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Transcript of Michael Steer, Ph.D.

Date: July 28, 2021
Case: Intel Corporation -v- ParkerVision, Inc. (PTAB)

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Intel v. ParkerVision
IPR2020-01265
Intel 1029

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION,

Petitioner,

v.

PARKERVISION, INC.,

Patent Owner

Case No. IPR2020-01265

CONFIDENTIAL - ATTORNEYS EYES ONLY

Videotaped Deposition of

MICHAEL STEER, Ph.D.

Conducted Virtually

Wednesday, July 28, 2021

9:11 a.m. EST

Job No.: 388566

Pages: 1 - 162

Stenographically Reported By:

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Donald Lane, Planet Depos tech

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T A B L E O F C O N T E N T S

Witness Page

MICHAEL STEER, Ph.D.

EXAMINATION

BY MR. ZUBLER: 9

EXAMINATION

BY MR. CHARKOW: 159

E X H I B I T I N D E X

Exhibit Page

(Exhibits attached to transcript.)

EXHIBIT 1022 12

Declaration of Dr. Michael Steer

EXHIBIT 1023 38

Microwave and RF Design Radio Systems,

Volume I

E X H I B I T I N D E X C O N T I N U E D

EXHIBIT 1024 69
U.S. Patent No.: US 7,110,444 B1
Sorrells
EXHIBIT 1025 76
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Declaration of Dr. Michael Steer

DEPOSITION OF MICHAEL STEER, Ph.D.

Wednesday, July 28, 2021

VIDEO TECHNICIAN: This begins the video-recorded deposition of Dr. Michael Steer in the matter of Intel Corporation versus ParkerVision Inc. in the United States Patent and Trademark Office, Case Number IPR2020-01265. 09:10:56 09:10:57 09:11:02 09:11:05 09:11:08

Today's date is Wednesday, July 28th, 2021. The time is 9:11 a.m. The videographer today is Derek Stanley, representing Planet Depos. This video deposition is taking place remotely via Webex videoconference. 09:11:17 09:11:19 09:11:24 09:11:26 09:11:30

Would counsel please voice identify themselves and state whom they represent. 09:11:31 09:11:33

MR. ZUBLER: This is Todd Zubler on behalf of Intel Corporation. I'm joined today by various colleagues of mine at WilmerHale. Those colleagues include Grant Rowan, Haixia Lin, Marissa Lalli, Brian Lambson, and Alicia Coneys. 09:11:35 09:11:39 09:11:45 09:11:51 09:11:57

MR. CHARKOW: This is Jason Charkow of the Daignault Iyer firm, representing ParkerVision, the 09:12:03 09:12:08

patent owner. And with me today I have Stephanie Mandir, as well as the client representative, Greg Rawlins. 09:12:10 09:12:14 09:12:17

VIDEO TECHNICIAN: The court reporter today is Alison Webster, representing Planet Depos. Will the reporter please swear in the witness. 09:12:20 09:12:22 09:12:26

STENOGRAPHER: The attorneys participating in this deposition acknowledge that I will be reporting this deposition remotely and that the witness has verified that he is Dr. Michael Steer, Ph.D. In lieu of an oath administered in person, the witness will verbally declare his testimony in this matter is under penalty of perjury.

The parties and their counsel consent to this arrangement and waive any objections to this manner of reporting or admissibility of the transcript. Please indicate your agreement by stating your name and your agreement on the record, starting with scheduling counsel.

MR. ZUBLER: I agree. This is Todd Zubler from WilmerHale. 09:13:01 09:13:04

MR. CHARKOW: I agree. This is Jason 09:13:06

Charkow from Daignault Iyer. 09:13:10

STENOGRAPHER: Dr. Steer, would you please raise your right hand.

Do you swear or affirm the testimony you are about to give in this matter will be the truth, the whole truth, and nothing but the truth?

DR. STEER: I do.

STENOGRAPHER: Thank you.

You may proceed.

MICHAEL STEER Ph.D.,

was thereupon called as a witness herein, and after having first been duly sworn to testify to the truth, the whole truth and nothing but the truth, was examined and testified as follows:

MR. ZUBLER: Good morning, Dr. Steer. My 09:13:33
name is Todd Zubler. I'll be asking you some 09:13:35
questions today. Let's begin. 09:13:41

EXAMINATION 09:13:41

BY MR. ZUBLER: 09:13:41

Q. Could you please state your full name for the record? 09:13:42

A. My full name is Michael Bernard Steer. 09:13:44

Q. And what city do you live in, sir? 09:13:51

A. I live in Raleigh, North Carolina. 09:13:54
Q. Where are you currently located for today's deposition? 09:13:58 09:14:01
A. I am located in my home. 09:14:02
Q. Is there anyone else with you today, in the room with you? 09:14:06 09:14:10
A. I am the only person in the room. 09:14:12
Q. And are you using any notes today? 09:14:14
A. I'm sorry, I didn't understand your question. 09:14:18
Q. Are you -- do you have any notes with you today? 09:14:21
A. I have a copy of my declaration. 09:14:29
Q. Anything else? 09:14:33
A. I have nothing else. 09:14:34
Q. And do you have any applications open on your computer other than the interface used for this deposition? 09:14:35 09:14:42
A. I have -- I have the directory open in case I have to download exhibits. I have Adobe pdf and Adobe Acrobat opened. 09:14:51 09:14:57 09:15:05
Q. Anything else? 09:15:06
A. I have nothing else. 09:15:06
Q. And do you agree that you will not be in electronic communication with anyone else while questions are 09:15:08 09:15:15

being asked in this deposition today? 09:15:18

A. That's correct. I think -- let me just turn off my phone. 09:15:22 09:15:25

Okay. It's off. 09:15:33

Q. All right. And just to be clear, you are agreeing not to be in electronic communication with anyone while questions are being asked in this deposition. Correct? 09:15:36 09:15:42 09:15:45 09:15:47

A. Yes, I agree to that. 09:15:48

Q. You understand, Dr. Steer, that Intel has filed a petition for inter partes review on one of ParkerVision's patents, the '444 patent. Correct? 09:15:49 09:15:58 09:16:03

A. Yes. 09:16:10

Q. And today we're going to be talking about issues specific to that patent. And so if I refer to the '444 patent today, you'll know that I am referring to U.S. Patent Number 7,110,444. Correct? 09:16:10 09:16:13 09:16:19 09:16:22

A. Yes. 09:16:29

Q. And tomorrow we'll have a separate deposition that will be directed to the other patent, which is the '474 patent. Are you aware of that? 09:16:29 09:16:32 09:16:38

A. Yes, I am. 09:16:41

Q. Now, you've submitted a declaration in support of ParkerVision's response to Intel's '444 IPR. Correct? 09:16:42 09:16:49

A. Yes. 09:16:58

MR. ZUBLER: Could we please pull up Tab Number 1? And this could be marked as Exhibit 1022. 09:16:59 09:17:01

THE WITNESS: Are you speaking to me? 09:17:19

MR. ZUBLER: I'm speaking to the -- no, I'm not speaking to you, sir. Speaking to the technicians and -- 09:17:21 09:17:22 09:17:22

There we go. 09:17:30

MARKED FOR IDENTIFICATION: 09:17:31

EXHIBIT 1022 09:17:31

9:17 a.m. 09:17:33

BY MR. ZUBLER: 09:17:33

Q. Dr. Steer, do you see a document in front of you? 09:17:34

A. Yes, I do. It's very small. 09:17:37

Q. Right. 09:17:38

A. Can I -- I have a second monitor here which is a lot larger than my laptop monitor. Can I move that over there, then? 09:17:43 09:17:45 09:17:48

Q. Certainly. And are you able to -- 09:17:49

[Simultaneous Speaking] 09:17:49

Q. -- this document? 09:17:52

MR. CHARKOW: Sorry, Counsel, I can't -- I only see a piece of the document. Sorry. Give me a second. I've just got to make sure I understand why I can't see. 09:17:53 09:17:58 09:18:02 09:18:05

Is somebody else controlling this document, I guess? 09:18:06 09:18:08

PLANET DEPOS TECH: Tech is controlling the document, yes, sir. 09:18:09 09:18:12

THE WITNESS: On a small screen, only a little bit can be seen. You need a big -- 09:18:15 09:18:17

MR. CHARKOW: Yeah, I mean, it's barely legible. I mean, it's like a little -- 09:18:20 09:18:23

Todd, it's just a -- I'm sorry, but -- sorry to interrupt, but I need to be able to see. Can we blow it up to the full size of the page? Because when it's blown up, you only get a little piece of the document and when it's small, we can't read it. I don't know what you're seeing, Todd. 09:18:25 09:18:26 09:18:28 09:18:32 09:18:34 09:18:37

THE WITNESS: I would like to be able to download the document. It's hopeless. 09:18:40 09:18:42

MR. ZUBLER: Yes. 09:18:47

And I believe -- if the tech could please enable the parties to download it, I believe that's capable here. 09:18:47 09:18:50 09:18:53

PLANET DEPOS TECH: Give me one moment, please. 09:18:57 09:18:58

MR. CHARKOW: Yeah, and, Todd, going forward, I think that's the best way to do it because I've got to say, either it was enlarged and super small on the screen or they zoomed in or -- you couldn't read it. Either way, you couldn't read it. You either got [audio distortion] it or you couldn't even read the words on the paper, and I have a pretty big screen. 09:19:01 09:19:03 09:19:07 09:19:10 09:19:13 09:19:16 09:19:16 09:19:16

MR. ZUBLER: That's fine. 09:19:27

STENOGRAPHER: Hey, Don, when you're in the background you're gonna need to mute because I can't understand them. 09:19:27 09:19:29 09:19:31

PLANET DEPOS TECH: Please stand by an additional second. I'm just getting this set up. 09:19:45 09:19:47

Okay. At this time, I have just dropped a SharePoint file link in the chat. If you click that, you should have access to the document and you should 09:20:25 09:20:27 09:20:29

be able to [audio distortion] at your leisure. 09:20:31

MR. ZUBLER: Dr. Steer, Jason, are you able 09:20:43

to access the document? 09:20:47

MR. CHARKOW: No. It says [as read]: 09:20:48

We're sorry, but my email address can't be found at 09:20:49

Planet Depos. 09:20:54

Hold on. That didn't work. Hold on one 09:20:54

second. Let me try another -- there's two links here, 09:20:59

so I'll try the first link. 09:21:01

No, I can't. It says [as read]: Click 09:21:05

here to sign into a different account on this site. 09:21:07

Yeah, it -- it says I can't access it. You 09:21:13

want to go off the record, Todd, until we figure this 09:21:17

out -- 09:21:20

MR. ZUBLER: Yeah. 09:21:20

MR. CHARKOW: -- because I think this is 09:21:20

pretty fundamental to the deposition. 09:21:23

MR. ZUBLER: Yes, that makes sense. Let's 09:21:25

go off the record. 09:21:27

VIDEO TECHNICIAN: Going off the record. 09:21:28

The time is 6:20 -- 9:21 a.m. 09:21:29

(Off the record at 9:21 a.m.) 09:21:33

(Back on the record at 9:29 a.m.) 09:29:30
VIDEO TECHNICIAN: Going back on the 09:29:34
record. The time is 9:29 a.m. 09:29:34
BY MR. ZUBLER: 09:29:37
Q. Dr. Steer, do you now have access to what has been 09:29:41
marked as Exhibit 1022? 09:29:45
A. Yes, I have that on my screen. 09:29:49
Q. And what is this document? 09:29:51
A. It is the declaration of Dr. Michael Steer in the 09:29:55
matter of Intel Corporation, Petitioner, versus 09:29:59
ParkerVision Incorporated, Patent Owner, regarding 09:30:02
U.S. Patent Number 7,110,444. 09:30:05
Q. And this is the declaration you submitted in support 09:30:15
of ParkerVision's response to Intel's '444 IPR. 09:30:20
Correct? 09:30:23
A. Yes, this is my declaration. 09:30:24
Q. Could you turn to page 114 of this declaration? 09:30:31
A. Yes, I'm here. 09:30:44
Q. All right. And this is the signature page of your 09:30:45
declaration? 09:30:48
A. Correct. 09:30:49
Q. And you -- that's your signature on the declaration. 09:30:49

