

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.

Petitioner,

v.

MASIMO CORPORATION,

Patent Owner

IPR No.2024-00294

U.S. Patent 10,736,507

DEPOSITION OF DR. THOMAS KENNY

September 27, 2024

12:00 p.m.

Reported by: Eileen Mulvenna, CSR/RMR/CRR

DIGITAL EVIDENCE GROUP

1730 M Street, NW, Suite 812

Washington, D.C. 20036

(202) 232-0646

1 REMOTE DEPOSITION of
2 DR. THOMAS KENNY, Declarant on behalf of the Patent
3 Owner in the above-titled action, held on Friday,
4 September 27, 2024, commencing at approximately
5 12:00 p.m., before Eileen Mulvenna, CSR/RMR/CRR,
6 Certified Shorthand Reporter, Registered Merit
7 Reporter, Certified Realtime Reporter, and Notary
8 Public of the State of New York.

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1 A P P E A R A N C E S:

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3 ON BEHALF OF THE PETITIONER:

4 FISH & RICHARDSON

5 BY: PATRICK BISENIUS, ESQ.

6 GRACE KIM, ESQ.

7 3200 RBC Plaza

8 60 South Sixth Street

9 Minneapolis, Minnesota 55402

10 202.783.5070

11 bisenius@fr.com

12 gkim@fr.com

13

14 ON BEHALF OF PATENT OWNER:

15 KNOBBE, MARTENS, OLSON & BEAR, LLP

16 BY: DOUGLAS WENTZEL, ESQ.

17 2040 Main Street

18 Irvine, California 92614

19 949.760.0404

20 douglas.wentzel@knobbe.com

21

22 -AND-

1 A P P E A R A N C E S (Continued):

2

3 MATTHEW RUTH, ESQ.

4 3579 Valley Centre Drive, Suite 300

5 San Diego, California 92130

6 858.707.4000

7 matthew.ruth@knobbe.com

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10 ALSO PRESENT:

11 Zach Hone, Document Technician

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1	I N D E X		
2	WITNESS	EXAMINATION BY	PAGE
3	DR. THOMAS KENNY	MR. WENTZEL	7

4			
5			
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7	E X H I B I T S		
8			PAGE

9			
10	Exhibit 1001	United States Patent No.	10
11		10,736,507, Muhsin, et al.	
12	Exhibit 1003	Declaration of Dr. Thomas	11
13		W. Kenny	
14	Exhibit 1007	33rd Annual International	13
15		Conference of the IEEE	
16		EMBS, D'Angelo Paper	
17	Exhibit 1011	28th IEEE EMBS Annual	14
18		International Conference,	
19		Mendelson Paper	

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21
22

1 THE REPORTER: Counsel, before I swear
2 in the witness, do both counsel stipulate to
3 the witness being sworn in remotely?

4 MR. WENTZEL: Yes.

5 MR. BISENIUS: Yes.

6 THE REPORTER: Counsel, state your
7 appearance for the record, please.

8 THE WITNESS: My name is Thomas Kenny.

9 MR. WENTZEL: This is Douglas Wentzel
10 with Knobbe Martens on behalf of the patent
11 owner, Masimo Corporation. Also with me
12 today from Knobbe Martens is Matthew Ruth.

13 THE REPORTER: Thank you.

14 MR. BISENIUS: This is Patrick
15 Bisenius from Fish & Richardson on behalf of
16 petitioner, Apple. And with me today is
17 Grace Kim, also of Fish & Richardson.

18 (Witness sworn.)
19
20
21
22

1 DR. THOMAS W. KENNY,
2 having been duly sworn by Eileen Mulvenna,
3 a Notary Public of the State of New York,
4 was examined and testified as follows:

5 EXAMINATION

6 BY MR. WENTZEL:

7 Q. Good morning. Could you please state
8 your name again, just for the record?

9 A. Sure. My name is Thomas Kenny.

10 Q. And I know you've been deposed before,
11 Dr. Kenny. But I just wanted to quickly go over
12 some ground rules so we're all on the same page
13 today.

14 So the first would be -- you
15 understand that you're testifying under oath today
16 as if you were in a courtroom; correct?

17 A. I do.

18 Q. And the court reporter is writing
19 everything we say down today. So you understand you
20 need to verbally respond to my questions; right?

21 A. I do.

22 Q. And if you don't understand one of my

1 questions, will you let me know? Otherwise, I'll
2 assume you understood my question; is that fair?

3 A. That's fair. Thank you.

4 Q. Your counsel may object to some of my
5 questions today, but you still must answer my
6 questions unless your counsel instructs you to not
7 answer.

8 Do you understand that?

9 A. I do.

10 Q. And will you wait until I've completed
11 asking my question today before you begin answering
12 so that the court reporter can accurately transcribe
13 our conversation?

14 A. I will try my best.

15 Q. Is there any reason you can think of
16 that you cannot give truthful and accurate testimony
17 today?

18 A. No.

19 Q. Where are you testifying from today?

20 A. I'm sitting in a bedroom in my house
21 in San Francisco.

22 Q. Is anyone also in the room with you?

1 A. Nope.

2 Q. Do you have any notes or documents
3 with you?

4 A. So there's a lot of paper in the room,
5 but here on the tabletop, I only have what are the
6 print copies of the materials that I think we'll be
7 covering.

8 Q. And those are materials for the IPR
9 proceeding for the '507 patent; is that right?

10 A. That's correct.

11 Q. And do you have any screens open on
12 your computer besides the one for this deposition
13 and the web page for downloading any exhibits?

14 A. I do not.

15 Q. And if you need a break today, let me
16 know. As long as there's not a question pending, we
17 should be able to take one. And I'll try to take
18 breaks every hour or so anyway.

19 Does that sound okay?

20 A. That sounds great.

21 Q. So you understand that today's
22 deposition is for an IPR proceeding concerning U.S.

1 Patent No. 10,736,507; is that right?

2 A. I do.

3 Q. And you're okay if we call that patent
4 the '507 patent today?

5 A. Yes.

6 Q. So let's just look at the '507 patent.
7 That's Exhibit 1001.

8 (Exhibit 1001, United States Patent
9 No. 10,736,507, Muhsin, et al., received and
10 marked.)

11 BY MR. WENTZEL:

12 Q. We can bring it up on the screen.
13 Yeah, and I --

14 A. Sure.

15 Q. I see you have a copy in front of you,
16 as well.

17 But, again, you understand this
18 '507 patent is the subject of the IPR we'll be
19 talking about today; right?

20 A. Yes.

21 Q. And you've provided a declaration in
22 support of Apple's IPR petition for the '507 patent;

1 is that right?

2 A. I have that here, as well, yes.

3 Q. Yeah, I see that.

4 MR. WENTZEL: And we can bring up
5 that, as well. So let's at Exhibit 1003.

6 (Exhibit 1003, Declaration of Dr.
7 Thomas W. Kenny, received and marked.)

8 BY MR. WENTZEL:

9 Q. Exhibit 1003 is the declaration you
10 prepared in this IPR regarding the '507 patent; is
11 that right?

12 A. That's correct.

13 Q. So if I refer to Exhibit 1003 today as
14 your declaration, you'll understand what I'm talking
15 about; right?

16 A. I will, yes.

17 Q. Did you sign your declaration on
18 December 10th, 2023?

19 A. I believe so, yes.

20 Q. And when you were signing your
21 declaration, did you understand that you were doing
22 so under the penalty of perjury?

1 A. Yes.

2 Q. Have any of your opinions relating to
3 the '507 patent changed since you signed your
4 declaration on December 10, 2023?

5 A. I don't think so, no.

6 Q. Are you aware of any mistakes or
7 inaccuracies in your declaration?

8 A. I am not.

9 Q. So you would agree your declaration
10 contains a complete and accurate statement of all
11 your opinions in this IPR proceeding; is that
12 correct?

13 A. So I've been teaching and doing
14 research in this field, including my Ph.D
15 preparation and college preparation, for more than
16 40 years. We wouldn't have enough pages to
17 completely transcribe every possible opinion, but
18 the opinions that are relevant for this proceeding
19 are all reflected in this report, and I stand by
20 them.

21 Q. Let's look at your declaration again,
22 Exhibit 1003, specifically at paragraph 31, which

1 starts on page 11.

2 Does paragraph 31 contain a complete
3 and accurate summary of all of your opinions in this
4 IPR?

5 A. I believe so.

6 Q. Let's look a couple pages back in your
7 declaration at paragraph 20, which is on page 9.

8 You see in paragraph 20, you refer to
9 a paper by D'Angelo, et al., as Exhibit 1007?

10 A. Yes.

11 Q. So if I refer to Exhibit 1007 today as
12 "D'Angelo," you'll understand what I'm referring to;
13 right?

14 A. Yes, I do.

15 MR. WENTZEL: We can bring up
16 D'Angelo. That's Exhibit 1007.

17 (Exhibit 1007, 33rd Annual
18 International Conference of the IEEE EMBS,
19 D'Angelo Paper, received and marked.)

