?

A. As I said, Counsel, I analyzed and provided my complete opinions in my declaration. Anything not there is not what I am offering an opinion on today.

MR. KIANG: Counsel, we have been

going about 90 minutes. Do you want to take a break?

MR. BISENIUS: Sure, we can take a break. Yeah, let's take say 5 minutes, 35 after the hour.

THE WITNESS: Let's take ten minutes.

MR. BISENIUS: 40 after.

THE WITNESS: Yes.

MR. BISENIUS: All right.

(Recess taken -- 11:31 a.m.)

(After recess -- 11:41 a.m.)

BY MR. BISENIUS:

Q. Continuing with Paragraph 28 in your declaration in the 243 proceeding.

So, earlier you stated you applied this legal standard in your declaration; is that correct?

A. I applied the guidance that was provided.

Q. And so is it correct that you are interpreting the claim terms in view of the

patent specification?

A. I am following the full guidance provided by the counsel.

Q. That is a yes or no question.

In interpreting the claim terms, are you interpreting them in view of the patent specification?

A. I am interpreting as offered in the guidance, Counsel, the whole paragraph.

And based on a intrinsic record, as understood by a POSITA in view of the intrinsic record, the patent specification and the filing stream and everything else.

So, I will apply the entire description of Paragraph 28.

Q. And you have offered opinions about the claim term, opening defined in the dark-colored coating, with respect to the prior art; is that correct?

A. I have only described the claim limitations with respect to that limitation.

I have said that Apple offered

inconsistent arguments before different courts. In sworn testimony before the Delaware Court, Apple's own expert utilized a different construction than what Apple is applying here.

But, in any case, whatever the construction of opening, there are additional reasons that I identified that the limitation is not met, for example, because the structure that Apple has identified does not actually have light passing through a surface as also required by that claim limitation.

Q. So, in your analysis in Paragraphs 76 through 80 of your 243 declaration, when considering the prior art with respect to the claim term, opening defined in the dark-colored coating that allows light to pass through the surface, did you consider the specification of the '159 patent?

A. I offered an opinion based on my analysis of the prior art combination based on the knowledge of a POSITA. I also analyzed it based on the legal guidance that I was provided.

Q. Can you identify any examples in the '159 patent specification that provides support for the claimed opening defined in the dark-colored coating that allows the light to pass through the surface?

MR. KIANG: Objection, asked and answered.

THE WITNESS: I think and as I have described, all of my opinions are in my declaration. That is not a specific opinion I was asked to offer and I did not provide such an identification.

The specification, if asked and allowed, I may do so in the future.

But at this point, my declaration contains all of my opinions that I have. I will let the specifications speak for itself.

BY MR. BISENIUS:

Q. Did you consider any examples in the specification when determining the scope of the claim term, opening defined in the dark-colored coating, with respect to your analysis in your

declaration?

A. I have not offered a specific opinion on the examples in the specification.

My opinions are captured in my declaration. And, I don't have any new opinions with respect to specific embodiments in the '159 or the '743 themselves.

All of my opinions are in my declaration.

Q. The question I asked is slightly different. I'm not asking if you have any opinions on the examples in the specification.

I'm asking, did you consider any examples in the '159 patent specification when forming your opinion about the scope of the term, opening defined in the dark-colored coating?

MR. KIANG: Objection to scope. Objection --

THE WITNESS: As I said, I did not discuss any opinions. I reviewed the patent. I have not discussed any opinions with respect to embodiments other than the

opinions that I offered in my declaration.

So, I don't have anything to say there.

MR. KIANG: Objection to scope and asked and answered.

BY MR. BISENIUS:

Q. So, is it correct that you did not consider any examples in the '159 patent specification when forming your opinion of the scope of the term, opening defined in the dark-colored coating, in your analysis?

MR. KIANG: Objection to scope. Misstates testimony.

THE WITNESS: I said, Counsel, that I did not offer any opinions with respect to examples. I reviewed the entire specification. I followed the legal guidance.

But I did not offer any opinions with respect to examples in the specification.

But, I followed all legal guidance.

I followed -- as I described, all of my opinions that I have to say in this matter are in my declaration.

I don't wish to offer any new opinions.

BY MR. BISENIUS:

Q. Can you identify any example in the '159 patent specification that you considered when forming your opinion regarding the scope of the claim term, opening defined in the dark-colored coating?

MR. KIANG: Objection to scope. Asked and answered.

THE WITNESS: As I said, Counsel, I have not offered a specific opinion as to which examples support which portion of the claim.

This is not a claim construction declaration. I was referring and rebutting specific opinions that Apple and its experts provided in this IPR and providing a technical analysis.

I was not treating this as a claim construction brief.

I believe that whatever the construction of opening does not matter, because there are far more serious problems with Apple's grounds for the reasons that I describe at -- even whatever the construction of opening may be in the Iwamiya-Sarantos combination, for example, light does not pass through the light shielding frame 18, that Apple has identified as the surface.

And, the limitation, pass through the surface, is not practiced is one of the many of the additional reasons why this combination is unavailing.

BY MR. BISENIUS:

Q. Do you understand what the claim term "an opening defined in the dark-colored coating is configured to allow at least a portion of light reflected from the tissue to pass through the surface" means?

A. I described that in my opinion, in

my, in my declaration.

Q. And I'm asking, can you identify any examples from the patent specification that informed your opinion as to the scope of that claim term?

A. I rely on the entire specification and the legal guidance that I was provided. And I have not offered a specific opinion with respect to that issue and therefore I cannot offer a new opinion here.

So, I relied on the specification, the legal guidance and everything else that I describe.

If asked and allowed, I may do so in the future, but this is not a claim construction declaration.

Q. So, just to be clear, you cannot identify any single example in the '159 patent specification that informs your opinion of what the claim term "an opening defined in the dark-colored coating is configured to allow at least a portion of light reflected from the

tissue to pass through the surface" means?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: I disagree with that wholeheartedly. I said I did not offer an opinion like a claim construction declaration which identifies all of the examples and every embodiment and how they support a particular meaning of a claim term or not.

That is not an opinion that I was asked to give.

So, if you are asking me to give me a new opinion that is not in my declaration, that is not something that I am prepared to do.

But, what I do offer an opinion is that whatever the construction of an opening, this limitation is not met for several other reasons that I identify in my declaration.

BY MR. BISENIUS:

Q. So, you are saying you have no opinion on what that claim term means?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: I disagree. I don't offer an opinion in this particular declaration in this IPR as to the specific meaning beyond the plain and ordinary meaning and my dispute that whatever the meaning that may eventually -- that term may be construed, it is, it is not -- there is a problem with Apple's prior art, even if that term is construed one way or the other, because there are other problems with respect to passing through the surface limitation that I describe in Paragraphs 76 onwards.

So, I don't offer an opinion on that in my declaration.

BY MR. BISENIUS:

Q. Returning to the example in Paragraph 8 starting at Line 32 of the '159 patent. Let me know when you get there.

A. Okay. I am there.

Q. Does this example include any

description of a dark-colored coating?

A. You are referring to Column 6, Lines 32 to -- sorry.

Q. I am referring to Column 8 --

A. Column 8 --

Q. The example that starts at Line 32 and continues on for a few paragraphs.

I'm wondering --

I'm asking you if there is any discussion of a dark-colored coating in this example?

A. So, I'm looking at Lines 32 through 53. I don't see the word "coating" or something there explicitly.

But again, I would have to review the entire specification and see how this is describing it, whether it is leveraging off other embodiments.

I cannot offer a definitive answer, but I don't see the English word "coating" in Lines 32 through 54.

Q. Looking at the next paragraph that

starts at Line 54, the first sentence describes that "The top surface of the light-absorbing material 306 (facing the tissue measurement site 102 and the emitter 302) is coated with a material that absorbs light such as, for example, black pigment."

Do you see that?

A. Yes.

Q. Would you consider that discussion in the '159 patent specification to be an example of the claimed dark-colored coating?

MR. KIANG: Objection to scope.

THE WITNESS: As I said again, I mean you are referring to this as a claim construction declaration. I have not offered a specific opinion about which example support which claims.

So, I don't wish to offer any new opinions today.

BY MR. BISENIUS:

Q. So, you are not sure if this discussion of a material that absorbs light, such

as for example black pigment, is an example of the claimed dark-colored coating; is that true?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: As I said, Counsel, you are using terms like don't know and unable to find out or do not agree.

I mean I don't agree with those characterizations.

I said I did not offer any opinion as to which examples in the specification support which claim.

This is not a claim construction declaration. I have offered all of my opinions and I have fully supported them as a part of my declaration in these IPRs.

BY MR. BISENIUS:

Q. Do you understand that a POSITA would need to know the scope of a claim term in order to determine whether or not a prior art reference disclosed that claim term?

A. I am not sure what you are asking,

Counsel. I have said in my report, in my Paragraph 76 that whatever the construction of opening, the fact that the claim requires through the surface -- pass through the surface, makes that issue a secondary issue, because the limitation is not met for several other reasons that are described in Paragraphs 76 through 80.

And --

Q. So, you have no opinion as to whether or not the material that absorbs light such as, for example, black pigment described in Column 8 is an example of the claim dark-colored coating; is that correct?

MR. KIANG: Objection to scope. Misstates testimony.

THE WITNESS: I said that I applied the full legal guidance and I applied the plain and ordinary meaning of the claims in my declaration.

I don't offer an analysis of which embodiment corresponds and supports to which claim limitation.

As I have said, the claim limitation of whatever the construction of opening, whatever the construction, the claim language has to be met.

And I describe how the combinations of Iwamiya and Sarantos, in Paragraphs 76 onwards in my declaration, do not satisfy that limitation in Claims 1 and 14.

That the combination does not have an opening defined in the dark-colored coating that allows light to pass through the surface, because there is no pass through the surface in the structure of the light shielding frame that Apple has identified as a part of the Iwamiya combination.

BY MR. BISENIUS:

Q. Going back to the previous paragraph in Column 8 the paragraph that starts at Line 32.

This paragraph describes that the opening 402 is an opening in the light-absorbing detector filter 306; is that correct?

A. Well, what are you reading from?

Q. I'm looking at the paragraph starting at Line 32 of Column 8.

A. Okay.

Q. This paragraph describes that the opening 402 is an opening in the light-absorbing detector filter 306; is that correct?

A. You are again missing the portion that deals with the planar surface like you did before.

It says here that, "The light-absorbing detector filter 306, which is also depicted in Figure 4A in a top view, is a planar surface having an opening 402 through which the emitted light may pass after being attenuated by the tissue measurement site."

That is the full sentence in Column 8, Lines 32 to 36.

You conveniently omit each and every time the words "planar surface" having an opening.

Q. Okay. Then is the planar surface the same as the light-absorbing detector

filter 306? Is it a component of the light-absorbing detector filter 306? Or is it something different from the light-absorbing detector filter 306?

A. I don't know.

THE WITNESS: Mr. Kiang, we can't hear you. You are very low.

MR. KIANG: Objection to scope.

THE WITNESS: Okay, that is better.

So, what is your question, Counsel? I'm not sure I understood your question.

BY MR. BISENIUS:

Q. Well, here it says the light-absorbing detecting filter 306 is a planar surface and so -- but you seem to think that they are different.

So I'm asking you: Is the planar surface a different component from the light-absorbing detecting filter 306? Is the planar surface coextensive with the light-absorbing detector filter 306? Or is the planar surface a component of the light-absorbing

detector filter 306?

A. As the language says here, it says that the light-absorbing detector filter 306 is a planar surface having an opening 402 through which emitted light may pass.

MR. KIANG: Same objection.

THE WITNESS: Yeah, Mr. Kiang, if you speak louder, because I can't hear you, either.

MR. KIANG: Okay. Let me check my microphone settings. Is this any better?

THE WITNESS: Yeah. I think you are moving back. That is the problem.

MR. KIANG: I will get closer to the mic.

THE WITNESS: Thanks.

BY MR. BISENIUS:

Q. Does this example describe an opening in the material that absorbs light that is separate from the opening 402 in the light-absorbing detector filter 306 that is a planar surface?

A. I don't have a specific opinion on that, Counsel.

Q. So, you are not sure if this opening 402 is an opening in the material that absorbs light or not?

A. As I said, I don't offer an opinion on specific examples. And, I don't wish to create new opinions on the fly without adequately reviewing the specification and examples from matters that may have been several weeks or months ago.

So, I will defer to what is in my declaration as a full statement of my opinions and not -- and, therefore, I cannot offer an opinion on something that is not in my declaration.

Q. I would like to turn to Column 9 of the '159 patent, specifically the paragraph starting at Line 31.

Can you please read that paragraph to yourself and let me know when you are finished.

A. Yes, I have looked at the portions from Line 30 through 40.

Q. I wanted you to read the entire paragraph of Column 9. It goes from Lines 31 to 51.

A. Oh, including Figure 4B, I see.

Q. Correct.

A. Okay, I have reviewed that.

Q. This paragraph is continuing to discuss the example in Figures 4A and 4B; is that correct?

A. It does discuss Figures 4A and 4B. And the discussion of Figure 4A and 4B is in many places in the specification.

But, this paragraph does mention 4A, and 4B.

Q. This paragraph mentions that the light-absorbing detector filter 306 has "a top surface coated with a light absorbing material."

Do you see that?

A. Which lines?

Q. Starting at Line 32.

A. I see that.

Q. And it goes on to state that, "The light absorbing material can be black opaque material, or coating or any other dark color or coating configured to absorb light."

Is that correct?

A. Yes. That is what you are reading from Lines 34 to 36 of Column 9.

Q. And this paragraph is discussing the opening in the light-absorbing detector filter 306; is that correct?

A. It is talking about the surface. It is saying the light-absorbing detector filter 306 is illustrated having a top surface coated with a light absorbing material. The light absorbing material can be a black opaque material coating or any other dark color.

So, it is referring to the filter 306 having a top surface coated with the light absorbing material.

Q. Is the opening 402 an opening in the dark-colored material, an opening in the

light-absorbing detector 306, or both?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, the specification speaks for itself. It shows here that there is a light-absorbing detector filter 306 that has a top surface coated with the light absorbing material. And then there is a rectangular opening 402 that is positioned as shown.

So that -- so it shows that the opening is passing through the surface of the light-absorbing detector filter in this example.

BY MR. BISENIUS:

Q. Is the opening 402 an example of the claimed opening defined in the dark-colored coating?

MR. KIANG: Objection to --

THE WITNESS: I am not sure -- I didn't hear the objection, Counsel.

MR. KIANG: Objection to scope.

THE WITNESS: Yeah. As I said these

are different examples of the embodiments, Counsel, an embodiment of the specification.

I'm not sure what your question is asking.

BY MR. BISENIUS:

Q. I'm asking if the opening 402 provides an example of the claimed opening defined in the dark-colored coating.

MR. KIANG: Same objection.

THE WITNESS: As I said, I don't offer specific opinions on different examples. All I will admit is that these are embodiments in the specification. The claim language must be understood as per the legal guidance.

BY MR. BISENIUS:

Q. Is the light absorbing material that can be a black opaque material or coating or any other dark color or coating, described in this example, an example of the claimed dark-colored coating?

A. I'm not sure what you are asking.

Q. So, the claims recite a dark-colored coating.

I'm wondering if the light absorbing material described in this example is an example of the claimed dark-colored coating or if it is something different?

A. Again, I don't offer a specific claim construction opinion, Counsel.

You are continuously asking me about opinions that are not in my declaration.

Q. Is the opening 402 in the light-absorbing detector filter 306 coextensive with the opening in the light absorbing material in this example?

MR. KIANG: Objection to form.

THE WITNESS: As I said, I don't offer a specific opinion on that, on this example in my declaration, Counsel.

The specification speaks for itself.

I cannot interpret all possible meanings of this specification examples on the fly.

It is not something that I discussed in my declaration.

BY MR. BISENIUS:

Q. Is there any discussion in this example of an opening in the light-absorbing material that is different from or otherwise distinct from the opening 402?

MR. KIANG: Objection to form.

THE WITNESS: As I said, I don't have an answer on that issue. I have not analyzed each and every example and how it relates to the claims.

You are referring to the specification of the patents themselves. My -- that is not something I offered opinions on in this, in this declaration.

BY MR. BISENIUS:

Q. I would like to turn to Column 3 of the '159 patent. Towards the bottom, the paragraph starting at Line 61 that continues on to Column 4.

Could you please read that entire

paragraph to yourself and let me know when you have finished?

A. You are referring to Column 3 that goes on to Column 4?

Q. Yes, starting, the paragraph that starts at Line 61 of Column 3 and then continues on in to Column 4.

Could you please read that paragraph?

A. Okay. I have reviewed that in Columns 3 and 4 of the '159 patent.

Q. This paragraph is once again describing the light-absorbing detector filter; is that correct?

A. It is providing some embodiments, discussing certain embodiments. And saying in some embodiments -- it provides certain sizes. It refers to at least three or four different embodiments that refer to different sizes and shapes, I believe.

There is a rectangular shape, a square shape and other shapes.

Q. In comparing the specification to Claim 1 of the '159 patent, do you believe that the light-absorbing detector filter described here provides support for the claimed surface recited in Claim 1?

A. I don't have an opinion on that issue, Counsel. That is not an opinion I offered in my declaration.

I believe I applied my opinions consistent with the legal guidance that was provided, but that is not an opinion that appears in my declaration. To the extent --

MR. KIANG: Objection --

THE REPORTER: Sorry. I missed the objection.

THE WITNESS: Yeah, we can't hear you, Mr. Kiang.

MR. KIANG: I'm sorry, Doctor Madisetti. You started answering. I didn't want to cut you off.

THE WITNESS: Okay, okay. Because we can't hear you.

Yeah, as I said, I mean, this is -- I have not written this declaration to discuss every example in this specification and how it relates to each claim.

I defer to the language in the specification for what it discloses.

My opinions are with respect to the validity challenges, and those are the opinions that are in my declaration.

So, I cannot answer your question on the fly without a full consideration.

If asked and allowed to do so, I may do that in the future. But not now.

BY MR. BISENIUS:

Q. Did you consider the descriptions of the light-absorbing detector filter in the specification of the '159 patent when forming your opinion on the scope of the claimed surface recited in Claims 1 and 19?

A. As I said, I reviewed the entire specification. I reviewed the legal guidance that was provided. I looked at the intrinsic

evidence and all of that.

And then I provided my analysis as described in the guidance by applying the plain and ordinary meaning.

And I have provided opinions, and I have provided opinions in my declaration.

Q. I'm asking: Did you specifically consider the descriptions of the light-absorbing detector filter when forming your opinion of the scope of the claimed surface?

A. I have considered the entire specification and the intrinsic evidence as for the legal guidance and offered my opinions.

I just have not offered an opinions on these examples. And I do not wish to remember these on the fly.

I believe that everything in the specification was consistent with what my understanding of the claims was.

But, I don't have, I don't have -- I have not memorized the specification nor memorized my analysis because that was not the

focus of my declaration.

Q. Going back to the claim language on Column 15. I want to talk about Claim 1.

A. One second. Column 15. Okay.

Q. Specifically the element that starts at Line 45. This element starts out "A surface comprising a dark-colored coating."

Do you see that?

A. Yes.

Q. So, my question is, does the light-absorbing detector filter described in the '159 patent provide support for the claimed surface comprising a dark-colored coating? Is it something different from the claimed surface comprising a dark-colored coating or do you not know?

MR. KIANG: Objection to scope.

THE WITNESS: Again, Counsel, you are asking me about specific examples that I have not offered an opinion on, as how or if and why they support a particular portion of the specification.

I understand that in an IPR you don't look at written description or enablement and other such issues.

I have focused correctly so on the matters raised by Apple which I believe it is burden to do so.

And I have responded in full with the basis for my opinions in my declaration. And, that is not one of the opinions that I offered, so I don't feel comfortable providing an opinion on the fly.

BY MR. BISENIUS:

Q. Can you identify any examples in the '159 patent specification that inform your opinion of the scope of the term "a surface comprising a dark-colored coating"?

MR. KIANG: Objection to scope. Asked and answered.

THE WITNESS: I don't -- I would rely on whatever is in my declaration, Counsel. I don't believe I have analyzed each and every example or certain examples to

show how they support a particular claim.

So, I don't have an opinion here, sitting here today, as a part of my declaration.

If asked and answered, if asked and allowed, I may do so in the future, should this be raised at some point.

But, at this point, these are not part of my opinions.

BY MR. BISENIUS:

Q. So, you cannot identify any examples in the '159 patent specification that informed your opinion as to the scope of the claim term "a surface comprising a dark-colored coating."

Is that correct?

MR. KIANG: Objection, misstates testimony. Objection to scope.

THE WITNESS: I would disagree with the characterization. I said I did not offer an opinion on each and every example and how it supports each claim, because I don't believe that is the purpose of my

declaration.

My opinions are in my declaration. And this is not an opinion that was included in the declaration.

If asked and allowed, I may do so in the future.

BY MR. BISENIUS:

Q. So, I'm not asking you about every example in the specification. I'm just asking if you can identify any example, just one example in the specification that would -- that informed your opinion of the scope of the term "a surface comprising a dark-colored coating"?

A. As I said, if it is not in my --

MR. KIANG: Objection to scope.

THE WITNESS: If it is not in my declaration, it is not an opinion that I offered here.

If you refer to a particular portion of my declaration, I would be glad to answer the question.

