1 O P E N S E S S I O N
2
3 JUDGE BHATTACHARYYA: Welcome, Dr. Mannheimer.
4 Do you understand that you are under an
5 obligation to tell the truth in your testimony today?
6 THE WITNESS: I do.
7 PAUL MANNHEIMER,
8 having been first duly sworn and/or affirmed
9 on their oath, was thereafter examined and testified as
10 follows:
11 JUDGE BHATTACHARYYA: Go ahead, Mr. Mueller.
12 MR. MUELLER: It looks like we may have lost the
13 witness. There we go. We're ready to proceed.
14 JUDGE BHATTACHARYYA: Sounds good.
15 DIRECT EXAMINATION
16 BY MR. MUELLER:
17 Q. Good afternoon, Dr. Mannheimer. Can you please
18 introduce yourself to Her Honor?
19 A. Yes. Your Honor, my name is Paul Mannheimer. I
20 live in Los Altos and I work at Apple.
21 Q. Sir, what is your role at Apple?
22 A. I'm a sensor architect and scientist.
23 Q. What is your educational background starting with
24 college?
25 A. I have my undergraduate degree in physics from

MASIMO 2077
Apple v. Masimo
IPR2024-00241

the University of California at Berkeley.

Q. Did you earn any graduate degrees over the years?

A. Yes. I obtained My master's degree in applied physics from Stanford University, and my Ph.D. from the University of Lubeck in Germany in biomedical engineering.

Q. Now when did you start to work for Apple?

A. At the very end of 2014.

Q. Before you worked at Apple what were you doing?

A. Just prior to joining Apple I was an independent consultant with my own consulting practice.

Q. And before serving as an independent consultant, did you work at another company?

A. Yes, I did. I worked at Nellcor. Although at the time they were Covidien, when I left, but it was Nellcor and then a variety of flavors of Nellcor.

Q. Dr. Mannheimer, for how long did you work at Nellcor?

A. I believe it was around 21 years.

Q. And would that be from around 1987 to 2008?

A. Yes, that's correct.

Q. What did you do in those 20-plus years at Nellcor?

A. I developed pulse oximetry sensors, some monitoring techniques, alarm handling techniques, I did clinical studies, a variety of roles.

Q. Let me put up on the screen RDX-3.02, and, Dr. Mannheimer, what are we looking at on the left-hand side of the of the screen?

A. Those are Nellcor products, patient bedside monitors, and a portable monitor at the bottom that uses pulse oximetry technology.

Q. And, sir, what setting were these Nellcor products designed for?

A. These were prescription-use pulse oximeters intended for use in the hospital or a home care or other critical and home-use settings.

Q. Now, in your time at Nellcor, did you become familiar with Masimo?

A. Yes.

Q. And how are Nellcor and Masimo situated in the industry as compared to each other?

A. They were competitors to one another.

Q. Did you become familiar, at a high level, with the Masimo product offerings in your years at Nellcor?

A. Of that era, yes, I was.

Q. If we could go to RDX-3.02.

What are we looking at here on the right-hand side of the screen?

A. Those are Masimo bedside monitors and portable akin to what we see on the left.

Q. Now what are some of the key considerations that you had to deal with personally in working on clinical products at Nellcor?

A. Well, they need to be reliable, accurate, they monitor continuously as a bedside safety monitor, relied upon by clinicians. The readings that were provided were generally interpreted by clinicians, and -- that's the bulk of it that I would call out.

Q. Now you joined Apple in 2014; is that right, sir?

A. Yes.

Q. Why did you decide to join Apple?

A. I had received a recruiting email from the Apple recruiter that said they were interested. I was intrigued, because I didn't exactly know why. Shortly after, the company had their launch, early September of 2014, announcing the watch, and so I got introduced to this concept of heart rate monitoring and consumer wearables. I knew there were people at Apple from -- with medical backgrounds but did not know other than what the blog sphere suggested that they might have been working on.

After meeting a few of the people during my interview process, it seemed like it would be a very interesting place to be and an interesting time to work in a consumer environment, consumer product environment.

Q. When you joined Apple in 2014, what assignment

were you given?

A. I didn't know what it was at the time of the interview, but after joining, and several days later, Brian Land told me that I would be asked to look into doing pulse oximetry at the wrist for the Apple Watch.

Q. And you joined, to be clear, Mr. Land's health sensing hardware team?

A. Yes, that's correct.

Q. Now let's pull up RDX-03.03.

MR. MUELLER: And let me go on the Apple confidential record at this point to be safe.

(Whereupon, the hearing proceeded in confidential session.)

[redacted]

21 Dr. Mannheimer, how did the blood oxygen sensor
22 you were asked to work on [redacted] compare to the blood
23 oxygen sensors that you had worked on [redacted]?
24 A. To me, [redacted] difference is that
25 it's intended to be used at the wrist. The clinical

1 products that I worked on previously for adults, peds,
2 neonates and fetuses operated on a much more vascularized
3 tissue bed, usually fingers or forehead, or on the fetus it
4 was the cheek.
5 The wrist is just an incredibly different beast.
6 [redacted]
[redacted] Shrinking things down to
8 be much smaller package and use substantially less power and
9 to be used by a consumer in a nonprescription environment
10 would ultimately add to additional challenges to think
11 through and work through.
[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

MR. MUELLER: We can go on the public record, Your Honor.