20 BY MR. WENTZEL:

21 Q. And I believe you have a copy of
22 Exhibit 1007 in front of you; is that right?

1 A. I do.

2 Q. So the Exhibit 1007 that you see here
3 is the D'Angelo paper discussed in your declaration;
4 is that right?

5 A. Yes, I believe so.

6 Q. Can we look at paragraph 24 of your
7 declaration? That's on page 10, I believe. Yeah.

8 A. Yes.

9 Q. So you see in paragraph 24, you refer
10 to a paper by Mendelson, et al., as Exhibit 1011?

11 A. Yes.

12 Q. So if I refer to Exhibit 1011 as
13 "Mendelson" today, you'll understand what I'm
14 referring to; is that right?

15 A. I will, yes.

16 MR. WENTZEL: And we can bring up a
17 copy of that Mendelson reference. That's
18 Exhibit 1011.

19 (Exhibit 1011, 28th IEEE EMBS Annual
20 International Conference, Mendelson Paper,
21 received and marked.)
22

1 BY MR. WENTZEL:

2 Q. I think you have a copy of that in
3 front of you, as well; is that right?

4 A. I do, yes.

5 Q. So Exhibit 1011 is the Mendelson paper
6 discussed in your declaration; correct?

7 A. That's correct.

8 Q. How did you prepare for your
9 deposition today?

10 A. So the initial work goes back, I
11 think, a full year. Are you interested in all of
12 that or just the recent events?

13 Q. Just what you did to prepare for
14 today, this deposition.

15 A. Sure. Over the last couple weeks, I
16 reviewed the declaration, the '507 patent, and the
17 references that the declaration refers to. I looked
18 at the declaration of Professor Duckworth, the
19 institution decision from the court, and the
20 preliminary response from the attorneys on Masimo's
21 side.

22 I think that's the full set of

1 materials that I've looked at. I spent time reading
2 them all again, thinking about the arguments and
3 doing my best to prepare for today.

4 Q. So how long would you say you prepared
5 for your deposition today?

6 A. You know, 20 to 30 hours, I think, is
7 a guess.

8 Q. Did you meet with your attorneys, as
9 well, in preparing?

10 A. We've had a few Zoom meetings over
11 that period, maybe three of them.

12 Q. Did you talk with anyone other than
13 attorneys in preparing for your deposition today?

14 A. No.

15 Q. Have you ever discussed this IPR with
16 anyone other than attorneys?

17 A. Well, my wife knows about it. She's
18 down the hall. There are some family members that
19 know because they were with me at our lake house a
20 few weeks ago when I started gathering and preparing
21 and reviewing the materials, just what am I doing.
22 But that's the extent of it.

1 Q. Understood.

2 So let's turn to your declaration
3 again, paragraph 27, which is on page 10.

4 Do you see, Dr. Kenny, in paragraph 27
5 you identify September 20th, 2012, as the critical
6 date that you used in forming the opinions in your
7 declaration; is that right?

8 A. That's correct.

9 Q. And if we look at paragraph 37, which
10 is on page 17.

11 Do you see on the second line there
12 that you identify September 20, 2012, as the
13 priority date of the '507 patent?

14 A. That's correct.

15 Q. And that's the date you applied in
16 forming the opinions in your declaration; is that
17 right?

18 A. That's correct.

19 Q. So during the deposition today, I'm
20 going to refer to a person of ordinary skill in the
21 art using the common abbreviation "POSITA." That's
22 P-O-S-I-T-A.

1 So when I refer to a "POSITA," you'll
2 understand what I'm referring to; is that right?

3 A. I will, yes.

4 Q. And if we turn a couple pages earlier
5 in your declaration -- or paragraphs I should say,
6 to paragraph 32.

7 Do you see in paragraph 32, you
8 provide your opinion on the definition of a "POSITA"
9 for the '507 patent?

10 A. Yes.

11 Q. And to begin in paragraph 32, you
12 first state your opinion that a POSITA "would have
13 been a person with a working knowledge of
14 physiological monitoring technologies"; correct?

15 A. That's correct.

16 Q. So what does physiological monitoring
17 technologies include?

18 A. It would be a large category of
19 sensors and instruments for capturing data and
20 determining states -- the conditions, states of
21 health, and other parameters of mostly humans, I
22 would say.

1 Q. Does physiological monitoring
2 technologies include invasive devices?

3 A. I'm thinking of some examples. For
4 example, there are blood glucose monitors that
5 people with diabetes wear as sort of a small object
6 on their skin with a small needle that penetrates
7 the tissue and can determine blood glucose from its
8 presence inside the tissue.

9 I would include that as an invasive --
10 somewhat invasive monitoring technology, and I would
11 include that in this definition.

12 Q. Would you include a device that took a
13 blood sample from a person within the category of
14 physiological monitoring technologies?

15 A. For example, a syringe with a needle?

16 Q. Or a sensor that had a syringe with a
17 needle and drew your blood to measure something.

18 A. Apologies for the delay here. These
19 are all outside of the examples in the '507 patent
20 and in all the prior art references. So I hadn't
21 really thought about -- I suppose an instrument that
22 draws blood and performs analysis would be -- would

1 be thought to be a physiological monitoring
2 technology.

3 Q. So would a person who exclusively had
4 experience with invasive physiological monitoring
5 devices satisfy your requirement of having a working
6 knowledge of physiological monitoring technologies?

7 A. If they have all of the other elements
8 of this definition of a person of ordinary skill in
9 the art, I would say so, yes.

10 Q. So to meet your definition of a
11 "POSITA" in paragraph 32, does a person need to have
12 a working knowledge of noninvasive physiological
13 monitoring devices?

14 A. I hadn't -- again, apologies for the
15 delay. I'm imagining a series of questions that are
16 dissecting the universe of physiological monitoring
17 technologies into finer and finer slices, you know,
18 cardiac monitoring technologies, other thermal
19 monitoring tech -- and if the questions are would a
20 person with a working knowledge of physiological
21 monitoring technologies need to have working
22 knowledge of every single possible physiological

1 monitoring technology, I would say no.

2 I think the general domain of these
3 technologies includes a number of common elements,
4 and that knowledge combined with the other elements
5 of this statement of expertise would be sufficient
6 for a person to understand the elements and details
7 of the matters of this case.

8 Q. So my question wasn't whether a POSITA
9 would need to understand all physiological
10 monitoring technologies.

11 I'm just asking, does a person need to
12 have a working knowledge of at least some
13 noninvasive physiological monitoring technologies to
14 meet your definition of a "POSITA"?

15 A. So I don't really want to draw that
16 distinction because the elements of physiological
17 monitoring technologies, like LEDs and photo sensors
18 and circuits and other such things are present in
19 many of the examples that we might discuss that span
20 the universe of such technologies.

21 I think a person of ordinary skill in
22 the art that has a working knowledge of

1 physiological monitoring technologies and the other
2 elements of this preparation would understand the
3 elements of invasive and noninvasive physiological
4 monitors, and be qualified and capable of
5 understanding the issues and elements of the matter
6 that we're discussing today.

7 I just don't think there's a
8 distinction in the expertise here that is relevant.

9 Q. But it seems like you agree that a
10 person would need to have a working knowledge of at
11 least some noninvasive physiological monitoring
12 technologies to be a POSITA; is that right?

13 A. I think my statement is that if they
14 have a working knowledge of physiological monitoring
15 technologies and all of the other elements of the
16 preparation that's described in this paragraph, that
17 they would be qualified to understand this
18 discussion about these noninvasive physiological
19 monitoring technologies, which include elements that
20 are more or less the same as the invasive monitoring
21 technologies.

22 Just as an example, invasive monitors,

1 you know, blood glucose, use optical sensors and
2 spectroscopy to measure those parameters. And in
3 some cases, the basic approaches, concepts, and
4 elements are pretty much the same as what would be
5 the case for a noninvasive example of such a
6 monitor.

7 Maybe put another way, if they have
8 the characteristics and expertise described here,
9 they would be capable of understanding invasive and
10 noninvasive physiological monitors.

11 Q. In paragraph 32 of your declaration,
12 what do you mean by "a working knowledge of
13 physiological monitoring technologies"?

14 A. I think, actually, the answer to that
15 is in the next sentence. They would have at least a
16 bachelor's degree in electrical, mechanical,
17 biomedical, computer engineering, physics, or
18 related field, and would have had at least two years
19 of relevant work experience with physiological
20 monitoring technologies and devices, including user
21 interfaces, capture and processing of information,
22 or equivalents thereof.

1 And then the last sentence states that
2 more education can compensate for less work
3 experience and vice versa.

4 Q. So in your definition of a "POSITA,"
5 the working knowledge of physiological monitoring
6 technologies is basically from the second sentence
7 to the end of paragraph 32; is that right?