BY MR. BISENIUS:

Q. Yeah, I'm referring to Paragraph 76 to 80 of your Exhibit 2100 in the 243 proceeding.

Here you have given an opinion about the scope of the claim term "opening defined in the dark-colored coating," and you have said that, you know, your opinion is not just based on the term "opening defined in the dark-colored coating."

That it also requires that the light is allowed to pass through the surface.

And so, now I'm asking you about the surface and what examples in the specification informed your opinion on the scope of what the claim surface is.

So, I'm asking you, can you identify any examples in the '159 patent specification that support the claimed surface?

MR. KIANG: Objection to form. Objection, misstates testimony. Objection to scope.

THE WITNESS: You have mischaracterized my opinions and you have

mischaracterized my declaration.

In this paragraph I was referring to the Iwamiya-Sarantos combination does not have the opening defined in the dark-colored coating that allows light to pass through the surface.

And, I specifically described that the plain language of the claim itself, the surrounding claim language confirms this interpretation of the claims.

A surface comprising a dark-colored coating a POSITA would understand that the surface and coating are distinct claim elements. The surface comprises a coating, but the coating and the surface are not one and same, because the coating, like paint, has to be applied to a surface.

It does not exist on its own without some structure.

So, therefore, additionally, the claim limitation requiring an opening defined in the dark-colored coating rather than an

opening defined in the surface.

So, therefore, the limitation then requires an opening to be configured to allow light to pass through the surface. That a POSITA would understand the claim requires light to pass through the surface that the coating is applied on.

And, Apple's evidence does not support this with respect to its prior art combinations.

BY MR. BISENIUS:

Q. I would like to turn to Figure 4A of the '159 patent. Can you identify any component or components in this figure that correspond to the claimed surface comprising a dark-colored coating?

MR. KIANG: Objection to form. Objection to scope.

THE WITNESS: I would defer to the specification to provide the necessary support. I don't have a specific opinion other than the support from the specification

and the intrinsic evidence.

BY MR. BISENIUS:

Q. Do you know if any of the components depicted in Figure 4A provide support for the claimed surface comprising a dark-colored coating?

MR. KIANG: Objection to scope. Counsel, I think you have been asking a variation of this question at least 40 times now.

THE WITNESS: As I said, Counsel, I believe that the specification and the intrinsic evidence fully supports the plain and ordinary meaning of the claims.

I have not offered a specific claim construction discussion that discusses each and every example or many of these examples, because that was not the purpose of my understanding.

That an IPR doesn't look at written description or enablement at this stage. I don't have a specific opinion at this point

in my declaration in this current matter.

But, that does not, that does not mean that it is an admission that the support is not there.

I fully intend to rely on the specification and other intrinsic evidence, if asked and allowed to offer such opinions at any point.

BY MR. BISENIUS:

Q. So, you believe that there is support in the specification for the claimed surface comprising a dark-colored coating; is that correct?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, it was not an opinion that I offered. I believe that because the patent has issued, it checks all of the boxes and it is presumed to be valid, and validity includes written description and enablement support.

So, therefore, I believe the U.S. Patent Office to have done the correct job,

at least in that regard.

With respect to my own opinions, I don't have the specific opinions in my declaration as it stands today in this IPR.

But, to the extent I'm asked and allowed, I may do such an analysis in the future. I just don't have such an opinion now.

BY MR. BISENIUS:

Q. So, sitting here today, you are unaware of any examples in the '159 patent specification that supports the claimed surface comprising the dark-colored coating; is that correct?

MR. KIANG: Objection to scope. Asked and answered and over 40 times now.

THE WITNESS: I disagree with your question. You used specifically the words "unaware, I don't know," and others, to characterize my responses. That is completely untrue.

I have never used the word "unaware"

or not -- do not know.

I have simply said, I have not provided such opinions in my report because I presume the patent is valid for the reasons of written description and enablement.

I believe that for those reasons at least that this was fully supported.

To the extent you wanted me to provide my own analysis, it is not a part of this declaration.

MR. BISENIUS: I would like to turn to the '743 patent, Exhibit 1001, in the 241 proceeding.

(Whereupon, previously marked Apple Exhibit 1001, first referral.)

THE WITNESS: Okay.

BY MR. BISENIUS:

Q. I would like to specifically start in Column 8, Line 32 of the '743 patent specification.

Let me know when you are there.

A. I am there.

Q. This paragraph describes, "A light-absorbing detector filter 306"; is that correct?

A. In Line 32, it is describing, "A light-absorbing detector filter 306, which is depicted in Figure 4A, is a planar surface having an opening 402 through which the light -- through which the emitted light may pass after being attenuated by the tissue measurement site 102 in an embodiment."

Q. Is the opening 402 an opening in the light-absorbing detector filter 306 an opening in the dark-colored coating on the surface of light-absorbing detector filter 306, or both?

MR. KIANG: Objection, form, asked and answered.

THE WITNESS: As I said, Counsel, this example is clearly describing in the language that is not -- that is not what you used to describe it.

I rely on the language in the

specification itself. I don't believe I offered an opinion on this particular embodiment. I don't have a specific opinion on that particular question which I believe requires me to look at the patent and memorize it or understand it.

So, I don't have a specific answer or an opinion for you today as a part of my declaration because it is not part of my current declaration in the 7 -- in the, in the IPR for the '159 patent -- sorry, for the '743 patent -- is this the '743 or the '159?

'159, sorry.

BY MR. BISENIUS:

Q. Sorry, I am discussing the '743 patent, now.

A. Yeah, okay, it is not part of my opinions with respect to the '743 patent.

Q. Would you agree that your answers regarding the light-absorbing detector filter and the opening in the dark-colored coating discussed

with respect to the '159 patent apply equally to the '743 patent?

MR. KIANG: Objection to form. Objection to scope. I incorporate all objections to previous questions.

THE WITNESS: As I said, I think my answers will be substantially the same. I have not analyzed these examples for the purpose of my declaration.

I believe that the patent is presumed valid. I believe that there is a written description. That there is enablement in all of these, because the examiners have reviewed it for this issue.

I believe that it is presumed valid. I don't have a specific opinion on these in my declaration, save for the '159 or the '743.

So, if asked and allowed for all of your questions, I may provide an answer in the future after I fully consider the issues.

But, for the time being, these

opinions are not in my declaration in this IPR, so I cannot offer you an opinion. That doesn't mean I do not know. That doesn't mean I don't want to. I just don't want to rush a new opinion on the fly.

BY MR. BISENIUS:

Q. Turning to Column 15 of the '743 patent, I want to talk about the claim language here.

The element starting at Line 53 of the '743 patent starts out --

A. Let me go to that --

Q. Yes, let me know when you are there.

A. '743.

Q. So, I uploaded the '743 patent to the share site this morning. So, if you download it --

A. Okay. I got lost here. Let me go to -- where is the '743 in your uploaded thing?

Q. It doesn't really have a good order.

The way I'm looking at it, it is on the very first page, it is the first document.

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

the '743 patent specification that provide support for the claimed surface?

MR. KIANG: Objection to scope. Asked and answered.

THE WITNESS: So, if I understand you right you are asking me what are the examples in the specification of the '743 that show different examples of the surface.

BY MR. BISENIUS:

Q. Correct.

A. Okay. And, I think that I answered that before. I said that I did not identify all of the different examples and analyze each example. We are the patent owner. We know our patent, I guess.

So, it was a rebuttal for the grounds raised by Apple and its expert. And I provided opinions in a fulsome way that rebutted the opinions.

And I did not see this as a way to offer written description support nor enablement support, because that is not what I was asked to

do.

Q. So, before we were talking about the '159 patent. And I asked you if you agreed that your answers from that line of questioning regarding the claimed surface and the claimed dark-colored coating would apply equally to the '743 patent.

And you didn't really agree so that is why I am asking what sounds like the same questions again.

But if you would agree that your answers to that line of questioning apply equally to the '743 patent, then we can move on.

MR. KIANG: Is there a question pending?

BY MR. BISENIUS:

Q. I'm wondering if you agree that your answers to the line of questioning that we just had with respect to the '159 patent regarding the surface, the dark-colored coating, and the opening in the dark-colored coating would apply equally to the '743 patent?

MR. KIANG: Objection to scope. Objection to form. I incorporate all previous objections regarding questioning about the '159 patent.

THE WITNESS: I mean to the extent that you are stating that the questions are for the same examples and the same type of questions.

As I said, it is not that -- my answer is that I have not offered an opinion in my declaration that identifies how each example offers written description support or enablement support for the claims of both of these patents.

That was not the purpose of my declaration. So, in that sense, it is not that I don't know the answer. It is not that I can't give an answer. It is just that it is an opinion that is not expressed in my declaration, and I don't want to generate one on the fly.

So, therefore, in that context, my

answers with respect to the '159 and the '743 would be similar.

MR. BISENIUS: We are getting to close to an hour. I don't know what time zone you are in, but would you want to break for lunch now or maybe do a more brief break?

MR. KIANG: I defer to the witness. It is 9:30 where I am.

THE WITNESS: So, I think, let us do -- I don't know where you are, Counsel.

MR. KIANG: I am in California.

THE WITNESS: Oh, sorry, not you.

MR. BISENIUS: I am in the central time zone but I can wait. I want to accommodate your schedule.

THE WITNESS: No, no. I mean I think that, I think maybe half an hour should be fine. And the court reporter, is that fine with you? Because you are doing also hard work.

THE REPORTER: Thank you. That is fine. Thank you.

THE WITNESS: Okay. So, half an hour time.

MR. BISENIUS: So, say 33 minutes. Reconvene at ten after the hour?

THE WITNESS: Sounds good.

MR. BISENIUS: Thank you.

(Recess taken -- 12:37 p.m.)

(After recess -- 1:11 p.m.)

BY MR. BISENIUS:

Q. All right. I would like to continue with the '159 patent. Could you please turn to Figure 3?

Could you please explain what is being depicted in Figure 3 of the '159 patent?

MR. KIANG: Objection to form.

THE WITNESS: Figure 3 represents an embodiment that is a side view of a three-dimensional oximetry sensor.

BY MR. BISENIUS:

Q. Can you please describe the components of the pulse oximetry sensor shown in Figure 3?

A. Column 7, Lines 4 through -- 4 through -- yeah, 4 through Columns 8 and portions of 9, they cover the various descriptions of the components in this exemplary embodiment.

Q. Figure 3 shows an emitter 302 as part of the pulse oximetry sensor; is that correct?

A. Column 7 confirms that the 3D sensor 300 includes an emitter 302, a light diffuser 304, a light-absorbing detector filter 306, a light concentrator 308 and a detector 310 in this embodiment.

Q. The emitter 302 is a light source that emits light that is attenuated through tissue such as the skin of a person; is that correct?

A. What are you referring to? I'm not sure what your question is.

Q. I'm looking at, there is a description in Column 7, starting at Line 30.

A. Okay. So, it is referring here that "The emitter 302 can serve as a source of optical

radiation transmitted towards the tissue measurement site 102."

Q. Would the term "optical radiation" include visible light?

A. It describes here in Line 35 that in an embodiment the emitter 302 includes the set of optical sources that are capable of emitting visible and near infrared optical radiation.

So, in some embodiments the emitter 302 transmits optical radiation of red and infrared wavelengths at approximately 650 nanometers and approximately 940 nanometers, respectively.

Q. When the '159 patent uses the term "optical radiation" it is referring to light; is that correct?

A. I am not sure what you are asking, Counsel. It has enough examples here and I rely on the specification itself.

It describes the emitter 302 can include one or more sources of optical radiation such as LEDS, laser diodes, incandescent bulbs,

frequency-selective filters.

And, in another embodiment it could be emitting visible and near infrared optical radiation. So, it depends on what the specification describes.

Q. When it refers to visible optical radiation, it is referring to visible light; is that correct?

A. As an example, yes. It would measure -- it would refer to both the visible -- if you commonly call it as light, for example, red.

Q. Would the optical radiation of the 650-nanometer wavelength be in the visible or invisible range?

A. It was generally in the visible range.

Q. Would the optical radiation of the 940-nanometer wavelength be in the visible or nonvisible range?

A. It is typically the infrared which is a nonvisible.

Q. So, continuing on with the description of Figure 3, the detector 310 of the pulse oximetry sensor captures and measures the light that has been attenuated by the tissue of the person using the devices; is that correct?

A. For example, in other embodiments it describes that "The pulse oximetry system 800 can measure analyte concentrations at least in part by detecting optical radiation attenuated by tissue at the measurement site 102."

I am referring to Column 12, Figure 8, as an example.

Q. Is this detection of the light attenuation performed by the detector 310?

A. The detector detects. And you are saying that attenuation is done by the detector.

I'm not sure what your question is asking.

Q. I'm asking if the detector 310 conducts the measurement of the attenuation of the light through the person's tissue?

A. In certain examples, yes. It

discloses in the '159 that the detector measures, the detector measures -- the detector measures the light that has been attenuated by the tissue measurement site.

Q. Could you please turn to Figure 3 of the '743 patent. I want to compare that to Figure 3 of the '159 patent.

A. Okay.

Q. Figure 3 of the '743 patent is the same as Figure 3 of the '159 patent; is that correct?

A. Yes. It looks substantially similar.

Q. In the examples shown in Figure 3 of the '743 patent and Figure 3 of the '159 patent, the site that the light is being emitted into and captured from is a person's finger; is that correct?

A. At a high level, yes. This is a finger sensor for the finger.

Q. All right. Moving ahead to Figure 5 of both patents, the '159 patent and the '743

patent. Would you agree that Figure 5 of the '159 patent is the same as Figure 5 of the '743 patent?

A. Yes, substantially similar. Again, I would defer to the specification on how they describe it.

Q. Figure 5 is showing another example of a pulse oximetry sensor; is that correct?

MR. KIANG: Objection to form.

THE WITNESS: Which one are you referring to?

BY MR. BISENIUS:

Q. Figure 5 of the '159 patent is showing another example of a pulse oximetry sensor; is that correct?

A. Figure 5.

MR. KIANG: Objection, form.

BY MR. BISENIUS:

Q. Figure 5.

A. It describes Figure 5 as "a top view of a three-dimensional pulse oximetry sensor according to an embodiment of the present

disclosure" again.

I'm reading from the specification, Column 5.

Q. The pulse oximetry sensor shown in Figure 5 measures light attenuation at a person's finger; is that correct?

A. The Figure 5, the finger is an example of the tissue measurement site, in Figure 5.

Q. Would the pulse oximetry sensor of Figure 5 be capable of measuring blood oxygen saturation at a person's forehead?

A. I don't have an opinion on that issue. I defer to the specification.

Q. Would the pulse oximetry sensor depicted in Figure 5 be capable of measuring blood oxygen saturation at a person's wrist?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, I mean the specification describes and uses terms "for the wrist."

So, I would, I would say that while

I have not provided an analysis of a written description or enablement, I believe that the claims as issued are presumed valid and have full support of the specification and the intrinsic evidence and the claims explicitly describe wrist.

BY MR. BISENIUS:

Q. So, I'm asking a slightly different question.

Would the configuration depicted in Figure 5 be capable of measuring pulse oxygen saturation at the wrist or would modifications be necessary?

MR. KIANG: Objection to scope.

THE WITNESS: I don't have an opinion on that in my declaration.

As I said, I was not asked to offer opinions as to written description of enablement or other such topics.

I was -- my opinions are captured in my declaration. That is not one of my opinions that I was asked to offer.

BY MR. BISENIUS:

Q. So, you are not sure if the specific configurations shown in Figure 5 of the '159 patent would be able to measure blood oxygen saturation at the wrist; is that correct?

MR. KIANG: Objection, misstates testimony. Objection to scope.

THE WITNESS: I would disagree with that characterization. I said I didn't have such an opinion. I believe that the specification, because it is an issued patent, would fully support the claims as issued.

I just don't have an opinion in the declaration in the current matter on that issue.

But, if asked and allowed on these and other issues that you asked me about, I can certainly offer an opinion in the future, but not as a part of this declaration which these opinions are not present in.

BY MR. BISENIUS:

Q. So, you don't know whether or not the pulse oximetry sensor shown in Figure 5 would need to be modified in order to measure blood oxygen saturation at the wrist; is that correct?

MR. KIANG: Objection, misstates testimony. Objection to scope.

THE WITNESS: I don't offer any opinion on that issue. If asked and allowed, I may do so in the future, but not as a part of this declaration.

BY MR. BISENIUS:

Q. So, today you have no opinion on that; is that correct?

A. My opinion is that I have not offered an opinion on that issue in my declaration.

Q. Can you please turn to Figure 8 of both the '159 and '743 patents.

Would you agree that Figure 8 of the '159 patent is the same as Figure 8 of the '743 patent?

A. They look substantially similar.

But, again, I would defer to the specification to identify any differences.

Q. Can you explain what Figure 8 in the '159 patent is showing?

A. It says that Figure 8 is "a block diagram of an example pulse oximetry system capable of noninvasively measuring one or more blood analytes in a monitored patient according to an embodiment of the disclosure."

Q. Is the pulse oximetry system of Figure 8 a different representation of the pulse oximetry sensor of Figure 3 or does it differ in some significant way?

MR. KIANG: Objection to scope.

THE WITNESS: I don't have an opinion on that issue in my declaration. I don't have an opinion here today on that issue, because there is no such opinion in my declaration.

BY MR. BISENIUS:

Q. Could the pulse oximetry sensor shown in Figure 3 be used in the system depicted

in Figure 8?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, Counsel, I am -- the specification speaks for itself. It is a presumed valid patent.

I would rely on the teachings of the specification itself and intrinsic record.

I just don't have an opinion comparing these various embodiments with each other, so I don't want to provide a new opinion without careful consideration.

BY MR. BISENIUS:

Q. Could the pulse oximetry sensor shown in Figure 5 be used in the system of Figure 8?

MR. KIANG: Objection to scope.

THE WITNESS: I believe that all of the figures work together with the specification and I rely on the specification itself.

I don't have an independent opinion at this point, nor have I provided such an

opinion in my declaration. So I cannot answer -- I cannot provide an opinion to you at this point.

But, if asked and allowed, I may do so in the future.

BY MR. BISENIUS:

Q. You stated that you have read the '159 patent within the last couple of weeks, correct?

A. I have briefly reviewed it, yes.

Q. Are there any portions of the '159 patent that you don't understand?

A. I am not sure as to what you are asking.

Q. Did you understand everything stated in the '159 patent when you reviewed it?

A. At the time I reviewed it in -- at the time of my declaration, I reviewed it and I understood the claims as having the plain and ordinary meaning.

I don't have any opinions as to how these various embodiments relate to the claims.

Q. So, you have no understanding of whether or not the pulse oximetry sensor in Figure 3 or the pulse oximetry sensor in Figure 5 could be used in the system shown in Figure 8; is that correct?

MR. KIANG: Objection, misstates testimony. Objection to form -- or, sorry, objection to scope.

THE WITNESS: I disagree that that is my opinion. I said that I did not view this declaration as an exercise on claim construction or written description or enablement which I understand are beyond the scope of the IPR.

The burden of the patent owner is to provide a validity defense against the assertions by the challenger, in this case Apple. And that is what my declaration focused on.

So, those -- my opinions are all captured in my declaration. I did not introduce any opinions that I was not asked

to offer.

BY MR. BISENIUS:

Q. Would a person of ordinary skill in the art having all of the knowledge of a person of ordinary skill in the art and having read the '159 patent, know how to use the pulse oximetry sensor Figure 3 or the pulse oximetry sensor Figure 5 in these systems shown in Figure 8?

A. I believe that because the patent was issued and it is issued valid patent, it is presumed to be valid. And I believe that it was examined by the U.S. Patent Office and the claims would allow, I believe, that at least that evidence shows that all of the checkboxes have been met, including those that you asked me about.

I just don't have a specific opinion, myself, on that issue.

Q. Okay. So I'm not asking you about the validity of the claims. I'm talking about the specific configurations in Figure 3 and

Figure 5.

And so I'm wondering, would a person of ordinary skill in the art having read the '159 patent know how to use the pulse oximetry sensor of Figure 3 or the pulse oximetry sensor of Figure 5 in the system shown in Figure 8?

A. My answer is --

MR. KIANG: Objection, relevance.

THE WITNESS: My answer is that because it is an issued patent that was examined by the U.S. Patent Office, they examine it for written description for enablement and other patentability considerations.

So, it is presumed to be valid, and a person of ordinary skill in the art would understand so.

I just don't have an independent opinion in my declaration at this time. To the extent I am asked to and allowed, I may do so in the future. But that is in the future, not as a part of my already submitted

declaration.

I believe further that such discussions were not part of the IPR, so I was not asked to offer such opinions.

BY MR. BISENIUS:

Q. So, you don't know whether or not a person of ordinary skill would be able to utilize the pulse oximetry sensor of Figure 3 or the pulse oximetry sensor of Figure 5 in the system shown in Figure 8; is that correct?

MR. KIANG: Objection, misstates testimony. Objection, relevance and scope.

THE WITNESS: As I said, that is not my testimony. My testimony is that I have not offered such an opinion at this point in my declaration because I believe that the issues that you are raising go beyond the scope of the IPR in the current legal matter.

And I was not asked to offer an opinion on that issue.

To the extent I am asked and allowed I may do so in the future.

But, it is not part of the current declaration.

BY MR. BISENIUS:

Q. You are being asked. I'm asking you right now: Can the pulse oximetry sensor from Figure 5 be used in the system of Figure 8? Would a POSITA know how to do that?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, I was meaning that it was asked by the court to do so, and allowed by the court.