Correct? 09:30:56

A. Correct. 09:30:56

Q. And when you signed this declaration, you understood you were signing it under the penalty of perjury. Correct? 09:31:00 09:31:03 09:31:06

A. Correct. 09:31:07

Q. Dr. Steer, have you been deposed before? 09:31:08

A. Yes, I have. 09:31:13

Q. How many times? 09:31:14

A. Oh, maybe seven times. 09:31:27

Q. And so you've done this before. I won't waste time on the ground rules, but I'll just mention a couple of them. Obviously, I'll be asking questions today. If you don't understand any of my questions, please ask me to rephrase; is that fair? 09:31:30 09:31:35 09:31:37 09:31:42 09:31:45

A. I will do that. 09:31:51

Q. And I will try to give you a chance to answer my questions. I won't interrupt you. And if you would agree not to interrupt me, that will create a much clearer record; is that fair? 09:31:52 09:31:57 09:32:02 09:32:05

A. Yes. 09:32:07

Q. We need to make sure that all of our interactions are 09:32:08

on the record with verbal indications, so head shakes and nods are not sufficient. That makes sense. Right? 09:32:14 09:32:21 09:32:24

A. Yes, it does. 09:32:26

Q. And if you need a break at any time, please just say so. Happy to take a break at any time after you've finished answering the question. All right? 09:32:27 09:32:34 09:32:36

A. Yes. 09:32:39

Q. And finally, is there any reason that you can't give complete and truthful testimony today? 09:32:39 09:32:47

A. No, there's no reason. 09:32:51

Q. Thank you. 09:32:53

Can you please describe the process by which your declaration was prepared? 09:32:59 09:33:01

MR. CHARKOW: I'm just gonna object to the extent that it calls for any sort of communications with the attorneys. The witness can -- cannot -- should not disclose the substance of any communications with attorneys. 09:33:06 09:33:08 09:33:13 09:33:16 09:33:18

A. I wrote the declaration with input from counsel. And I think that's probably complete. I wrote the declaration with input from counsel. 09:33:26 09:33:39 09:33:41

BY MR. ZUBLER: 09:33:43
Q. Who prepared the first draft of your declaration? 09:33:43
A. I did. 09:33:46
Q. And are there portions of your declaration that the ParkerVision attorneys drafted for you? 09:33:47 09:33:54
MR. CHARKOW: I'm gonna object and instruct -- I'm gonna instruct the witness not to answer on any of the -- you know, the communications and the processes by which the declaration was prepared. So I'm instructing him not to answer. 09:33:57 09:33:59 09:34:00 09:34:02 09:34:04
MR. ZUBLER: Okay. 09:34:11
MR. CHARKOW: I don't know where you're going with this, Counsel, but I'm not gonna let the witness talk about the work product and how the work product was put together unless you have some very specific questions. 09:34:11 09:34:12 09:34:15 09:34:17 09:34:20
BY MR. ZUBLER: 09:34:27
Q. Dr. Steer, how much time did you spend preparing your declaration? 09:34:27 09:34:30
A. I spent at least 100 hours. Maybe a bit more than that. 09:34:37 09:34:40
Q. So, Dr. Steer, you've mentioned that you have been 09:34:56

deposed seven times. Is that -- and were those seven times all in the context of serving as an expert witness? 09:35:01 09:35:08 09:35:11

A. Yes, that would be true. 09:35:15

Q. In how many cases or proceedings have you served as an expert? 09:35:17 09:35:23

A. How many proceedings? I have not been deposed in all the proceedings that I have been involved in. I'm sorry, I just need -- that was on my mind too. 09:35:25 09:35:33 09:35:37

Could you repeat that question, please? 09:35:39

Q. In how many cases or proceedings have you served as an expert? 09:35:41 09:35:44

A. Well, not all legal proceedings were cases. It's -- let's -- let me -- I don't do this very often so I need to go back, like, 15 years. I'd say something like five or six, a number close to that. 09:35:50 09:35:59 09:36:04 09:36:13

Q. Five or six cases or proceedings over, roughly, 15 years; is that right? 09:36:18 09:36:21

A. That is correct. 09:36:22

Q. Did all of those matters involve patent disputes? 09:36:24

A. No, they did not. 09:36:30

Q. What were the other ones? 09:36:33

A. There was a trade secret matter. All of the others were related to patent disputes. 09:36:38 09:36:51

Q. How many matters have you worked on for ParkerVision? 09:36:57

A. So -- 09:36:57

MR. CHARKOW: Sorry, Michael, objection. Form. 09:37:14 09:37:16

A. So some matters, such as -- so some matters involve multiple -- multiple cases, so I think the thing would be to say that there have been maybe -- there have been three matters. But I know that some of those matters end up being, you know, maybe two cases. 09:37:22 09:37:29 09:37:38 09:37:42 09:37:44 09:37:48

BY MR. ZUBLER: 09:37:48

Q. So what are those three matters? 09:37:49

MR. CHARKOW: So just before you answer, Michael, I just want to caution the witness that if the examiner gets down to asking you questions about information between, you know, ParkerVision and yourself or the attorneys, you should not answer those questions. 09:37:55 09:37:57 09:38:01 09:38:05 09:38:10 09:38:14

And if the -- if there is a discussion about other matters and there's some sort of 09:38:16 09:38:19

confidential information in those matters -- for instance, a trade secret matter that you discussed -- if we go down further down that road, I would instruct you, you know, be mindful of any confidentiality obligations that you may have in other cases. 09:38:23 09:38:24 09:38:29 09:38:32 09:38:34

Go ahead. 09:38:36

THE WITNESS: Thank you, Counsel, for that because there is one matter where I'm not allowed to disclose who I am working for. 09:38:39 09:38:41 09:38:43

A. So the best I could do with regards to ParkerVision would be to identify the law firms because I don't remember numbers or -- or titles or cases. Is that okay? 09:38:46 09:38:51 09:38:57 09:39:02

BY MR. ZUBLER: 09:39:06

Q. That's fine. 09:39:06

A. Okay. So several years ago I did some work with Mintz which involved ParkerVision. I'm currently working with McKool regarding ParkerVision. 09:39:07 09:39:14 09:39:20

Q. Uh-huh. 09:39:20

A. And, of course, there's this matter. 09:39:25

Q. And when did you first start working on behalf of [audio distortion]? 09:39:30 09:39:30

A. I'm sorry, you -- the end of your question was cut off. I didn't understand it. 09:39:37 09:39:39

Q. When did you first -- strike that. 09:39:44

When did you first start working on behalf of ParkerVision? 09:39:46 09:39:48

A. Are you asking with regards to this matter? 09:39:50

Q. With regard to any matter. 09:39:58

A. It would be either the end of 2015 or the beginning of 2016. 09:39:59 09:40:07

Q. And is that when you were working in conjunction with the Mintz Law Firm? 09:40:08 09:40:19

A. That is correct. 09:40:20

Q. And what specific case or opposing party did that work involve? 09:40:25 09:40:31

A. That involved -- ParkerVision filed a complaint against several companies. I'm not too sure if I remember all of them. I do recall LG. I recall Apple. I recall Qualcomm. I recall that there were several experts. And I cannot recall how deeply I was involved in some of those matters. 09:40:37 09:40:45 09:40:50 09:40:59 09:41:06 09:41:10

Q. In what form was this matter, or forms? 09:41:15

A. So ParkerVision accused those companies of infringing 09:41:29

their patent. Or patents. 09:41:32

Q. And did ParkerVision accuse them in all -- in one matter or was this multiple different cases that were filed? 09:41:37 09:41:41 09:41:46

MR. CHARKOW: Object to the form. 09:41:53

A. My answer is, I do not know if there was just one case or multiple cases. I don't know whether it started off as multiple cases and became one, so, actually, I'm not clear on those details. It seemed to me that it was one matter, but I don't -- I don't know the history because I believe the history started before I was -- became involved. 09:41:56 09:41:59 09:42:08 09:42:11 09:42:13 09:42:18 09:42:20

BY MR. ZUBLER: 09:42:23

Q. Were you deposed while working on this matter for Mintz? 09:42:24 09:42:31

A. Yes, I was deposed. 09:42:32

Q. How many times? 09:42:33

A. I cannot remember the exact details. Once or twice, but they were 14-day [sic] -- I remember a 14-day deposition back in probably 2016. And I can't remember whether they were two depositions back to back or the same deposition. 09:42:52 09:43:02 09:43:05 09:43:11 09:43:15

Q. I'm sorry, did you say a 14-day deposition? 09:43:17
A. 14-hour, sorry. 09:43:21
Q. Oh, okay. 09:43:22
A. Two days next to each other. And I can't remember whether they were two separate depositions or one deposition that went for 14 hours. 09:43:22 09:43:24 09:43:27
Q. How many times have you been deposed in a case involving ParkerVision? 09:43:29 09:43:39
A. Excluding today, three times. Not including today. But then one of those could have been two depositions on consecutive days. I can't remember whether the 14 hours was one deposition or two. But, basically, three periods, three pieces. 09:43:50 09:43:58 09:44:01 09:44:07 09:44:12
Q. So you mentioned that there were two depositions that were, perhaps, next to each other -- 09:44:14 09:44:21
A. Uh-huh. 09:44:21
Q. -- on consecutive days. What was the context of your third deposition on behalf of ParkerVision? 09:44:28 09:44:31
A. I recall one deposition when I was working with the Mintz Law Firm. I recall two depositions when I was working with the McKool law firm. 09:44:40 09:44:43 09:44:48
Q. And did that involve -- sorry, strike that. 09:44:57

When you were working with the McKool law firm, what party was the adversary in that litigation? 09:44:58 09:45:01

A. I believe it was just Qualcomm. There could have been another party, but Qualcomm took the lead, and so Qualcomm was what was visible to me. 09:45:15 09:45:18 09:45:22

Q. Have you ever testified at a trial or hearing? 09:45:28

A. I have not. 09:45:40

Q. On what issues did you testify on behalf of ParkerVision while working for Mintz? 09:45:46 09:45:54

A. You cut out -- 09:45:59

MR. CHARKOW: So I just -- 09:45:59

Sorry, Michael. Hold on. 09:46:00

I just want to caution the witness that, you know, don't go into any sort of confidential information or any of your specific communications with attorneys. Other than that, you can go ahead and answer, Michael. 09:46:01 09:46:05 09:46:10 09:46:13 09:46:17

BY MR. ZUBLER: 09:46:18

Q. And to be clear, I'm asking only about, you know, what were the top -- general topics of your deposition testimony that you were -- that you were presenting on behalf of ParkerVision while working with Mintz. 09:46:19 09:46:22 09:46:25 09:46:31

A. Can you -- 09:46:35

MR. CHARKOW: Right. And I -- and I have the same -- 09:46:35

09:46:36

Michael, hold on. 09:46:37

And I have the same warning or -- to Michael that just be careful, you know, not to disclose any specifics. You can talk in high-level general terms, but not specifics. 09:46:38 09:46:46 09:46:48 09:46:50

Go ahead. 09:46:54

A. Counsel, could you give me an example of a topic which would be -- I don't know how broad or how narrow it will be. 09:46:56 09:47:01 09:47:06

BY MR. ZUBLER: 09:47:08

Q. Sure. Let's start at the highest level. Were you testifying about patent infringement, about damages, about invalidity, about infringement, about issues such as that? 09:47:08 09:47:10 09:47:12 09:47:17

MR. CHARKOW: Objection. Form. 09:47:21

A. I did testify about -- this is with regards to my work with the Mintz Law Firm. I did testify with regards to infringement. I did testify with regards to domestic industry. That was the same deposition. 09:47:23 09:47:31 09:47:35 09:47:43

Did I -- I do not know if the report I prepared was used for damages. I do not -- I do not recall being deposed regarding damages. 09:47:58 09:48:03 09:48:13

