

UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE, INC., )  
 ) IPR2020-00905  
Petitioner, ) IPR2020-00906  
 )  
vs. )  
 )  
COREPHOTONICS, LTD., )  
 )  
Patent Owner. )  
-----x

VIDEOTAPED VIDEOCONFERENCE DEPOSITION OF  
EXPERT WITNESS

JOHN C. HART, Ph.D.

April 29, 2021

9:02 a.m. (CST)

Reported By:

Mayleen Ahmed, RMR, CRR, CRC, CSR

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TransPerfect Legal Solutions

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MOTIONS TO STRIKE None
INSTRUCTIONS NOT TO ANSWER None
DOCUMENT/INFORMATION REQUESTS None

----- REFERENCED DOCUMENTS -----

EXHIBIT DESCRIPTION PAGE
Exhibit APPL 1001 U.S. Patent 10,225, 479 9
Exhibit APPL 1005 U.S. Patent 7,859,588, 58
Exhibit APPL 1013 "Computer Vision, Algorithms and Applications," Szeliski 125
Exhibit APPL 1023 U.S. Patent 8,908,041 134
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DEPOSITION OF JOHN C. HART, Ph.D. - April 29, 2021

THE VIDEOGRAPHER: We are on the record on April 29, 2021, at approximately 9:02 a.m. Central time for the remote video deposition of Dr. John Hart in the matter of Apple, Inc. versus Corephotonics Ltd., IPR No. 2020-00905 and 2020-00906.

My name is Valerie Beltran, and I am the videographer.

Will counsel please introduce themselves for the record, beginning with the party noticing this proceeding.

MS. SIVINSKI: Good morning. My name is Stephanie Sivinski, with Haynes and Boone, for Apple. And I'm joined today by my colleagues Mike Parsons and Bethany Love, also with Haynes and Boone, and then Priya Viswanath from Cooley LLP.

MR. LINK: My name is Jonathan Link with the law firm of Russ, August & Kabat, on behalf of the Patent Owner, Corephotonics.

THE VIDEOGRAPHER: Thank you.

Will the court reporter please swear in the witness.

THE REPORTER: I'm going to ask that you

1 please raise your right hand.  
 2 Do you solemnly swear under penalty of  
 3 perjury that you are Dr. John Hart, and the  
 4 testimony you are about to give in the matter now  
 5 pending shall be the truth, the whole truth, and  
 6 nothing but the truth?

7 THE WITNESS: I do.

8 THE REPORTER: Thank you.

9 -----  
10 JOHN C. HART, Ph.D.

11 having been duly sworn, testified as follows:

12 -----  
13 EXAMINATION

14 BY MS. SIVINSKI:

15 Q. All right. Good morning, Dr. Hart.

16 How are you?

17 A. Good morning. I'm fine.

18 How are you?

19 Q. I'm good. Thanks.

20 Okay. Have you given testimony in a  
21 remote deposition before?

22 A. Yes, I have.

23 Q. Okay. So you're familiar with Zoom and  
24 the chat function for downloading exhibits and those  
25 sorts of things?

1 A. Yes, I am.

2 Q. Where are you testifying from today?

3 A. My daughter's bedroom in Champaign,  
4 Illinois. This is where I conduct the business,  
5 including expert services. I mean, not from my  
6 daughter's bedroom but from Champaign, Illinois.

7 Q. Yeah. Understood. We're all very, very  
8 fancy these days with our -- with our office digs.  
9 Okay. Good.

10 Is there anyone else in the room with  
11 you?

12 A. No, there's not.

13 Q. Okay. And will you agree not to  
14 communicate with others, including Corephotonics'  
15 attorneys, while questions are pending?

16 A. Understood and agreed.

17 Q. Great.

18 Do you have any access to notes from  
19 where you're sitting today?

20 A. No, I do not. I mean, there are notes  
21 on my computer, but I am not accessing those notes.  
22 I will not access those notes.

23 Q. All right. Thank you.

24 Is there any reason that you cannot give  
25 truthful and accurate testimony today?

1 A. No.

2 Q. All right. So I know that you sat for  
3 depositions before, but just so we can all be on the  
4 same page, a few rules.

5 Can you agree to answer pending  
6 questions before we take a break?

7 A. Yes.

8 Q. And if you don't understand a particular  
9 question, do you agree to let me know so I can  
10 clarify my question?

11 A. Yes.

12 Q. Do you understand you're testifying  
13 today about a Declaration that you submitted in two  
14 different IPRs?

15 A. Yes.

16 Q. And those would be IPR2020-905 and  
17 IPR2020-906?

18 A. Yes.

19 Q. And I loaded a copy of the Declaration  
20 that you submitted in those IPRs into the chat  
21 function.

22 (Exhibit 2001 introduced.)