So, I have not been asked or asked by the court.

BY MR. BISENIUS:

Q. Are you refusing to answer this question of whether or not a POSITA would know how to use the pulse oximetry sensor of Figure 3 or the pulse oximetry sensor of Figure 5 in the system of Figure 8?

MR. KIANG: Objection to scope. Objection, misstates testimony.

THE WITNESS: To -- in response to

your question as to whether a person of ordinary skill in the art would be able to use the invention, I said already the answer is yes, because the U.S. Patent Office examined the patents at length and issued it and allowed the claims.

And as a part of the checkboxes, they check for the description, which is position for the invention and for the enablement and for all such criteria. I myself have not done an independent analysis because I was not asked to do so.

And I am not able to develop an opinion on the fly, because this is an important issue and one that requires consideration which I will do if asked and allowed by the court.

BY MR. BISENIUS:

Q. You do realize that I ask you the questions. The court doesn't ask you questions. That that is what this deposition is.

So, I'm asking you, do you know if a

POSITA would be able to implement the pulse oximetry of Figure 5 in the system of Figure 8?

MR. KIANG: I'm objecting to the manner in which counsel is taking this deposition, including the fact that he is badgering the witness. He has also asked the question repeatedly. And the witness has answered the question repeatedly.

Counsel is advised to keep questions within the scope of direct examination.

THE WITNESS: As I said, Counsel, I believe that the answer is yes, a person of ordinary skill in the art would understand it based on at least the fact that the patent was examined by a qualified team of U.S. patent examiners and by the U.S. Patent Office.

And, therefore, the part of the check the box, they check for written description enablement.

So, I believe the answer is yes. And I have been responsive.

What I have said is I don't have an independent opinion on that issue at this point. And it is not part of my declaration.

BY MR. BISENIUS:

Q. Figure 8 shows that the light is being emitted into and captured from the person's finger; is that correct?

A. Again, I would rely on the specification to describe Figure 8. And Figure 8 is described as a pulse oximetry system example that is capable of noninvasively measuring one or more blood analytes in a monitored patient according to an embodiment. So, it says a monitored patient. It does not explicitly mention the figure or otherwise.

Q. Looking at Figure 8, what is being shown by the label 102?

A. It can be, given the specification of the -- given the specification of -- the specification of the '159 patent, it refers to a monitored patient. So, while it shows an example of a finger, one of ordinary skill in the art

could understand that it could be the wrist or something else.

So, it is consistent with the disclosures in the specification. But again, I would rely on the complete specification to support any answer. And this is not something that I specifically call out in my declaration as to the scope or the limitation of written description or enablement.

But, the language in the specification is clear enough. It is monitored patient. It is not limited to a finger, similarly with the '743.

I would rely on the entire specification as a whole and the intrinsic evidence.

Q. What happens to the light that is emitted by the emitters 804?

MR. KIANG: Objection to form.

THE WITNESS: I think there is a description of Figure 8 in Column 12. I will defer to that. That says that, to that

column, Column 12 and 13, that describes what the process is, but that is not something that I have memorized.

I would rely on the descriptions in Columns 12, 13, and 14, for a fulsome description of Figure 8.

BY MR. BISENIUS:

Q. The light emitted by the emitters 804 passes through the tissue of the monitored patient; is that correct?

MR. KIANG: Objection to form.

THE WITNESS: What was your question, Counsel?

BY MR. BISENIUS:

Q. Looking at Figure 8 and the related description --

A. Uh-huh.

Q. -- is it correct that the light emitted by the emitters 804 passes through the tissue of the monitored patient?

MR. KIANG: Objection to form.

THE WITNESS: I would say that it

describes Figure 8 as an example pulse oximetry system capable of noninvasively measuring one or more blood analytes in a monitored patient.

So, it is not invasively measuring one or more blood analytes in a monitored patient.

BY MR. BISENIUS:

Q. I'm asking specifically of the light emitted by emitters 804.

That light passes through the tissue of the monitored patient; is that correct?

MR. KIANG: Objection to form.

THE WITNESS: I'm not sure I understand your question, Counsel.

BY MR. BISENIUS:

Q. Do the detectors 806 -- sorry.

Does the detector 806 in Figure 8 detect light that has been emitted by the emitters 804?

A. As described in Column 12, "The pulse oximetry system 800 can measure analyte

concentrations at least in part by detecting optical radiation attenuated by tissue at measurement site 102."

And "The measurement site 102 can be any location on a patient's body such as a finger, foot, earlobe, wrist, forehead or the like."

Q. And what I'm asking is: Is it the detector 806 that detects the light that has attenuated through the patient's tissue?

A. It says in Column 6 -- sorry, Column 12, Lines 60 onwards, it says, "The detector 806 captures and measures light from the tissue measurement site 102. For example, the detector 806 can capture and measure light transmitted from the emitter 804 that has been attenuated or reflected from the tissue at the measurement site 102."

So it would be attenuated or reflected. And the detector can output a detector signal responsive to the light captured and measured.

"The detector 806 can be implemented using one or more photodiodes, photo transmitters or the like."

So, it refers to both reflective and transmissive type of light used in this pulse oximetry. So the -- so as I mentioned earlier, there is a clear disclosure of all types of pulse oximeters that include embodiments that would cover, that would cover the wrist and other, forehead, as well as the finger and so on.

Q. What is the difference between light that has been attenuated through the tissue and light that has been reflected by the tissue?

A. For example -- as an example, it describes here that sometimes again it is a nonlimiting example. A reflection light could be something that is reflected and that is commonly, as an example could be a reflective pulse oximeter. And an attenuation could be something like a transmissive pulse oximeter, but again these terms as used in the specification of the '159 confirmed that the wrist and the

forehead and the finger all are within the scope of this particular set of embodiments of nonlimiting embodiments.

Q. What portions of a patient's body would a light transmissive pulse oximetry sensor typically be used at?

A. As I said, I don't have a specific, a specific description. I am relying on the specification here for, for its disclosures. And it discloses that it can be used in the context of the '159 and '743, how it can be used.

Q. Can you give me an example of any location on a patient's body at which a transmissive pulse oximetry sensor could be used?

A. Again, these are examples, and I don't mean to be limiting in any particular manner.

And in my declaration itself, I discuss in the introductory sections that, for example, in Paragraph 37, I say that, "A pulse oximeter with photo detector and light emitters are placed on opposite sides of the tissue is

known as a transmittance pulse oximeter, while the pulse oximeter that has a photo detector and light emitters on the same side of the tissue is known as a reflectance pulse oximeter." So, I provide some examples there.

But again these are high level examples. And the specification fully reflects what is disclosed in the '159 and the '743.

Q. And what I'm asking is can you give any examples? Not a limited example. Just any nonlimiting example of an area on a patient's body where you would use a transmittive pulse oximetry sensor.

A. The examples -- again, nonlimiting examples would be the finger. They could be the ear.

Q. Can you give some nonlimiting examples of areas on a patient's body where you would use a reflective pulse oximetry sensor?

A. For example, a reflectance pulse oximetry sensor could be used in areas such as the forehead or the wrist.

Q. Continuing with Figure 8, Figure 8 shows a user interface 812.

Do you see that?

A. Okay.

Q. Is the user interface 812 part of the pulse oximetry sensor?

A. I would -- in this example I would rely on the specification. I don't remember what the specification specifically calls out, but I would defer to the language in the specification and the intrinsic record.

Q. Can you review the description of the user interface 812 in the specification and let me know whether or not it is part of the pulse oximetry sensor?

For example, descriptions of the user interface 812 are in Column 13, the paragraph starting at Line 33, there is a few mentions of it there.

There is mentions at the bottom of Column 13 and going into Column 14.

A. I don't have an opinion on the fly,

Counsel. That is not part of my report. So, I would just defer to the specification. I don't have a specific opinion on that.

Q. So, you don't know if the user interface 812 is part of the pulse oximetry sensor or not?

MR. KIANG: Objection, relevance.

THE WITNESS: As I said, as I said, I don't have an opinion on this as a part of this declaration.

In other cases, other matters, other reports, I don't know if I have commented on those issues.

But at this point, as a part of this declaration, I don't have an opinion on that issue. I refer to the specification of the '159 or the '743 to describe what did cover.

BY MR. BISENIUS:

Q. Can you give any examples of information that would be displayed by the user interface 812?

MR. KIANG: Objection, relevance.

THE WITNESS: I don't have an opinion on that, Counsel, sitting here as a part of my declaration.

BY MR. BISENIUS:

Q. So, you are incapable of reviewing a half of a column of the '159 patent and answering any questions about the user interface 812; is that correct?

MR. KIANG: Objection, misstates testimony. And again objection to the manner in which counsel is taking this deposition, including harassing the witness.

THE WITNESS: As I said, Counsel, I would -- I think both of us would be comfortable if I did not introduce new opinions. I am not planning to introduce any new opinions. And you are continuously inviting me to offer opinions on things that I have not opined on.

So, this is not something that I have discussed in my declaration, and

therefore I don't want to offer an opinion on this important legal matter on the fly.

So, I will defer to whatever is in the declaration.

Of course, if asked by the court and allowed, I may do so in the future. But at this part and this declaration, I have not offered such an opinion.

BY MR. BISENIUS:

Q. Did you consider any design considerations that would be included within including a user interface and a pulse oximetry sensor when forming your opinions in any of your declarations?

MR. KIANG: Objection, relevance.

THE WITNESS: I don't understand your question at all.

BY MR. BISENIUS:

Q. Well, the Figure 8 shows that the system includes a user interface 812.

I'm wondering if you considered any of the design considerations that would go into

including a user interface in a pulse oximetry sensor when you formed any of your opinions in your declarations?

A. I'm -- I have proffered an opinion on the claims in the prior art.

I'm not sure if Figure 8 is -- are you saying Figure 8 is a claim? I'm just saying Figure 8 is an embodiment. I refer to the claims. I analyze the claims; I looked at the asserted grounds from Apple and offered some opinions.

So I'm not sure if you are referring to a claim that has the term user interface and please point me to that.

So, for example, there is a claim that talks about a touchscreen interface to provide visual feedback and all of that.

Is that what you are asking me about? I'm not sure what you are asking me about.

Q. Well, I'm asking you about the user interface example in Figure 8. But if you want

to talk about the user interface recited in the claims.

Would you consider the user interface 812 in Figure 8 to be an example of the user interface recited in the claims?

MR. KIANG: Objection, relevance.

THE WITNESS: I don't have a, I don't have a specific opinion on that issue because I would just rely on the specification.

That is not something I have offered an opinion on. And I don't want to create a new opinion today.

BY MR. BISENIUS:

Q. So, you have not considered any of the design considerations that would be included with including a visual display or a touchscreen display in a pulse oximetry monitor when forming your opinions in your declaration; is that correct?

MR. KIANG: Objection. Misstates testimony. Objection to scope and relevance.

THE WITNESS: I would disagree with that characterization. My opinions are very clear. The basis for my opinions are clear in my declaration.

I do not want to characterize them in any way in the manner that you describe them in your question.

BY MR. BISENIUS:

Q. Figure 8 shows the system divided into two main portions, a sensor 801 and a monitor 809.

Do you see that?

A. Where did you see that self-serving language about two different divisions and all of that? I'm not sure.

Q. What is the sensor 801 in Figure 8?

A. As I said, I mean I would defer to the description in the exemplary embodiment.

Q. What is the monitor 809 in Figure 8?

A. Again, it is an exemplary embodiment. It is some sort of described in a nonlimiting manner in the specification.

Q. Are the sensor 801 and the monitor 809 two components of the same device or are they separate devices?

MR. KIANG: Objection, relevance, objection, scope.

THE WITNESS: As I said, this is not an opinion that I offered in my declaration. I believe that you are referring to other matters at issue which are not part of this IPR.

So, I don't have an opinion in this particular IPR about issues such as those.

BY MR. BISENIUS:

Q. So, you can't answer any questions about the system in Figure 8 of the '159 patent, correct?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: As I said, I disagree with your question.

I said that I did not offer an opinion on how Figure 8 limits the claims or

illustrates the claims or otherwise. I was not asked to do that.

I offered specific opinions with respect to the validity challenges raised by the challenger, Apple. And I provided a fulsome opinion. And that is all I am opining today on.

BY MR. BISENIUS:

Q. What functions are performed by the signal processor 810 in Figure 8?

A. I will defer again to the specification.

Q. What form does the network interface 816 in Figure 8 take?

A. I don't have a specific opinion on that. I will defer to the specification and the intrinsic record and the claims themselves.

Q. Can you give any examples of what forms the network interface 816 would take in the system Figure 8?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, the

specification itself describes certain nonlimiting examples of network interfaces in Column 14.

But that is again from a quick search. I have not done a search of the full patent specification to memorize it.

But, as nonlimiting examples, it could include a serial bus port, a universal serial bus, wireless interface, such as WiFi.

It could include an ethernet port or any other suitable communication device and so on, as described in Column 14.

But beyond that, I don't have a specific comprehensive and limiting answer.

BY MR. BISENIUS:

Q. Turning to the claim language in Claim 19 of the '159 patent. I want to talk about the element that starts at Column 18, Line 5.

Let me know when you get there.

A. Okay. Yes. I am there.

Q. So, this element starts, "A

processing device configured to wirelessly receive physiological parameter data from the physiological monitoring device, where the processing device comprises a user interface, a storage device and a network interface."

Do you see that?

A. I do now.

Q. Does the processing device recited in this element receive any support from any of the components of Figure 8?

MR. KIANG: Objection, relevance. Objection to scope.

THE WITNESS: As I said, Counsel, I don't have an opinion on the written description nor enablement.

I understand that your focus is on. But, those are not part of my declaration. I don't want to be invited to offer opinions on the fly.

My opinions is about -- my opinions are captured in my declaration and this is not one of them.

BY MR. BISENIUS:

Q. Can you identify any examples in the specification of the '159 patent that support the claim recitation of a processing device?

MR. KIANG: Objection, scope. Objection, relevance.

Reminding counsel that this deposition is limited to the scope of Madisetti's direct examination.

THE WITNESS: As I said, I would rely on the specification. I don't have anything else on that. I don't have, I have not offered an opinion on the metes and bounds on what it means, nor what it does or anything else.

I have applied the plain and ordinary meaning and looked at the prior art reference and grounds.

I don't offer any independent opinion on the examples in the specification with respect to written description or enablement or other aspects that I believe

the U.S. Patent Office has already cleared and checked the box when it issued and allowed the claims.

BY MR. BISENIUS:

Q. Can you identify any examples of the claimed physiological monitoring device in the '159 patent specification?

MR. KIANG: Objection to form.

Objection, relevance. Scope.

THE WITNESS: As I said, again, these are different portions of the claim. And, I believe that they are fully supported in this specification in the intrinsic record by the virtue that the Patent Office found it valid. And a presumed valid patent checks the box under written description and enablement.

But I have not offered an independent opinion because I understand these are outside the scope of the IPRs and correctly so. I focused instead on the challenges raised by Apple's grounds of

alleged prior art.

BY MR. BISENIUS:

Q. In forming your opinions in your declarations in these proceedings, did you consider the design considerations that would go into including a network interface having wireless communication capabilities into a pulse oximetry sensor?

MR. KIANG: Objection to scope. Objection, relevance. Again, this is outside the scope of Madisetti's direct testimony.

THE WITNESS: As I said, Counsel, these are not opinions I was asked to provide. I don't wish to offer such opinions on the fly.

I believe that the patent fully supports all of these different features by the fact that it was allowed and issued and presumed valid.

My declaration focused on the challenges raised by Apple, and written description enablement were not those.

BY MR. BISENIUS:

Q. In forming your opinions in your declarations in these proceedings, did you consider the design constraints that would go into including a touchscreen interface into a pulse oximetry sensor?

MR. KIANG: Objection to scope. Objection to relevance.

THE WITNESS: Counsel, I rely on everything in my declaration as support of my opinions for the validity challenges.

But, to the extent you are asking me to look at the specification and offer opinions as to how the specification supports enablement or written description, that is not what I was asked to do.

So, I did not offer such opinions at this time.

BY MR. BISENIUS:

Q. I would like to turn to Column 16 of the '159 patent.

A. Okay.

Q. Sorry. Column 12, Line 16.

A. Okay.

Q. Can you please read the first sentence of this paragraph at Line 16 of Column 12 out loud?

A. It says that, "The measurement site can be any location on the patient's body, such as the finger, foot, earlobe, wrist, forehead or the like."

Q. I was actually looking at the sentence before that that starts at Line 16 of the '159 patent that starts out, "The pulse oximetry system 800."

A. Oh. "The pulse oximetry system 800 can measure analyte concentrations at least in part by detecting optical radiation attenuated by the tissue at a measurement site 102. The measurement site can be any location on a patient's body such as a finger, foot, earlobe, wrist, forehead or the like."

Q. These analyte concentrations are used to determine physiological parameters; is

that correct?

MR. KIANG: Objection to form. Misstates testimony.

THE WITNESS: Again, I don't have a specific opinion on that question. I'm not sure what you are asking.

I would defer to the language in the specification.

BY MR. BISENIUS:

Q. I'm asking you -- so this says that the pulse oximetry system 800 can measure analyte concentrations, correct?

A. That is what it says in Line 16.

Q. And I'm asking you: Are those measured analyte concentrations used to determine physiological parameters?

A. That is what it --

MR. KIANG: Objection to form. Objection, misstates the document.

THE WITNESS: As I said, that is a portion of an exemplary embodiment in a particular portion of the specification.

I did not tie each and every exemplary embodiment to the claim language. I don't have a specific opinion on that issue.

BY MR. BISENIUS:

Q. So, you are not sure if the analyte concentrations described here are used to determine a physiological parameter; is that correct?

A. I don't have an opinion on that --

MR. KIANG: Objection to form.

THE WITNESS: I don't have an opinion on that issue with respect to this language in the exemplary embodiment.

It is not something I was asked to offer an opinion on.

BY MR. BISENIUS:

Q. Have you ever designed a pulse oximetry sensor?

A. Yeah, yes.

Q. But you are not sure if measurement of analyte concentrations is used to determine

physiological parameters in such a sensor?

MR. KIANG: Objection, same.

THE WITNESS: As I said, different methods, different procedures, different contexts, different products.

It all depends what is disclosed, what is not.

None of the prior art reference is disclosed meaning a pulse oximetric value.

BY MR. BISENIUS:

Q. So, you are not sure if analyte concentrations would be used to determine physiological parameters or not?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: As I said, I don't offer an opinion on this embodiment.

I have been asked to offer an opinion on the challenges raised by Apple. And I believe those are my opinions in my declaration.

These are not things I was asked to

offer an opinion on, with respect to written description of enablement and other validity features which I assumed are presumed valid because the patent are reviewed by a team of qualified examiners.

BY MR. BISENIUS:

Q. In your declarations you have given opinions on whether certain prior art references describe successful measurement of physiological parameters such as blood oxygen saturation; is that correct?

A. I have not seen a single prior art reference cited by Apple or its combination that I believe disclosed a determine.

Q. But you also can't explain how analyte concentrations would have been used to determine any physiological parameter; is that correct?

MR. KIANG: Objection to form.

THE WITNESS: I was not asked to offer an opinion on that issue with respect to the specification of the patents

themselves.

I was referring to my opinions with respect to the prior art grounds alleged by Apple.

BY MR. BISENIUS:

Q. You are an expert in physiological sensors; is that correct?

A. Yes.

Q. But sitting here today, you can't tell me whether or not analyte concentrations can be used to measure physiological parameters?

A. As I said, my opinions here are strictly based on the validity challenges. I don't have other opinions.

Q. You really have no idea whether or not analyte concentrations could have been used to determine physiological parameters as of the time of the '159 patent?

A. I have not seen any evidence --

MR. KIANG: Object to form.

THE WITNESS: I have not seen evidence presented by the petitioner. I have

reviewed objective criteria. I have looked at -- I have cited to various documents and evidence that shows that at the wrist, which was specifically called out by the claims, that that --

BY MR. BISENIUS:

Q. Continue in paragraph in Column 12 of the '159 patent.

It lists a number of measurement sites, correct? Finger, foot, earlobe, wrist, forehead; do you see that?

MR. KIANG: Counsel, I think you cut me off. I had an objection to the previous question. Objection to form.

MR. BISENIUS: Sorry. I will repeat this question.

BY MR. BISENIUS:

Q. Looking at Column 12 of the paragraph, starting at Line 16 in the second sentence, it discusses that various locations can be used on the patient that includes finger, foot, earlobe, wrist, forehead or the like.

Is that correct?

A. Which line was it?

Q. That is the paragraph that starts at Line 16.

A. Oh, yeah, yeah. Okay. Okay, I got it.

Q. So, you agree that it is describing various locations including the finger, foot, earlobe, wrist, and forehead, correct?

A. Or the like, yes.

Q. And so my question is, are the analyte concentrations described in this paragraph used to determine one or more physiological parameters?

MR. KIANG: Objection to form. Misstates the document.

THE WITNESS: Again, I would let the specification speak for itself.

I don't have a comment on this particular portion of the specification. That changes the language.

BY MR. BISENIUS:

Q. If a POSITA were using a fingertip pulse oximetry sensor and the sensor determined analyte concentrations for the patient, would a POSITA know how to determine the user's heart rate, the patient's heart rate from that information?

MR. KIANG: Objection to form. Unintelligible.