BY MR. ZUBLER: 09:48:17

Q. So that was when you were working with Mintz. 09:48:17

When you worked with McKool, what topics did you present deposition testimony on? 09:48:20 09:48:25

MR. CHARKOW: Michael, same instruction as before, but you can go ahead and answer. 09:48:33 09:48:35

THE WITNESS: Yes. 09:48:41

A. I testified regarding infringement and I testified regarding validity. 09:48:41 09:48:50

BY MR. ZUBLER: 09:48:55

Q. And that was with respect to infringement or alleged infringement violations? 09:48:55 09:49:00

A. Correct. 09:49:04

STENOGRAPHER: If there was an answer, I didn't hear it. 09:49:20 09:49:21

THE WITNESS: From me? 09:49:32

MR. ZUBLER: I believe he said "correct." 09:49:32

THE WITNESS: That's right, one word, "correct." 09:49:35 09:49:36

1	STENOGRAPHER: Thank you.	09:49:45
2	BY MR. ZUBLER:	09:49:45
3	Q. Are you currently serving as an expert on behalf of	09:49:45
4	ParkerVision in any other litigation other than	09:49:49
5	litigation involving Intel?	09:49:54
6	A. Sorry, could you just say that again? I want to get	09:50:05
7	the answer right.	09:50:07
8	Q. Are you currently serving as an expert on behalf of	09:50:09
9	ParkerVision with respect to any litigation other than	09:50:13
10	litigation against Intel?	09:50:19
11	A. I -- okay. So I am working with McKool in litigation	09:50:27
12	with respect to Qualcomm. I am not sure whether	09:50:35
13	there are other parties involved in that, but	09:50:38
14	Qualcomm is certainly the lead.	09:50:41
15	With DI, I am not too sure where -- I am	09:50:45
16	not too sure whether I should answer that, and that's	09:50:57
17	because I do not know whether some matters are under	09:51:00
18	litigation or not. I simply do not know.	09:51:05
19	MR. CHARKOW: So, Counsel, you know, we've	09:51:08
20	been talking about these areas, and I understand you	09:51:10
21	want to establish he's an expert, but we're here for	09:51:14
22	an IPR deposition and I've given you considerable	09:51:17

leeway. You know, how much longer do you have on this area of questioning? 09:51:20 09:51:25

MR. ZUBLER: Jason, this is well within the scope of understanding the witness's background, experience, ties to the client. I can ask questions. I don't have a whole lot more, but your basis to object is irrelevant. 09:51:28 09:51:29 09:51:34 09:51:41 09:51:45

MR. CHARKOW: Okay. I just -- I just want to -- I want to understand where we're going here. Okay. Keep going. 09:51:47 09:51:48 09:51:51

BY MR. ZUBLER: 09:52:07

Q. And has your testimony ever been excluded by a court, such as by a Daubert ruling? 09:52:07 09:52:24

A. I -- I have no knowledge of any such thing happening. 09:52:30

Q. How much do you charge as your hourly rate for your work with ParkerVision? 09:52:34 09:52:46

A. Well, in the context of this matter I am charging $440 an hour. 09:52:54 09:53:01

Q. How much money total have you billed to ParkerVision for all of your work on behalf of ParkerVision? 09:53:15 09:53:22

A. So you're asking from -- from 2015 to the current date? 09:53:30 09:53:35

Q. Correct. 09:53:36
A. I imagine it is maybe 700 or $800,000 over those years. 09:53:39 09:53:51
Q. How much money total have you made serving as an expert consultant over the 15 years you said you've served as an expert consultant? 09:53:56 09:53:59 09:54:03
MR. CHARKOW: Objection to form. 09:54:06
A. Well, in particular, you're asking me as an expert consultant for -- regarding ParkerVision and other litigation matters? 09:54:07 09:54:11 09:54:16
BY MR. ZUBLER: 09:54:18
Q. Correct. 09:54:19
A. And -- okay. So for that, I would say total -- and this involves companies that I haven't mentioned and I'm prevented from -- I have a document which prevents me from mentioning it. I would say about 1.4 million. 09:54:19 09:54:29 09:54:32 09:54:34 09:54:39
Q. Since 2015 when you started working for ParkerVision, what percentage of your professional time have you devoted to serving as a litigation consultant for ParkerVision? 09:54:40 09:54:55 09:54:58 09:55:03
A. Well, I've never worked that out. I haven't kept 09:55:13

that kind of tracking. I would say, overall, it would be close to maybe 30 percent of my time, professional time. 09:55:16 09:55:23 09:55:29

MR. CHARKOW: So, Counsel, because we have some confidential information now in the record, I am gonna request that this deposition be marked as confidential. 09:55:30 09:55:36 09:55:38 09:55:45

MR. ZUBLER: No objection. 09:55:46

BY MR. ZUBLER: 09:55:52

Q. Dr. Steer, you attached a curriculum vitae to your declaration. Is that a reasonably up-to-date summary of your experience? 09:56:17 09:56:29 09:56:35

A. Yes, it is up to date. Probably I don't put as much material in there as some people do, but it's accurate. 09:56:37 09:56:45 09:56:48

Q. And you are a professor at North Carolina State University. Correct? 09:56:49 09:56:57

A. Well, things have changed recently because my retirement date was June 30th, but I still hold an appointment, so my title -- I am an emeritus now, so my title is lampe distinguished professor emeritus, which basically means I can work for them without 09:56:59 09:57:02 09:57:09 09:57:14 09:57:20

getting paid. 09:57:22

Q. Well, congratulations on your retirement. 09:57:28

A. I still have some graduate students that I need to get out the door. 09:57:30 09:57:33

Q. Are you still teaching courses? 09:57:34

A. No, I'm not teaching. 09:57:38

Q. Over the last five years, what kind of courses have you taught? 09:57:39 09:57:41

A. Oh, over the last five years, I have taught second-year circuit design. I have taught final-year RF circuit design. I have taught an electronic warfare class to military officers. I have taught a first-year class on RF circuit and system design. And I have taught a Ph.D.-level class on RF circuit design. 09:57:45 09:57:51 09:57:59 09:58:06 09:58:12 09:58:17 09:58:24

Probably in that period I've probably taught classes about transistor circuits. I used to be the person who taught classes on ethics for my department, you know, and so I was -- I would go into a lot of different lectures. 09:58:25 09:58:28 09:58:36 09:58:39 09:58:43

What have I left out? 09:58:46

And I've done a few other guest lectures 09:58:49

in different courses. 09:58:52

Q. You state in your declaration that you had -- you [as read]: Have a detailed understanding of radiofrequency circuit design, including the radiofrequency front end of cellular phones. 09:58:53 09:58:57 09:59:00 09:59:03

Is that correct? 09:59:06

A. I don't remember -- 09:59:10

MR. CHARKOW: Objection to form. 09:59:11

THE WITNESS: Pardon me. 09:59:12

A. That is -- 09:59:14

MR. CHARKOW: Just give me a minute. 09:59:14

THE WITNESS: Sorry. 09:59:14

MR. CHARKOW: Sorry, Michael, just give me a minute to object, if you could. 09:59:15 09:59:17

Objection to form. 09:59:19

A. Yes. Could you repeat your question, please? 09:59:23

BY MR. ZUBLER: 09:59:25

Q. Sure. You state in your declaration that you [as read]: Have a detailed understanding of radiofrequency circuit design, including the radiofrequency front end of cellular phones. 09:59:26 09:59:29 09:59:32 09:59:34

Is that a true statement about your 09:59:38

understanding? 09:59:41

A. Yes, it is. 09:59:42

Q. Do you consider yourself to be an expert in RF microwave -- strike that. 09:59:43 09:59:48

Do you consider yourself to be an expert in RF and microwave system design? 09:59:51 09:59:53

A. I do. And I consider myself to be at least a person of ordinary skill in that field. 10:00:02 10:00:05

Q. And as a professor, do you make an effort to stay up to speed on significant developments in the field of RF and microwave system design? 10:00:08 10:00:14 10:00:17

MR. CHARKOW: Objection to form. 10:00:23

A. You will need to repeat that. It was broken up. I lost the end of certain words. 10:00:24 10:00:27

BY MR. ZUBLER: 10:00:29

Q. Sure. As a professor, do you make an effort to stay up to speed on significant developments in the field of RF and microwave system design? 10:00:29 10:00:32 10:00:36

MR. CHARKOW: Objection to form. 10:00:40

A. I am up to date. I follow the literature, I write papers, I review papers in that field, and I write many books. So I am up to date. 10:00:47 10:00:58 10:01:00

BY MR. ZUBLER: 10:01:06

Q. And your CV states that you have authored more than 500 publications; is that an accurate statement? 10:01:06 10:01:09

A. That would be accurate. 10:01:14

Q. And what percentage of those publications, as a ballpark, would you estimate relate to RF and microwave technology? 10:01:16 10:01:22 10:01:25

A. Nearly all of them. Probably at least 90 percent, maybe 95 percent. 10:01:32 10:01:36

Q. And you are the author of a set of books entitled Microwave and RF Design. Correct? 10:02:05 10:02:10

A. That's -- that's the main title. Then there are subtitles under that. Yes. 10:02:17 10:02:20

Q. And this book series has five volumes. Correct? 10:02:22

A. Well, there are actually six books in that series. 10:02:30

Q. Okay. There are five -- well, could you describe those volumes, please? 10:02:34 10:02:42

A. Yes. There -- that's actually the third edition of a book. The second edition, everything was in one book. I bought the copyright back from the publisher and I've turned those books into locum [ph] access books, and those books expanded from the original 10:02:43 10:02:49 10:02:53 10:02:58 10:03:06

volume up to maybe over 2,000 pages. It's broken up. 10:03:08

There is a call which is five volumes and 10:03:15

then I have a undergraduate version which is -- is 10:03:17

another book. Each of those books is about 300 pages 10:03:21

long because that is the cheapest way to have a book 10:03:24

printed because it's totally automatic then. 10:03:28

So the whole idea was that people can buy 10:03:30

books for about $13 or they can download the pdf for 10:03:32

free. So I took the large volume and broke it into a 10:03:37

large document and broke it into five volumes. 10:03:45

The first volume design, I cannot remember 10:03:49

the exact titles. It's, like, radio systems. The 10:03:52

second volume is on transmission lines. The third 10:03:58

volume is on [audio distortion]. The fourth volume 10:04:01

is on something I can't remember. The fifth volume 10:04:07

is amplifiers and oscillators. And the volume I'm 10:04:09

working on -- and I'm working on a volume now. 10:04:12

Another volume now. 10:04:23

STENOGRAPHER: Okay. I didn't hear what 10:04:23

the third volume was. 10:04:24

A. The third volume was on networks. 10:04:27

BY MR. ZUBLER: 10:04:31

Q. And I think the third edition of this was published in 2019; is that correct? 10:04:31 10:04:35

A. That would be correct. 10:04:38

Q. And the first edition was published around 2010; is that correct? 10:04:44 10:04:48

A. Something like that, yes. 10:04:49

MR. ZUBLER: Could we please pull up document at tab [audio distortion] and if we can mark this as Exhibit 1023. 10:04:56 10:04:59 10:05:05

PLANET DEPOS TECH: I apologize, this is the tech. You were cutting out, sir. 10:05:11 10:05:12

MR. ZUBLER: Could we please bring up Tab 24 among the documents from the deposition and mark it as Exhibit 1023? 10:05:16 10:05:19 10:05:21

PLANET DEPOS TECH: Understood, Counsel. Please stand by. 10:05:28 10:05:30

MARKED FOR IDENTIFICATION: 10:05:33

EXHIBIT 1023 10:05:33

10:05 a.m. 10:06:06

PLANET DEPOS TECH: The document is currently uploading to the SharePoint. 10:06:06 10:06:07