8 A. I think that's fair, yes.

9 Q. In your declaration, you offer
10 opinions on the legal issues of anticipation and
11 obviousness; is that right?

12 A. I do.

13 Q. What is the legal standard of
14 anticipation that you applied in forming the
15 opinions in your declaration?

16 A. So, you know, I'm not an attorney. So
17 the exact written definition of the legal standard
18 would be the thing I would normally read back to you
19 at this point. I'm not finding it in my report.

20 So I could paraphrase, or I could read
21 it to you from one of the other documents I have
22 here, which would be the court's opinion or maybe

1 one of the other reports. I think I can give you my
2 understanding of that definition, if that's --

3 Q. We can take a step back.

4 What's the legal standard for
5 anticipation that you applied in forming the
6 opinions in your declaration?

7 A. So, for example, in my declaration, I
8 have the opinion that Claims 13, 15, 18, and 19 are
9 anticipated by Mendelson. My understanding is that
10 all elements of those claims are present in
11 Mendelson, and that, therefore, the disclosure of
12 Mendelson fully encompasses the requirements of
13 those four claims of the '507 patent.

14 Q. And do you understand that your
15 declaration also does not set forth the legal
16 standard you applied for obviousness?

17 A. I could look through all hundred-odd
18 pages one more time, but I think that's true. So
19 let me just spare us that time.

20 Q. So can you tell me what -- sorry,
21 strike that.

22 And you also didn't see a legal

1 standard section for anticipation in your
2 declaration; correct?

3 A. I did not find that, that's correct.

4 Q. So can you tell me what legal standard
5 for obviousness you applied in forming the opinions
6 on obviousness in your declaration?

7 A. So my understanding of that standard
8 is that, for example, Claims 16, 18, and 20 are
9 obvious over the combination of Mendelson and Tran,
10 and that all the elements of those claims are
11 present in the disclosures of Mendelson and Tran,
12 and that a person of ordinary skill in the art would
13 understand that those references can be combined and
14 would be motivated to consider such a combination.

15 Q. Are you familiar with something called
16 secondary considerations or objective indicia of
17 nonobviousness?

18 A. I've heard of them, yes.

19 Q. Did you discuss secondary
20 considerations or objective indicia of obviousness
21 in your declaration?

22 A. I don't believe so, no.

1 Q. Why not?

2 A. I wasn't asked to, maybe first. I
3 wasn't provided with information around those
4 secondary considerations which I believe include
5 things around market acceptance, what people in the
6 field think about the relevance of certain things
7 and how they might work together, et cetera.

8 I wasn't presented with any of that
9 evidence, and the materials I considered didn't
10 include any -- any information that would support
11 any such analysis.

12 Q. As someone who's been an expert
13 witness in at least IPRs before, you understand
14 there's an issue in patent cases known as claim
15 construction; right?

16 A. I do.

17 Q. And you submitted declarations in
18 other IPRs that had some analysis of claim
19 construction; correct?

20 A. Yes, I have.

21 Q. But in this IPR, your declaration
22 never addresses claim construction; is that right?

1 A. That's correct. In the absence of
2 explicit constructions, my understanding is that I
3 and anyone would interpret the claim language in
4 terms of its plain and ordinary meaning, and that's
5 the interpretation that I applied.

6 Q. Just to confirm, you're saying you
7 applied the plain and ordinary meaning of all of the
8 claim language in forming the opinions in your
9 declaration; is that right?

10 A. That is correct.

11 Q. What's the legal standard for claim
12 construction that you applied in forming the
13 opinions in your declaration?

14 A. Could you repeat that question?

15 Q. Sure.
16 What's the legal standard for claim
17 construction that you applied in forming the
18 opinions set forth in your declaration?

19 A. I think that's -- it would be the same
20 answer, that I applied the plain and ordinary
21 meaning of the language in the claims to interpret
22 the claims and inform my opinions as to obviousness

1 and anticipation.

2 Q. Are you aware that Masimo accuses
3 Apple of infringing the '507 patent in a pending
4 patent litigation case in Delaware district court?

5 A. The awareness I have of that only
6 comes from the references made to that proceeding in
7 the materials from Masimo and its expert, and just
8 in sort of understanding the overall framework of
9 our -- of this case.

10 Q. So Apple's counsel never told you that
11 there is a pending patent case in Delaware where
12 Apple is accused of infringing the '507 patent; is
13 that right?

14 A. No, so in the early discussions and
15 recent discussions, I understand there is a parallel
16 case. I don't know anything about the proceedings
17 in that case.

18 Q. And did Apple's counsel tell you about
19 the Delaware case, or did you just learn it
20 yourself?

21 A. No, it was discussed, I believe, when
22 we began preparing the IPR a year ago. And it was

1 discussed very briefly in our conversations in the
2 last week.

3 Q. So did you know that Apple set forth
4 its claim construction positions for the '507 patent
5 in the Delaware case months before Apple filed its
6 IPR petition on the '507 patent?

7 MR. BISENIUS: I'm going to instruct
8 the witness to not divulge the contents of
9 any discussions between Dr. Kenny and
10 attorneys for Apple.

11 BY MR. WENTZEL:

12 Q. And just to be clear, Dr. Kenny, I'm
13 not asking for the content of your conversations
14 with attorneys.

15 I'm just asking if you were aware that
16 Apple set forth claim construction arguments for the
17 '507 patent in the Delaware case months before the
18 '507 patent IPR petition was filed?

19 A. I'm including a no on that question.
20 I really don't know anything about the proceedings
21 in that parallel case, except for the comments made
22 in the reports from Dr. Duckworth and the

1 preliminary response from Masimo.

2 Q. Wouldn't you want to know, Dr. Kenny,
3 what Apple's claim construction arguments were for
4 the '507 patent in Delaware before you offered
5 opinions on validity of the '507 patent in this IPR?

6 A. I think that would be going outside of
7 the bounds of what I was asked to do. I was asked
8 to look at the '507 patent. We considered the
9 validity of the claims of that patent in the context
10 of the prior art references, including Mendelson and
11 others.

12 Based on my understanding of the plain
13 and ordinary meaning of the language in the claims
14 of '507 patent, I believe Mendelson anticipates some
15 of the claims, and that Mendelson, combined with
16 these other references, renders obvious all of the
17 other claims and in many combinations of references
18 and claims.

19 For me, that was a sufficient
20 description of my exercise, and that's the work I
21 did.

22 Q. Are you aware that in the Delaware

1 litigation, Apple argues that the phrase "one or
2 more signals" in the '507 patent claims means "raw
3 detected signals"?

4 A. My awareness of that comes from the
5 reports of Dr. Duckworth and the preliminary
6 response from Masimo. I have no other knowledge
7 aside from what's contained in those reports.

8 Q. So in forming the opinions in your
9 declaration, did you apply Apple's claim
10 construction that one or more signals in the '507
11 patent claims means raw detected signals?

12 A. I applied the plain and ordinary
13 meaning of the signals described in the claims of
14 the '507 patent. I did not apply that particular
15 construction.

16 Q. Why not?

17 A. I didn't ask for or know about any of
18 those constructions at the time of my report. I
19 found that the claims are clear on their face, and I
20 applied the plain and ordinary meaning of the terms
21 in the claims to my analysis.

22 Q. Do you agree with Apple's construction

1 that one or more signals means raw detected signals
2 in the '507 patent claims?

3 A. I haven't spent any time considering
4 or analyzing the answer to that question. I don't
5 have an opinion.

6 Q. And can you form such an opinion?

7 A. Can I?

8 Q. Yes.

9 A. I suppose, if given time and resources
10 and opportunity to think through all of it, I could.
11 But as I stand -- as I sit here today, I haven't
12 done that work, and I don't really have anything to
13 say on the matter.

14 Q. You're aware in this IPR that Apple
15 argues that "no claim terms need be construed"; is
16 that correct?

17 A. Is that a quote from --

18 Q. That's a quote from the petition.

19 A. Apple's petition. Yes, I am aware of
20 that.

21 Q. Is it proper to argue that one or more
22 signals means raw detected signals in one case, but

1 to then argue that one or more signals has its plain
2 meaning in this case?

3 A. Are you asking me is it proper from a
4 legal perspective? I'm not a lawyer. So I don't
5 know the answer to that question. I've read the
6 report -- or I say the opinions provided by the
7 board, and they're comfortable proceeding with the
8 plain and ordinary meaning of these terms as the
9 basis for this proceeding.

10 Q. Does making inconsistent claim
11 construction arguments regarding the same term of
12 the same patent in parallel cases seem fair to you,
13 Dr. Kenny?

14 A. I really don't have an opinion that
15 I'd want to see on the record here. It's -- that's
16 a legal question. I'm not an attorney. I don't
17 prosecute cases in parallel. I'm simply doing the
18 work here, which is to consider the claims of the
19 '507 as I understand them and as a person of
20 ordinary skill would understand them.