MR. BISENIUS: I can re-ask.

BY MR. BISENIUS:

Q. If a POSITA were using a fingertip sensor on a patient and that fingertip sensor measured analyte concentrations, would a POSITA know how to use that information to determine the patient's heart rate?

MR. KIANG: Same objections.

THE WITNESS: I'm not sure. I'm not -- sorry. I have not offered such an opinion in my declaration by relating the embodiment of Figure 8 to, to what could or could not be enabled or provided as a written description for the patent.

That is not something I was asked to do and I have not done that. So, I don't want to offer a new opinion here.

BY MR. BISENIUS:

Q. If a POSITA were to use a fingertip pulse oximetry sensor on a patient and that sensor measured analyte concentrations, would a POSITA know how to determine blood oxygen saturation using those analyte concentrations?

MR. KIANG: Objection to form. Unintelligible.

THE WITNESS: To which specification are you looking at once again, just as a reminder?

BY MR. BISENIUS:

Q. I'm on the '159 patent, Column 12, starting -- the paragraph starting at Line 16.

A. I think I described that in my declaration for the '159. I have an analysis in Section D, starting in Paragraph 81 that says, "Determining oxygen saturation at the wrist would not have been obvious to a POSITA."

Claims 8 and 17.

And I go through a detailed analysis of the basis for my opinions starting in Paragraph 82, onwards.

So, that says that --

Q. So, I'm asking a different question.

A. Uh-huh.

Q. Your analysis here relates to Claims 8 and 17.

A. Yes.

Q. But there are other claims of the '159 patent and the '743 patent that do not require determination of blood oxygen concentration at the wrist.

Is that correct?

A. Which claims are those?

Q. For example, Claim 1 of the '159 patent or Claim 1 of the '743 patent do not require that the measurement site be the wrist; is that correct?

A. So, what is your question then?

Q. Well, I will go back to Column 12,

the paragraph starting at Line 16.

So, my question was about measurement at the finger because this paragraph gives a bunch of different examples of locations.

So, my question is: A POSITA using a fingertip pulse oximetry sensor on a patient and the pulse oximetry sensor measures analyte concentrations, would a POSITA be able to calculate the blood oxygen saturation based on those measured analyte concentrations?

MR. KIANG: Objection to form. Unintelligible.

THE WITNESS: As I said, I don't have an opinion on that issue, Counsel, unless you can point to something. I have focused on certain opinions in my declaration and I have not offered such a statement in my declaration to my -- best of my knowledge unless you can point something to me.

BY MR. BISENIUS:

Q. Had you designed an optical pulse oximetry sensor prior to 2015?

A. Yes.

Q. And in designing that optical pulse oximetry sensor, did the sensor measure analyte concentrations?

A. What do you mean by analyte concentrations?

Q. I'm using the term as it is used in the '159 patent. It states, "The pulse oximetry system 800 can measure analyte concentrations at least in part by detecting optical radiation attenuated by tissue at a measurement site."

I'm wondering if when you designed an optical pulse oximetry sensor prior to 2015, did it measure analyte concentrations, as that term was used in the '159 patent?

A. I have not offered an opinion on how that term is used and what that term -- and how that term -- what that term covers and doesn't cover. So, I don't have an opinion on that issue.

Q. So you are unaware of what the term "analyte concentrations" means in the context of

the '159 and '743 patent; is that correct?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: As always, you used the word "don't know" and "unaware."

All I said is I have offered an opinion and I have not offered an opinion on what the scope is and what it covers and doesn't cover.

I don't have an answer to the question because that is not an opinion I have considered.

MR. BISENIUS: We have been going about an hour and ten minutes. Might be a good time for another break.

THE WITNESS: Okay.

(Recess taken -- 2:20 p.m.)

(After recess -- 2:31 p.m.)

BY MR. BISENIUS:

Q. I would like to go to the background section of the '159 patent. I'm looking at Column 1. And I'm going to start part way

through a paragraph. I want to start at the sentence that starts at Line 61 of Column 1.

Let me know when you are there.

A. Okay.

Q. This recites that, "The sensor has an emitter that transmits optical radiation of one or more wavelengths into a tissue site and a detector that responds to the intensity of the optical radiation after absorption by pulsatile arterial blood flowing within the tissue site."

Do you see that?

A. Could you remind me which line you read from?

Q. That was the sentence in Column 1, starting at Line 61.

A. Okay. In the sensor that has an emitter. Okay. I see. What is -- I'm reading that. Okay.

Q. And then the next sentence states, "Based upon this response, a processor determines the relative concentrations of oxygenated hemoglobin and deoxygenated hemoglobin."

Do you see that?

A. So, it says, "in the blood so as to derive oxygen saturation," on Column 2.

Q. Correct. Would you consider oxygenated hemoglobin to be an analyte as that term is used in the '159 patent?

MR. KIANG: Objection, foundation.

THE WITNESS: I don't have an opinion on that issue, Counsel.

BY MR. BISENIUS:

Q. Would you consider deoxygenated hemoglobin to be an analyte, as that term is used in the '159 patent?

MR. KIANG: Objection, foundation.

THE WITNESS: As I said, the specification speaks for itself. I don't wish to link up or connect without further analysis.

So, I don't have an opinion right now.

BY MR. BISENIUS:

Q. Prior to 2015, had you ever designed

a pulse oximeter that determined relative concentrations of oxygenated hemoglobin and deoxygenated hemoglobin in a patient's blood?

A. I don't recall. I don't recall what was done.

Q. Would a POSITA have known to measure relative concentrations of oxygenated hemoglobin and deoxygenated hemoglobin in an optical pulse oximetry sensor prior to the '159 patent?

A. I think my opinions are captured in my declaration. I don't have any additional opinions on that issue.

So, if you are referring to a portion of my declaration, I would like to know what you are asking.

Q. Sure. I am asking you these questions because I'm trying to clarify the opinions that you stated in your declaration.

So, for example, if we turn to your declaration, Exhibit 2100, in the 243 proceeding.

A. Uh-huh.

Q. Starting -- the section starting at

Paragraph 81. This is on the bottom of Page 51.

Let me know when you get there.

A. So, Page 51.

Q. Page 51, the section starting with Paragraph 81.

A. Okay. I am on Page 81.

Q. And in these paragraphs, you have given a number of opinions regarding what a POSITA would have understood from the disclosures of Sarantos and the corroborating references cited by the petition and by Dr. Anthony and his declaration.

And so I'm asking to clarify a few things about your opinions here regarding what a POSITA would have known about measuring of blood oxygen saturation.

So, turning to the disclosure of the '159 patent. Again, I'm talking about the background section of the '159 patent.

I'm asking you: Would a POSITA have understood that prior to 2015 an optical pulse oximetry system would have determined relative

concentrations of oxygenated hemoglobin and deoxygenated hemoglobin?

A. With respect to Paragraph 81, it is about determining oxygen saturation at the wrist would not have been obvious to a POSITA.

So, I'm talking about specifically at the wrist there. And it is my opinion that determining oxygen saturation at the wrist as opposed to determining oxygen saturation from convention locations like the finger or the forehead would not have been obvious to a POSITA in 2015.

And then I go into how Iwamiya and Sarantos don't disclose measuring oxygen saturation at all. And they are teaching away from measuring oxygen saturation.

Q. Yeah. And going further down to Paragraph 110. Let me know when you get there.

A. Okay. Okay. 110. Uh-huh.

Q. Here you stated that you reviewed six references cited in the petition. And you state in second sentence, "Instead those

references at most reported detecting a PPG signal or a modulation ratio."

Can you describe what information would have been included in such PPG signals?

A. It depends on the reference. I don't -- I would have to look at each reference. I don't believe that any of those, any of those references actually determined oxygen saturation at the wrist.

Q. So, in the next sentence you state, "But detecting a PPG signal or obtaining a modulation ratio is not a determination of oxygen saturation."

And so, I'm asking you, what information is included in a PPG signal and how does that differ from the information included in actual determination of oxygen saturation?

A. A PPG signal just is a signal that refers to some sort of, for example, a volume of blood or something like that.

It is not anything more than that.

Q. What information is included in a

modulation ratio?

A. I don't know and I mean those references you look at are hardly anything.

I mean it just seems to refer to some sort of ratio volumes of some kind. But, there is no determination of oxygen saturation, let alone supporting measurements as described.

Q. So, you described that you had developed pulse oximetry sensors -- sorry.

You described you developed optical pulse oximetry sensors prior to 2015 that could measure blood oxygen saturation; is that correct?

A. Yes.

Q. In those pulse oximeters, did the sensor determine relative concentrations of oxygenated hemoglobin and deoxygenated hemoglobin?

A. I don't remember exactly what was done. It was complicated algorithm. I don't remember.

Q. Do you remember what information was measured in the patients in order to determine

blood oxygen saturation?

A. I don't remember, no.

Q. Returning to Column 12, the paragraph we were discussing before the break, starting at Line 16?

A. Column 12?

Q. Yes. Column 12, Line 16.

A. Uh-huh.

Q. This is discussing the pulse oximetry system 800, correct?

A. Column 16?

Q. Sorry. Column 12, Line 16.

A. Okay. 16 was the claims, yes. Column 12. Yes. So, I'm in Column 12, Line 16. Okay.

Q. And this section of the '159 patent is discussing the pulse oximetry system 800 of Figure 8.

Is that correct?

A. It is describing an embodiment of Figure 8, it appears, but it could be referring to others as well.

So, at this, in this location, it seems to be referring to 8.

Q. And those paragraphs states that, "The measurement location could be any location on a patient's body such as a finger, foot, earlobe, wrist, forehead or the like." Correct?

A. Yes. You are reading from Lines 18 through 20.

Q. Can you identify any discussion in the '159 patent of design considerations for a pulse oximeter that measures blood oxygen saturation at the wrist that differ from design considerations for a pulse oximeter that measures blood oxygen saturation at a person's finger?

MR. KIANG: Objection to scope.

THE WITNESS: I don't have an opinion on that in my report, Counsel. I will rely on the specification as well as the intrinsic file record.

But, that is not an opinion I provided in my report.

BY MR. BISENIUS:

Q. I understand that you haven't provided that opinion in your report.

What I'm asking you this because I'm trying to clarify the comments in your report, specifically about measuring blood oxygenation at the wrist. And you give a lot of opinions specifically about alleged difficulties of measuring blood oxygen saturation at the wrist.

And so I'm asking you, because I'm trying to clarify your statements there, if the '159 patent itself has any discussion of design considerations for a pulse oximeter that measures blood oxygen saturation at the wrist that differ from design considerations for a pulse oximeter that measures blood oxygen saturation at a person's finger?

MR. KIANG: Objection, form. Objection, scope.

THE WITNESS: As I said, Counsel, it is not an opinion I offer because I was assuming that I was offering an opinion with respect to Apple's validity and challenges.

And my opinions are fully captured in my declaration.

I have not yet to offer any new opinions.

BY MR. BISENIUS:

Q. So, sitting here today, you are unaware of any discussion in the '159 patent of design considerations for a pulse oximeter that measures blood oxygen saturation at the wrist that differ from design considerations for a pulse oximeter that measures blood oxygen saturation at a person's finger?

MR. KIANG: Objection, misstates testimony. Objection to scope.

THE WITNESS: I disagree. I show that -- I was not asked to offer an opinion with respect to the specification of these patents.

I did not. But as I describe in my declaration, Ammar Al-Ali was experimenting with this in 2014/'15 time frame.

I have reviewed testimony of Apple

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

I also cite to the two references that a POSITA would not have been motivated to combine, Iwamiya and Sarantos, in this regard.

And, further, neither Iwamiya nor Sarantos discloses measuring oxygen saturation. And determining oxygen saturation at the wrist would not have been obvious as regards to Claims 8 and 17.

So, those are the opinions that are described. I don't analyze the specification nor was I asked to.

BY MR. BISENIUS:

Q. In the pulse oximetry sensors -- sorry let me start over.

In the optical pulse oximetry sensor that you designed prior to 2015, what locations of a patient's body were used to determine blood oxygen saturation?

A. I believe it was the forehead.

Q. So, can we agree that prior to 2015, it was possible to measure blood oxygen saturation at a patient's forehead?

A. I have no opinion on that, Counsel. It was just part of the design. I don't know if it was successful, if it was a product, if it was launched, if it passed any approvals. I don't know.

Q. Are you aware of any optical pulse oximeters that could measure blood oxygen saturation at the forehead prior to 2015?

A. I don't remember if they have been commercialized or not. I don't know for sure.

Q. Are you aware of any optical pulse oximeters that could measure blood oxygen

saturation at a user's finger prior to 2015?

A. The finger, yes. I have seen examples of products that, that were commercialized, I think, for a finger.

Q. So, can we agree that a person of ordinary skill in the art would have known that was possible to measure blood oxygen saturation at a patient's finger prior to 2015?

A. I don't -- as I said, these are different products, different designs. They don't have to -- I am not offering an opinion that they practice the limitations of the claims in the manner the limitations were written.

Q. But you agree that there were devices that existed in the world prior to 2015 that could use an optical sensor to measure blood oxygen saturation at the finger; is that correct?

A. As I said, I mean at a high level, they don't -- I have done no analysis to show they do that in the manner claimed.

Q. Would you agree that a pulse oximeter that measures blood oxygen saturation at

the finger would have different design considerations from a pulse oximeter that measures blood oxygen saturation at the wrist?

MR. KIANG: Objection to form.

THE WITNESS: As I said, a wrist is a very difficult scenario. And I have cited evidence that, in my declaration, that as of 2015 --

BY MR. BISENIUS:

Q. So, you have stated today --

A. -- as of 2015 determining oxygen saturation at the wrist would not have been obvious as of July of 2015.

Q. So, you have stated today that prior to July 2015, it was possible to measure blood oxygen saturation at the wrist.

You have opined in your declarations that a POSITA would not have known how to measure a blood oxygen saturation at the wrist prior to -- sorry. Let me start that over.

You stated earlier today that prior to July 2015, it was possible to measure blood

oxygen saturation at the finger, but you have opined in your declarations that a person of ordinary skill would not have known how to measure blood oxygen saturation at the wrist.

And so what I'm asking you is: Are there different design considerations for measuring blood oxygen saturation at the finger from measuring blood oxygen saturation at the wrist?

A. You have mischaracterized my testimony. I never said that you could design a pulse oximeter as in the claims for the finger in the manner claimed using, using -- sorry.

I have not said that it was obvious to design a pulse oximeter, even for a finger, in the manner claimed.

Q. I'm asking you something different. I'm asking you about the manner --

A. And so, let us be very clear that it is my opinion that the claims are valid. That it would not be obvious to combine Iwamiya and Sarantos and any of the Apple's grounds in any of

these petitions to render any of the claims obvious, specifically with respect to Claims 11, 19 and 24.

I offer this opinion that determining oxygen saturation at the wrist would not have been obvious as of July 2015.

Q. So, I'm asking you something different. I'm not asking if the specific claimed pulse monitoring device recited in the claims was known prior to 2015.

Clearly you would not agree to that.

What I'm asking you is something much simpler.

That, optical pulse oximetry sensors that measure blood oxygen saturation at the finger were known prior to 2015, correct?

A. In different ways. Not in the claim manner.

Q. What I'm asking you is, is there any discussion in the '159 patent regarding design considerations for a pulse oximeter that measures blood oxygen saturation at the wrist that differ

from design considerations for a pulse oximeter that measures blood oxygen saturation at a person's finger?

A. Well --

MR. KIANG: Objection to form.

THE WITNESS: As I said, Counsel, I don't have an opinion on that based on the specification in my declaration.

And I was not asked to offer that opinion. I assume that because the patent is valid it had written description and it was enabled.

And these are matters outside the preview of the IPR.

So, my opinions were focused on the validity challenges raised by Apple, and my opinions are captured in my report along with the basis.

You continuously ask me about examples in the specification that I have not offered an opinion on.

BY MR. BISENIUS:

Q. So, you cannot identify any discussion in the '159 patent of design considerations for a pulse oximeter that measures blood oxygen saturation at the wrist that differ from design considerations for a pulse oximeter that measures blood oxygen saturation at a person's finger?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: As always, you have mischaracterized my testimony. I said I was not asked to offer an opinion on that because I assumed that an issued patent is presumed valid and had all of the necessary support for written description and for enablement and other challenges.

I focused, instead, on the validity art.

And, so, I'm surprised you keep asking me for the entire day on questions that are about opinions that are not part of my reports.

BY MR. BISENIUS:

Q. I'm trying to clarify because you give a lot of opinions in your report about the specific difficulty of measuring blood oxygen saturation at the wrist.

And, you have a lot of emphasis on how it is very difficult to measure blood oxygen saturation at the wrist in comparison to other locations such as the finger or forehead. You give these opinions in your declaration.

And so what I'm asking you is: Does the '159 patent itself identify any of those design considerations for measuring blood oxygen saturation at the wrist that would differ from design considerations for measuring blood oxygen saturation at the finger or forehead?

A. As I said --

MR. KIANG: Sorry. I am hearing a lot of static.

THE WITNESS: Yeah, I know --

MR. KIANG: Now I can't hear you at all, Dr. Madisetti.

MR. BISENIUS: Yeah, I can't hear you, either.

Let's go off the record until we get this figured out.

THE REPORTER: Off the record.

(Whereupon, a discussion off the record took place.)

BY MR. BISENIUS:

Q. Go ahead. Or would you like me to re-ask the question?

A. Yes, please do. That way it is clear.

Q. All right. So, going back to Paragraph 81 of your declaration. In the 243 proceeding, in the second sentence there you state, "However, determining oxygen saturation at the wrist as opposed to determining oxygen saturation from the conventional locations like the finger or forehead would not have been obvious to a POSITA in 2015."

So, would you agree that there are some aspects to measuring blood oxygen saturation

at the wrist that differ from measuring blood oxygen saturation at the finger or forehead?

A. The way I structure the declaration is, first of all, the next section I show that neither Iwamiya nor Sarantos disclose measuring oxygen saturation nor can they measure oxygen saturation.

Second, that there would be no motivation for a POSITA to combine Iwamiya and Sarantos.

Third, I describe that evidence from, from -- as well as from Apple and other companies, that cite from, Paragraphs 94, 95, 96, onwards, including Apple's own engineers, like Mr. Mannheimer and others, that this is going to be a challenge. That my first reaction when actually hearing it was internally was my head rolling my eyes and thinking good luck with that.

So, when you have a Ph.D. at Apple who worked on this for years, saying that you can't do it at the wrist, all of these provide supporting evidence.

I don't offer any opinion about how the wrist would differ from the finger and everything else from the specification.

Q. So, based on your personal knowledge, you are not sure if measuring blood oxygen saturation at the wrist would differ from measuring at the finger or forehead?

A. As I said, I don't offer an opinion in this particular case in this particular section on my -- based on my personal experiments.

I rely on the evidence that is cited. So, I'm not here to offer a new opinion, however inviting that question may be.

Q. I'm not asking for a new opinion. I'm trying to clarify your statement in the second sentence of Paragraph 81.

You state, "Determining oxygen saturation at the wrist as opposed to determining oxygen saturation from conventional locations, like the finger or forehead, would not have been obvious to a POSITA in 2015."

And so --

A. Rely on ---

Q. The question is: Is it correct that there are different aspects to measuring blood oxygen saturation at the wrist than there are to measuring blood oxygen saturation at the finger or forehead?

A. I used the evidence that are cited in that section. Nothing more.

Q. Would a POSITA have been aware that the finger and forehead were conventional locations for determining oxygen saturation prior to 2015?

A. As I said, I don't offer such an opinion and certainly not in the manner claimed.

So, in my opinion all of the claims are novel, including the claims that don't require the wrist.

Q. I'm asking you because you have given a very long opinion here and in your other two declarations regarding what a POSITA would have known and what a POSITA would have

understood from the references.

And so I'm asking you: Would a POSITA have considered the finger and the forehead to be conventional locations for determining oxygen saturation prior to 2015?

A. In the context of the claimed inventions, the answer is no, I did not for the manner claimed.

Q. I am not asking about the manner claimed. I'm asking just about blood oxygen saturation determination in general. Would a POSITA have considered the finger and forehead to be conventional locations for determining blood oxygen saturation prior to July 2015?

A. I have not offered such an opinion.

Q. So, you don't know whether or not a POSITA would have considered the finger or forehead to be a conventional location for determining oxygen saturation prior to July 2015?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: As I said, I disagree

with your question. All I'm saying is I have not offered that opinion. It is not -- I was not asked to offer that opinion. I rely on other evidence in Section D, as in David, in my declarations.

BY MR. BISENIUS:

Q. And that is -- now you have stated here that the finger and the forehead are conventional locations for determining oxygen saturation in 2015.

Is that correct?

A. I see the sentence in its entirety that determining oxygen saturation at the wrist as opposed to determining oxygen saturation at conventional locations in the finger or forehead would not have been obvious to a POSITA in 2015. I do not say anything about a finger or forehead being obvious.

Q. I'm not asking if it is obvious. I'm asking if a POSITA would have considered the finger or the forehead to be conventional locations for determining oxygen saturation prior

to July 2015?

A. People have used the finger in -- for design of other types of pulse oximeters in the past, but they would be different and not relevant to the asserted claims here.

MR. KIANG: Objection to form.

BY MR. BISENIUS:

Q. The follow-up to is: What are the different design considerations for measuring oxygen saturation at the wrist that differ from design considerations for measuring oxygen saturation at the finger or forehead?