MR. CHARKOW: Donald, will these all be 10:06:16

separate links or you just go to the same site? 10:06:18

PLANET DEPOS TECH: Go to the same site. 10:06:24

You may need to refresh. 10:06:26

THE WITNESS: Can you give those 10:06:34

instructions again? You go to file and... 10:06:35

PLANET DEPOS TECH: So we are -- so we're 10:06:38

using the SharePoint, sir. You should only have to 10:06:40

click the link that I sent in chat. If you click 10:06:42

that, it should open up. When I'm uploading new 10:06:48

exhibits, simply refresh that window you're on and 10:06:52

that exhibit should be there. 10:06:56

THE WITNESS: Yes, I have it. I'm 10:07:03

downloading it now. 10:07:05

I have Exhibit 1023 up in front of me. 10:07:34

MR. ZUBLER: And, Counsel, do you have a 10:07:42

copy that you can see as well? 10:07:43

MR. CHARKOW: Yes, I do. This is Jason. 10:07:49

BY MR. ZUBLER: 10:07:52

Q. Dr. Steer, is this Volume 1 of the book series 10:07:52

Microwave and RF Design, the Third Edition? 10:07:59

A. It certainly looks like it. 10:08:03

Q. And this is the book that you wrote. Correct? 10:08:05

A. Correct. 10:08:15

Q. If I could ask you to turn to page -- let's see... 6 of the ParkerVision. It's little Roman V as enumerated on the page. 10:08:16 10:08:30 10:08:37

A. The preface? 10:08:42

Q. The preface, correct. The first sentence says that [as read]: The book series Microwave and RF Design is a comprehensive treatment of radiofrequency (RF) and microwave design with a modern systems-first approach. 10:08:43 10:08:48 10:08:51 10:08:54

Do you see that? 10:08:59

A. Yes, I do. 10:09:06

Q. What does that mean, a "modern systems-first approach"? 10:09:06 10:09:09

A. So the philosophy here is that if -- with most books -- not just in microwave and RF design, most electrical engineering books, basically any book, they would start from very basic things and gradually build up over time, and then at the end there would be a tiny bit about how this is used in a system. 10:09:17 10:09:24 10:09:28 10:09:30 10:09:40 10:09:42

And what I wanted to do was come out first and talk about systems and then describe some details. And, of course, when we say 10:09:45 10:09:47 10:09:54

"comprehensive," there's -- even if you're up to 2,000, you know, you have to make a choice. 10:09:56 10:10:03

But that was the basic idea. So this first volume is about system concepts rather than circuits. 10:10:05 10:10:08 10:10:12

Q. And the subsequent volumes are then more about specific topics, like circuits? Is that what you're saying? 10:10:18 10:10:25 10:10:29

MR. CHARKOW: Objection to form. 10:10:29

A. Yes. And at least -- that's correct. And there's at least -- at least more volume that needs to be added to that which I'm working on now. 10:10:30 10:10:33 10:10:38

BY MR. ZUBLER: 10:10:40

Q. And what is that volume about? 10:10:41

A. It will be about RFIC design. 10:10:45

Q. And if you look at the section entitled Rationale, under Preface, it says -- the first sentence says [as read]: The central philosophy behind this series's popular approach is that the student or practicing engineer will develop a full appreciation for RF and microwave engineering and gain the practical skills to perform system-level design decisions. 10:10:59 10:11:03 10:11:06 10:11:10 10:11:13 10:11:16 10:11:18

Do you see that? 10:11:21

A. Correct. 10:11:22

Q. And is that an accurate statement of your goal and philosophy for this series? 10:11:27 10:11:30

MR. CHARKOW: Objection to form. 10:11:40

A. I wrote that, and I believe that that is the -- that is the way we should approach things now since engineers deal with much higher level of abstraction than they used to. 10:11:41 10:11:44 10:11:47 10:11:51

And I also think it's a much more interesting way of learning material since, if you look at the old way that books were written, you know, you can never cover every topic, and so you end up just presenting odd topics here and there. And -- and most of the people that write books really don't understand systems. 10:11:52 10:11:56 10:12:00 10:12:03 10:12:07 10:12:15 10:12:18

And I just thought, well, let's give people a good appreciation for systems from an RF circuit designer's point of view because, you know, the systems are full of math. You know, how -- how communications work is full of math, and that's just not going to appeal to circuits people and they're 10:12:21 10:12:23 10:12:29 10:12:30 10:12:34 10:12:38

not going to gain the full understanding. 10:12:40

So I -- what is different with this book 10:12:42

series is that I am an RF circuit designer and I 10:12:47

wanted to write a system-level book that circuits 10:12:55

people could read and understand and learn every -- 10:12:59

and learn things rather than having to go into very 10:13:01

deep math before they got a system understanding. 10:13:06

Q. One moment. 10:13:09

Dr. Steer, in the six volumes of this book 10:13:26

series, Jeff Parker is never mentioned. Correct? 10:13:30

MR. CHARKOW: Objection to form. 10:13:39

A. I -- I don't think I refer to anybody by name unless 10:13:43

a particular technology has been associated with it, 10:13:53

like the Smith chart. And I reference a lot of 10:14:00

publications. I do not mention patents, of course. 10:14:07

So do I write out Jeff Parker's name 10:14:22

anywhere? No, I'm pretty sure I don't. 10:14:26

BY MR. ZUBLER: 10:14:28

Q. And you don't mention the name of David Sorrells. 10:14:28

Correct? 10:14:32

MR. CHARKOW: Objection to form. 10:14:33

A. I am sure I don't. 10:14:39

BY MR. ZUBLER: 10:14:41
Q. The book series never mentions ParkerVision. Correct? 10:14:41
MR. CHARKOW: Objection to form. 10:14:44
A. I would say, I do not mention any company unless I -- 10:14:52
I used -- unless the company provided like a picture 10:14:58
of an object that I used. And so would I mention -- 10:15:02
would ParkerVision be in there? No. Would I mention 10:15:10
them? Only if I got material from them. 10:15:13
BY MR. ZUBLER: 10:15:17
Q. The book series never mentions the phrase "energy 10:15:17
sampling." Correct? 10:15:20
A. I'm sorry, you'll need to repeat that question. It 10:15:22
broke up. 10:15:25
Q. The book series never mentions the phrase "energy 10:15:25
sampling." Correct? 10:15:28
A. I would say it does not. 10:15:33
MR. CHARKOW: Objection. Form. 10:15:33
A. I do not think the book series mentions that. 10:15:35
BY MR. ZUBLER: 10:15:38
Q. The book series never mentions the phrase "energy 10:15:38
transfer." Correct? 10:15:42
MR. CHARKOW: Objection. Form. 10:15:43

A. That is correct. 10:15:44

BY MR. ZUBLER: 10:15:48

Q. Have you ever written an article that mentions the phrase "energy sampling"? 10:15:53 10:15:58

MR. CHARKOW: Objection. Form. 10:16:01

A. I have not. 10:16:04

BY MR. ZUBLER: 10:16:06

Q. Have you ever written an article that mentions energy transfer? 10:16:06 10:16:09

MR. CHARKOW: Objection. Form. 10:16:10

A. I have not. 10:16:13

BY MR. ZUBLER: 10:16:15

Q. Have you ever written an article that mentions ParkerVision? 10:16:16 10:16:19

MR. CHARKOW: Objection. Form. 10:16:21

A. I do not think so. 10:16:23

BY MR. ZUBLER: 10:16:28

Q. Have you ever given a presentation that mentions the phrase "energy sampling" or "energy transfer"? 10:16:29 10:16:33

MR. CHARKOW: Objection. Form. 10:16:37

A. So the -- what you're saying there is talking about terminology which the community currently calls many 10:16:44 10:16:50

different words because everybody who writes a paper uses their own words. Like, they use words such as -- they use other words. But, no, I have not used the specific words "energy transfer system" in the publication or presentation. 10:16:59 10:17:02 10:17:07 10:17:11 10:17:16

BY MR. ZUBLER: 10:17:17

Q. What are the other words that people use for the phrase or the concept of sampling? 10:17:26 10:17:30

MR. CHARKOW: Objection to form. 10:17:35

Sorry, Michael, just let me put my objection in. Thank you. 10:17:38 10:17:40

THE WITNESS: Yes. Thank you. Sorry about that. 10:17:41 10:17:44

A. I just cannot remember all of -- all of the phrases that people use. I do remember many publications because I was editor in chief of the main magazine in this area at one time. It would always surprise me that every publication used another term. So I just can't remember the terms -- all those various terms that different authors have used. 10:17:45 10:17:49 10:17:59 10:18:04 10:18:08 10:18:11 10:18:15

BY MR. ZUBLER: 10:18:16

Q. Can you remember any of the terms that authors have 10:18:17

used to refer to the concept of energy sampling or energy transfer? 10:18:22 10:18:25

MR. CHARKOW: Objection. Form. 10:18:26

Sorry, Michael. 10:18:28

Objection. Form. 10:18:28

A. I remember -- some of the terms are passive mixer, but there are qualifications to that. I remember one of the prominent authors who discusses energy transfer sampling is Dr. Razavi. I do remember his publications because he wrote more of a tutorial review series of papers which was fairly popular. And so he uses the terms that people use. 10:18:35 10:18:41 10:18:53 10:18:56 10:19:00 10:19:05 10:19:11

But passive is in there. Passive mixer is in there. Concept of using non-negligible apertures are in these papers. As I said, nearly every author uses a different term. 10:19:17 10:19:22 10:19:30 10:19:34

BY MR. ZUBLER: 10:19:42

Q. What paper specifically by Dr. Razavi do you say discusses the concept of energy sampling or energy transfer? 10:19:42 10:19:47 10:19:50

MR. CHARKOW: Objection. Form. 10:19:56

A. I cannot recall the title of that paper. I could 10:19:57

find it in 15, 30 minutes, I imagine. 10:20:03

BY MR. ZUBLER: 10:20:08

Q. And what term did Dr. Razavi use for the concept in energy sampling or energy transfer? 10:20:10 10:20:16

MR. CHARKOW: Objection. Form. 10:20:19

A. My recollection is that he used several different terms. 10:20:23 10:20:26

BY MR. ZUBLER: 10:20:32

Q. What terms? 10:20:32

A. Well, standing here today, I cannot -- I cannot remember. 10:20:36 10:20:42

MR. CHARKOW: Counsel, when we get a chance, could -- when you're at a good place, could we take a break? I think we've been close to an hour now. 10:20:42 10:20:44 10:20:46 10:20:48

MR. ZUBLER: Sure. I think this is a fine time for a break. 10:20:49 10:20:51

MR. CHARKOW: Great. 10:20:54

So, Michael, how long would you like? Like, ten minutes, is that good? Like, ten minutes to -- 10:20:58 10:20:59 10:21:01

THE WITNESS: Ten minutes is -- 10:21:01

[Simultaneous Speaking] 10:21:03

MR. CHARKOW: -- whatever, 5, 10, 15. It's up to you, from my point of view. 10:21:03 10:21:06

THE WITNESS: Ten minutes. 10:21:08

MR. CHARKOW: Okay. 10:21:10

MR. ZUBLER: All right. We can go off the record. 10:21:10 10:21:11

VIDEO TECHNICIAN: Okay. We're going off the record. The time is 10:21 p.m. -- or a.m. 10:21:11 10:21:14

(Off the record at 10:21 a.m.) 10:35:58

(Back on the record at 10:35 a.m.) 10:35:58

VIDEO TECHNICIAN: Going back on the record. The time is 10:35 a.m. 10:35:59 10:36:00

BY MR. ZUBLER: 10:36:03

Q. Dr. Steer, on the break, did you communicate with anyone? 10:36:07 10:36:12

A. Yes. I my checked my text messages and I communicated with my son. 10:36:17 10:36:19

Q. Have any communications with counsel? 10:36:22

A. No. 10:36:25

Q. We were talking earlier about the phrases "energy sampling" and "energy transfer." Is it your position 10:36:25 10:36:42

that a paper can be describing energy sampling or energy transfer without using those terms? 10:36:45 10:36:50