21 I think the claims do not require any
22 explicit constructions. And with the plain and

1 ordinary meaning of those claims, I believe they're
2 either anticipated by Mendelson or rendered obvious
3 by Mendelson, together with other references.

4 Q. So I'm not asking a legal question,
5 Dr. Kenny.

6 I'm asking just whether you think it's
7 fair for -- it's fair to make inconsistent claim
8 construction arguments regarding the same term of
9 the same patent in two different cases?

10 MR. BISENIUS: Objection, asked and
11 answered.

12 THE WITNESS: Yeah, I just don't know,
13 frankly. The fairness is -- that's in the
14 context of the matters at hand. Those are
15 legal questions. I think the four attorneys
16 on the call could have a sidebar and argue
17 that out. Perhaps you will. But for me, I
18 don't have anything to say about that,
19 really.

20 BY MR. WENTZEL:

21 Q. Have you ever offered an expert
22 opinion on the issues of infringement and validity

1 in the same case?

2 A. I believe so, going back quite some
3 time, but yes.

4 Q. Did you ever opine that a patent claim
5 term has one meaning for infringement and a
6 different meaning for validity?

7 A. In my own analysis of invalidity and
8 infringement of a particular patent, no.

9 Q. Why not?

10 A. Within my analysis of a combination of
11 arguments, just to be consistent with my own
12 thinking, I applied the same constructions on both
13 sides of matters of that sort, when I've done it.
14 It's only been a few times, but I think in most
15 cases, it was the plain and ordinary meaning applied
16 on both sides.

17 So there was no real argument. I
18 don't remember off the top of my head a particular
19 construction in a prior proceeding -- well, I don't
20 know. I've been deposed many times. I've been
21 involved in many cases. So I don't want to make a
22 blanket statement.

1 I can think of cases where the sides
2 had proposed alternate constructions and the court
3 hadn't yet ruled on the construction. So arguments
4 were presented in the context of multiple possible
5 constructions of a claim term.

6 Q. But as for the construction that you
7 were advocating for in those cases, you would have
8 applied the same construction for infringement and
9 validity; is that right?

10 A. What I remember in cases like that is
11 that there might have been -- there would have been
12 two or more constructions that had been proposed,
13 and that I presented arguments around my analysis in
14 the context of any of those constructions.

15 Q. Let's say a term has one construction
16 and there aren't competing constructions being
17 proposed by the parties.

18 In that circumstance, you would apply
19 the same construction for infringement as you apply
20 for validity; is that right?

21 A. I think I would apply the
22 constructions that I was offered. You know, so if

1 the parties agreed on a construction and it was time
2 to consider the validity or infringement of a
3 patent, in the context of that construction, I would
4 apply that construction.

5 Q. All right. Let's take a look at your
6 declaration again, paragraph 114, which is on
7 page 73.

8 Do you see at the top of
9 paragraph 114, you state that, "D'Angelo is a paper
10 that was presented at the 33rd IEEE EMBS Annual
11 International Conference in Boston, Massachusetts
12 and published in the collected proceedings of the
13 conference."

14 You see that?

15 A. Yes.

16 Q. You did not attend that IEEE
17 conference in 2011; correct?

18 A. I don't think so, no.

19 Q. So since you did not attend that 2011
20 IEEE conference, you do not know what was actually
21 presented there; is that right?

22 A. So I wasn't a live, in-person witness

1 to the presentation. I think the expectation for
2 participants in conferences where there's a parallel
3 conference proceedings is that they would present
4 the material at the meeting that's consistent with
5 what is described in the proceedings paper that
6 usually is prepared shortly in advance of the
7 conference.

8 During the conference, the presenter
9 is a live human on a stage, usually, or perhaps
10 standing next to a poster. And there was questions
11 and answers, and often useful discussion. Some of
12 that might or might not be reflected in the details
13 of the paper.

14 But the paper itself was published at
15 or before the time of the meeting and provides a
16 good public record of the disclosure that was made
17 to the community at that time.

18 Q. You never offer an opinion as to the
19 specific date when the D'Angelo paper was actually
20 published; right?

21 A. I know -- I know the conference took
22 place on August 30th to September 3rd, 2011. It's

1 typically the case that the proceedings' papers are
2 available at the time of the meeting, either as a
3 hard copy or by download.

4 That is the general tradition of IEEE
5 meetings, which I've attended many. Every single
6 IEEE meeting I've attended, the proceedings were
7 available at the time of the conference itself.

8 Q. Do you know the -- so taking a step
9 back.

10 You're referring to what you say is
11 typically done with making papers available for
12 download; correct?

13 A. Or providing hard copies to the
14 attendees at the time of the meeting, yes.

15 Q. But you don't know if that actually
16 happened with respect to the D'Angelo paper; is that
17 right?

18 A. I just -- from my experience attending
19 IEEE meetings, every single meeting I've attended
20 throughout my entire career, when I show up at the
21 meeting, I am either given a hard copy of all of the
22 proceedings' papers or access to a soft copy,

1 sometimes on a memory stick or further back on a CD.
2 But more recently, those are usually made available
3 through a website.

4 The general purpose is so that
5 attendees of the conference can read the paper prior
6 to the presentations and have some time to think
7 about what materials are being presented so that
8 it's possible to prepare thoughtful questions.

9 Q. What specific date was the D'Angelo
10 paper actually published, do you know?

11 A. I believe it was made available to the
12 attendees at the time of the conference. If we
13 wanted to spend a little time right now or during a
14 break, I suppose I could poke around the Internet
15 and maybe come up with an answer to that question in
16 particular.

17 But I believe, based on my experience
18 attending these meetings, that the paper was
19 available to the attendees at the time of the
20 conference.

21 Q. That doesn't answer my question, sir.
22 I'm asking for the specific date D'Angelo was

1 published.

2 Do you have an opinion set forth in
3 your declaration on the specific date the D'Angelo
4 paper was actually published?

5 A. So, you know, my answer is that this
6 paper was published in the proceedings of the
7 conference. Those proceedings are made available to
8 attendees of the conference at the time of the
9 conference.

10 There may be subsequent additional
11 publications in some society journals or in other
12 venues, but the attendees of the conference would
13 have had access to either hard copies or soft copies
14 of the paper as it was presented, which is the paper
15 we're considering today.

16 Q. Again, you haven't answered my
17 question about whether you provided an opinion in
18 your declaration on a specific date that the
19 D'Angelo paper was actually published?

20 A. So it was published in the
21 proceedings. The proceedings were made available to
22 attendees at the conference, which took place from

1 August 30th to September 3rd, 2011. So I would
2 regard the proceedings to have been published on the
3 first day of the conference, if not before.

4 Q. But you don't know that for a fact;
5 correct?

6 A. It's -- it's my understanding of the
7 practice of IEEE's facilitation of technical
8 conferences that the proceedings are available to
9 the attendees at the time of the conference. And my
10 statement, you know, really at the start of this is
11 that those proceedings were published -- this paper
12 was published in the collected proceedings and that
13 the conference took place August 30th.

14 So my expectation is that the paper
15 was available to the attendees at the time of the
16 conference in either hard copy form or downloadable
17 soft copy, perhaps on a CD-ROM or a memory stick.
18 2011, I would imagine it was probably a memory stick
19 that was provided to the attendees.

20 Q. So your statement about when the
21 conference proceedings would be provided to
22 attendees is just your expectation, correct, because

1 you don't know for a fact?

2 A. So I wasn't present. I suppose we
3 could review the bylaws of the IEEE. I think you'll
4 find a statement to that effect, that IEEE-sponsored
5 conferences are required to make the proceedings
6 available to the attendees at the time of the
7 conference.

8 I've been the general chair of several
9 IEEE-sponsored conferences. I've been part of
10 organizing committees of many of them. Our practice
11 at all such conferences was consistent with what
12 I've described, that proceedings are made available
13 at the time of the conference.

14 And every IEEE conference I've
15 attended, either as a general member or as an
16 organizer, presenter, as a chair, member of the
17 program committee, any role, every such conference,
18 the proceedings are available at the time of the
19 meeting to the attendees of the conference.

20 Q. So you've had papers presented at IEEE
21 conferences that were published by IEEE; is that
22 right?

1 A. So there are many ways papers from
2 conferences can be published. There can be the
3 copies of the papers provided by the authors that
4 are a part of the review and selection process prior
5 to the meeting that get published at the meeting.

6 Often authors are allowed to submit
7 extended papers after the meeting for review in
8 journals and subsequent additional publication. But
9 the proceedings paper itself, in this particular
10 example, the paper presented at this conference on
11 September -- August 30th to September 3rd, 2011,
12 was -- I would regard that to have been published at
13 the time of the conference.

14 Q. Did you receive a copy of D'Angelo
15 between August 30th and September 3rd, 2011, such
16 that you know it was published at that time?