A. I have not provided an opinion in my report here and I rely only on the evidence that I cite.

So, for this report I have not provided any additional evidence as to the differences.

MR. KIANG: Dr. Madisetti, can you boost your microphone again a little bit? You are a bit quiet compared to everyone else.

THE WITNESS: Okay. Let me do that. I will try this.

MR. BISENIUS: Are there any differences -- sorry. Let me know when you are ready. I didn't realize you were repositioning your earphones.

THE WITNESS: Yeah, I am trying to. One second, let me see where my Zoom window is. Okay. --

I have a space heater running here so maybe that is the problem.

MR. BISENIUS: All right. I think we stayed on the record. Sorry.

BY MR. BISENIUS:

Q. We are continuing with Paragraph 81. Would a POSITA have been aware of differences in measuring pulse oxygen saturation at the wrist compared to measuring pulse oxygen saturation at the finger or forehead?

A. All I'm saying here is that determining oxygen saturation at the wrist would not have been obvious. Nothing else.

Q. Okay. But you have compared measuring oxygen saturation at the wrist to measuring oxygen saturation at the finger or forehead in this sentence.

So what I'm asking you is can you identify any discussion in the '159 patent of design considerations for a pulse oximeter that measures blood oxygen saturation at the wrist that differ from design considers for a pulse oximeter that measures blood oxygen saturation in a person's finger or forehead?

A. As I said, Counsel, that is not what I was asked to do.

I assume that the patent had sufficient written description and it had enablement. So, I did not offer an opinion on that, and I don't want to offer a new opinion here.

So, that is not an opinion that I offered in my declaration.

Q. So sitting here today, you cannot identify any portions of the '159 patent that

discuss design considerations for a pulse oximeter that measures blood oxygen saturation at the wrist that differ from design considerations for measuring blood oxygen saturation at the person's finger or forehead; is that correct?

MR. KIANG: Objection, misstates testimony. Asked and answered.

THE WITNESS: I said, sir, that it was not something I was asked to do. It was not an opinion that I formulated. It is not an opinion that I put in my report.

So, if asked and allowed, I may do so in the future.

But, sitting here today, I have not formed an opinion on that issue. I was not asked to do that.

All I'm saying here is that determining oxygen saturation at the wrist would not have been obvious to a POSITA.

BY MR. BISENIUS:

Q. So, once again, you have compared determining oxygen saturation at the wrist to

determining oxygen saturation at the finger or forehead in this paragraph.

What are the differences in performance constraints between a finger-based pulse oximetry sensor or a forehead-based pulse oximetry sensor when compared to a wrist-based pulse oximetry sensor that a POSITA would have been aware of?

A. I talk about the problems with the wrist. I don't offer a comparative analysis of other areas.

As I said, there is no admission on my part that any of the claims, the wrist or the non-wrist claims are obvious for the reasons I cite in my declaration.

I don't offer any further analysis.

Q. Did you consider any design considerations or performance constraints that would have differed between a finger-based pulse oximetry sensor or forehead-based pulse oximetry sensor to that of a wrist-based pulse oximetry sensor when forming your opinions in your

declaration?

MR. KIANG: Objection to form. You can answer. And foundation.

THE WITNESS: As I said, Counsel, all of the evidence that I cite is in my report. Nothing more. Even Mr. Mannheimer -- Dr. Mannheimer says that my first reaction when actually hearing upon being hired, Apple tasked Dr. Mannheimer to [redacted]

Exhibit 28, Dr. Mannheimer testified. My first reaction when hearing this was head rolling my eyes and thinking good luck with that, as he thought of his experience with past clients. And he said he doesn't know if this can be done.

That is all I am relying upon and among other evidence, that is all.

He says that --

Q. So, you are not sure that --

A. No, no. Wait a second.

Dr. Mannheimer -- that is why I was answering this question. Dr. Mannheimer also explained that while measuring oxygen saturation at the wrist would be challenging.

He testified, so the wrist is enormously different from a physiological perspective than a fingertip or the forehead or the ear, the more conventional sites for pulse [redacted]

There is a lot of large blood vessels in the field. There are tendons right below the skin. Just a lot of very heterogeneous environment that differs enormously from the more conventional sites and the signal is enormously weak. Exhibit 2080 and so on.

And, Dr. Mannheimer had previously operated on much more conventional sites as he calls them, like the finger or forehead. And the wrist is just an incredibly different beast.

So, I cite to Dr. Mannheimer to provide support for that. I mean, you are asking

me what is in the specification and all of that. I provide fulsome evidence here.

Q. Looking again at Figure 8 of the '159 patent. As you stated earlier, in the actual picture shown in Figure 8, it is showing that the tissue of the measured patient is at the patient's finger; is that correct?

A. No. It refers to everywhere. It refers to the wrist. It refers to everywhere in the specification. It is only an example. As you can see in Figure 8 in the text of the specification, it says that it will be in the other locations including the wrist.

Q. Does the '159 patent identify any changes that would need to be made to the pulse oximetry system 800 shown in Figure 8 to measure blood oxygen saturation at the patient's wrist rather than at the patient's finger?

A. It is the same question all over again, Counselor.

As I said, it was not something I was asked to do. I assumed the patent is valid,

has written description. That is a different challenge, different court.

Q. So, sitting here today --

A. In the IPR, I mean you have asserted certain prior art and I have responded to that. And, the declaration consists of all of those opinions that I intend to rely upon, not new opinions that you asked me about written description or enablement.

Q. So, sitting here today, you are unaware of any discussion in the '159 patent of changes that would need to be made to the pulse oximetry system 800 of Figure 8 to measure blood oxygen saturation at the patient's wrist rather than at the finger; is that correct?

MR. KIANG: Objection, misstates testimony. Asked and answered.

THE WITNESS: As I said, it was not an opinion I was asked for, and I did not offer such an opinion. If asked and allowed, I may do so in the future.

But, sitting here today, it is an

opinion that is not in my declaration. And because I was not asked to provide that, I assume the patent was valid and had full written description and enablement and other support.

BY MR. BISENIUS:

Q. I'm asking you the question right now.

A. I don't have an answer.

Q. And I'm not asking you about enablement of the claims. That is not what the question is.

I'm asking you: Is there discussion in the '159 patent specification of changes that would need to be made to the pulse oximetry system 800 to measure blood oxygen saturation at the wrist rather than at the finger?

A. As I said I was not asked to offer an opinion on the issue. I did not. If asked and allowed, I may do so in the future but not here.

Q. So, you are refusing to answer this

question?

MR. KIANG: Objection, misstates the testimony.

THE WITNESS: No.

BY MR. BISENIUS:

Q. You said you could answer it in the future but you won't answer it here?

A. Because I have not considered the specification. I have not memorized it. I have not looked at the relevant inquiry. I have not looked at all of the support.

It takes time. It takes a lot of effort to understand these issues.

And it is not something in my report, so I don't want to speak something on the fly.

Q. I would like to turn specifically to Column 2 of the '159 patent. Looking at the, near the bottom, I want to talk about the sentence that starts at Line 58.

A. Are we back to the patent, or --

Q. Yes, I'm in the '159 patent,

Column 2. Let me know when you get there.

A. Okay. '159 patent, Column 2. Okay.

Q. The sentence starting at Line 57 states, "The tissue measurement site can include such as, for example, a finger, a wrist or the like."

Do you see that?

A. Which line?

Q. Line 57.

A. Okay, uh-huh.

Q. Does this paragraph discuss any design considerations that would differ between measuring blood oxygen saturation at the finger compared to the wrist?

A. As I said, Counsel, you have to read the entire specification and all of the different patents and applications that are incorporated by reference in their entirety.

It talks about in Column 2, Lines 15 through 25, it refers to other applications from Masimo that are incorporated that are referenced here in the entirety.

So it requires a fulsome analysis.

I can't really answer these questions because these are -- these have to be looked in the wholistic manner, in the light of the whole intrinsic record.

So, I don't have an answer for you.

Q. I would like to go to Column 1 again in the Background section. I want to talk about the paragraph that starts at Line 53.

This paragraph is in the Background section of the '159 patent; is that correct?

A. This is in Column 1?

Q. Column 1 --

A. And by background, I hope that you don't view that as an admission that this is prior art. It is not.

Q. So, looking at the second sentence of this paragraph, the sentence that starts at Line 56.

A. Okay.

Q. This is discussing a sensor attached externally to the patient output signals.

Do you see that?

A. Reading from Line 55 and 56.

Q. Looking at Line 56, it states, "Pulse oximetry relies on a sensor attached externally to the patient to output signals."

Do you see that?

A. Yes, from Line 56 and 57.

Q. And it states that these signals can be used to determine a percent value of arterial oxygen saturation; is that correct?

A. Yes, Line 58.

MR. KIANG: Objection, misstates the document.

THE WITNESS: I, if you are reading the paragraph from Lines 58 through 65, I'm going to let the specification say what it is reading.

Why do you summarize it?

BY MR. BISENIUS:

Q. It states, "A percent value for" -- sorry.

It states, "Pulse oximetry relies on

a sensor attached externally to the patient to output signals indicative of various physiological parameters such as a patient's blood constituents and/or analytes including for example a percent value for arterial oxygen saturation."

So my question is just, this is describing that the signals from the sensor can be used to determine arterial oxygen saturation, correct?

A. I mean I would defer to the language in the specification itself. I don't have any comments on this or alternate interpretations.

Q. So, you can't even agree with me that this is saying that signals are used to determine blood oxygen saturation?

A. As I said, I mean I would be comfortable with the language in the patent. The inventor is the best description of the invention so why would you summarize it differently?

Q. In the next sentence it states that, "The sensor as has an emitter that transmits

optical radiation of one or more wavelengths into a tissue site."

Do you see that?

A. You are reading from Line 60 through 62?

Q. Correct. So, this paragraph appears to be stating that blood oxygen saturation can be measured using a single wavelength of light; is that correct?

A. I don't agree.

MR. KIANG: Objection, misstates the document.

BY MR. BISENIUS,

Q. Well, it says that it could measure the physiological parameter using a single wavelength of light, correct?

A. I do.

MR. KIANG: Objection, misstates the document.

BY MR. BISENIUS:

Q. What do you understand from the recitation of one or more wavelength?

Do you understand that to require multiple wavelengths?

A. As I said, I don't agree with your analysis.

Q. Do you understand the sentence to state that one wavelength could be used at the tissue site?

A. As I said, I don't see that.

Q. So, do you understand the term "one or more wavelengths" to require more than one wavelength?

A. I see the disclosure of multiple wavelengths.

There could be multiple emitters. Again, it depends on the specification. I don't wish to comment on something that requires more analysis.

There could be more than one emitter. The emitter could be emitting different wavelengths. It could be configured in one way or the other.

I mean, I don't know. So, I cannot

comment on some unrelated portion of the specification that you cherry pick.

Q. Could we at least agree that the section of the '159 patent is talking about an optical sensor?

A. I mean, I would defer to the language of the claim of the specification itself.

I don't wish to summarize it in any other way.

And, that --

Q. So, you can't tell me if this paragraph is talking about an optical sensor?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: I said that this -- I would defer to the language in the specification as describing what it describes. Nothing more.

BY MR. BISENIUS:

Q. Is this paragraph discussing an optical sensor; yes or no?

A. This describes -- for example, it describes a sensor for, for example, it could be for -- it says "The practical application of this technique is pulse oxymetry which uses a noninvasive sensor to measure oxygen and pulse rate among other physiological parameters."

So, it could be measuring pulse rate, for example.

Q. It states that the sensor had --

A. Using one wavelength.

Q. It states that, "The sensor has an emitter that transmits optical radiation of one or more wavelengths."

Is that correct?

A. You are reading from Paragraph 61?

Q. Correct. And then the next sentence which we talked about earlier states that, "Based upon this response," that uses one or more wavelengths, "a processor determines the relative concentrations of oxygenated hemoglobin and deoxygenated hemoglobin in the blood so as to derive oxygen saturation."

Do you see that?

A. I don't see that. You inserted the language "one or more wavelengths."

Q. Are you incapable of reading sentences in context with each other? It says in the sentence right before it that the sensor emits one or more wavelengths.

MR. KIANG: I object to the manner in which counsel is taking this deposition. That was a badgering question and it was harassing -- and is harassing our witness.

I would ask counsel please stop that and conduct this deposition in a more professional manner.

BY MR. BISENIUS:

Q. This paragraph is discussing a sensor, correct?

A. It is discussing several embodiments in different cases under different context.

That sentence could be for the case where it has multiple wavelengths.

So, as I said, it defines different

options like pulse rate, pulse oximetry. It defines oxygen saturation.

It is trying to provide in the background different types of scenarios. In some scenarios it uses two wavelengths. And one of ordinary skill in the art would understand in the context of the background and the section that it is describing what is used.

Because it sometimes says and/or pulse rate. For example, in Column 2, Lines, Lines 15 through 18, it refers that the monitor process the signal to provide a numerical readout of physiological parameters such as oxygen saturation and/or pulse rate.

So, if it is a pulse rate, it would have one wavelength, for example. But again, this is part of the specification and it means what it means to one of ordinary skill in the art.

Q. In the sentence that starts on Line 65 it starts, "Based upon this response."

What is the term "this response"

referring to?

A. It refers to the beginning of the paragraph where it could be either for oxygen saturation or pulse rate, and it also refers to various other potential embodiments.

So, I would not limit it to just one or two sentences that are convenient. And it also uses the word "or." It does not say that the emitter transmits optical radiation of one wavelength. It says one or more.

So, this sentence is talking about more. So, it very well applies to more wavelengths.

Q. So, the -- you agree that when it says based upon this response, it is referring to the response of a detector that responds, in the previous sentence; is that correct?

A. No. That is a whole paragraph. You read it in the context of all of the paragraph.

So, it talks earlier about the Beer-Lambert law. It refers to Equations 1 and 2. It says the minimum number of wavelengths

is one and two, is required. So, minimum number is required to solve them. It refers to in Line 50.

So, it is a whole different section.

And then it says, one or more wavelengths. So, one of ordinary skill in the art would understand that to the extent that it is talking about oxygen saturation, it would be two wavelengths.

So, everything is consistent. So, I disagree with your characterization.

Q. Earlier when I asked you what is the term "this response" referring to, you said it could be either for oxygen saturation or pulse rate.

Are you saying --

A. Are --

Q. Are you saying the response is the oxygen saturation or the response is the pulse rate?

Or are you saying the response is in the context of one of those measurements?

A. It can be in the context. Again, I would refer to the specification.

I don't have a fulsome and a final opinion for you. These are opinions on the fly that are potentially limited only to certain embodiments and nonlimiting.

So, as I said, in my opinion, this is read as multiple wavelengths for pulse oxygenation, for pulse oximetry and a single wavelength for a pulse rate.

Q. So, in Line 65 when the sentence starts out, "Based upon this response," the term "this response" is referring to a previously recited response.

What is that response?

A. As I said, it refers to whether it is a pulse measurement or an oxygen measurement. And earlier in the section say on line, line -- it could be starting in the background, for example, it starts all of the way back to Line 53, for example.

Q. So, in your opinion the response is

the blood oxygen saturation itself?

A. No, no. That is not what I said. I said that it could do calculations in many different ways. And, it could use one wavelength for pulse rate and two wavelengths for pulse oxygenation, for pulse oximetry values.

Q. So, is the response the wavelength?

I'm asking you what is the term "this response" referring to?

A. I don't have an opinion on that in this embodiment. I don't know. I have not offered an opinion on that. Again, going to the specification in detail and understand that I have not memorized it.

And it has to be read in context of all of the other documents that are incorporated in entirety.

I mean you spend your entire deposition on talking about things that are not in my opinion or in my declaration.

Q. I want to talk about Column 10 of the '159 patent.

A. Okay.

Q. The paragraph starting at Line 40 specifically. This paragraph is discussing Figures 7A and 7B, correct?

A. It says, "Figure 7A and 7B are simplifying." So, I don't know. I'm just reading it from here based on your question.

It says, "Figure 7A and 7B are simplified schematic side and top views of a 3D reflective pulse oximetry sensor according to an embodiment."

Q. This paragraph states that, "Any flat surface on the patient, including but not limited to, the patient's wrist is suitable for using this configuration of Figures 7A and 7B to determine blood oxygen saturation." Is that correct?

A. The specification says what it does, Counsel. I don't wish to characterize it in any other way.

Q. Can the configuration shown in Figures 7A and 7B be used to determine blood

oxygen saturation at the wrist?

A. I have no opinion other than what the specification is saying, what it says.

Q. So, you don't know if the embodiment shown in Figures 7A and 7B can be used to determine blood oxygen saturation at the wrist?

A. I'm, saying here on Line 47 or 48 that it says, for example, at the wrist. But again, I have no -- I am not offering an opinion on this issue, because I was not asked to offer an opinion on written description and enablement.

And I assume the patent is valid. And I was responding to the challenges in an IPR which doesn't cover these issues.

So, I don't have an opinion on this at this point.

Q. This paragraph describes an adjustment from the configuration as used for pulse oximetry of the finger by placing the emitter and the detector on the same side as the housing; is that correct?

A. Again, I would defer to the language

in the specification as it discloses it. I don't have any other comments.

Q. What language in the specification would that be?

A. I don't know. I mean I am answering your question.

So, if you are reading in the specification in the record, that is fine with me. I don't want to, I don't want to abridge or characterize the specification in any other way.

Q. So, you don't know what adjustments are described in the '159 patent between Figures 7A and 7B to measure pulse oxygen saturation at the wrist as compared to measuring it at the finger?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: As I said, I was not asked to offer an opinion on the specification of the '159 and the '743, which I assume are presumed valid and have a certain written description and enablement

support because they were issued by the U.S. Patent Office.

And I was asked instead to rebut the allegations by the challenger, which I did.

These are not part of my opinion, so I don't have opinions at this point at this issue.

BY MR. BISENIUS:

Q. So, sitting here today you cannot tell me any differences between the pulse oximetry sensor of Figures 7A and 7B when compared to the pulse oximetry sensor of Figure 3; is that correct?

A. I said I was not asked to look at that issue and I didn't offer an opinion on this issue. This requires time and effort and a full evaluation of the specification and everything that it includes.

I was not asked to do that.

If asked and allowed to do that in the future, I may do so. But at this point, I don't have an opinion because I was not asked to

do that.

Q. Can you look at Figure 3 of the '159 patent. I want you to look at that and compare it to Figure 7A, kind of side by side, if you can.

Can you identify one difference in the configuration between the pulse oximetry sensor in Figure 3 and the pulse oximetry sensor in 7A?

MR. KIANG: Objection, scope.

THE WITNESS: Figure 7A is different from Figure 3.

BY MR. BISENIUS:

Q. Can you identify one of those differences in the configuration of the sensor itself?

A. I don't want to do it on the fly. I said they look different to me. I don't have any further answer.

Q. Earlier you discussed the differences between a transmittive pulse oximetry sensor and a reflective pulse oximetry sensor.

Is the pulse oximetry sensor in Figure 3 a transmittive pulse oximetry sensor or a reflective pulse oximetry sensor?

A. As I said, I don't agree with your characterization of my opinions as part of your question.

So, please ask me a straight question about Figures 3 and Figure 4 or whatever figures without saying I agreed to something which I did not.

Q. Do you know the difference between a transmittive pulse oximetry sensor and a reflective pulse oximetry sensor?

A. I said in one case, a typical example of a transmittive one would be something on the finger. And something that is reflective would be something on the forehead or the wrist.

Q. Is the pulse oximetry sensor of Figure 3 a transmittive pulse oximetry sensor or a reflective pulse oximetry sensor?

A. I don't have an opinion on that issue because I believe that the specification

describes that these are exemplary embodiments and they can be applied to the wrist as well and so on.

So, I don't have a full opinion at this point.

Q. Is the pulse oximetry --

A. I was not asked to -- I was not asked to offer an opinion on this issue.

Q. Is the pulse oximetry sensor of Figure 7A a transmittive pulse oximetry sensor or a reflective pulse oximetry sensor?

A. Again, this nonlimiting embodiment appears to be -- again, I don't have a full final opinion on this.

It appears to be some sort of reflective sensor.

But again I am not sure. All I'm saying is that it is not an opinion that I offer as part of my declaration.

If asked and allowed, I may offer a fulsome opinion later. But I don't have an opinion on this, other than a guess.

MR. BISENIUS: We are almost an hour and I'm about to change to a different line of questioning. It might be a good time for another break. Should we do ten minutes again?

THE WITNESS: Yes.

(Recess taken -- 3:35 p.m.)

(After recess -- 3:44 p.m.)

BY MR. BISENIUS:

Q. I would like to go back to your most recent declaration in the 243 proceeding which is Exhibit 2100.

And specifically I want to start at Page 62.

A. Okay.

Q. In this section, Subsection 3, you are discussing measurement of oxygen saturation in a person's wrist.

Is that correct?

A. I'm saying that a POSITA would not have had reasonable expectation of success in determining oxygen saturation at the wrist as

of 2015.

Q. So, on the next page in this section in Paragraph 98, you stated that you believe that, "A POSITA would not have had a reasonable expectation of success in modifying the prior art to determine oxygen saturation from the wrist as of July 2015."

Do you see that?

A. In which paragraph?

Q. Paragraph 98. This is in the second sentence of Paragraph 98.

A. Oh, but. You mean but, that is the one? Starting with, "but their testimony"?

Q. Yes.

A. So, I say "But the testimony of Apple engineers further confirms that a POSITA would not have had reasonable expectation of success in modifying the prior art to determine oxygen saturation from the wrist as of July 2015." And I go through the various opinions that I discussed earlier.