23 BY MS. SIVINSKI:

24 Q. Does that document look like the  
25 Declaration that you submitted?

1 A. Yes, it does.

2 Q. As you sit here today, is there anything  
3 you need to correct about that Declaration?

4 A. I think there are minor spelling errors  
5 and so on throughout, but -- but I believe the  
6 meaning and -- there's no substance -- substantive  
7 corrections I would -- I would want made at this  
8 point.

9 Q. Perfect.

10 (Exhibit APPL 1001 introduced.)

11 BY MS. SIVINSKI:

12 Q. All right. And I've also loaded a copy  
13 of U.S. Patent No. 10,225,479, and that is the  
14 patent at issue in these IPRs.

15 Do you recognize that document that I've  
16 loaded in the chat?

17 A. Yes, I do.

18 Q. And have you read that patent?

19 A. Yes, I have.

20 Q. Memorized it?

21 Okay. Is it okay if I call that the  
22 '479 patent today?

23 A. Yes. That'll be fine.

24 Q. All right. If you will turn with me to  
25 pages -- page 2 of your Declaration. I just want to

1 go over some of the summaries of your opinions  
2 there.

3 Do you see on page 2 and extending  
4 through page 4 of your Declaration, a bullet-pointed  
5 list of materials?

6 A. Yes, I do.

7 Q. Are these the materials that you  
8 considered in drafting your Declaration?

9 A. Yes.

10 Q. Did you read all of these materials?

11 A. Yes. There's also item C on page 5 that  
12 I also considered. It's not materials. It's just  
13 the level and skill of a person having ordinary  
14 skill in the art.

15 Q. Understood. Thank you for that  
16 addition.

17 Is all of the analysis you performed for  
18 these IPRs reflected in your Declaration?

19 A. The opinions based on that analysis are  
20 -- are reported in my opinion -- in this  
21 Declaration.

22 Q. How many hours did you spend on your  
23 work for this Declaration?

24 A. Somewhere between 50 and 60 hours.

25 Q. And did you write your Declaration?

1 A. Yes, I did.

2 Q. Other than your lawyers -- and I don't  
3 want to know any conversations between you and  
4 Corephotonics' lawyers -- did you talk to anyone in  
5 preparing for your deposition today?

6 A. No, I did not.

7 Q. And other than Corephotonics' lawyers,  
8 did you talk to anyone in preparing this  
9 Declaration?

10 A. I'm not sure I understand the difference  
11 between that question and the question you asked  
12 before it.

13 Q. Sure. So it might be the same answer,  
14 but with one, I was talking specifically about the  
15 preparation for your deposition. And with this  
16 second question, I'm asking more broadly about your  
17 work in this case and your preparation of your  
18 Declaration.

19 A. Oh. So I've not spoken to anybody else  
20 in the preparation for both.

21 Q. So are you aware that Dr. Moore has also  
22 submitted a declaration for the 905 and 906 IPRs?

23 A. Yes, I am.

24 Q. Okay. And would you agree with me that  
25 Dr. Moore's declaration is related to the lens

1 design aspects of the 905 and 906 IPRs?

2 A. I don't have an opinion that I'm aware  
3 of at the moment that characterized Dr. Moore's  
4 deposition in that particular ways.

5 Is -- is there a statement in my  
6 Declaration stating that?

7 Q. Well, I -- I am planning on asking you  
8 questions today that are slightly broader than your  
9 Declaration.

10 So my question is whether you would  
11 agree with me that that's the case, whether or not  
12 you stated it in your Declaration.

13 Would you agree with me that Dr. Moore's  
14 declaration is directed towards the lens design  
15 elements of the 905 and 906 IPRs?

16 A. I'm not going to pigeonhole Dr. Moore's  
17 declaration in any way. I did refer to Dr. Moore's  
18 declaration in, for example, patents describing lens  
19 designs.

20 Q. Okay. Well, let me ask this question.  
21 Do you consider yourself a lens design  
22 expert?

23 A. I wasn't asked to declare myself as a  
24 lens design expert in the -- in preparing these  
25 opinions. I have experience in lens design. I have

1 training in optics and understand, you know, the  
2 physics of lenses, the characteristics of lenses.

3 I have not, you know, physically built  
4 any lenses. My work on lenses has been more  
5 theoretical. I'm certainly an expert in ray  
6 tracing, and ray tracing is an element of lens  
7 design.