17 A. I personally -- no, I didn't look for
18 or download that paper at that time.

19 Q. Do you know how IEEE publishes papers
20 to the public, to members outside of IEEE?

21 A. Today or at that time or --

22 Q. At the time in 2011.

1 A. And publishing to the general public?
2 So this is a question about when the conference
3 proceedings would be made available to people who
4 did not attend the conference. So that's the
5 question you're asking?

6 Q. Yes.

7 A. I don't know if there's a strict
8 policy on that. My general expectation is that
9 conference proceedings are made available within
10 weeks, maybe up to a month or so, of the completion
11 of the conference. That can depend on the execution
12 of the committee running the meeting, in particular,
13 but that's the understanding that those proceedings
14 are made available to the public soon after the
15 conference.

16 There's no expectation that these
17 conferences are confidential presentation of
18 materials not to be forwarded beyond the attendees.
19 So it's fairly routine for authors of papers to send
20 copies to their friends, perhaps post them on their
21 websites. Perhaps friends would do the same.

22 Often a group or a department will

1 post the entire proceedings on a website. But
2 shortly after the meeting itself, members of the
3 IEEE would have access to the proceedings through
4 the IEEE website.

5 And nonmembers have access to those
6 same materials by paying sort of per paper download
7 fees, maybe 20 or \$30 per paper. As an IEEE member,
8 they would have free access to all proceedings of
9 IEEE conferences shortly after the event of the
10 conference itself.

11 There's at least a full year between
12 this conference and the disclosure of the '507. I'm
13 unaware of any IEEE conference that took longer than
14 that to make available proceedings' publications.

15 Q. Before we shift kind of topics here,
16 we can take a break, if you'd be interested in that.

17 A. Not a terrible idea.

18 MR. WENTZEL: Let's take a break.

19 THE REPORTER: Okay. We're off the
20 record.

21 (Recess from the record.)

22 THE REPORTER: We're back on the

1 record.

2 BY MR. WENTZEL:

3 Q. Welcome back, Dr. Kenny.

4 A. Thank you.

5 Q. Let's turn to page 81 of your
6 declaration, to paragraph 124.

7 In paragraph 124 of your declaration,
8 you provide your opinion on the motivation to modify
9 Mendelson's receiver module to draw power from the
10 PDA; is that right?

11 A. Yes, that's correct.

12 Q. And in paragraph 124, you state that
13 using the PDA to power the receiver module "would
14 have provided the additional and beneficial
15 functionality for the measured physiological data to
16 be read from the Receiver Module 'even when its
17 battery is empty.'" is that correct?

18 A. That is correct.

19 Q. So your opinion is that it would have
20 been obvious to draw power from Mendelson's PDA to
21 read out data from Mendelson's receiver module that
22 had already been measured; is that right?

1 A. I'm sorry, would you repeat that
2 again?

3 Q. Sure.

4 Your opinion in paragraph 124 is that
5 it would have been obvious to draw power from
6 Mendelson's PDA to read out previously measured data
7 from Mendelson's receiver module; is that right?

8 A. So I think the statement here is that
9 a person of ordinary skill would consider modifying
10 Mendelson's system, based on the straightforward
11 teachings of D'Angelo that would have provided
12 additional functionality, including the opportunity
13 to capture the data even when the battery in the
14 receiver module was empty.

15 Q. And by "capture the data," you're
16 referring to reading out previously measured data
17 from the receiver module; is that right?

18 A. I don't think it's limited to that
19 precisely. I think that as described here and
20 elsewhere in this section, one person of ordinary
21 skill would consider modifying Mendelson's system to
22 be able to rely on the PDA for power, and that would

1 allow opportunities to read from the receiver module
2 even when the battery is empty. And that would
3 include anything that one might read from the
4 receiver module.

5 Q. So is it your opinion that a person of
6 ordinary skill in the art would make this
7 modification to both read out previously measured
8 data from the receiver module and measure new data
9 with the receiver module?

10 A. So reading from the D'Angelo
11 reference, that a person of ordinary skill would be
12 thinking about here, one of -- the second edition in
13 this case is a connection between the smartphone's
14 power output pin and the management devices charging
15 pin, allowing to read out the management device with
16 the smartphone even when its battery is empty.

17 I think the understanding here is that
18 D'Angelo allows reading out of any data in the
19 management device to the smartphone, even in the
20 scenario where the battery in the management device
21 is empty, and that a person of ordinary skill in the
22 art would consider modifying Mendelson to achieve

1 the benefits as described by D'Angelo.

2 Q. And you're reading from the top left
3 column on page 3 of D'Angelo; is that right?
4 Exhibit 1007?

5 A. That's correct.

6 Q. So is D'Angelo talking about reading
7 out previously measured data from the management
8 device or taking new measurements with the
9 management device?

10 A. So in D'Angelo, measurements are
11 performed by the -- I think they're called sensor
12 modules. That data is transferred to the management
13 device and made available.

14 So you would be taking data from the
15 management device to the PDA from amongst the data
16 that's in the management device, which is produced
17 by the sensor modules.

18 Q. So D'Angelo is talking about using the
19 PDA to power the management device to read out
20 previously recorded data; is that correct?

21 A. (No response.)

22 Q. It's been a few minutes, Dr. Kenny,

1 are you able to answer my question?

2 A. I'm just reading D'Angelo to see where
3 it describes the timing and, you know, detailed
4 operations for data management.

5 Can I have the question again?

6 Q. Sure.

7 Where we were reading from on the top
8 left column of page 3 of D'Angelo, we were talking
9 about the sentence that talks about reading out the
10 management device with the smartphone even when its
11 battery is empty.

12 So my question is: D'Angelo is
13 talking about using the PDA to power the management
14 device to read out previously recorded data; is that
15 correct?

16 A. I can't say for sure that it's limited
17 to previously recorded data. Certainly, it includes
18 the readout of previously recorded data, but there's
19 other portions of D'Angelo that describe the
20 interaction between the elements as continuously
21 operating or continuously running.

22 So I don't know what the timing of

1 events for a measurement at the sensor module
2 getting to the management device and onto the PDA,
3 whether there's automatic buffering or the buffering
4 is an option.

5 It's not clear to me that it's limited
6 to only previously recorded data. Certainly, it
7 includes previously recorded data, but it could
8 include continuously or simultaneously recorded
9 data, as far as I can tell.

10 And maybe to add to that, simultaneous
11 would include possible very, very short time delays
12 for propagation that are insignificant on the scale
13 of the data being recorded.

14 Q. So is it your opinion that it would
15 have been obvious to draw power from Mendelson's PDA
16 to read out previously measured data from
17 Mendelson's receiver module or to read out new data
18 using that receiver module? Which is it?

19 A. It could be both. I don't know if
20 there's a clear distinction, partly because the
21 timing for the operation of the system could all be
22 very, very fast compared to the timing of the

1 measurements themselves.

2 So in some sense, all data is
3 previously recorded, but I think a person of
4 ordinary skill reading this would understand that if
5 the data gets from the sensor module to the PDA on a
6 time scale that's fast enough to seem to be current,
7 that that could be viewed as not -- you know, not
8 buffered and stored for a long time, but currently
9 recorded data.

10 And I'm sorry if I'm digging into a
11 distinction that you're not interested in. I think
12 the understanding of D'Angelo is that the sensor
13 module is measuring and sharing that data with the
14 management device and that the management device is
15 in communication with the PDA, and at the time of
16 propagation of information is fast. You know, it's
17 communication time scales.

18 So, yes, it includes previously stored
19 data, as well as perhaps data that is on route, if
20 you will. I think the point I'm making is that this
21 is not limited to a case where you wear the device
22 and go off on a run, store all of the device -- all

1 of the data in the management device, and then come
2 home and download all of it all at once to the PDA.
3 It could be continuous, or it could be a delayed
4 download.

5 Q. So your opinion is that it would have
6 been obvious to draw power from Mendelson's PDA to
7 read out both previously measured data and new
8 future data from the receiver module; is that right?

9 A. It could be useful to read out
10 previously captured and stored data, as well as
11 whatever the current measurements are, yes.

12 Q. I'm not asking what could be or what
13 D'Angelo says, sir. I'm just asking for what your
14 opinion is so that I can understand it.

15 A. I think a person of ordinary skill in
16 the art would consider modifying Mendelson so that
17 the power connection from the PDA to the receiver
18 module could allow download of physiological data,
19 and that that would include data that's been stored,
20 as well as the current flow of data.

21 Q. And what is your understanding of the
22 phrase "read out a management device with the

1 smartphone" in D'Angelo?

2 What data is being read out there?

3 A. It's data that is present in the
4 management device being read out by the PDA, which
5 could include data that's been buffered and stored
6 for some maybe lengthy period of time. And it could
7 include the realtime data that's flowing from the
8 sensor to the management device and available for
9 transfer.