Q. Did you review any materials other

than the testimony of the Apple engineers when forming this opinion?

A. I relied on whatever I put in my report.

Q. Can you identify what materials other than the testimony of Apple engineers that you relied on in forming this opinion?

A. I talked about FitBit, I believe, that -- where was that? Yeah, FitBit in Paragraph 95.

I talked about FitBit not being able to do anything in this area. And the research director called it a pretty hard technical problem, Exhibit 2088.

Then in 2014, I referred to this company called Withings. And Withings could not measure oxygen from the wrist. And they called it -- the reviewer called it seriously annoying, Exhibit 2095.

Then I rely on a number of other engineers from Apple. And Mannheimer relies on his past experience as well. So, I bring in that

based on his past experience with other consulting companies that he has worked with.

And, so on.

I mean, I have provided a lot of evidence. So, these are the ones that stand out. There could be other ones that I did not cite right now.

Q. Is it your opinion that Apple engineers encountered obstacles with including a pulse oximetry sensor within a wrist-worn Apple watch?

A. It is an opinion that Dr. Mannheimer, who is an Apple engineer, said it couldn't be done.

Q. Can you identify any specific obstacles discussed by the Apple engineers with respect to including a pulse oximetry sensor in the wrist-worn Apple watch?

A. I mean, they, they hired Dr. Paul Mannheimer because nothing worked. And then he had extensive experience in the industry with the Ph.D.

And, he also spent 20 years designing pulse oximeters at one of Masimo's major competitors. So, he was asked to design this oxygen features, and he said I don't think it can be done.

And he described why it was so difficult because there were a lot of tendons, a lot of large blood vessels, very heterogeneous environment, and the signal is enormously weak.

So, he did identify all of these technical issues based on his industry experience.

Q. Can you identify any discussion in the '159 patent specification or the '743 patent specification regarding overcoming tendons right below the skin, very heterogeneous environment that differs enormously from conventional sites, a weak signal or any of these other obstacles that you have identified?

A. As I said, I was not asked to offer such an opinion. I did not -- there is a lot of applications incorporated by reference in the

specifications of these patents.

A lot of them to Masimo's earlier technology called SET, which is recognized as one of the best in the world.

So, I did really have not studied that issue because I was not asked to. Because I assumed, like everyone does, that if a patent was issued, it is presumed valid and has written description and enablement which is not challenged at the IPR.

So, I was focusing and was asked to focus on the challenges through the grounds as stated by Apple.

Q. So, sitting here today you can't identify any portions of the '159 patent or '743 patent that describe overcoming obstacles such as tendons right below the skin, a very heterogeneous environment or a weak signal?

A. As I said, I was not asked to offer such an opinion. I did not. If asked and allowed, I may do so in the future.

But, I did not. I was not asked to

do it. So, I do not have opinions on that.

So, you are asking me to give an opinion on the fly. So, I said I do not have an opinion on that. That is considered and careful enough in such an important matter.

Q. So, sitting here right now you are not aware of any discussion in the '159 patent or '743 patent of overcoming those obstacles described in Paragraph 99 of your declaration; is that correct?

MR. KIANG: Objection, asked and answered.

THE WITNESS: I disagree with that characterization. I said I was not asked to offer an opinion and I did not offer an opinion because I assumed that the Patent Office checked its box and assumed that enablement and written description challenges were met.

I did not offer an opinion because I was not asked to do that. If asked and allowed, I may do so at some other point.

BY MR. BISENIUS:

Q. So, you believe that you could review the '159 patent and the '743 patent to determine if it discusses overcoming those obstacles.

But you are not aware of any discussion of overcoming those obstacles right now; is that correct?

A. That is not my answer --

MR. KIANG: Objection. --

BY MR. BISENIUS:

Q. Well, you said that you could perform the analysis if asked to do so in the future.

So, I'm asking, do you believe that you could review those specifications of the '159 patent and the '743 patent to determine if there is a discussion of overcoming those obstacles.

But right now you are unaware of any discussion in the '159 patent or '743 patent of overcoming those obstacles; is that correct?

A. I disagree. I say that I don't have

an opinion on that issue. I don't admit that I am unaware.

All I'm saying is that I don't have an opinion on that issue right now. I would need to do an analysis and offer an opinion if asked and allowed.

But, given the U.S. Patent Office fully examined this application, they issued it and allowed it, I would assume that written description and enablement are all met. And that is not a proper venue to challenge for the IPR.

Q. I wasn't asking about enablement, just to clarify, but we can move on.

I want to talk about the next paragraph in the same declaration for the 243 proceeding, Paragraph 100.

A. One second. Okay.

Q. In Paragraph 100, you discuss statements made by Dr. Stephen Waydo. Is that correct?

A. Yes.

Q. And Dr. Waydo mentions that a

[redacted]

Is that correct?

A. That is one of the things that he [redacted] And as a leader of the team, he was intimidated and he found it extremely challenged.

[redacted]

And, then he said in general it is a very difficult area to do physiological measurements.

And he said it would take something like 30,000 hours.

Q. In these statements that you have quoted from Dr. Waydo in Paragraph 100, what does [redacted]

A. These would be things like motion and things like very low availability of blood supply, like perfusion.

Q. Would these artifacts affect the accuracy of the measurement?

A. [redacted]

A. No, I think --

MR. KIANG: Objection --

[redacted]

[redacted]. KIANG: Objection, foundation.

Objection, speculation.

And I also object to the manner in which this deposition is being conducted to the extent that counsel is asking the witness questions about a document that is not being presented to the witness.

BY MR. BISENIUS:

Q. Is there any discussion in the '159 patent or the '743 patent of how to correct for artifacts for measuring blood oxygen saturation at the wrist?

A. As I said, Counsel, I don't have an opinion on that in my declaration because I was not asked to offer an opinion on that.

I believe that the patent has full written description support and enablement support because it is issued by the Patent Office.

But, I was not asked to offer an opinion on that issue and I don't have an opinion sitting here today.

Q. Continuing on to the next paragraph

of your declaration, Paragraph 101.

You discuss statements made by Dr. Tao Shui in this paragraph.

Is that correct?

A. Yes, he is also an Apple engineer.

Q. Here in these statements that you have quoted from Dr. Shui, he states that the issue of performing pulse oximetry at the wrist is noise and interference; is that correct?

A. He said it is a very challenging position. The wrist is well known for its lack of signals.

So, it is a very, very weak signal, or no signal at all. [redacted] Exhibit 2082.

Q. Did you read all of the testimony of Dr. Waydo included in Exhibit 2078?

A. Yes. I also heard him testify at some of the trials.

Q. Did you read all of the testimony

from Dr. Shui in Exhibit 2082?

A. I believe so. I have also heard Dr. Mannheimer testify.

Q. So, continuing with Paragraph 101 and these statements from Dr. Shui, in the context of pulse oximetry, what do you understand the terms, noise and interference, to mean?

MR. KIANG: Objection.

THE WITNESS: I looked add --

MR. KIANG: Objection, foundation. Objection, speculation. Counsel is asking the witness to answer questions about a document that is not being presented to the witness.

MR. BISENIUS: You can open an Exhibit 2082. It is in the trove of documents I gave you today, so if you would like to review any of these underlying documents that you cited to in your report, I invite you to.

If you need to look at Exhibit 2082 or Exhibit 2078 or any of the other exhibits

that you cited to, they are available.

THE WITNESS: Okay. I will look at them.

BY MR. BISENIUS:

Q. And so the question here is --

A. So, let me look at Exhibit 2082. 2082.

Q. And so my question, just to repeat it, is: In the context of pulse oximetry, what do you understand the terms, noise and interference, to mean?

A. So, in this specific context he is referring to I believe external noise and interference. And this could include motion, interference due to other types of ambient signals.

And the fact that the hand is always moving. Things like that. Compared to what he defines as the most challenging part is the lack of a signal.

Q. When you said other types of ambient signals, would environmental light be -- fall in

that category of other types of ambient signals?

A. I mean, there could be a lot of other degradations.

I believe that his main concern was the lack of a signal. And when there is a lack of a signal or an extremely low signal, even the smallest amount of external degradation like motion or any other types of noise, can make it unsolvable on the wrist.

If you had a loud signal you could handle certain degradations like external noise and interference.

But if the signal is already so small, it will drown it.

And so his main concern is that there is no signal and the fact it is well known. Not just within Apple. He confirm goes it is well known outside Apple.

Q. So, this external noise and interference and ambient signals would affect the accuracy of the reading; is that correct?

A. Because it is particularly small.

Because there is a lack of a signal at the wrist.

Q. In forming your opinions in your declarations, did you consider any other portions of the Apple employees' testimony other than what you have identified in your declarations?

A. I reviewed the entire -- I provided some selected excerpts. But, I did review the entire testimony. I heard it in many trials.

Q. In forming your opinions in your declarations, did you consider whether any of the obstacles faced by the Apple engineers were due to the specific form factors and other functionality included in the Apple watch?

A. First of all, you seem to be repeating the word "obstacles." These are not obstacles. These were very difficult. They were extremely challenging.

Q. What term would you like to use?

A. Dr. Mannheimer, Dr. Mannheimer referred to rolling his eyes and saying you can't do that, type of difficulties. Lack of a signal.

So, using the word "obstacle" is

sort of minimizing the level of anguish and concern that his engineers raised about the impossibility of the task.

It was not done. There were no products. Masimo, the leader in this area, was one of the first to be able to do it.

Q. Would you prefer to use the term "challenges" or "difficulties"?

A. Again, I'm, all I said was -- I said what I said. You seem to be using these as somewhat in a very pedestrian manner as something that is a minor hindrance. It is not.

It is a grave challenge. It was not done before, no one had done it. Engineers at Apple itself would have viewed all of these references that Apple now cites in the IPR. Say it can't be done. It is impossible. There is no signal.

Q. I will reframe the question then.

In forming your opinions in your declarations, did you consider whether any of the challenges, difficulties or obstacles that you

describe in your declarations were specific to the form factors and functionality of the Apple watch?

A. I think I explained that in my -- that those form factors and constraints came later. And I explained that with my reliance on certain design documentation that showed that the form and the industrial design, they only came later in the design process.

I believe that I discussed that somewhere in my reliance on Exhibit 2085 that the Board's decision in earlier IPRs, for example, the 2022-01291. [redacted]

Q. I would like to turn to your declaration in the 241 proceeding involving the '743 patent.

Once again, it is Exhibit 2100 in that proceeding.

A. Which patent? It was the '743?

Q. '743 patent, yes.

A. Okay, okay.

Q. On the 241 proceeding, specifically.

A. 241. Let me see. Yes. I got that.

Q. All right. I would like to talk about Paragraph 78 of that declaration. Let me know when you are there.

A. Yes, I am at 78.

Q. There is an annotated figure in this paragraph. Do you see that?

A. Yes.

Q. Does this figure come from the '743 patent?

A. It is annotated. I believe it -- it is annotated. So it, let me make sure. I believe it does, but let me check on that. Where are my patents?

So, this is a caricature that mimics the claims. So, I'm trying to figure out where exactly -- which portion of the figures it may have been accepted from.

This is more like an illustration of the claims.

Q. So, this image did not come from the '743 patent itself; is that correct?

A. No, it reflects the teachings, I believe, of the claims.

And it, I believe, may have --

Q. So, this figure did not come from the '159 patent either; is that correct?

A. This is referring to the plain language of the claim, that says as a part of my analysis. And, it reflects the, some aspects of the claim language viewed in light of the specification.

Q. What portions of the '743 specification informed your opinion when creating this figure?

A. Primarily the claims. And so, I cite -- I may have used this figure in a previous report, either at the ITC or some other place.

So, I'm unclear as to how this came about, but it is intended to reflect the language of the claims.

Q. Do you recall if you created this figure or if it was provided to you by someone else?

A. I believe I created this in collaboration with the attorneys for a previous matter, maybe ITC or something like that.

Q. Outside of the claim language of the '743 patent, can you identify any support in the specification for this figure in Paragraph 78?

A. I have not, I have not done that, I believe, in the declaration, so I don't have the opinion ready for you.

Q. So, you are unaware of any portion of the '743 patent that actually describes this configuration in the figure you have created in Paragraph 78; is that correct?

A. That is not correct. What I said is that I believe that this is a depiction of the claim language.

I was not asked -- I did not try to identify the portions in the specification for this figure. That is all I'm saying. I'm not saying -- I am not saying that they could not be done or not there.

But, I believe that I was focusing on the claim language.

Q. So, when creating this depiction in Paragraph 78 you did not consider the disclosures of the specification of the '743 patent; is that correct?

A. I disagree. I said that I created this figure in a previous report after looking at the claims in light of the specification and inferred that this illustrates the claims in the manner that I can explain to the ALJ.

Q. So, I'm asking you what portions of the specification informed your opinions when creating this depiction shown in Paragraph 78?

A. I believe that it was the claims and I don't recall the specific portions.

Q. I want to go back to your 243 declaration for the '159 patent.

A. So, what does that mean, 243? 243. Okay. Yes, '159, okay.

Q. Paragraph 78 in this declaration as well.

A. Okay. One second. Paragraph 78.

Q. This paragraph --

A. One second, sir. Let me get there. Oh, sorry. Oh, yeah, okay. 78. Uh-huh.

Q. This paragraph includes the same figure that we were just discussing with respect to Paragraph 78 of your 241 declaration; is that correct?

A. Yes.

Q. Is it correct that this figure does not appear in the '159 patent?

A. This, the actual figure is an annotation, annotated description of how one of ordinary skill in the art would understand the claim language. And I believe it is consistent with the specification.

But it is not an explicit figure in the specification. It is intended to be demonstrative that describes how a POSITA would understand the language of the claim.

Q. Can you identify any portions of the '159 patent specification that informed your

opinions when creating this figure?

A. I don't recall. I remember reviewing the specification and the patent and the intrinsic record and I believe it is consistent. I just don't recall.

Q. Is the claimed opening in the dark-colored coating shown in this figure?

A. So, this is describing that the surface, comprising a dark-colored coating, and the surface position between the plurality of detectors and the tissue, wherein an opening defined in the dark-colored coating is configured to allow a portion of light reflected from the tissue to pass through the surface.

So, the surface is shown in blue and the coating is shown in black. And then there is this opening that allows the light to pass through the surface.

So, the arrow in the middle is the light that is passing through the opening in the black through the blue, and the blue is the surface.

Q. Can you identify any descriptions in the '159 or '743 patents of the opening depicted in this figure?

A. I believe we reviewed that portion and the portion that talked about the surface in an embodiment as well earlier today that actually said that you had to go through the pass through the surface.

And, this is consistent with the claim language.

Q. Are you referring to the opening 402 that is discussed in Column 8 of the '159 patent?

A. Yes. It was in Column 8. And it was referring to Lines 32 to 35 where it said in this example, a nonlimiting example, "The light-absorbing detector filter 306 which is also depicted in Figure 4A in a top view is a planar surface having an opening 402 through which the emitted light may pass after being attenuated by the tissue measurement site." So that is an example of the opening as well.

And then other embodiments are there

with respect to the coating and all of that.

But, I have not cited specific portions of the specification. That was --

Q. But you believe --

A. -- I don't recall --

Q. Sorry --

A. -- I don't recall which portions of the specification I relied upon, but at the time I recreated how the understanding of the claims in view of the line eyes of the POSITA.

Q. So, you believe that the opening 402 described in Column 8 is depicted in this figure you included in Paragraph 78 of your declaration; is that correct?

MR. KIANG: Objection, misstates the testimony.

THE WITNESS: As I said, that, it describes that there is a surface. And it describes how the light goes through the surface and the surface is part of the light absorbing filter.

So, that is consistent with my

diagram here in Paragraph 78 that the surface has to have the light going through it and the coating has the opening as shown in black.

MR. BISENIUS: I would like to switch to talking about the Sarantos reference. This is U.S. Patent Number 9,392,946 and it is Exhibit 1005 in each of the proceedings.

(Whereupon, previously marked Apple Exhibit 1005, first referral.)

BY MR. BISENIUS:

Q. Please let me know when you find that.

A. Okay. One second. What is the exhibit number?

Q. 1005.

A. Yeah. Okay.

Q. Can you please turn to Figure 2 of Sarantos?

A. Figure 2.

Q. Figure 2 is showing a wrist-worn sensor; is that correct?

A. Figure 2 is a heart rate sensor or a pulse rate sensor. It is not calculating any or deriving any oxygen saturation.

Q. That wasn't my question. This is showing a wrist-worn sensor, correct?

A. It is a wrist-worn sensor for just pulse rate or heart rate.

Q. All right. Turning to the specification. I want to talk about Column 7, Line 12.

A. Okay.

Q. So, the paragraph starting at Line 12 of Column 7 is discussing Figure 2. Is that correct?

A. Yes. It is referencing Figure 2.

Q. And, this paragraph describes that the invention of Sarantos is a "wristband-type wearable fitness monitor 200 that incorporates a PPG sensor."

Do you see that?

A. Yes, it is just a heart rate or a pulse rate sensor.

Q. And this paragraph goes on to describe that this wrist-worn monitoring device includes two light sources and a photo detector; is that correct?

A. It is for heart rate, yes. It is a pulse rate sensor. And, it is teaches a way against pulse oximetry or oxygen saturation.

Q. That wasn't my question.

Does Sarantos describe the wrist-worn sensor as having two light sources?

A. It -- Sarantos describes a heart rate or a pulse rate sensor with two light sources.

But, these light sources are specifically not designed or teach away from using pulse oximetry.

Q. And the wrist-worn monitoring device includes a photo detector as well; is that correct?

A. It includes a non-square photo

detector in this embodiment.

Q. Going back in Sarantos a bit to Column 3. I want to talk about the paragraph that starts at Line 58 of Column 3.

A. Okay.

Q. And in the second sentence of this paragraph it states, "In some such implementations, the plurality of light-emitting devices may include at least two light-emitting devices that predominantly emit light of different wavelengths."

Do you see that?

A. You are reading from Lines 58 through 62?

Q. Correct. Why would someone want to implement a physiological sensor to include two light-emitting devices that emit light at different wavelengths?

MR. KIANG: Objection, speculation.

THE WITNESS: What are you referring to?

BY MR. BISENIUS:

Q. Well, this portion of Sarantos discusses that there is two different light-emitting devices and that the two light-emitting devices emit light at predominantly different wavelengths.

So, I'm asking you, you know, looking at it from the perspective of a POSITA, during the relevant time frame, why would a POSITA want to implement a physiological sensor to include two light-emitting devices that emit light at different wavelengths?

MR. KIANG: Same objection.

THE WITNESS: So, in Sarantos, Sarantos is heart rate sensor. And it is specifically designing -- it is a pulse rate sensor.

So, it is not really -- it teaches away from measuring any oxygen saturation calculation.

So, it uses this high aspect ratio photo detector elements. So, it refers to primarily light sources that emit green,

green light which are wavelengths in the range of 500 nanometers and so on.

And it is primarily for measuring heart rate. So, it does not -- it actually confirms that it is not tailored for use in other spectrums such as red or infrared, Sarantos in Column 18, Lines 35 to 41.

So, a POSITA would understand that Sarantos teaches away from using red or infrared so therefore that is a dead giveaway that it is not for pulse oxygenation.

It is primarily using green. And green is used for heart rate or pulse rate. And the reason it may have more than one of these wavelengths, for example, green wavelengths that are between 500 and 550 nanometer is not really described.

BY MR. BISENIUS:

Q. Would a POSITA have known how to determine pulse rate using an optical sensor having only one wavelength of light during the relevant time frame?

A. I don't have an opinion on that, Counsel. I was looking at Sarantos, and Sarantos talks about a specific type of detector, a hard detector of high aspect ratio. In the context of Sarantos, it appears that they were trying to maximize certain detection capabilities.

But other than that I cannot offer a general opinion.

Q. I would like to turn back to your declaration from the 243 proceeding, Paragraph 48, specifically.

A. 243. Okay. '159 patent. Okay.

Q. Correct.

A. Okay. So, which paragraph, sir?

Q. Paragraph 48.

A. 48. Okay.

Q. So, here you are discussing the level of ordinary skill in the relevant art, correct?

A. Yes.

Q. And in Paragraph 48 you have quoted the Board's adopted definition for a POSITA; is

that correct?

A. Yes.

Q. Have you applied this definition of POSITA in your analysis in your reports?

A. Yes.

Q. And this states in part, "The person would have had a Bachelor of Science degree in an academic discipline emphasizing the design of electrical, computer or software technologies in combination with training or at least one or two years of related work experience, with capture and processing of data or information including, but not limited to, physiological monitoring technologies."

Do you see that?

A. Yes.

Q. So, my question to you is kind of divorced from the specific device of Sarantos.

What I was asking was, would a person of ordinary skill in the art have known that you can use a single wavelength of light to determine pulse rate in a patient?

A. I don't have an opinion on that specification.

Q. Would a person of ordinary skill in the art have considered optical determination of pulse rate to require more than one wavelength of light?

A. I believe, for example, in Sarantos it does disclose a pulse rate with more than one wavelength of light.

I believe that Sarantos confirms that you can use two wavelengths if needed.