MR. CHARKOW: Objection to form. 10:36:55

A. In particular, they -- they can describe an energy transfer system without using those terms. 10:37:05 10:37:07

BY MR. ZUBLER: 10:37:15

Q. Can a paper describe an energy transfer system without using the term "energy"? 10:37:16 10:37:19

MR. CHARKOW: Objection to form. 10:37:22

A. They could use terms that have equivalent meaning. 10:37:43

BY MR. ZUBLER: 10:37:46

Q. Such as? 10:37:49

MR. CHARKOW: Objection to form. 10:37:52

A. They could use terms such as -- there is no term that has an exact equivalency of meaning, but some concepts would be transfer of charge. They could talk about transfer of current in something like a finite aperture. But, yes, I've read hundreds of papers that -- with the description -- with ParkerVision's description of an energy transfer system you would say, yes, these are energy transfer systems. 10:37:58 10:38:07 10:38:10 10:38:21 10:38:26 10:38:36 10:38:39 10:38:42 10:38:45

BY MR. ZUBLER: 10:39:07

Q. When was the first time you became aware of Jeff Parker? 10:39:07 10:39:12

MR. CHARKOW: Objection to form. 10:39:13

A. Oh, I simply do not recollect the actual -- when I first knew the actual name, but I do -- I would say, the actual name is probably sometime in 2015. Probably around about 2015. 10:39:33 10:39:41 10:39:50 10:39:56

BY MR. ZUBLER: 10:40:00

Q. Are you familiar with David Sorrells? 10:40:00

MR. CHARKOW: Objection to form. 10:40:10

A. I know of Mr. Sorrells. I have talked to him on the phone, so I guess I do know him. I have never met him in person. 10:40:12 10:40:19 10:40:26

BY MR. ZUBLER: 10:40:27

Q. When did you first become aware of Mr. Sorrells? 10:40:28

MR. CHARKOW: Objection to form. 10:40:33

A. You know, my -- I just -- I never kept track of that, but I would say, possibly in the 2015 timeframe. 10:40:41 10:40:50

BY MR. ZUBLER: 10:40:58

Q. How many times have you spoken with Mr. Sorrells? 10:40:59

A. I think it would be in the range of 10 to 20 times. 10:41:15

Q. Have you spoken with Mr. Sorrells [audio distortion] last year? 10:41:26 10:41:28

A. Sorry, you broke up. So I believe you asked me, did I speak to Dr. -- no, Mr. Sorrells, last year. 10:41:30 10:41:32

Q. Within the last year. 10:41:36

A. With -- I have talked to Mr. Sorrells within the last year. 10:41:37 10:41:40

Q. And did you talk to Mr. Sorrells in preparation for this deposition? 10:41:41 10:41:48

MR. CHARKOW: Objection. Sorry. I'm gonna instruct the witness not to answer for any -- well, he can answer that. 10:41:52 10:41:56 10:41:59

Go ahead. You can answer that, Michael. 10:42:01

A. I actually don't recall whether I spoke to him in preparation for this deposition. He may have been on the phone call in the background and didn't speak. So I do not recall speaking with him preparing for this deposition. I think, most likely, I did not. I just don't recall talking to him. 10:42:13 10:42:15 10:42:19 10:42:25 10:42:28 10:42:30

BY MR. ZUBLER: 10:42:32

Q. I'm not asking about the content of any communications, but with whom did you speak to prepare 10:42:32 10:42:39

for this deposition? 10:42:42

A. I've talked to counsel at DI. I have talked to Mr. Rawlins. But I will say that that was always with counsel on the phone. I have talked to Mr. Parker on the same -- same call. I have never -- have not talked to them without a group -- a group call, and that would only -- that would be in preparation for this deposition. Maybe twice, perhaps. 10:42:43 10:42:55 10:43:04 10:43:14 10:43:16 10:43:18 10:43:25 10:43:31

Q. And, I'm sorry, I'm not following your last sentence where you said, "maybe twice, perhaps." What are you referring to? 10:43:36 10:43:40 10:43:42

A. How many times I have talked to them. 10:43:43

Q. Talked to whom? 10:43:45

A. Mr. Rawlins and Mr. Parker. 10:43:51

Q. And that's two times you've ever spoken with them or two times you've spoken to them in connection with this deposition? 10:43:57 10:44:01 10:44:03

A. That is two times in connection with this deposition. 10:44:09

Q. How many times have you spoken with Mr. Parker or Mr. Rawlins ever? 10:44:11 10:44:15

A. I think it would be in the range of 10 to 20, 10:44:28

possibly closer to 10. 10:44:31

Q. Have you ever read an academic article written by Jeff Parker? 10:44:46 10:44:52

MR. CHARKOW: Objection. Form. 10:44:52

A. I have not read an academic paper written by Mr. Parker. 10:44:57 10:45:02

BY MR. ZUBLER: 10:45:03

Q. Have you ever read an academic article by Mr. Sorrells or any inventor on a ParkerVision patent? 10:45:03 10:45:07

MR. CHARKOW: Objection. Form. 10:45:14

A. Yes, I have. 10:45:16

BY MR. ZUBLER: 10:45:25

Q. What paper or academic article have you read? 10:45:25

A. Oh, I cannot remember the title. I remember a paper by Mr. Sorrells, in particular, where he described an energy transfer system, but I -- I cannot remember the title. Of course, it shows up in a Google search -- Google Scholar search. So I do remember one paper -- academic paper in particular by Mr. Sorrells. 10:45:37 10:45:41 10:45:45 10:45:49 10:45:57 10:46:05 10:46:09

Q. Where was it published? 10:46:09

A. It was -- I believe -- I'm 90 percent certain that it 10:46:10

was published by the IEEE. 10:46:20

Q. Did that article relate to energy transfer or energy sampling? 10:46:30 10:46:35

MR. CHARKOW: Objection to form. 10:46:35

A. That's my recollection. 10:46:39

BY MR. ZUBLER: 10:46:48

Q. And do you recall any other articles written by any inventor of a ParkerVision patent? 10:46:49 10:46:52

MR. CHARKOW: Objection to form. 10:46:56

A. I really don't know. I looked -- I only remember the authors that I know, really, of any paper. So I may have or I may not have. I can't remember. 10:47:06 10:47:16 10:47:23

BY MR. ZUBLER: 10:47:33

Q. When was the first time you had heard of ParkerVision? 10:47:33

A. Well, I know I heard of them in 2015. I think I had probably heard of them earlier than that. 10:47:53 10:47:55

Q. But your earliest specific recollection of ParkerVision is in 2015? 10:48:04 10:48:07

MR. CHARKOW: Objection to form. 10:48:11

A. I want to be careful how I answer that because 2015 is for certain. There was an incident that occurred prior to 2015 which had some notoriety, and I really 10:48:18 10:48:21 10:48:24

don't want -- and ParkerVision was involved in that. 10:48:28

So I was -- I was aware of the company 10:48:34

without really knowing who they were. I was aware 10:48:41

that there was a company, but I don't -- I never 10:48:45

logged the name of the company. But I know that that 10:48:49

company -- I now know that that company was 10:48:53

ParkerVision. 10:48:54

BY MR. ZUBLER: 10:48:55

Q. What is the incident you are referring to? 10:48:55

MR. CHARKOW: Objection to form. 10:48:58

And hold on, Michael. I don't know -- 10:48:59

just -- if there's any sort of confidential 10:49:03

information that you're -- well, just consider 10:49:07

confidential information, any sort of attorney-client 10:49:11

privilege, attorney work product. Other than that, 10:49:13

you can go ahead and answer. 10:49:17

A. Okay. So the information was told to me in 10:49:22

confidence and it did not involve litigation. 10:49:25

BY MR. ZUBLER: 10:49:36

Q. Again, without asking -- what were the circumstances 10:49:42

under or -- under which this information was given to 10:49:49

you? 10:49:52

MR. CHARKOW: So, Michael, I just caution you, again, that if this is confidential information under which you have -- you know, it's confidential information or its something -- communications with attorneys or attorney work product where attorneys were involved, you shouldn't answer that. Otherwise, you can go -- you know, if you're not gonna answer that, affects any of those things, then you can go ahead and answer. 10:49:55 10:49:56 10:49:58 10:50:01 10:50:04 10:50:08 10:50:11 10:50:13 10:50:17

A. The matter has nothing to do with energy transfer systems or -- it did not involve any lawyers. And I do not -- I feel -- because it was told to me in confidence, I do not want to say anything because the -- part of the reason is... let's say it wasn't a very nice situation that a consulting company that I knew was involved with, and if I said anything, I think the company would try and -- would attack me for slander perhaps. 10:50:22 10:50:26 10:50:39 10:50:42 10:50:44 10:50:51 10:50:54 10:50:57 10:51:02

But it did have nothing to do at all with what we're -- what we are talking about or any transfer systems. It was another matter altogether. 10:51:04 10:51:08 10:51:14 10:51:16

BY MR. ZUBLER: 10:51:21

Q. Are you under a confidentiality agreement not to disclose information about this incident? 10:51:22 10:51:24

MR. CHARKOW: Objection to form. 10:51:28

A. There was not a confidentiality agreement, but I know individuals very well, and they told it to me -- told me that information in confidence. And so, to me, that's as strong as a confidentiality agreement. 10:51:37 10:51:44 10:51:47 10:51:52

I'm sorry I even went down this path. 10:52:01

BY MR. ZUBLER: 10:52:28

Q. Let's change topics for at least a minute. 10:52:28

When is the first time you became aware of the '444 patent? 10:52:40 10:52:43

MR. CHARKOW: Objection to form. 10:52:45

A. That would be in 2015. 10:52:50

BY MR. ZUBLER: 10:52:59

Q. And that's when you were contacted about serving as an expert for ParkerVision? 10:52:59 10:53:02

A. It preceded that. 10:53:07

Q. So in what context did you first learn about the '444 patent? 10:53:14 10:53:18

MR. CHARKOW: Michael, again, I just -- 10:53:20

just cautioning you that if -- you know, not to reveal any discussions with attorneys or the substance of discussions with attorneys or any sort of confidential information. Other than that, you can go ahead and answer. 10:53:22 10:53:26 10:53:31 10:53:34 10:53:37

A. What I can say is, I was contacted by someone at Mintz to do a technology assessment, but at that time I had no contact with ParkerVision. I was not working with ParkerVision. Solely for Mintz. I reviewed every one of ParkerVision's patents and I also reviewed every one of several other companies' patents at the time. So I probably reviewed about 4- or 5,000 patents. And since I know I reviewed every ParkerVision patent, I know that I must have seen the '444 patent. 10:53:48 10:53:51 10:54:01 10:54:03 10:54:07 10:54:18 10:54:21 10:54:28 10:54:33 10:54:36

BY MR. ZUBLER: 10:54:39

Q. But your further exposure to the '444 patent was in the context of being asked to consult with Mintz. Correct? 10:54:39 10:54:44 10:54:54

A. That is correct. 10:54:58

MR. CHARKOW: Objection to form. 10:54:59

A. That is correct. 10:55:00

MR. CHARKOW: Sorry, Michael, just give me a chance to put in my objection. 10:55:03 10:55:05

BY MR. ZUBLER: 10:55:12

Q. And was that the first time you became aware of any ParkerVision patent? 10:55:12 10:55:16

MR. ZUBLER: Objection to form. 10:55:20

A. I really don't know. I have reviewed -- you know, generally, I look at academic papers. I look at patents when I'm asked to do due diligence, and I often don't look at the company. I do it independent of the company. So I don't -- I cannot answer that question. I don't know. 10:55:30 10:55:37 10:55:41 10:55:48 10:55:54 10:55:57

BY MR. ZUBLER: 10:55:58

Q. So do you recall being aware of any ParkerVision patent before 2015? 10:56:04 10:56:07

MR. CHARKOW: Objection to form. 10:56:10

A. I cannot say with certainty. There is been -- I may have been aware of some ParkerVision patents. I can think of discussions I had with people at one time, but I would -- just didn't -- just didn't lock in my memory. 10:56:22 10:56:31 10:56:36 10:56:42 10:56:45