10 Q. Let's turn to page 98 of your
11 declaration, paragraph 152.

12 A. Okay.

13 Q. Do you see here in paragraph 152, you
14 state that, D'Angelo describes "a connection between
15 the smartphone's power output pin and the management
16 device's charging pin, allowing to read out the
17 management device with the smartphone even when its
18 battery is empty"; is that right?

19 A. That's correct.

20 Q. So now let's look at Exhibit 1007,
21 D'Angelo.

22 In the bottom left of page 3, do you

1 see the heading "Smartphone application"?

2 A. Yes.

3 Q. And under the "Smartphone application"
4 heading, on page 3, do you see that D'Angelo states
5 that "iPhone application enables transferring the
6 data stored on the microSD card inside the
7 management device to the iPhone via the serial
8 interface"?

9 A. Yes.

10 Q. So in the system of D'Angelo, the
11 smartphone could read out measured data from the
12 management device because the management device
13 stored that data on a microSD card; is that correct?

14 A. That's what's described here.

15 Q. Is a microSD card a type of
16 nonvolatile memory that retains its data even after
17 power is lost?

18 A. I believe so.

19 Q. And on the other hand, you understand
20 that volatile memory, such as random access memory,
21 or RAM as it's called, loses its data when power is
22 lost; correct?

1 A. Certain kinds of RAM can lose the data
2 when the power is completely lost, that's correct.

3 Q. But more generally speaking, you
4 understand that volatile memory will lose its data
5 when power is lost; correct?

6 A. I think that's generally the case on
7 some time scale, yes.

8 Q. Mendelson never states that its
9 receiver module has a microSD card; does it?

10 A. I don't believe Mendelson ever states
11 the -- or describes a microSD card.

12 Q. Does Mendelson ever state that its
13 receiver module has any form of nonvolatile memory
14 for storing measurements?

15 A. So the memory device in the Mendelson
16 receiver module would be the microcontroller and the
17 elements contained within the microcontroller, which
18 necessarily include memory.

19 And, for example, there's some
20 nonvolatile memory in most microprocessors that
21 retains the code that provides the operation of the
22 device, so that when the power is available, the

1 device's code is present and ready to run.

2 So there are -- there is nonvolatile
3 memory available in the microcontroller.

4 Q. Are you referring to something that's
5 typically called like a ROM, R-O-M, type memory?

6 A. Or electrically erasable ROM or other
7 kinds of memory. There's a smorgasbord of options
8 for what might be included in a microcontroller.

9 And a person of ordinary skill would
10 understand "microcontroller" to be a fairly broad
11 descriptive term that might include a number of
12 particular features within the many examples of
13 microcontrollers at that time.

14 Q. So you're talking about generally what
15 a microcontroller might have, but my question is:
16 Does Mendelson ever state that its receiver module
17 has any nonvolatile memory for storing measurements?

18 A. It doesn't explicitly state that. I
19 think a person of ordinary skill in the art,
20 considering Mendelson and D'Angelo together and
21 thinking of obtaining the benefits of having a power
22 connection to capture data when the battery is

1 empty, would probably also have understood that some
2 form of nonvolatile memory on the processing unit --
3 sorry, make sure I get the right jargon here.
4 Mendelson calls it -- I'm sorry, wrong reference.
5 Mendelson calls it the receiver module.

6 So a person of ordinary skill,
7 expecting that a powered connection would provide an
8 opportunity to read out data when the battery was
9 empty, would certainly have understood that
10 nonvolatile memory on the receiver module would be
11 necessary, and either utilize the characteristics
12 and capabilities of a particular microcontroller or
13 perhaps select a different microcontroller or add
14 other elements to the design of the receiver unit as
15 needed to support that function.

16 Q. Do you offer an opinion in your
17 declaration about changing Mendelson's receiver
18 module's microcontroller or adding memory?

19 A. I think it's generally the case that
20 when a person of ordinary skill considers a
21 reference like Mendelson in combination with a
22 reference like D'Angelo, and is considering applying

1 the teachings of D'Angelo to Mendelson's system,
2 that that would include modifications to Mendelson
3 based on the teachings of D'Angelo. I think it's
4 true with any combination.

5 Q. You offer a specific combination in
6 your declaration, though, right, Dr. Kenny?

7 A. So I don't present a detailed design
8 of a possible Mendelson/D'Angelo combination with
9 all of the details worked out and the schematics
10 fully provided. I think one of ordinary skill in
11 the art would be capable of doing that work, making
12 the selections of the elements at the time of 2012,
13 might consider some of the choices Mendelson made in
14 2006, and perhaps substitute a microcontroller for a
15 slightly more modern microcontroller, substitute the
16 connectors with connectors that are less expensive
17 or more easier to use.

18 I think it's an ordinary process of
19 what a person of ordinary skill does when
20 considering combining a reference like Mendelson
21 with a reference like D'Angelo that one considers
22 the detailed modifications necessary to implement

1 that combination.

2 Q. Can you point me to a paragraph in
3 your declaration where you offer an opinion about
4 changing Mendelson's receiver module, changing its
5 microcontroller, or adding memory to the receiver
6 module?

7 A. So there are no detailed statements
8 like that, but paragraph 124 says that a person of
9 ordinary skill would recognize that applying
10 D'Angelo's teaching to Mendelson's system to
11 configure Mendelson's receiver module to be able to
12 draw power from the smartphone in at least some
13 scenarios would have provided various benefits, and
14 that such a modification to Mendelson's system,
15 based on the straightforward teachings of D'Angelo,
16 would have provided this crucial backup
17 functionality.

18 I think a person of ordinary skill in
19 the art would understand how to implement the
20 particulars of that combination in a way that solves
21 the straightforward combination problems, like
22 making sure the connectors talk to each other,

1 making sure the power levels are compatible, making
2 sure the time scales of the communication are
3 compatible.

4 And if an objective is to draw power
5 from the receiver module when the battery is empty,
6 I think a person of ordinary skill would understand
7 that the data that you're hoping to draw needs to be
8 stored in some nonvolatile form, which could include
9 the elements of the microprocessor that Mendelson
10 chose, or it could be elements of a microprocessor
11 to be chosen in 2012, based on the teachings of
12 Mendelson and D'Angelo, but including improvements
13 to the overall technology of microprocessors during
14 that time frame.

15 Q. You understand that the title of
16 Mendelson -- I guess we can look at Mendelson. So
17 that's Exhibit 1011, first page.

18 Do you see that the title of Mendelson
19 is "A Wearable Reflectance Pulse Oximeter for Remote
20 Physiological Monitoring"; correct?

21 A. Yes.

22 Q. And you understand that Mendelson

1 explains that the intended purpose of its system is
2 for medics and first responders to remotely monitor
3 injured people or firefighters; is that correct?

4 A. There's a number of statements in the
5 paper about the possible uses of this device,
6 including, for example, during training exercises.
7 There's others, as well. But there's several
8 different mentions of the possible uses of such a
9 device.

10 Q. But the intended purpose is for remote
11 monitoring; correct?

12 A. I don't think that's intended as
13 exclusive, but it's certainly a capability and maybe
14 a priority.

15 Q. Wouldn't you agree that remote
16 monitoring is important to Mendelson, given that
17 it's even in the title of the paper?

18 A. Yeah, so some of the examples of the
19 applications for battlefield scenarios, where the
20 first -- or the people monitoring are remote, making
21 decisions and deploying resources. That's, I think,
22 correct.

1 I think there's other examples
2 monitoring soldiers during training exercises. The
3 system of Mendelson could allow that remote -- or
4 that monitoring to be perhaps more local. That
5 doesn't exclude or teach away from any of the
6 aspects of what's described in Mendelson.

7 Q. You see that remote monitoring is
8 discussed also in the abstract of Mendelson;
9 correct?

10 A. So the last sentence of the abstract
11 says it has the potential for use in combat casualty
12 care, such as for remote triage, and also by first
13 responders, such as firefighters.

14 Q. Do you disagree that the intended
15 purpose of the Mendelson system is remote
16 monitoring, sir?

17 A. I think it's -- the intent here is
18 that this is a system that's capable of remote
19 monitoring. That doesn't exclude any scenarios
20 where the monitoring is less remote, but it's an
21 important feature of the system that it's -- it
22 would support remote monitoring.

1 Q. In order for Mendelson's receiver
2 module to draw power from the PDA, you understand
3 the PDA would have to be brought to the person
4 wearing the receiver module; correct?

5 A. Certainly within the length of a cable
6 or a connector, sure, which I understand to mean
7 within some modest distance, yes.

8 Q. If a first responder carrying
9 Mendelson's PDA had to go up to an injured person to
10 plug in the PDA into the receiver module, power the
11 receiver module, you understand that the medic is no
12 longer remotely monitoring that person; correct?

13 A. I think the last sentence of the
14 abstract articulates that those are two
15 possibilities, remote triage and first responders.
16 And I think first responders are -- maybe I'm
17 overstating the understanding here, but to me, a
18 first responder is someone on the scene.