Q. Can you identify what portion of Sarantos discusses using two wavelengths to determine pulse rate?

A. Pulse rate and heart rate.

Q. Correct. I'm using those terms interchangeably.

A. Yes.

So, for example, it talks about -- so, it describes here that in Column 3, I believe we discussed that earlier, that in some implementations you can have a plurality of

light-emitting devices that may include at least two light-emitting devices that predominantly emit light in different wavelengths.

Q. Does this portion of Sarantos describe using those light-emitting devices that emit light at two predominantly different wavelengths to measure heart rate or pulse rate?

A. Yes. The entire specification of Sarantos is about heart rate and pulse rate.

It actually dissuades against, teaches away against any other form of measurements, types of measurements, for example, by explicitly saying that the invention is not to be applied for -- is not for use in other spectrums such as red or infrared, among other reasons.

So, it is finding the light sources is between 500 and 600 which include yellow light and some orange light and things like that.

Q. So, are you talking about Column 18, the paragraph starting at Line 35; is that where you are?

A. Yeah, around Lines 35 to 40 talks about green and, and it also talks about 500 to 600, which is yellow and light orange.

And, it is again for heart rate. And it clearly says that this is not designed for red or infrared which is the signature in this case for blood oxygen.

Q. When it is discussing the light and the wavelength for 500 nanometers to 550 nanometers, does it actually say that it emits light at two different wavelengths within that range at the same time?

A. It does mentions different colors. It talks about yellow orange and green, so one would understand that these are different wavelength.

Q. But does it actually describe the device having different light sources that emit the light at the different wavelength within those ranges or is it just contemplating different possible wavelengths for the light sources?

A. I believe that earlier portions confirm that it would have, you would have multiple wavelength.

Given the size and the aspect ratio, the length may be three times more than the width. And the claims seem to say at least 2.8 times longer than -- no, between 2 and 1, and 5 and 1.

So, it would make sense to have, I guess, multiple emitters.

But again, that is not something that I fully offered an opinion on.

Q. Can you identify any disclosures in Sarantos that talk about advantages of measuring pulse rate or heart rate using two different wavelengths of light?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, Counsel, it is not something that I offered a specific opinion on.

But, as I said, that is not something that I offered an opinion on. If

asked and allowed, I may do so in the future.

But at this point I don't have that opinion in my declaration, I believe.

BY MR. BISENIUS:

Q. I would like to go back a few columns to Column 13.

A. Which reference?

Q. In Sarantos, sticking with Sarantos.

A. Okay, Column 13.

Q. Column 13.

A. Uh-huh, okay.

Q. I am -- there is a really long paragraph here, the second half of Column 13. I am about halfway down it, starting at the sentence that starts around Line 53, 54.

A. Okay.

Q. This is discussing the sensor, Figure 2; is that correct?

A. As I said, I, you are asking me questions on the fly, so I am not able to answer them right away. I would defer to the specification.

Q. Well, the sentence literally says Figure 2 in it. I'm just trying to confirm that we are talking about Figure 2.

A. Which sentence?

Q. The sentence starting at Lines 53 and 54 of Column 13.

A. Okay. It says, "For example, the light source 108 on the left side of Figure 2 may be a green LED and the light source 108 on the right side may be a red or infrared LED."

Q. So, this is contemplating light sources of two different wavelengths and one of them could be in the infrared range.

Is that correct?

A. It says here that the light source 108 on the right may be a red or infrared wavelength LED. That is all I can see. Nothing else.

Q. Going to a few sentences earlier in this, paragraph, up to Lines 39 and 40. The sentence that starts at Line 39 going into Line 40 is discussing green light spectrum,

correct?

A. I'm not sure.

Q. You are not sure if this sentence that starts at Line 39 of Column 13 of Sarantos discusses green light spectrum?

A. Oh, it is saying, "for example, it may be desirable to utilize an LED that predominantly emits light in the green light spectrum for the purposes of detecting heart rate."

So, it is talking about the advantages of an LED with the green light spectrum.

So, I'm not sure what it is saying here. It is talking about the advantages of green light in certain, in certain conditions.

Q. And this sentence is talking about detecting heart rate; is that correct?

A. It talks about advantages of green light for the purpose of detecting heart rate, yes.

Q. And then the next sentence discusses

detecting "other physiological parameters besides heart rate such as blood oxygenation levels."

Do you see that?

A. It indicates, it is a may. And it does not say it is doing it. It is says may.

Q. And then the next sentence describes that in such situations, it may be desirable to utilize an LED that predominantly emits light in the red or infrared spectrum for such purposes; is that correct?

A. It is just talking about what is aspirational maybe and says it is desirable in certain scenarios.

It doesn't say it utilizes or proposes that, because later on it says that the invention is not for red and infrared.

Q. And then the next sentence starting at Line 49 states, "Thus, it may be desirable to include separate light-emitting devices that are each able to emit light" -- sorry. Let me start over.

"Thus it may be desirable to include

separate light-emitting devices that are each able to emit different wavelengths of light. Each light-emitting device may be used to supply light for a different type of photoplethysmographic measurement."

So, here in this section where it is discussing other types of physiological parameters such as blood oxygen levels, it is actually expressly describing using two different wavelengths of light; is that correct?

A. Where does it say blood oxygen level? It does not.

It says that these may be used for -- it says that in such situations it may be desirable to use an LED, but then later on it says that this invention is not designed for red and infrared.

Q. When it says in such situations, what situations is it referring to?

A. It is talking about, say, if it is -- if you wanted to do other stuff in addition to heart rate.

So, it seems to be saying that you could use -- you may be able to use different wavelengths of light.

But it does not say that the system uses these wavelength because it says later that this invention is not designed for red and infrared.

Q. What other stuff is it referring to in this section?

A. These are various possibilities of using different light sources for different types of measurements.

So, it talks -- the invention is about heart rate and pulse rate and not for red and infrared measurements which are teaching away from oxygenation.

It is just talking various possibilities of using different types of emitters but in the context of HAR, or H-A-R, it clearly says that, in the sentence that we read earlier, that they are not tailored for other -- for use -- for example, in Column 18 that we

looked at earlier, Lines 45 through 52, say that these are not tailored for use in other spectrums such as red or infrared.

So, this would teach away to a POSITA that it is only focused on heart rate for green and yellow.

Q. So, continuing with the sentence at Line 47 of Column 13 in Sarantos. When it says in such situations, is it referring to situations where it is measuring heart rate?

A. It is talking about multiple light-emitting devices, why one would think of various multiple light-emitting devices.

But, it is not clear what it is saying because it is not clear what it is trying to say.

Q. So, when the sentence states, "It may in such situations be desirable to utilize an LED," dot, dot, dot, you are unsure of what situations Sarantos is referring to?

A. No, I'm sure that it is not oxygenation because you are -- you cannot have an

LED that emits light in red or infrared. You need both of them, so it uses the word "or."

So, therefore it cannot be oxygenation.

Q. So, when Sarantos expressly says that the techniques may also be used to measure other physiological parameters besides heart rate such as blood oxygenation levels, and then starts the next sentence, "It may in such situations be desirable to utilize an LED," dot, dot, dot, you believe that the statement in such situations is not referring to blood oxygen levels; is that correct?

A. It cannot be because it clearly says "or." It says red or infrared, so it is referring to something else.

Q. So, what is the phrase, "in such situations" referring to?

A. I don't know. It is something else. It can't be blood oxygenation because it is either red or infrared. That doesn't tell a POSITA that it is contemplating using red or

infrared.

And given that it is teaching later that it is not tailored for red or infrared, that is confirming that it is not for oxygenation. The title of the specification and the patent itself talks about heart rate and pulse rate.

Q. So, even though Sarantos expressly says that its techniques may also be used to measure other physiological parameters besides heart rate such as blood oxygenation levels and then the very next sentence states, "It may, in some situations, be desirable to use an LED that predominantly emits light in red or infrared spectrum for such purposes."

The term "in such situations" is not referring to blood oxygen level is your opinion, is that correct?

A. I mean it explicitly discloses that you can't emit for oxygenation because it talks about red or infrared. It doesn't say both.

So, that would tell a POSITA that this is not for blood oxygenation. This is more

aspiration for other parameters.

Q. So, a POSITA would understand that you would need to use red and infrared light to measure blood oxygen levels?

A. A POSITA wouldn't understand that why -- how and why would red or infrared alone be used.

And they would wouldn't understand it to be referring to blood oxygenation levels.

Q. My question is slightly different.

Is it your understanding that a POSITA would know that red and infrared light would be needed to measure blood oxygen levels?

A. As I said, one would understand that you cannot measure that -- one would understand that based on this disclosure that using just one wavelength would not -- either red or infrared -- would not be sufficient to calculate blood oxygen levels.

Q. Why would using only an infrared spectrum light be insufficient for determining blood oxygen levels?

A. I mean, I am not sure what you are asking, but all I can say is that as a part of the calculations, you require red and infrared as emitters.

Q. So, my question is --

A. That itself is not sufficient but it is a portion of the equation.

Q. So, a person of ordinary skill would know that you would need to use both red and infrared LEDs to determine blood oxygen levels; is that correct?

A. No. I said that you would -- a person of ordinary skill in the art would understand that a disclosure of a single wavelength here of red or infrared, green, is not sufficient.

Q. Okay, so --

A. Any type of analysis with the exception of pulse rate.

Q. So, why would a POSITA consider use of only infrared wavelength light to be insufficient for measuring blood oxygen levels?

A. I don't know. He seems to refer to pulse rate here only.

So, they are talking only about one wavelength here.

Q. And you believe that "Techniques may also be used to measure other physiological parameters besides heart rate, such as blood oxygen levels," means that he is only talking about heart rate?

A. I mean, there is nothing else. It is aspirational. It says may. It doesn't show how it is done. It doesn't show any calculation. It doesn't show -- and it also confirms it by saying using only one LED of one wavelength.

So, it means a different type of parameters. And, further, you would know that it clearly teaches away from red and infrared, in other sections. For example, Column 18 and Column 8.

MR. BISENIUS: All right. I'm about to change locations. We have going for about an hour and ten minutes. It might be a good

time for a break.

(Recess taken -- 4:55 p.m.)

(After recess -- 5:04 p.m.)

BY MR. BISENIUS:

Q. All right. Continuing with Sarantos Exhibit 1005. I want to go back to Column 18, the paragraph starting at Line 35.

A. Okay.

Q. This paragraph is distinguishing light in the wavelengths of 500 to 550 nanometers and 500 to 600 nanometers used for measuring heart rate from other wavelengths used in measuring blood oxygen levels; is that correct?

A. I mean it says what it says, so I don't wish to characterize it in a different language.

Q. Does this paragraph state that light in the wavelength range of 500 to 550 nanometers would be suitable for measuring heart rate?

A. This paragraph says that the invention, the aspect ratios and the dimensional values here are not for the use in other

spectrums such as red or infrared.

So, it -- while it says that if you can use red or infrared, but it discourages. And says that this invention be cannot be used in those spectra. This is primarily for green. It is mainly for green and teaches away against red or infrared.

Q. It does state that you would use light of a wavelength of 660 nanometers for measuring blood oxygen levels; is that correct?

A. It refers to them in contrast. So it doesn't say it; it contrasts it against heart rate which is green.

Then it says that this invention is not for those. So, one would understand that this is has not been covered by the heart rate embodiments and the invention -- the inventive aspects of Sarantos.

They would not use Sarantos for these others.

Q. This paragraph expressly discusses red wavelength light of 660 nanometers; is that

correct?

A. The way I would say that is that it says that those are not covered in the invention. They are not part of the invention.

To the extent it mentions red, it says these are not covered. So, it says they are out of the boundary of the invention.

It tells a POSITA that hey, those -- if you are trying to use red or infrared, don't look here, go away.

Q. It says that red wavelengths such as 660-nanometer wavelengths would be most effective for measuring blood oxygen levels; is that correct?

A. It says what it says. I mean all I'm saying is that it does not say that the invention does that.

It is just offering some sort of statements here. It clearly shows that you don't apply this HAR invention for red or infrared or anything.

Q. So, it is your opinion that this

paragraph of Sarantos does not discuss any relationship between red wavelengths of light and measuring blood oxygen levels?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: That is not what I said. I said this paragraph tells that if you are looking to use red or infrared, in any context, or if you are trying to use it for blood oxygenation with red or infrared or whatever, it is not covered by this invention.

BY MR. BISENIUS:

Q. Does this paragraph discuss using red wavelengths of light such as 660 nanometers to measure blood oxygen levels?

A. Not as part of this invention. You can do it somewhere else. Don't use Sarantos, it says if you are looking to use red or infrared as a part of oxygen calculation or anything.

Q. Is that because blood oxygen calculations would require red wavelengths of

light?

A. Nothing. I mean I'm just telling you what the paragraph says. It says if you are trying to use red or infrared, then don't come here.

Q. So, you are telling me you can't read the plain language where it says that techniques for measuring blood oxygen levels may be most effective using light of dramatically different wavelengths such as the red wavelengths, e.g., 660 nanometers.

Can you show me where it includes language along the lines as don't use this reference for measuring blood oxygen levels, don't come here, do not measure blood oxygen level?

MR. KIANG: Objection --

THE WITNESS: All of those are captured in line --

MR. KIANG: Hold on a second, I have an objection here. Objection, again, to the manner in which counsel is taking this

deposition. Counsel is badgering the witness. These are argumentative questions.

Again, counsel, if I see another outburst like this, we may need to stop this deposition and take it up with the court.

Again, objection to form. That was at least three questions.

THE WITNESS: So, what I was answering is that this section shows that you shouldn't use this invention, Lines 48 through 52, if you are trying to do anything with red or infrared or anything else.

That is all.

BY MR. BISENIUS:

Q. Where does it say that it is not part of this invention?

A. It says in contrast. And it says that the aspect of ratios and dimensional values discussed herein are tailored based on green yellow light spectrum and are not tailored for using other spectrums such as red or infrared.

Q. You don't believe that it is

contrasting heart rate measurement to blood oxygen level measurement?

A. No, it is just saying don't use this techniques for red or infrared.

Q. Where does it say that?

A. That is what it tells me.

Q. So, it doesn't actually say don't use this device for measuring blood oxygen levels?

A. That statement tells that this invention, Sarantos, is not for blood oxygen or for red or infrared.

It is just used for green light, yellow light, for heart rate.

Q. I want to go back to Column 2 of the '159 patent.

A. '159? Okay.

Q. I'm looking at the paragraph that starts at Line 50 of Column 2 and goes on to the top of Column 3.

Do you see that?

A. Line 50, 5-0?

Q. Yes.
A. Okay.
Q. This is in the Summary section of the '159 patent, correct?
A. Yes.
Q. Can you read that paragraph to yourself and let me know when you are done?
A. Okay.
Q. Does this paragraph of the '159 patent disclose wavelengths that are suitable for measuring blood oxygen saturation specifically at the wrist?
A. It does mention wrist on Line Number 58.
Q. Does it mention any specific wavelengths to use for measuring oxygen at the wrist?
A. It does mention in Column 6 that with respect to the Beer-Lambert law that is referenced in Column 1.
Q. Do any of those additional sections that you have just mentioned disclose wavelengths

that are suitable for measuring blood oxygen saturation specifically at the wrist?

A. It does mention at the wrist as I pointed to you.

I mean again, I have not offered specific enablement and written description opinions with respect to the patents that have been challenged, because I believe that they are valid patents and examined by the Patent Office and checked all of the boxes.

Q. Does the paragraph starting at Line 50 of Column 2 mention any specific wavelengths?

A. I read the specification. I mean, you can't just cherry pick a particular few lines.

So, you have to read the patent and specification.

Q. I'm being clear that I'm asking just about the single paragraph starting at Line 50 of Column 2.

Does that paragraph mention any

specific wavelengths?

A. Again, as I said, you read it in the context of the discussion that it is continuing. It is just a summary.

And, so it refers to the other sections that it summarizes. And therefore it refers to the Beer-Lambert law which it confirms is based on the red and infrared in Column 6, Line 15 through 18.

Q. Can you identify where it discusses red and infrared light specifically in Column 6?

A. Yes. It talks about the Beer-Lambert's laws. And it refers to the phenomena of multiple scattering. It refers to the use of red and infrared. There are different departments that can cause problems with measurements.

Q. This section of Column 6 is talking about Figure 1 of the '159 patent; is that correct?

A. No, it is talking about -- it is a detailed description that the earlier section

summarized.

Q. Would a POSITA know from this disclosure at the top of Column 6 of red and infrared wavelengths, to use those wavelengths in a wrist-based pulse oximeter?

A. Again, this was not something that I was asked to offer an opinion on. And I believe that the Patent Office did its good job, written description, checked the box, enablement, checked the box, other boxes.

And I was not asked to offer those opinions. I was asked to offer opinions about Apple's validity challenges. And, that is what I did.

Q. Let's turn to column -- I want to turn to Column 10, Line 40. We talked about this paragraph earlier.

Can you please read the entire paragraph to yourself and let me know when you are done?

A. Which exhibit?

Q. I'm still in the '159 patent,

Column 10, Line 40.

A. Okay. I have read that.

Q. Yes, can you please read that paragraph to yourself and let me know when you are done.

A. Okay, I have read it.

Q. Is there any discussion in this paragraph of wavelengths that are suitable for measuring blood oxygen saturation specifically at the wrist?

A. It does mention wrist and it also talks about other sections that this is referencing.

But again, I don't offer a complete opinion in my declaration because that is not something I was asked to do. So.

Q. Is there any discussion of specific wavelengths in Paragraph 40 -- or, sorry, in the paragraph starting at Line 40?

A. As I said, I believe so. It references other paragraphs. But, I don't offer a fulsome opinion because it is not my job in

this declaration is not something I was asked to do.

Q. What other paragraphs do you believe it is referencing?

A. I refer to the entire specification. I did mention the Column 6, Column 2, the Beer-Lambert's laws and others. But, I don't really --

Q. So --

A. I don't believe anything. I was just offering you some guesses as to where you may find additional support. It is not an opinion that I offer in my report. You are eliciting report -- new opinions that I did not consider.

So, I would not agree to you citing these as statements made or admissions I made. Because statements of the '159 in the specification written description and enablement questions are not something I offered in my reports.

Q. Looking at the discussion of the

Beer-Lambert law in Column 6 and the discussion of red and infrared photons, would a POSITA have understood that this disclosure was suitable for determining wavelengths of light to use for measuring pulse oximetry at the wrist?

A. I have no opinion on that. I understand that you are trying to fill in the gaps for the determining step and looking for potential fillers, but I don't have an opinion on that.

Q. Let's turn to Column 7, Line 30.

A. Okay. I am looking at Column 7, Line 30.

Q. So, Column 7, Line 30, could you please read that paragraph to yourself and let me know when you are finished?

A. Yes, I am reading it. Okay.

Q. This paragraph discusses emitting red and infrared wavelengths at approximately 650 nanometers and approximately 940 nanometers; is that correct?

A. You are talking about Lines 38

to 40.

Q. Do you agree that this disclosure of using 650-nanometer and 940-nanometer wavelengths of light would be sufficient for a POSITA to identify the correct wavelengths for measuring blood oxygen saturation at the wrist?

MR. KIANG: Objection to scope.

THE WITNESS: I have no opinions on that.

BY MR. BISENIUS:

Q. Would you agree that the 660-nanometer wavelength of light disclosed by Sarantos falls within the range discussed in the '159 patent?

A. Again, I would just refer to the disclosure of the '159. I would not characterize it in any other way.

Q. Earlier you stated that a POSITA would know you could not use a single wavelength of light to determine blood oxygen saturation; is that correct?

A. I was referring only to the

disclosures in Sarantos. It was not a general statement.

Q. Well in general, in the optical pulse oximetry sensors, prior to July 2015, would a POSITA have known to use two different wavelengths of light in such an optical sensor?

A. Again, I'm not making a general statement, Counsel. I was referring to the grounds faced by Apple, so I don't have an opinion on that.

Q. Were you aware of how finger-based pulse oximeters worked prior to July of 2015?

A. I didn't offer a specific opinion. I mean there are many different ways probably, but I don't have a specific opinion that I put about finger based.

Q. So, you can't, here today, discuss any aspects of finger-based pulse oximetry prior to 2015; is that correct?

A. No, I'm not sure what you are asking. I mean, you are -- you seem to be looking for some, some statements of certain kind

without pointing to anything in the declaration and pointing to only the original patent specifications.

MR. KIANG: Objection, misstates testimony.

BY MR. BISENIUS:

Q. All right. Let's go to your declaration in the 243 proceeding. I'm at Paragraph 83.

A. Which proceeding?

Q. The 243 proceeding.

A. Okay. Okay. Which paragraph?

Q. And Paragraph 83. So, it starts at the bottom of Page 52.

A. Paragraph 83. Okay.

Q. So, towards the end of this paragraph on Page 53, the third to the last sentence you state, "But oxygen saturation is not performed using red or infrared light. It uses both red and infrared light."

Do you see that?

A. Yes.

Q. So, would a POSITA at the time have known that blood oxygen saturation is detected using red and infrared light?

A. What a POSITA would know is that it uses red and infrared. That is all. Nothing more.

But it does not disclose a measurement. Just the use does not disclose a measurement.

Q. Would a POSITA have known what wavelengths of red and infrared light to use in a pulse oximeter prior to July of 2015?

A. They would know that they would use red and infrared, but they use it. Use is not sufficient for a disclosure of measurement.

MR. BISENIUS: Let's talk about the Iwamiya patent. This is Exhibit 1004 in the proceedings.