BY MR. ZUBLER: 10:56:46

Q. So sitting here today, you can't recall any specific awareness of any ParkerVision patent before 2015. Correct? 10:56:47 10:56:55 10:56:58

MR. CHARKOW: Objection to form. 10:57:00

A. I certainly became aware of a ParkerVision patent independent of any litigation or lawyers. I am not able to pin down the date. I'm sorry about that. But I certainly know that I was very aware of that I had reviewed every ParkerVision patent in 2015. 10:57:02 10:57:16 10:57:22 10:57:29 10:57:32

BY MR. ZUBLER: 10:57:37

Q. What was the context of becoming aware of a ParkerVision patent independent of any litigation? 10:57:40 10:57:43

MR. CHARKOW: Michael, I just want to caution you, again, to not reveal any discussions with attorneys or involving attorney-client communications or any confidential information that you're -- that you should not be revealing. Other than that, you can go ahead and answer. 10:57:48 10:57:49 10:57:55 10:57:57 10:58:02 10:58:06

THE WITNESS: Yes. 10:58:08

A. So the context is that there were no lawyers involved. There's no litigation involved. I seem to recall that it had to do with an amplifier that used 10:58:09 10:58:12 10:58:18

polar modulation, but I just can't be more specific than that. In that timeframe of probably 2000 to 2010, a lot of people believed that polar modulation -- amplifiers using polar modulation was the way to go, and I was the -- I was the chair of a group in the microwave society that was looking into that technology. And I did not search out the information. Somebody brought up something and, you know, it's all fuzzy. Sorry. 10:58:27 10:58:32 10:58:42 10:58:49 10:58:55 10:59:04 10:59:12 10:59:19 10:59:21

BY MR. ZUBLER: 10:59:25

Q. Whatever patent you might have been aware of, that patent is not at issue in any litigation between Intel and ParkerVision. Correct? 10:59:25 10:59:34 10:59:37

MR. CHARKOW: Objection to form. 10:59:44

THE WITNESS: Are we ready to proceed? 10:59:50

Sorry. I missed something there. 10:59:51

A. So that material that -- the patent that I would have become aware of before 2015, as I've described, has nothing -- I believe, has nothing to do with the things that I am involved with in litigation between Intel and ParkerVision. 10:59:54 10:59:59 11:00:04 11:00:08 11:00:14

BY MR. ZUBLER: 11:00:31

Q. Other than Mr. Parker and Mr. Sorrells, have you spoken to any other inventors of a ParkerVision patent? 11:00:33 11:00:36 11:00:42

A. I believe I have. Mr. Rawlins -- Mr. Greg Rawlins was on the phone. He may have been an inventor of one of those. I did visit ParkerVision at one time where I met quite a few people. I visited ParkerVision in the context of running simulations. 11:00:54 11:00:58 11:01:01 11:01:09 11:01:13

So I think there's a very good chance that I have met other inventors of ParkerVision patents. I just -- I have not done -- connected of the dots. 11:01:20 11:01:24 11:01:33

Q. Have you met with Michael J. Bultman? 11:01:36

A. I have not. 11:01:42

Q. Have you met with Robert W. Cook? 11:01:43

A. I have not. 11:01:51

Q. Have you met with Richard C. Looke? 11:01:51

A. I believe I have not. 11:02:02

Q. And by the way, when I say "have you met," I'm talking about any sort of meeting or communication; is that fair? 11:02:07 11:02:10 11:02:12

A. I'm sorry, you broke up then. 11:02:15

Q. I've been asking you questions, have you met Michael 11:02:18

Bultman or Robert Cook. When I used the phrase "met," I was referring to either a meeting or any kind of communication. Did you understand that? 11:02:20 11:02:24 11:02:26

A. Yes, I understood that. 11:02:31

Q. Have you met or communicated with Charley Moses? 11:02:33

A. I believe I have not. 11:02:44

Q. And have you communicated with Michael Rawlins? 11:02:45

A. I believe I have. 11:02:53

Q. In what context have you met or communicated with him? 11:02:57

A. I think it's when I -- I visited ParkerVision in -- I visited ParkerVision in Florida twice, I recall, and I met several people. One person sat with me while I directed him to do simulations and, unfortunately, I can't remember his name. But I think I met Michael Rawlins at that -- at one of those visits. 11:03:04 11:03:17 11:03:32 11:03:41 11:03:45 11:03:51

Q. Are you aware of any ParkerVision products? By which I mean, products that ParkerVision designed and manufactured. 11:03:54 11:04:15 11:04:23

MR. CHARKOW: Object to form. 11:04:23

Sorry, Michael, let me just get my objection in. 11:04:26 11:04:28

Objection to form. 11:04:29

A. I am aware of products that ParkerVision designed and manufactured. And I am aware that they had commercial products. 11:04:34 11:04:42 11:04:46

BY MR. ZUBLER: 11:04:51

Q. What products are you aware of? 11:04:51

A. I am aware of the Eddie I and Eddie II chips. I have studied those chips. I have seen results prepared by independent consultants on the performance of those chips. I have seen a WiFi product, but I just -- I cannot remember the name of the product. 11:04:53 11:05:05 11:05:15 11:05:18 11:05:25

I have seen -- I have seen circuit boards. I have seen many different designs on -- on computer. I have seen many -- seen many schematics, the different designs on computers. 11:05:33 11:05:37 11:05:46 11:05:49

MR. CHARKOW: Just -- sorry. Real quick. Just for the court reporter -- 11:05:55 11:05:57

Michael, are you done? I just want to -- just real quickly, there's... Michael, were you done? 11:05:58 11:06:01

THE WITNESS: Yes. 11:06:06

MR. CHARKOW: For the court reporter, it's Eddie, E-d-d-i-e. When he's saying -- you have 81 and 82. It's E-d-d-i-e I and then E-d-d-i-e II, like the 11:06:07 11:06:09 11:06:14

name. 11:06:20

Sorry about that, Todd. I just saw it so I wanted to clean it up. 11:06:21 11:06:23

BY MR. ZUBLER: 11:06:34

Q. Have you ever tested a ParkerVision product yourself? 11:06:34

MR. CHARKOW: Objection to form. 11:06:43

A. I have not physically tested a ParkerVision product. 11:06:48

BY MR. ZUBLER: 11:06:54

Q. Do you know if any of the products that you mentioned as ParkerVision products have been commercialized? 11:06:55 11:06:59

MR. CHARKOW: Objection to form. 11:07:05

A. I believe that some of the ParkerVision products have been commercialized, and that is because I have seen some financial data. So I was not looking out for that, but I believe that some of ParkerVision's products have been commercialized or licensed. 11:07:08 11:07:13 11:07:19 11:07:27 11:07:33

BY MR. ZUBLER: 11:07:41

Q. Do you know the level of sales of any ParkerVision product? 11:07:49 11:07:53

MR. CHARKOW: Objection to form. 11:07:57

A. I have -- I know I have seen sales information, but I have no recollection as to -- as to volume or 11:08:02 11:08:09

dollars. 11:08:14

BY MR. ZUBLER: 11:08:27

Q. Has any ParkerVision product been a commercial success? 11:08:28 11:08:30

MR. CHARKOW: Objection to form. 11:08:32

A. I really don't know. 11:08:41

BY MR. ZUBLER: 11:08:43

Q. You mentioned earlier some simulations that you were involved with, I believe, when you visited ParkerVision. Do you recall that testimony? 11:08:46 11:08:53 11:08:58

A. Yes, I recall saying that. 11:09:01

Q. What were those simulations? 11:09:04

MR. CHARKOW: Objection to form. 11:09:09

And, Michael -- sorry, Michael, hold on. If you were doing simulations or any discussions that you were having related -- you know, discussions with attorneys or some sort of attorney-client -- you know, attorney privilege or work product, then you shouldn't be going into the details of the specific communications. But other than that, you can go ahead and answer. 11:09:10 11:09:13 11:09:16 11:09:19 11:09:22 11:09:26 11:09:28 11:09:30

A. So what I can recall is, when I first visited, a 11:09:31

lawyer from Mintz came with me. He was very particular about laying out ground rules that these simulations were all to be done under my direction. And I -- at one time I visited, a lawyer did not come with me, but we had a conference call with a Mintz lawyer, again, laying out the ground rules. 11:09:38 11:09:47 11:09:53 11:10:03 11:10:06 11:10:10

So I think that that may fit in the category of being -- that may be as much as I can say. 11:10:13 11:10:16

BY MR. ZUBLER: 11:10:26

Q. Have you -- 11:10:26

MR. CHARKOW: Sorry, Michael, that's as far as you should go. I wouldn't let the -- you should not be answering beyond what you just answered. 11:10:27 11:10:30 11:10:34

Sorry, go ahead, Todd. 11:10:37

BY MR. ZUBLER: 11:10:38

Q. Have you conducted any simulations of a ParkerVision product outside -- 11:10:38 11:10:44

MR. CHARKOW: Objection to the form. 11:10:48

MR. ZUBLER: Let me finish. 11:10:50

BY MR. ZUBLER: 11:10:51

Q. So have you conducted any simulation of a ParkerVision product outside the context of an attorney-supervised 11:10:52 11:10:56

activity? 11:11:07

MR. CHARKOW: Objection to form. 11:11:08

A. Any simulation I may have done was in connection with ongoing litigation, and I would need to have the ParkerVision counsel say what -- tell me if I can say any more. 11:11:16 11:11:23 11:11:30 11:11:34

MR. CHARKOW: Not with regards to the substance, Michael, in terms of communications about what you were doing or why you were doing it. So not in terms of the substance. I think you've gone pretty much as far as you can go. 11:11:37 11:11:38 11:11:41 11:11:44 11:11:47

MR. ZUBLER: All right. Could we please bring up Tab 5 and mark that as Exhibit 1024? 11:11:49 11:12:12

MARKED FOR IDENTIFICATION: 11:12:17

EXHIBIT 1024 11:12:17

11:12 a.m. 11:12:19

PLANET DEPOS TECH: Understood. Please stand by. 11:12:19 11:12:20

The document is currently uploading. Please stand by. 11:12:51 11:12:53

THE WITNESS: So will that document appear in the link in the chat again? 11:13:00 11:13:01

PLANET DEPOS TECH: Yes, sir. Same -- you just need to refresh the page once I say it's been uploaded. 11:13:04 11:13:05 11:13:08

THE WITNESS: Okay. 11:13:09

PLANET DEPOS TECH: The document is now uploaded. 11:13:16 11:13:16

BY MR. ZUBLER: 11:13:43

Q. Do you have the document in front of you, Dr. Steer? 11:13:43

A. Not yet. I've downloaded it. 11:13:46

Q. Take your time. Just let me know when you're ready to proceed. 11:13:49 11:13:51

A. I have Exhibit 1024 in front of me. 11:13:58

MR. ZUBLER: And, Counsel, do you have the document available? 11:14:04 11:14:06

MR. CHARKOW: It's the '444 patent. If that's the exhibit, then, yes, I have it. 11:14:09 11:14:10

MR. ZUBLER: Correct. 11:14:12

BY MR. ZUBLER: 11:14:16

Q. Dr. Steer, this is U.S. Patent Number 7,110,444. Correct? 11:14:17 11:14:21

A. Yes. 11:14:22

Q. Exhibit 1024 is the patent that we've been referring 11:14:22

to as the '444 patent. Right? 11:14:30

A. Correct. 11:14:35

Q. And the '444 patent relates to wireless communication. Correct? 11:14:37 11:14:44

MR. CHARKOW: Objection to form. 11:14:45

A. In the Summary of the Invention it says [as read]: The present invention is directed to a wireless local area network that includes one or more wireless LAN devices (also called stations, terminals, access points, client devices, or infrastructure devices) for effecting wireless communications. 11:15:10 11:15:13 11:15:17 11:15:21 11:15:26 11:15:29