19 The remote triage could be a doctor in
20 a clinic watching the activities remotely, but the
21 first responder might actually be the first
22 responder on the scene.

1 Q. Doesn't Mendelson describe using the
2 system to monitor people in dangerous scenarios,
3 whether they be injured people in combat scenarios
4 or firefighters fighting a fire?

5 A. Yes. And, also, it describes
6 monitoring people during training exercises. I
7 think the understanding here is that the system has
8 impressive capabilities, which could include remote
9 monitoring, but are also useful in scenarios where
10 the monitoring is not remote.

11 It's not exclusively for remote
12 monitoring. It's capable of remote monitoring, but
13 might also be used by first responders, who are, I
14 think by definition, on the scene.

15 Q. Are you saying a first responder
16 couldn't arrive at some emergency situation and use
17 Mendelson's system to remotely monitor people on the
18 scene?

19 A. So I can imagine some scenarios where
20 the first responder would arrive on the scene, and
21 the instrument being worn by the subject has had its
22 battery run out, and that it would be a benefit for

1 that first responder to be able to connect their PDA
2 to the instruments on the patient -- or the subject
3 and to extract the data.

4 So that's, I think, exactly the
5 motivation that a person of ordinary skill in the
6 art would be considering when viewing Mendelson in
7 light of D'Angelo. D'Angelo provides an additional
8 feature to provide power to the remote monitoring,
9 and recover the data on that module even if its
10 battery has run dry.

11 I think a person of ordinary skill in
12 the art would appreciate that at least one of the
13 scenarios for Mendelson's device, which involves
14 first responders or monitoring of training
15 exercises, might imagine a scenario that the
16 benefits of being able to apply power and extract
17 data are useful, even though they're not exclusively
18 taught in Mendelson alone.

19 Q. Can we turn to page 2 of Mendelson, to
20 Figure 2.

21 You understand that the top half of
22 Figure 2 of Mendelson shows the system block diagram

1 for Mendelson's sensor module; correct?

2 A. That's correct.

3 Q. So looking at the block diagram for
4 the sensor module, you agree that the signal from
5 the photodiode on the left first goes through a
6 transimpedance amplifier; correct?

7 A. So that's what's -- that's what's
8 indicated by this diagram. My view of the sensor
9 module is used to perform these measurements of
10 physiological parameters, in this case oxygen
11 saturation, and that the output of the receiver
12 module is the signal that is produced by the
13 receiver module that goes through a number of
14 internal stages, of course, as I think one of
15 ordinary skill in the art would expect. But, yes,
16 including the transimpedance amplifier.

17 Q. So you were saying the signal from the
18 photodiode goes through a number of internal stages
19 before it's output by the sensor module; is that
20 right?

21 A. I think that's what this block diagram
22 shows, that there's signal produced by the receiver

1 module. It comes from the operation of the system.

2 Q. So you're saying produced by the
3 receiver module. Did you mean the sensor module?

4 A. I'm sorry, you're correct. Thank you
5 for pointing that out. I meant the sensor module.

6 Q. So what is your understanding of what
7 happens to the signal in Mendelson's sensor module
8 between being detected by the photodiode and
9 being -- data being output by the sensor module?
10 What happens to the data?

11 A. Yeah, so this block diagram is not a
12 detailed schematic, but I think one of ordinary
13 skill would understand that the electrical signal
14 from the photodiode is processed, amplified,
15 filtered, et cetera, in a straightforward way, that
16 the result of this is a signal that reflects the
17 information, and it reflects the oxygen saturation
18 that's initially detected by the light levels
19 received by the photodiode.

20 Q. So the information output by
21 Mendelson's sensor module is not raw detected
22 signals from the photodiode; correct?

1 A. It's really not a useful or important
2 distinction, in my view. The sensor module measures
3 the oxygenation or the oxygen saturation of the
4 blood. It produces signals that are -- that reflect
5 that oxygen saturation information, that those
6 signals are output and made available to the
7 receiver module, and the receiver module converts
8 that -- those signals into measurements of
9 oxygenation, oxygen saturation.

10 Whether, you know, what descriptors
11 are for the signal as it propagates through or
12 exits, signal is signal.

13 Q. So you just said, Dr. Kenny, that the
14 electrical signal from the photodiode -- sorry, let
15 me strike that.

16 Do you recall a moment ago, Dr. Kenny,
17 when you stated that "the electrical signal from the
18 photodiode is processed, amplified, filtered,
19 et cetera," before being output by the sensor
20 module?

21 A. I'm assuming you're reading from the
22 transcript. So I believe that's true. That's what

1 this figure is intended -- I believe intended to
2 indicate.

3 Q. So is the raw signal from the
4 photodiode what is output by the sensor module of
5 Mendelson?

6 A. So the signal from the photodiode is
7 what's output by the sensor module of Mendelson.
8 Mendelson doesn't try to distinguish raw signals
9 from other signals. I don't think there's a
10 universally recognized distinction between such
11 things.

12 Different context, even different
13 people describing this context, might apply the word
14 "raw" in various locations, or they might not. It's
15 really not meaningful or important.

16 To me, the photodiode produces a
17 signal. That signal is managed by the sensor module
18 and provided for the receiver module. And the
19 receiver module of Mendelson takes that signal and
20 determines the oxygen saturation values.

21 Q. Is the exact data that's output by the
22 photodiode what is subsequently output by the

1 module -- by the sensor module, sorry? Let me reask
2 that.

3 Is it the exact data output by the
4 photodiode what the sensor module outputs?

5 A. I think the sensor module outputs
6 signals that are responsive to light from the light
7 source attenuated by the tissue and responsive to an
8 oxygen saturation of that tissue. This is language
9 from the claim of '507. I think that's what this
10 module is doing.

11 Q. So you think that nothing about the
12 signal from the photodiode is being amplified,
13 filtered, processed in any way before information is
14 output from the sensor module; is that right?

15 A. I would say the signal produced by the
16 photodiode is amplified, filtered, et cetera, and
17 then that signal is output by the sensor module.
18 That sensor -- that signal from the sensor module is
19 responsive to the light from the light source, and
20 that is responsive to the oxygen saturation of the
21 tissue.

22 Q. So I'm asking you about Mendelson, and

1 you're reading from the '507 patent claims; is that
2 right?

3 A. That is correct. Mendelson -- the
4 system of Mendelson produces and performs the
5 function that that anticipates the patent claim.

6 Q. Let's look at page 123 of your
7 declaration, paragraph 199.

8 So you see paragraph 199 starts the
9 section where you provide an obviousness opinion for
10 Claims 10 and 11 of the '507 patent; is that right?

11 A. That's correct. This is based on the
12 combination of Mendelson, D'Angelo, and Goldsmith,
13 yes.

14 Q. So is it your opinion for Claims 10
15 and 11 that based on Goldsmith, a POSITA would have
16 been motivated to implement the PDA of the
17 Mendelson/D'Angelo combination as a wearable
18 wristwatch?

19 A. So the last part of paragraph 203 in
20 my report, I say, "A person of ordinary skill in the
21 art would have predictably applied Goldsmith to the
22 system of Mendelson and D'Angelo to beneficially

1 implement the display device (Mendelson's PDA having
2 cellular and smartphone capabilities as described by
3 D'Angelo) as a wearable wristwatch."

4 And then I provide a number of reasons
5 why a person of ordinary skill would consider that
6 combination and modification.

7 Q. So your proposed combination for
8 Claims 10 and 11 is making the PDA into a
9 wristwatch; correct?

10 A. It would be implementing the functions
11 of the elements of the PDA in the Mendelson/D'Angelo
12 combination into a wristwatch, yes. So the various,
13 you know, receivers, displays, power sources,
14 et cetera.

15 Q. So in your proposed combination for
16 Claims 10 and 11, would the wristwatch that you
17 propose entirely replace Mendelson's PDA, or would
18 the system still have a PDA?

19 A. I think the proposed combination
20 contemplates replacing the PDA with a wristwatch.
21 It might have all the same functions of a PDA and
22 might even still call it a PDA, but it would have

1 the form, shape of a wristwatch.

2 Q. And Claims 10 and 11 depend from
3 Claim 1, which has the limitation requiring drawing
4 power from the mobile computing device; right?

5 A. That's correct.

6 Q. So is it your opinion that the POSITA
7 would use this PDA turned into a wristwatch to
8 provide power to Mendelson's receiver module in at
9 least some circumstances?

10 A. Yes, I think that's -- it isn't
11 explicitly stated in this description, but it's part
12 of the prior description that this is based on, that
13 the combination of Mendelson and D'Angelo would
14 include a means for applying power from the PDA to
15 the -- to the management device or the receiver
16 module, depending on which perspective we're looking
17 at, and that modifying a wristwatch to provide that
18 feature would include having a very small port and a
19 small connector would apply power from the
20 wristwatch to the receiver module of Mendelson to
21 allow it to be powered up and to gather data.