8 So I don't believe I have an opinion in  
9 the report that claims to -- where I'm an expert in  
10 lens design, but I did understand lens design and  
11 was able to understand Dr. Moore's report.

12 Q. Okay. Would you -- do you think  
13 Dr. Moore is an expert in lens design?

14 A. Yes, I do.

15 Q. Okay. And I'm not intending to limit  
16 the scope of his declaration. I'm just trying to  
17 get a general understanding that Dr. Moore has  
18 submitted opinions about lens design in these cases.

19 Would you agree with that?

20 A. Yes, I would.

21 Q. And that your Declaration is focused  
22 more on the image processing aspects of the '479  
23 patent?

24 A. I think the opinions I offer have --  
25 have included both, but, certainly, I believe

1 I've -- I've offered perhaps more opinions on -- on  
2 the other aspects than lens design.

3 Q. Are you familiar with the software  
4 that's used in connection with lens design, for  
5 example, Zemax?

6 A. Yes, I'm aware of it.

7 Q. Have you ever used it?

8 A. No.

9 Q. Did you review any Zemax files in  
10 connection with your work for the 905 and 906 IPRs?

11 A. Only by name and in -- in their  
12 reference in Dr. Moore's reports and the other  
13 documents in my materials that I considered.

14 Q. Do you know what a Zemax black box model  
15 is?

16 A. Yes.

17 Q. Can you describe what a Zemax black  
18 model is -- black box model is for me?

19 A. Yes. It describes the design of the --  
20 of the lens -- of a lens system in such a way that  
21 you can see the effects of the lens system without  
22 revealing the details of the lens system design.

23 Q. And what is your understanding of what  
24 Zemax black box models are used for?

25 A. I think in this case, a Zemax black box

1 model was provided to demonstrate the effectiveness  
2 of an invention to somebody seeking to eventually  
3 utilize that invention without revealing the details  
4 of -- of the specific implementation.

5 Q. And this is perhaps an obvious question,  
6 but why would someone want to use a Zemax black box  
7 model in your experience?

8 A. If they would like to understand how  
9 something works, but are not yet at a stage to need  
10 to understand the details of -- of how something was  
11 built or how something was implemented, just the  
12 effects without understanding the process.

13 Q. Would someone be able to copy a lens  
14 design after reviewing just a Zemax black box model?

15 MR. LINK: Objection. Outside the scope  
16 of his declaration.

17 A. I think it's certainly possible. You  
18 know, another example of a black box might be the  
19 machine code that -- when somebody is writing a  
20 program, for example, Microsoft Word, that -- that  
21 machine code can be decompiled and  
22 reverse-engineered.

23 Reverse-engineering is a broad field  
24 that -- that works in -- in a variety of cases and a  
25 variety of implementations.

1 So I -- I don't have an opinion that  
2 says it's impossible.

3 Q. Okay. Well, specifically with respect  
4 to the Zemax black box models that you talk about in  
5 your Declaration, would it be possible to copy a  
6 lens design from those Zemax black box models?

7 A. I don't believe I have an opinion  
8 stating that.

9 Q. Okay. Well, I'm asking you for your  
10 understanding whether that would be possible, as you  
11 sit here today.

12 A. I don't -- I don't believe I was asked  
13 to consider that. I -- I did not give an opinion  
14 that said that that was not possible, and that's the  
15 extent of my opinion.

16 Q. Can you turn with me to paragraph 133 of  
17 your Declaration.

18 Are you there? Sorry.

19 Are you there?

20 A. Yes.

21 Q. Okay. Perfect.

22 In paragraph 133, you conclude that,  
23 quote -- that:

24 "Petitioner copied the invention of the  
25 '479 patent (among other Corephotonics

1 technologies, which Petitioner also appears  
2 to have copied) is strongly implied by the  
3 course of conduct between the parties and the  
4 timing of petitioner's announcement of their  
5 dual-aperture camera in their iPhone 7  
6 series..."

7 Do you see that portion of your  
8 Declaration?

9 A. Yes, I see that.

10 Q. Okay. Is your conclusion that Apple  
11 copied the invention of the '479 patent based on the  
12 evidence you discuss about Zemax black box models?

13 A. I believe that sentence is saying that  
14 Petitioner's actions strongly implied that they  
15 created what appeared to be technology that copied  
16 the technology provided to them by Core --  
17 Corephotonics. I don't believe this sentence speaks  
18 to any, any one piece that -- that allowed me to  
19 form -- form that opinion over any other piece.

20 But the black box technology was one of  
21 the pieces that was provided by Corephotonics to  
22 Petitioner.

23 Q. So I'm not sure I understand your  
24 answer.

25 Does the fact that Corephotonics

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