Yes. 11:15:34

BY MR. ZUBLER: 11:15:36

Q. And the '444 patent discusses the down-conversion of electromagnetic signals. Correct? 11:15:36 11:15:40

MR. CHARKOW: Objection to form. 11:15:43

A. I do not see "electromagnetic signals" anywhere in the patent. 11:16:05 11:16:09

BY MR. ZUBLER: 11:16:17

Q. I guess, what about the abstract that we were just looking at? Doesn't it discuss, in the third sentence, a [as read]: WLAN receiver includes at 11:16:18 11:16:22 11:16:26

least one universal frequency translation module that frequency down-converts a received EM signal? 11:16:29 11:16:35

Do you see that? 11:16:39

MR. CHARKOW: Objection to form. 11:16:40

A. Yes. [As read]: The WLAN receiver includes at least one universal frequency translation module that frequency down-converts the received EM signal. 11:16:48 11:16:51 11:16:53

And "EM" is an acronym for electromagnetic. 11:16:57 11:17:03

BY MR. ZUBLER: 11:17:03

Q. So we can agree that the '444 patent discusses the down-conversion of electromagnetic signals. Correct? 11:17:03 11:17:06

MR. CHARKOW: Objection to form. 11:17:09

A. It concerns frequency down-conversion of a received electromagnetic signal. 11:17:19 11:17:23

BY MR. ZUBLER: 11:17:29

Q. And ParkerVision was not the first to invent a method of frequency down-conversion of a received electromagnetic signal. Correct? 11:17:29 11:17:32 11:17:34

MR. CHARKOW: Objection to form. 11:17:37

A. I agree with that. 11:17:48

BY MR. ZUBLER: 11:17:55

Q. Could we turn to column 9 of the '444 patent? And in the pdf, I believe that's page 367 of the pdf. 11:17:55 11:18:14

A. That's correct. 11:18:28

Q. And if you look at column 9, this -- and specifically line 30, this paragraph is within a section entitled Frequency Down-Conversion. Do you see that? 11:18:29 11:18:36 11:18:46

A. I see that. 11:18:49

Q. And line 27 says [as read]: The present invention is directed to systems and methods of universal frequency down-conversion and applications of same. 11:18:54 11:18:58 11:19:01

Do you see that? 11:19:05

A. I'm going to repeat that because you broke up. 11:19:07

Q. Sure. 11:19:10

A. The line 27 says that [as read]: The present invention is directed to systems and methods of universal frequency down-conversion and applications of same. 11:19:14 11:19:18 11:19:22 11:19:25

Q. And then line 30 continues and says [as read]: In particular, the following discussion describes down-converting using a universal frequency translation module. The down-conversion of an EM signal by aliasing the EM signal at an aliasing rate 11:19:29 11:19:36 11:19:40 11:19:45 11:19:49

is fully described in co-pending U.S. application entitled "Methods and System For Converting Electromagnetic Signals," Serial Number 09/176,022, filed October 21, 1998, issued as U.S. Patent Number 6,061,551 on May 9th, 2000, the full disclosure of which is incorporated herein by reference. 11:19:53 11:19:58 11:20:05 11:20:12 11:20:18 11:20:27

Do you see that? 11:20:30

A. Yes, I see that. 11:20:34

Q. And this is -- this language is incorporating a patent 6,061,551 into the disclosure of the '444 patent. Correct? 11:20:36 11:20:46 11:20:50

MR. CHARKOW: Objection to form. 11:20:56

A. I believe I did not hear the last part of the question. Your voice faded out. If you were finished asking a question, I never heard a question. 11:21:00 11:21:08 11:21:11

BY MR. ZUBLER: 11:21:13

Q. Okay. I will repeat the question. 11:21:14

This portion of the '444 patent is incorporating the full disclosure of U.S. Patent Number 6,061,551. Correct? 11:21:16 11:21:19 11:21:27

MR. CHARKOW: Objection to form. 11:21:30

A. That is my understanding. 11:21:39

BY MR. ZUBLER: 11:21:41

Q. And in your declaration you stated that [as read]: A person of ordinary skill in the art would look to a review of the '551 patent in order to further his or her understanding of the technology of the '444 patent. 11:21:45 11:21:48 11:21:50 11:21:54 11:21:58

Do you recall stating that? 11:22:02

MR. CHARKOW: Objection to form. 11:22:03

A. If you tell me where that is in my declaration. 11:22:08

BY MR. ZUBLER: 11:22:14

Q. Certainly. Paragraph 194. 11:22:15

A. In paragraph 194, I say, "As shown above" -- which is the section that you just read out -- "the specifications of the '444 patent specifically states that the details regarding the aliasing" -- that is the UFD module -- "and down-conversion are set forth in U.S. Patent Number 6,061,551, hereafter known as the '551 patent. 11:22:31 11:22:34 11:22:38 11:22:42 11:22:47 11:22:51 11:22:56

"As such, a PCSITA will look to and review the '551 patent in order to further his or her understanding of the technology of the '444 patent." 11:22:57 11:23:02 11:23:06

Correct. 11:23:08

MR. ZUBLER: Now, if I could ask the video technician to please bring up Tab 8 and mark that as Exhibit 1025. 11:23:22 11:23:26 11:23:32

PLANET DEPOS TECH: Understood. Please stand by. 11:23:40 11:23:41

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MARKED FOR IDENTIFICATION: 11:24:32

EXHIBIT 1025 11:24:32

11:24 a.m. 11:24:35

MR. ZUBLER: Dr. Steer, Counsel, let me know when you have the document. It should be the '551 patent. 11:24:35 11:24:37 11:24:40

A. I believe it has 206 pages; is that correct? 11:25:25

BY MR. ZUBLER: 11:25:29

Q. That's correct. 11:25:30

A. Okay. 11:25:31

MR. CHARKOW: Sorry, can you guys hold on a minute? It's not downloading for me. 11:25:33 11:25:36

THE WITNESS: Yeah, I had trouble downloading it too. 11:25:39 11:25:42

I had to download it twice to download it. 11:25:53

MR. CHARKOW: Okay. My computer was blocking it. I don't know why, but... it's almost done. 11:25:59 11:26:00 11:26:03

Okay. I have the document. 11:26:25

BY MR. ZUBLER: 11:26:27

Q. Dr. Steer, do you recognize this as the '551 patent that you referred to in your declaration, as we've discussed previously? 11:26:31 11:26:34 11:26:38

A. Yes. 11:26:42

Q. Have you reviewed the '551 patent? 11:26:44

A. Yes, I've read -- I've read the entire patent several times. 11:26:52 11:26:56

Q. If you could turn to paragraph 196 of your declaration. 11:26:59 11:27:15

Are you there, sir? 11:27:15

A. Yes, I am there. 11:27:16

Q. There's a sentence that states [as read]: The '551 patent and, thus, the '444 patent discloses two systems for down-conversion; one, energy transfer, i.e., energy sampling; and, two, sample-and-hold, i.e., voltage sampling. 11:27:17 11:27:20 11:27:25 11:27:30 11:27:33

You see that language? 11:27:35

A. Yes, I see that. 11:27:37

Q. And that's your [audio distortion] of the '551 patent and what it discloses. Correct? 11:27:38 11:27:43

MR. CHARKOW: Objection to form. 11:27:45

MR. ZUBLER: Well, strike the question. 11:27:53

BY MR. ZUBLER: 11:27:53

Q. And in this sentence, you state -- you use the phrase "energy transfer, i.e., energy sampling." 11:27:56 11:28:05

Can we agree, as we proceed in this deposition, that unless you or I specify otherwise, those two terms are interchangeable? 11:28:07 11:28:09 11:28:13

MR. CHARKOW: Objection to form. 11:28:23

A. I think that I would like to use the term "energy transfer system" because energy transfer is used to refer -- and, thus, energy sampling are used to refer to pieces of the system as well. But an energy transfer system describes the complete invention. 11:28:24 11:28:35 11:28:42 11:28:47 11:28:51

BY MR. ZUBLER: 11:28:59

Q. So an energy transfer system uses energy sampling? Is that the relationship you're stating? Or how would you... 11:29:00 11:29:06 11:29:08

MR. CHARKOW: Objection to form. Objection 11:29:09

to form. 11:29:14

A. An energy transfer system uses energy transfer. 11:29:16

BY MR. ZUBLER: 11:29:24

Q. And in your declaration, that's the same as energy sampling. Correct? 11:29:28 11:29:33

MR. CHARKOW: Objection to form. 11:29:35

A. Well, in my mind, energy transfer system is -- describes the system. And the energy transfer system includes a energy sampling, but I think an energy transfer system denotes more than just energy sampling. 11:29:36 11:29:55 11:30:03 11:30:10 11:30:15

BY MR. ZUBLER: 11:30:29

Q. Can we turn now -- so -- okay. 11:30:40

You stated -- again, looking at paragraph 196, that [as read]: The '551 patent discloses two systems: An energy transfer system and a sample-and-hold system. 11:30:50 11:30:52 11:30:55 11:30:58

Correct? 11:31:03

MR. CHARKOW: Objection to form. 11:31:04

A. What I state is that [as read]: The '551 patent and, thus, the '444 patent discloses two systems for down-conversion. One is energy transfer, that is 11:31:04 11:31:07 11:31:10

energy sampling; and, two, sample-and-hold, that is voltage sampling. 11:31:13 11:31:17

BY MR. ZUBLER: 11:31:19

Q. Let's turn to the claims of the '551 patent, and if we could go to Claim Number 1. 11:31:19 11:31:26

A. Are we talking about the '444 patent? 11:31:32

Q. I'm talking about the '551 patent, so I'm referring to Exhibit 1025. And, specifically, page 149 of the pdf. 11:31:34 11:31:38

A. Correct. 11:31:47

Q. And can you look at Claim 1, please? 11:31:48

A. I'm looking at Claim 1. 11:32:06

Q. And can you just take a moment to read it to yourself. 11:32:07

A. I have read Claim 1 of the '551 patent. 11:32:47

Q. And what does Claim 1 of the '551 patent describe? 11:32:54

MR. CHARKOW: Objection to form. 11:33:06

A. I have no opinion on that claim. 11:33:12

BY MR. ZUBLER: 11:33:16

Q. This claim refers to [as read]: A method for down-converting a carrier to a lower frequency signal. 11:33:18 11:33:27

Do you see that? 11:33:33

A. So the preamble says [as read]: A method for down-converting a carrier signal to a lower frequency 11:33:34 11:33:37

signal comprising the steps of. 11:33:40

Q. And it lists two steps. Do you see that? 11:33:42

A. Yes, I do. 11:33:44

Q. So this claim describes a method for frequency down-conversion. Correct? 11:33:44 11:33:47

MR. CHARKOW: Objection to form. 11:33:49

A. I have no opinion on that claim. I have not had time to study that. There are terms in here that were subject to claim construction, which I don't have access to, or if it has been done, and so I am not prepared to offer an opinion on that claim. 11:33:53 11:33:59 11:34:04 11:34:12 11:34:16

BY MR. ZUBLER: 11:34:24

Q. So you said you studied the '551 patent several times. Correct? 11:34:25 11:34:28

A. I have read the '551 patent several times. 11:34:34

Q. And step 2 in Claim 1 refers to [as read]: Transferring non-negligible amounts of energy from the carrier signal. 11:34:38 11:34:41 11:34:46

Do you see that? 11:34:48

A. I see that. 11:34:49

Q. And step 3 requires [as read]: Generating a lower frequency signal from the transferred energy. 11:34:51 11:34:53

Correct? 11:34:55

A. I see that. 11:34:55

Q. So going back to your statement in paragraph 196 where you stated [as read]: "One patent described two systems for down-conversion: Energy transfer and sample-and-hold systems. 11:34:57 11:35:02 11:35:05 11:35:11

This claim is describing a method for what you refer to as an "energy transfer system." Correct? 11:35:12 11:35:15