(Whereupon, previously marked Apple Exhibit 1004, first referral.)

THE WITNESS: Okay.

BY MR. BISENIUS:

Q. You understand when I say Iwamiya, I'm referring to Exhibit 1004, correct?

A. Yes, it is the U.S. Patent 8,670,819.

Q. Can you please turn to Column 8 of Iwamiya.

THE WITNESS: How much time have we on the record, Counsel?

MR. KIANG: We -- let's see. We are around, close to six and a half hours right now. A little bit less than six and a half.

THE WITNESS: So, how much is that, 6 hours 28?

MR. KIANG: Well, I would have to calculate it. Let me see.

THE WITNESS: Uh-huh, okay.

Please go on, Counsel. Where I was going, to Column 8?

BY MR. BISENIUS:

Q. Column 8 -- well, actually let's go back to Column 5. Column 5 between Lines 50

and 55 --

A. One second. I was never at Column 5. So, you mentioned go back there. So I did not. So, okay. Column 5.

Q. Column 5 between Lines 50 and 55 includes a header, Identifying a First Embodiment. Is that correct?

A. Yes.

Q. And Column 14 between Lines 50 and 55 identifies a Second Embodiment; is that correct?

A. The word "Second Embodiment" is present in, in Column 14 around Line 53 or so, 54.

Q. So, would you agree that Column 8 falls within the portion identified as the First Embodiment?

A. I'm not sure what you are asking.

Q. I'm just asking because there is section titles here. First Embodiment in Column 5, Second Embodiment in Column 14.

I'm asking to confirm that Column 8

falls within the section titled First Embodiment; is that correct?

A. I can't confirm. I have to read the specification. I mean, are you saying that -- I mean, I'm not sure what you are asking. It may be features -- there are features that are analogous to these various embodiments. And there may be portions of the specification that are the same across multiple embodiments, so I'm not sure.

Q. Are you aware of portions of the First Embodiment and the Second Embodiment that are analogous between the two embodiments?

A. Yes. I highlighted some of them. For example, the, I have highlighted the -- which patent are we on? Which IPR are we on?

Q. This is -- well, I'm talking about Iwamiya, which is relevant to the 241 and the 243 proceedings.

A. 243, all right. So, I was saying that -- for example, I was saying that a POSITA in Paragraph 61 of the 243, I was saying that "a

POSITA would have understood that the holder portion 43 in Iwamiya's other embodiments is an analogous structure to the light shielding frame 18 in Iwamiya's first embodiment.

"The use of a different reference numeral 43 versus 18 does not end the analysis. Indeed, Iwamiya he repeatedly used different reference numerals for structures that are same or similar between its various embodiments."

They refer to light unit -- emitting unit 6 and light emitting units 31, annular light guide unit 7, and annular light guide unit 32, light receiving unit 9 and light receiving unit 33.

They also explain that the light receiving unit 33 is similar to the light receiving unit 9 from the first embodiment.

A POSITA therefore would have understood that these structures to be the same or at least similar despite the reference -- the difference in reference numerals and other such arguments that I make in Paragraph 60, 61, 62 in

my Exhibit 2100 of the 243 IPR.

Q. Okay. I want to go back to Iwamiya specifically, Exhibit 1004.

A. Okay.

Q. Column 8. I want to talk about the paragraphs starting at Line 38.

Can you please read that paragraph to yourself and let me know when you are finished?

A. Which column?

Q. Column 8, starting at Line 38.

A. Okay.

Q. This paragraph discusses a light shielding frame 18; is that correct?

A. It describes that there is an optical filter 17. And this optical filter is mounted on the lower side of the light shielding, light shielding frame 18 to surround the light receiving unit 9, referencing Figures 3 and 4 and also Figure 8 in, in this section.

Q. Does this portion of Iwamiya describe how the light shielding frame operates

to block light?

A. Which portion, Counsel?

Q. The portion starting at Line 38 of Column 8.

A. I'm not -- it says here that -- again I'm not sure what you are asking.

Q. I'm asking if this portion of Iwamiya describes how the light shielding frame operates to block light?

A. Are you referring to a portion of my declaration? Because in the IPR 2022, the 1291, the Board found that Iwamiya provides no detail concerning the structural configuration of the frame 18 and simply identifies the frame as a light shielding frame.

Q. So, specifically, referencing your 243 proceeding declaration, Paragraph 55, you have recreated a portion of the petition that shows a figure from Iwamiya having the light shielding frame?

A. In Paragraph 55?

Q. 55.

A. Yeah, I have put in Apple's figure from their petition.

Q. So, returning to Iwamiya itself, in this portion of Column 8 that is discussing the light shielding frame, does this portion of Iwamiya describe what material is used for the light shielding frame 18?

A. It doesn't mention -- I'm not sure again. I'm not sure what you are asking.

Q. I'm asking if Iwamiya describes what material is used for the light shielding frame 18.

A. It is -- I have to read the specification so I can't answer you. I have not memorized the specification.

Q. Looking at Column 8, the paragraph starting at Line 38, going on into the next two paragraphs, through Line 60, is there any discussion in those paragraphs of what material is used for the light shielding frame 18?

A. As I said, I can't just look at a portion and then make a decision on the fly.

Q. Are you aware of any description in the -- in Iwamiya of a material that is used for the light shielding frame 18?

A. As I said, I mean, the claim limitations require a surface comprising a dark-colored coating and other limitations.

I have provided a detailed analysis that Iwamiya does not satisfy many of the limitations, so I'm not sure what you are asking.

Q. Well, going back to your declaration in the 243 proceeding.

A. Uh-huh.

Q. Going ahead a few more paragraphs. In Paragraph 57, the heading just above that in that section starting at Paragraph 57, you discuss that it is your opinion that a POSITA would not have been motivated to add a dark-colored coating to Iwamiya's light shielding frame.

And so I want to start by talking about the light shielding frame in Iwamiya and its properties and how that informed your opinion

here.

So, are you aware of any disclosure in Iwamiya of a material used to implement the light shielding frame 18?

A. In my opinion, Iwamiya, as Apple has acknowledged, does not disclose the surface comprising a dark-colored coating.

Q. Does Iwamiya discuss how the light shielding frame performs its light blocking functionality?

A. As I described, "The Board found Iwamiya provides no detail containing the structural configuration of frame 18 and simply identifies the frame as a light shielding frame which is a function description, apart from the word "frame."

So, that is what the Board seemed to have found and concluded about certain aspects.

And, so, if you look at Paragraph 60, "Iwamiya discloses some material that provides the light shielding function. Iwamiya describes, in relation to a similar

structure called holder portion," that "the holder portion 43 of the light receiving unit 33 is formed of a metal with the light shielding property such as aluminum. And its surface is subject to the aluminate treatment to have a reflection function."

"A POSITA would have found it meaningful that Iwamiya used the same light shielding terminology in both the light shielding frame 18 and the light shielding function of the material."

And they "would have understood that Iwamiya already disclosed that metals such as aluminum accomplishes the light shielding function."

Iwamiya does speak to how its light shielding function is achieved using a metal such as aluminum. So, this is what I was talking earlier of an analogous structure.

Q. So, I'm looking at your Paragraph 60 of your declaration in the 243 proceeding.

And I see where you have quoted

language from Iwamiya regarding the holder portion 43 having a reflection function.

I don't see where you have identified what portion of Iwamiya describes the holder portion 43 as having a light blocking or light shielding function.

Can you identify that portion of Iwamiya?

A. So, we are referring to Paragraph 59?

Q. I was looking at Paragraph 60. I believe that is where you were --

A. Yes, so 59. Starts on 59, that a POSITA would clearly understand the structure of the frame 18 and its light shielding function.

A POSITA would have readily understood that the light shielding function frame is itself made of light shielding material and is therefore opaque.

Additionally, Iwamiya already discloses some material that provides the light shielding function. And I cite here that Iwamiya

describes in relation to a similar structure called a holder portion 43.

In other embodiments the holder portion 43 of the light receiving unit is formed of a metal with the light shielding properties such as aluminum. And its surface is subject to the aluminate treatment to have reflection function, Column 18, Lines 61 through 65. See also Column 28, 64 to Column 29, 5 and Column 39.

Q. You understand that the holder portion 43 is not depicted in Figure 3, correct?

A. I know it is. It is analogous structure. A POSITA would understand that to be true.

Q. Let's go to Figure 13 of Iwamiya.

A. One second, which exhibit is that?

Q. It is Exhibit 1004.

A. Okay. So let me go to 1004. Figure 13 or 14 or what?

Q. Figure 13, do you see the --

A. One second, let me go there Figure 13.

Q. Do you see the holder portion 43 in this figure?

A. I haven't got to the figure yet. I have to rotate it first. Okay. So, I am on Figure 13. What is the question?

Q. Do you see the holder portion 43 depicted in Figure 13?

A. One second. Actually, there is a better version of this figure in my declaration.

Q. Okay.

A. On page, on Paragraph 62.

Q. This is great because I wanted to talk about Figure 3 and Figure 13 together.

So, you see where the holder portion 43 is in Figure 13. Correct?

A. Yes.

Q. And this has a substantially different configuration from the light shielding frame 18 of Figure 3; isn't that correct?

A. No. They are the same. They are located in the same portion. They are the same purpose. They call it the hold optical filter.

They are both describing as light shielding.

So, nothing in Iwamiya would suggest to a POSITA the information of one embodiment cannot be used in the other. And as a POSITA would understand that Iwamiya's teachings with respect to the holder portion 43 and its use of metal to accomplish light shielding speak directly to how the light shielding frame 18 would have been implemented.

"Indeed, Apple's petition conflated the two structures." And further confirming to a POSITA that Apple viewed them as a, a POSITA would view them as analogous structures.

For example, petition at 14 where Apple itself said "a POSITA would have known that the light shielding frame 18 or a holder portion 43 as disclosed by Iwamiya can be of various proportions, materials, and a thin surface could be coated."

So here I mean you are trying to recant and step away from something that you yourself said. And that is something that we

confirmed is an analogous structure.

So, it is a bit a little too late.

THE WITNESS: So, we have ten more minutes, so --

MR. BISENIUS: Well, we have 21 hours for this deposition. We are covering three cases.

MR. KIANG: I'm sorry. No, we do not have 21 hours. We have agreed to two days.

MR. BISENIUS: Okay. So, we have 14 hours.

MR. KIANG: And you are almost up at the end of the first day.

BY MR. BISENIUS:

Q. Okay. Looking at Figure 13 in comparison to Figure 3, the holder portion 43 is many times thicker than the light shielding frame 18 in Figure 3.

Is that correct?

A. No. They are analogous structures. The figures are not drawn to scale. There is no

description that they are drawn to scale. They are very similar.

Q. The light shielding frame 18 is positioned in an angled orientation whereas the holders 43 are vertical; is that correct?

A. Again, that is your view. These are simplified figures. The angle is -- certainly 90 degrees is an angle as well.

I mean don't look for straws, Counsel. You admitted they were analogous, and the specification confirms they are analogous.

Q. Going back to Iwamiya Exhibit 1004. Can you please turn to Column 6.

A. One second. I have looked on this document, counterclockwise, okay. Column 6. Okay.

Q. Can you please read the paragraph starting at Line 62 that continues on to Column 7 to yourself and let me know when you are finished.

A. Column 6, Line 16. From Line 16?

Q. 62.

A. Oh, 62. Okay.

Q. Is there any discussion of a light shielding frame in this paragraph?

A. I have to look at the figures at the same time which is causing the problem. I am trying to put the figure on the side of the column.

So, what is the question? I'm not sure if I understand what is this -- why you are pointing to this paragraph.

Q. I'm wondering if there is any discussion of the light shielding frame 18 in this paragraph.

A. As I said, I cannot answer on the fly. I'm not sure if I reference this paragraph in my declaration.

Q. So, you are not sure if this paragraph talks about light shielding frame 18 or not?

A. No, no. I'm not sure what you are asking about this paragraph. I mean, we have to refer to the other portions of the specification

that are describing this figure. So you just point to five lines and say something. I'm not sure what you are asking.

Q. I'm asking if this paragraph discusses the light shielding frame 18?

A. I don't have an opinion on that issue. I have to look at the entire specification and see what this is referring to.

Q. Jumping ahead to Column 18, could you please look at the paragraph that starts at Line 61 and that continues on to Column 19 and read that paragraph to yourself and let me know when you are finished.

A. Which line?

Q. Line 61.

A. On Column 18?

Q. Correct.

A. Okay. Okay. I am reading that. It talks about, it is formed with metal with the light shielding property, the holder portion. It talks of the holder portion. I think I referred to this earlier.

Q. Is there any discussion of the light shielding frame 18 in this paragraph?

A. Yes. They are analogous structures.

Q. Can you identify where it refers to the light shielding frame 18 in this paragraph?

A. By referring to that common name, light shielding, and the fact that Apple also referred to them as analogous structures.

Q. Are you referring to the holder portion 43?

A. I'm referring to the holder portion 43, yes.

Q. So, in your opinion, the holder portion 43 is identical to the light shielding frame 18?

MR. KIANG: Objection, misstates testimony.

THE WITNESS: It is analogous. It is analogous and it is admitted by Apple in its petition.

BY MR. BISENIUS:

Q. So, you believe that --

A. And, and I have identified the grounds in my declaration to show that -- for example, I think we discussed that a bit earlier where Apple itself conflated the two terms and described them in an analogous manner.

Q. Do you believe that all disclosures in Iwamiya regarding the holder portion 43 apply equally to the light shielding frame 18?

A. I'm referring to these two embodiments that I discussed. I don't have a specific opinion with respect to anything other than Figures 3 and 13.

Q. Can you identify what aspects of the holder portion 43 apply equally to the light shielding frame 18?

A. As I said, I have discussed that in Paragraphs 59, 60, 61, 62, and so on.

Q. How did you determine which descriptions of the holder portion 43 apply to the light shielding frame 18 and which do not?

A. As I said, you have to refer to my declaration in those paragraphs. I think I would

rather read them into the record. I referred to Paragraphs 59, 60, 61, 62, 63, 64, 65, 66, 67, and so on.

Q. Looking at the paragraph at the bottom of Column 18 in the sentence that starts at Line 65, it states, "As illustrated in Figures 13 and 14, the holder portion 43 is formed to have the same thickness as that of the light emitting unit 31, length of a vertical direction, and is disposed in a central portion of the diffusion reflection ring portion 35."

Do you see that?

A. You are reading from Columns 18 and 19 at the bottom and the top.

Q. Do you believe that this description of the holder portion formed to have the same thickness as that of the light emitting unit 31 applies equally to the light shielding frame 18 in Figure 3?

A. As I said, Counsel --

You had an objection.

MR. KIANG: Yes, objection to scope.

THE WITNESS: Yes, as I said, I mean I am asking for stuff that is beyond and it clearly shows the --

MR. KIANG: Dr. Madisetti, your microphone was acting up.

THE WITNESS: Yes, this one also went dead. I will have to use the laptop.

Okay, how many minutes do we have left.

MR. KIANG: By my calculations about ten minutes left.

MR. BISENIUS: We are getting the feedback again.

THE REPORTER: I didn't hear the whole answer, either.

MR. BISENIUS: Okay. Can we go off the record until we fix this issue.

(Recess taken -- 5:59 p.m.)

(After recess -- 6:00 p.m.)

THE WITNESS: Okay. Maybe I will give you the answer. And the answer is that I did not explain this portion of the

specification in my declaration but my declaration in paragraphs that I cited earlier provides sufficient disclosure as to why these structures are analogous.

And I also utilize Apple's own statements where they admit, in my opinion, that these structures are analogous.

BY MR. BISENIUS:

Q. So, what I am asking you is that you have opined that based on this description of the holder portion 43 that the description of using aluminum would apply equally to the light shielding frame 18.

I'm asking you would the additional descriptions of the holder portion 43 having the same thickness as the light emitting unit 31 also be applied to the light shielding frame 18?

A. As I said counsel, these figures are not to scale. One of ordinary skill in the art would understand that, that they would apply and they would be understood to be analogous structures.

Q. I want to go to Column 28.

A. Of what?

Q. Of Iwamiya. Exhibit 1004.

A. One second. Column 28. Okay. And which line?

Q. Line 64. Can you please read that paragraph, it goes on to Column 29, to yourself and let me know when you are done.

A. Okay.

Q. Is there any discussion of the light shielding frame 18 in this paragraph?

A. I believe so. One would understand the analogous structures and -- because they have a description of the light shielding property, and its use in the earlier -- in the same way the light shielding, one would understand that a metal such as aluminum with its surface subject to aluminate treatment would apply also.

Q. This paragraph states the holder portion 43 is also formed to have the same thickness as that of the light emitting unit 31.

Do you believe that that description

of the holder portion 43 applies equally to the light shielding frame 18?

MR. KIANG: Objection to scope.

THE WITNESS: As I said, that is not an opinion that I offered, but my opinion is that the light shielding frame of Figure 3 is analogous to the holder portion of Figure 13 for the reasons that I discuss in my declaration that I believe are also supported in Apple's own petition.

BY MR. BISENIUS:

Q. How did you determine which descriptions of the holder portion 43 apply to the light shielding frame 18 and which descriptions of the holder portion 43 did not apply to the light shielding frame 18?

A. I didn't say about not applying.

I simply said that one would understand the function. One would understand the materials. One would understand they were analogous.

Both of them have -- the patent

itself, the MEI uses multiple numerals for the same structure in different embodiments.

So, one would understand that the light shielding frame 18 and the holder portion 43 are analogous structures.

Q. But the light shielding frame is not literally mentioned in this paragraph; is that correct?

A. I disagree. The light shielding function is clearly mentioned. And one of ordinary skill in the art would understand that that structure is analogous based on the disclosures for the reasons that I discuss in my declaration.

Q. So, if you believe that this paragraph is discussing the light shielding frame 18, my question is how do you determine which aspects of the holder portion 43 applied to the light shielding frame 18 and which do not?

A. I would understand that the functions that are being carried over, the light shielding function would be. For example, due to

the metal and the aluminum reflective material.

So, one of ordinary skill in the art would understand that the light shielding function and the holder portions would have similar function and the function would be utilizing the use of metal such as aluminum.

Q. I would like to go back to the '159 patent, Exhibit 1001 in the 743 and 744 proceedings.

A. Okay. Okay.

Q. Can you please turn to Column 8 of the '159 patent.

A. Column 8?

Q. Yes.

A. Column 8. Okay. I am on Column 8.

Q. I want to talk about the paragraph that starts at Line 54 and continues on to Column 9.

Can you please read that paragraph to yourself and let me know when you are finished.

A. Column 8, which line?

Q. Line 54.

A. 54. Okay. I have reviewed the paragraph starting in Line 64 -- sorry, 54, in Column 8, all of the way to Line 10 in Column 9 of the '159 patent.

Q. This paragraph describes the effects of multiple scattering and variations in path lengths; is that correct?

A. I describe this in Paragraph 41 that "The additional features of dark-colored coating and the light block found in the claims are important for measurement accuracy. The '159 patent explains the use of dark-colored coating also address the multiple scattering problem caused by light reflecting back and forth between the user's tissue and the sensor."

So, I refer to that in Paragraph 41.

Q. So, would it be desirable to avoid such multiple scattering?

MR. KIANG: Objection to form.

THE WITNESS: Are you using hindsight or something? What are you trying

to say?

BY MR. BISENIUS:

Q. I'm talking about the knowledge of a POSITA at the time of the '159 patent.

Would a POSITA have understood that it would be desirable to avoid multiple scattering?

A. As I said, that is not taught in any of the references. You are using the teachings of the '159 to find a way.

So, I believe that that is hindsight, so I don't see anything in there. Further, this is happening inside the sensor and other things.

So, I'm not really -- I cannot agree to that. I think you are using hindsight.

Q. So, it your opinion that a POSITA would not have been aware of the concept of multiple scattering prior to the '159 patent?

A. I'm not saying anything. I am simply seeing here what is in Paragraph 41 that --

Q. So, you do not know if a POSITA would have been aware of multiple scattering prior to the '159 patent?

A. I say here that the '159 patent explains that the conventional two-dimensional approach results in a problem known as multiple scattering.

And multiple scattering refers to a phenomenon where red and IR photon pathlengths vary through the tissue.

And so Al-Ali discovered that implementing the claimed devices. So, it was something that Al-Ali discovered.

Q. Do you believe that Al-Ali discovered multiple scattering?

A. As described, how he describes it in the '159 patent.

MR. KIANG: Counsel, the time is now 3:11, and we have exhausted seven hours for the day.

MR. BISENIUS: We can stop and go off the record.

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

* * *

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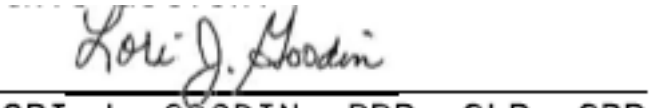

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Case: Apple, Inc. v. Masimo Corp.
Date of deposition: February 4, 2025
Deponent: Vijay K. Madisetti, Ph.D., Vol I

Please be advised that the transcript in the above referenced matter is now complete and ready for signature. The deponent may come to this office to sign the transcript, a copy may be purchased for the witness to review and sign, or the deponent and/or counsel may waive the option of signing. Please advise us of the option selected. Please forward the errata sheet and the original signed signature page to counsel noticing the deposition, noting the applicable time period allowed for such by the governing Rules of Procedure. If you have any questions, please do not hesitate to call our office at (202)-232-0646.

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