22 Q. You have a Bachelor of Science and a

1 Ph.D. in physics; is that right?

2 A. That's correct.

3 Q. And you've never designed or built a
4 pulse oximeter; is that right?

5 A. I think -- not a medical device
6 intended for use as a pulse oximeter. I've designed
7 and built many systems that include all the elements
8 of the sensor module in Mendelson, LEDs,
9 phototransistors and photodiodes, circuit elements,
10 filters, amplifiers, et cetera.

11 I'm familiar with all of the important
12 aspects that one of ordinary skill in the art would
13 need to know to understand the claims of '507 and
14 the teachings of the references.

15 Q. Just to be clear, you've never
16 designed or built a pulse oximeter; correct?

17 A. That's correct.

18 Q. Have you ever designed or built any
19 optical sensors for non-invasively measuring
20 physiological parameters?

21 A. Pardon me for the pause here. It's
22 30 years of teaching at Stanford, which includes a

1 course on medical mechatronic system design and a
2 course on sensors, both of which have included a lab
3 component. And beyond advising my 75 Ph.D.
4 students, I've been a peripheral advisor to many
5 more. So it's a long list.

6 I'd say to be fair and honest, I
7 haven't specifically designed and built such a
8 system that I recall myself. I've been involved as
9 an advisor, coach, you know, over-the-shoulder
10 assistant for people building a number of systems
11 that use optical sensors to detect physical and
12 physiological parameters.

13 Q. Have you ever published on pulse
14 oximetry?

15 A. I think that's an easy no. I don't
16 think you'll find that phrase anywhere in my CV.

17 Q. Have you ever turned a PDA into a
18 wristwatch?

19 A. I wish I'd done that about 15 years
20 ago. But no, I have not. I have many former
21 advisees who were involved in that activity at Apple
22 and frankly at other places, Google and other

1 high-tech companies. And I'm familiar with what a
2 typical person would have needed to know to do that
3 work.

4 Q. You know people that work at Apple; is
5 that right?

6 A. A number of my former Ph.D students
7 work at Apple, yes. It might be a dozen at the
8 moment. I've also got former Ph.D students at other
9 companies. 75 of them out there. So...

10 Q. Do you know other people that work at
11 Apple besides your former Ph.D. advisees?

12 A. There are a number of students from
13 classes I've taught that are at Apple. I don't have
14 a detailed list, or I've lost track of many of them.
15 But quite a few, I think, frankly, and at other
16 companies. Apple isn't our sole customer at
17 Stanford.

18 Q. Do you have any friends that work at
19 Apple?

20 A. My former Ph.D students are mostly
21 still friends, I think. That's a question for them.
22 And I see them causally occasionally. Just for

1 example, there was a reunion event for the students
2 who have taken one of the graduate mechatronics
3 design courses over 30 years back in the spring.

4 It was framed around a retirement
5 celebration for one of the professors that has
6 taught that class. And we had 400 attendees at the
7 meeting -- or at the celebration, and I ran across
8 quite a few people who I remember as students who
9 are currently working at Apple, also at Google,
10 Tesla, many, many companies. But there were --
11 certainly, Apple was well-represented amongst that
12 crowd.

13 I've never done any direct consulting
14 work for Apple. Never had any research contracts
15 from Apple. No -- no real interaction like that.
16 Apple was pretty secretive and self-contained.

17 Q. You don't claim to be an expert in
18 pulse oximetry; do you?

19 A. I would say at least as a minimum, I
20 claim to have the expertise to understand the '507
21 patent and these references and how the elements of
22 all of these disclosures work, you know, what's the

1 technological basis, what are some of the issues and
2 challenges.

3 Q. But do you hold yourself out to be an
4 expert in pulse oximetry?

5 A. I think I try to be a modest person.
6 I try not to overclaim. I think the threshold of
7 expertise required for this project, I'm
8 certainly -- I certainly exceed that threshold.

9 There are people who are probably --
10 have more expertise on certain elements of pulse
11 oximetry, but I would assert that I've spent a fair
12 bit of time in recent years reading patents and
13 publications in this space.

14 You probably know I've been retained
15 as an expert on a number of similar matters in the
16 IPR regarding these patents around pulse oximetry,
17 and I have -- I had some prior expertise, and in
18 these few years of work, I believe I've probably
19 gained expertise.

20 Q. You refer in your declaration to
21 something called PPG signals; right?

22 A. Correct.

1 Q. What does "PPG" stand for?

2 A. It's a horribly difficult-to-pronounce
3 word, photoples- --

4 Q. Is it photo- -- photoplethysmography;
5 is that right?

6 A. I'm sorry, it's not in my everyday
7 conversation. Yes.

8 Q. What is photoplethysmography?

9 A. So it's data reflecting oxygen
10 saturation and blood flow. It's measured using
11 infrared signals at two wavelengths, at least, and
12 comparison of the transmission or reflection or
13 about both of those signals to compute
14 oxygenation -- oxygen saturation, I should say.

15 Q. Does photoplethysmography have
16 applications outside of measuring oxygen saturation?

17 A. So I'm just -- since it's in front of
18 me, I'm looking at part of Mendelson, second column
19 of the first page.

20 Pulse oximetry relies on the detection
21 of photoplethysmographic signals produced by
22 variations in the quantity of arterial blood that is

1 associated with contractions and relaxations of the
2 heart. It can be performed in transmission or
3 reflection modes, et cetera, et cetera.

4 I can keep reading, but what's stated
5 here, you can measure characteristics of the blood
6 with these reflected or transmitted signals,
7 including oxygenation, pulse, et cetera.

8 Q. And what does a PPG signal contain
9 measurements of?

10 (Document review.)

11 THE WITNESS: Could I have that
12 question again, just to be sure?

13 BY MR. WENTZEL:

14 Q. Sure.

15 I asked, what does a PPG contain
16 measurements of?

17 If you'd like it another way, I can
18 ask, what is being measured in a PPG signal?

19 A. So, for example, maybe Figure 3 of
20 Mendelson shows a PPG waveform, just a couple pages
21 further in the same reference that you have on the
22 screen. So that's a measurement of the pulsing

1 arterial flow in the blood by examining the
2 intensity of the optical radiation that is reflected
3 or transmitted through the site of the tissue.

4 Q. What are the parameters of the PPG
5 signal? For example, the -- what's on the Y axis
6 and the X axis in a PPG plot?

7 (Document review.)

8 A. So conventional PPG plot is showing
9 variations in blood flow. Just looking at the
10 examples in the '507 and in some of these references
11 that -- well, typically, with particular units on
12 the vertical axis.

13 So the understanding is up is more
14 flow, I think. And in a way that sort of allows one
15 to recognize the pulse waveform in the PPG waveform
16 on Figure 3, for example.

17 I don't think it's typical to put
18 precise numbers on the vertical axis. It's really a
19 relative measurement.

20 Q. Do you have any experience designing
21 or developing user interfaces for physiological
22 monitoring technologies?

1 A. Not in the narrow interpretation of
2 that question. For my entire career, a big part of
3 my work is presenting data, which includes making
4 decisions about the format and style and details of
5 the representation.

6 That is part of how I've worked with
7 students over the years to design displays of their
8 results, but none of them have been specific to
9 biomedical monitoring devices.

10 Q. Have you yourself ever made a user
11 interface for an application, also known as a
12 graphical user interface?

13 A. Again, I have to think back. Not
14 recently. And so the things I'm thinking of I'm
15 trying to decide whether I would think of them as a
16 user interface -- a graphical user interface for a
17 PDA of this sort. The answer is probably no, not in
18 my personal direct experience.

19 Q. What hourly rate is Apple paying you
20 to provide opinions in this IPR proceeding?

21 A. I believe the rate is \$450 an hour.

22 Q. And, Dr. Kenny, have you discussed the

1 substance of your testimony with anyone during our
2 break today?

3 A. No, I haven't.

4 Q. Okay. Well, thank you for your time.

5 MR. WENTZEL: In that case, subject to
6 any redirect questions by your attorney, I
7 have no further questions at this time.

8 MR. BISENIUS: Can you give us about
9 maybe 15 minutes? Let's reconvene at 40
10 after the hour.

11 MR. WENTZEL: Okay.

12 THE WITNESS: Okay.

13 THE REPORTER: We're off the record.

14 (Recess from the record.)

15 MR. WENTZEL: Are we back on the
16 record?

17 MR. BISENIUS: We have no further
18 questions. We can end it there.

19 MR. WENTZEL: Thank you for your time,
20 Dr. Kenny. Appreciate it.

21 THE WITNESS: All right. My pleasure.
22 Thank you.

1 THE REPORTER: Okay. We're off the
2 record.

3 (Off the record at 2:30.)
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20
21 
22 EILEEN MULVENNA, CSR/RMR/CRR/RDR

1 Dr. Thomas Kenny, c/o
FISH & RICHARDSON

2 3200 RBC Plaza, 60 South Sixth Street
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