(Whereupon, the hearing resumed in open session.)

O P E N S E S S I O N

JUDGE BHATTACHARYYA: Moving back to the public record.

BY MR. MUELLER:

Q. Dr. Mannheimer, just a few more questions.

There's been some suggestions in this hearing that the blood oxygen sensor in the Apple Watch is inaccurate.

Based on your own personal experience, as a factual matter, is it accurate?

A. Absolutely, it is. Relative to the ISO standard, which says the accuracy is calculated as a root means square when tested in the manner precisely like we did from a study protocol perspective, as we did at UC San Francisco, against blood draws measured in a cooximeter, as well as the FDA guidance, which is a similar document more specific to U.S. use, recognizes the international standard plus some additional requirements, and additional set of accuracy requirements, the Apple Watch that we characterized meets both the FDA and the ISO standard guidance for accuracy.

Q. Dr. Mannheimer, this case involves five patents asserted by the Complainants.

Before this investigation had you ever heard of any of them?

A. No, I had not.

Q. Dr. Mannheimer, you were part of the research and development project that resulted in the blood oxygen sensor in the Series 6 and Series 7 watch, right?

A. Yes.

Q. In fact, fair to say you were at the heart of that R&D process?

A. Yes.

Q. Dr. Mannheimer, did any, any, of the sensors, hardware and software, come from Masimo?

A. No.

MR. JENSEN: Object, Your Honor, lacks foundation.

JUDGE BHATTACHARYYA: Would you explain a little further?

MR. JENSEN: How would he know whether the other people did or did not rely upon Masimo information? He can only know what he relied upon, not what was in their heads.

MR. MUELLER: I can rephrase, Your Honor.

JUDGE BHATTACHARYYA: Okay. Please do.

BY MR. MUELLER:

Q. From your position at the heart of the research and development of the blood oxygen sensor for the Apple Watch, have you, Dr. Mannheimer, personally seen any evidence that any of the software or hardware came from

Masimo ideas?

A. No, I have not.

Q. Who actually developed the software and the hardware in the blood oxygen sensor in the Apple Watch Series 6 and Series 7?

A. The folks from my team in Brian's organization and the HID team under Steve's organization.

Q. Thank you, sir.

MR. MUELLER: I have no further questions at this time, and I pass the witness, Your Honor.

MR. JENSEN: May I proceed, Your Honor?

JUDGE BHATTACHARYYA: Yes, please go ahead.

CROSS-EXAMINATION

BY MR. JENSEN:

Q. Good morning for me, Dr. Mannheimer. I think it's your afternoon or getting close.

A. Yes.

Q. My name is Steven Jensen, one of Masimo's lawyers. Good to meet you. I think we met in the '90s. I will be asking you some questions today.

Before we begin, you should have a sealed package or an envelope there that you are welcome to open now. We will be looking at some of the documents in there.

Is it in the room with you?

A. Yes.

Q. If you could open that.

If I heard your testimony correctly, you've been designing pulse oximetry sensors and pulse oximetry systems for decades, correct?

A. Yes.

Q. If I heard you right, you worked on pulse oximetry at Nellcor from 1987 to 2008; is that correct?

A. Yes.

Q. And so if I calculated in my head right, you were part of the pulse oximetry team at Nellcor during the development and introduction of at least the M3000, the O4, the O5, the O5CI, and the N600 pulse oximeters; is that correct?

A. Yes, that's correct.

Q. Did I miss any?

A. I don't recall if there were additional form factors that were created.

Q. But at least those technologies you were involved with the development, correct?

A. Yes.

Q. And you were at Nellcor in 2004 and testified for Nellcor in a patent trial between Masimo and Nellcor, did you not?

A. Yes.

MR. MUELLER: Your Honor -- I'm sorry,

Dr. Mannheimer. Just give me a moment here.

I'm going to object on relevance grounds to discussion of another litigation involving unrelated patents asserted against products of another company developed in another time period. I don't think it's relevant to this case what the infringement allegations were made in another case involving different patents against a different company.

MR. JENSEN: Your Honor, I didn't ask any questions about the content of that case, and it just simply goes to bias and the high priority objection on this issue was overruled on the Phillips decision, but I do not plan to ask any questions about the content of that case, one question only, the one I just asked.

JUDGE BHATTACHARYYA: The objection is overruled.

Q. So did you answer my question? You testified in that trial, correct?

A. Yes.

Q. Over the years you have designed many sensors for different body locations, correct?

A. Yes.

Q. And I mean pulse oximetry sensors in that, correct?

A. That's how I interpreted it, yes.

Q. And you have filed and been granted many patents

on your pulse oximetry ideas, correct?

A. Correct.

MR. JENSEN: At this time, Your Honor, I'm going to need to the move to the Apple confidential record.

(Whereupon, the hearing proceeded in confidential session.)

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

(Whereupon, the hearing resumed in open session.)