MR. CHARKOW: Objection to form. 11:35:18

A. I'm not prepared to offer an opinion on that claim. 11:35:20

BY MR. ZUBLER: 11:35:26

Q. So you can't answer the question sitting here today, sir? 11:35:30 11:35:32

MR. CHARKOW: Objection to form. 11:35:33

A. I would need to study that claim, relate the terms in that claim to what is in the specification. And I could do that, but given how long it took me to form an opinion on Claim 3 and be very solid in my opinion, I do not think I would be finished today. 11:35:39 11:35:49 11:35:55 11:36:02 11:36:10

MR. CHARKOW: And, Counsel, we've been on the record for about an hour, so whenever you have a chance, if we could take a break. 11:36:14 11:36:16 11:36:18

BY MR. ZUBLER: 11:36:31

Q. Did you review the claims of the '551 patent before you prepared your declaration regarding the '444 patent? 11:36:32 11:36:36 11:36:42

MR. CHARKOW: Objection to form. 11:36:43

A. I read through the claims of the '551 patent. I did not form an opinion regarding those claims. 11:36:46 11:36:58

BY MR. ZUBLER: 11:37:07

Q. And the '444 patent incorporates, by reference, the '551 patent. Correct? 11:37:07 11:37:11

MR. CHARKOW: Objection to form. 11:37:14

A. That is my understanding. 11:37:17

BY MR. ZUBLER: 11:37:22

Q. And the language of the patent is the '444 patent incorporates the full disclosure of the '551 patent. Correct? 11:37:23 11:37:26 11:37:30

MR. CHARKOW: Objection to form. 11:37:31

A. I believe that the claims of the '551 patent do not become claims of the '444 patent. And so what is incorporated are the specifications of the '551 patent, and those specifications are incorporated in the '444 patent. And that is my understanding. 11:37:33 11:38:02 11:38:09 11:38:17 11:38:19

BY MR. ZUBLER: 11:38:33

Q. So I'm not suggesting that the '551 patent claims become claims of the '444 patent. But is it your understanding that the claims of the '551 patent are not part of the disclosure of the '444 patent? 11:38:33 11:38:37 11:38:43 11:38:51

MR. CHARKOW: Objection to form. 11:38:55

A. What I'm saying is that the specifications of the '551 patent are incorporated into the specifications of the '444 patent. And that is my understanding. 11:39:05 11:39:07 11:39:10

BY MR. ZUBLER: 11:39:16

Q. And when you're referring to the "specification," you're referring to the '551 patent other than the claims of the '551 patent? 11:39:16 11:39:18 11:39:24

MR. CHARKOW: Objection to form. 11:39:25

A. And that is my understanding. 11:39:34

BY MR. ZUBLER: 11:39:38

Q. So you didn't consider the claims of the '551 patent in preparing your opinions regarding the '444 patent. 11:39:40 11:39:45

MR. CHARKOW: Objection to form. 11:39:49

A. I was asked to form an opinion regarding Claim 3 of the '444 patent. 11:40:00 11:40:04

BY MR. ZUBLER: 11:40:11

Q. And in preparing your opinion about Claim 3 of the '444 patent, did you take into consideration the claims of the '551 patent? 11:40:11 11:40:16 11:40:19

MR. CHARKOW: Objection to form. 11:40:22

A. When I formed my opinion regarding Claim 3 of the '444 patent, I read the entirety of the '444 patent and the entirety of the '551 patent. I considered the entirety of the '551 patent in forming my opinion. 11:40:25 11:40:37 11:40:43 11:40:50 11:40:53

BY MR. ZUBLER: 11:41:03

Q. You didn't consider the claims to be part of the disclosure of the '551 patent. Correct? 11:41:04 11:41:06

MR. CHARKOW: Objection. Objection to form. 11:41:09 11:41:11

A. I did not form an opinion regarding the claims of the '551 patent. 11:41:19 11:41:21

MR. CHARKOW: Counsel, are you getting to a stopping point? I've got to use the restroom. 11:41:34 11:41:36

MR. ZUBLER: Yeah, just one minute and we will -- 11:41:38 11:41:42

MR. CHARKOW: Yeah, sure. 11:41:42

MR. ZUBLER: -- take a bio break. 11:41:43

BY MR. ZUBLER: 11:41:46

Q. So did you consider the claims of the '551 patent in forming your opinions on the '444 patent? 11:41:46 11:42:00

MR. CHARKOW: Objection to form. 11:42:01

A. Well, I was asked to form an opinion regarding Claim 3 of the '444 patent, not all of the claims of the '444 patent. I read the entirety of the '444 patent. I read the entirety of the '551 patent. I did not form opinions regarding the claims of the '551 patent. 11:42:05 11:42:08 11:42:11 11:42:16 11:42:20 11:42:25

BY MR. ZUBLER: 11:42:29

Q. And so you can't answer any questions about the content of the '551 patent claims; is that your testimony? 11:42:29 11:42:32 11:42:36

MR. CHARKOW: Objection to form. 11:42:38

A. My testimony is in the declaration and I'm prepared to answer questions regarding my declaration. Asking me questions about the claims of the '551 patent were not addressed in my declaration, and so I'm not prepared to offer an opinion on the claims of the '551 patent or... 11:42:41 11:42:46 11:42:52 11:42:55 11:43:00 11:43:12

BY MR. ZUBLER: 11:43:24

Q. Did you complete your answer? 11:43:25
A. I was complete. 11:43:28
MR. ZUBLER: Why don't we take a break now. 11:43:30
VIDEO TECHNICIAN: Going off the record. 11:43:32
The time is 11:43 a.m. 11:43:33
(Off the record at 11:43 a.m.) 11:43:38
(Back on the record at 11:58 a.m.) 11:58:06
VIDEO TECHNICIAN: Going back on the 11:58:08
record. The time is 11:58 a.m. 11:58:10
BY MR. ZUBLER: 11:58:19
Q. Dr. Steer, we were talking before the break about 11:58:19
claims of the '551 patent. How long would it take 11:58:22
you, sir, to review a claim and have an opinion about 11:58:26
a claim such that you could discuss it with me? 11:58:30
MR. CHARKOW: Objection to form. 11:58:34
A. I think it could take me several hours. I would need 11:58:51
to consult with counsel to see if there was a claim 11:58:55
construction, and then I would need to find the 11:59:01
embodiment in the specifications that relates to that 11:59:13
claim, study that. If there were terms that were not 11:59:17
already in the claim that were not already construed, 11:59:24
that would take me additional time to figure out what 11:59:30

they were. 11:59:33

I have an example of forming the opinion 11:59:37

for Claim 3 of the '444 patent, and I would say that 11:59:41

it took me maybe two days. 11:59:44

BY MR. ZUBLER: 11:59:53

Q. All right. I won't ask you to spend two days. Why 11:59:54

don't we move to a different topic. 12:00:03

Could you go to Exhibit 1024, again, which 12:00:06

is the '444 patent. 12:00:15

A. I have that in front of me now. 12:00:28

Q. Okay. Good. 12:00:30

Could you please turn to column 10 of the 12:00:31

'444 patent, line 36? And line 36 begins [as read]: 12:00:34

The pulse aperture may also be referred to as the 12:00:50

pulse width, as will be understood by those skilled in 12:00:54

the art. 12:00:57

Do you see that language? 12:00:59

A. So we're looking at line 36. [As read]: The pulse 12:01:02

aperture may also be referred to as the pulse width, 12:01:06

as will be understood by those skilled in the art. 12:01:10

Correct. 12:01:13

Q. So in the '444 patent, the term "aperture" refers to 12:01:15

pulse width. Correct? 12:01:21

MR. CHARKOW: Objection to form. 12:01:22

A. So I'm trying to see what section we're talking about here. We're talking about frequency down-conversion in general, and the '444 patent has more than one invention disclosed. So I need to understand what we're talking -- which invention we're talking about here. 12:01:30 12:01:34 12:01:38 12:01:44 12:01:50 12:01:52

BY MR. ZUBLER: 12:01:55

Q. Well, we're in the section entitled Frequency Down-Conversion, and -- 12:01:57 12:02:00

A. Excuse me. Just let me -- I need to read from the top of the section. 12:02:03 12:02:05

Q. Please, take your time. Read as much as you like. 12:02:07

A. Yes, I have -- I have read that. So we were -- can you just remind me where we were? We were in column 10, line -- which line? 12:05:15 12:05:20 12:05:24

Q. 36. 12:05:26

A. So that reads [as read]: The pulse aperture may also be referred to as the pulse width, as will be understood by those skilled in the art. Correct? 12:05:32 12:05:35 12:05:38

Q. And in the context of the '444 patent, the term 12:05:47

"aperture" refers to the pulse width. Correct? 12:05:51

MR. CHARKOW: Objection to form. 12:05:56

A. I do remember reading this section, and full understanding of the section required me to go back and read the '551 patent. My recollection is that the pulse aperture refers to the time that the switch is closed -- that a switch is closed, which is not always equal to pulse width. 12:05:57 12:06:11 12:06:13 12:06:21 12:06:27 12:06:31

But certainly here it says, in this embodiment that they're talking about, the pulse aperture may also be referred to as the pulse width. But not in -- not in all the embodiments that are discussed. 12:06:36 12:06:38 12:06:40 12:06:46 12:06:49

BY MR. ZUBLER: 12:06:50

Q. Okay. So you're saying that the term "aperture" refers to the time the switch is closed. Correct? 12:06:52 12:07:01

A. Correct. 12:07:06

MR. CHARKOW: Objection to form. 12:07:07

Michael, just give me a little bit of time to get an objection in, please. Thanks. 12:07:10 12:07:12

THE WITNESS: Sorry. 12:07:15

MR. ZUBLER: Could we pull up Tab 11, 12:07:41

please, and mark that as Exhibit 1026? 12:07:46

MARKED FOR IDENTIFICATION: 12:07:52

EXHIBIT 1026 12:07:52

12:07 p.m. 12:07:56

PLANET DEPOS TECH: Understood. Please 12:07:56

stand by. 12:07:57

The document is currently uploading. 12:08:33

The document is uploaded. 12:08:41

MR. ZUBLER: Dr. Steer, Counsel, please let 12:08:48

me know when you have this. 12:08:53

MR. CHARKOW: I have it up in front of me. 12:09:21

A. Yes, I have Exhibit 1026 in front of me. 12:09:24

BY MR. ZUBLER: 12:09:26

Q. Yes. And, Dr. Steer, I'll represent to you that this 12:09:27

is the claim construction order from the 108 case, the 12:09:32

case is numbered 108, between ParkerVision and Intel 12:09:37

in the Western District of Texas. Do you recognize 12:09:41

this document? 12:09:47

A. It seems to me a document I've seen, yes. 12:09:50

Q. And you submitted a declaration regarding claim 12:09:55

construction in this case. Correct? 12:09:58

A. Regarding some of the claims -- claim terms, yes. 12:10:03

Q. Now, on page 6 of this document, the order shows various constructions that were both proposed and adopted by the Court for the term "sampling aperture." Do you see that? 12:10:12 12:10:19 12:10:27 12:10:31

A. I see that they -- the Court adapted -- adopted claim construction for sampling aperture of the '513 patent and the '528 patent, the '736 patent, and the '673 patent. And the Court's final construction is [as read]: Sampling aperture is a period of time during which the switch is in its closed, that is on, state. 12:10:42 12:10:46 12:10:50 12:10:57 12:11:01 12:11:04

Q. And is that the idea that you were expressing to me a moment ago about your understanding an aperture? 12:11:11 12:11:14

MR. CHARKOW: Objection to form. 12:11:22

A. That is my understanding of sampling aperture. 12:11:25

BY MR. ZUBLER: 12:11:34

Q. Now, in your view, a sample-and-hold or a voltage sampling system will use a sampling aperture of negligible duration. Correct? 12:11:34 12:11:40 12:11:45

MR. CHARKOW: Objection to form. 12:11:48

A. Sorry, I lost my other tabs. 12:11:49

That is certainly something that I formed a detailed opinion on in my declaration, so I'm going to 12:12:06 12:12:13

turn to that because I go into a long discussion. 12:12:23

And so I have a figure that I refer to in 12:12:26

the '551 patent, Figure 78B, which illustrate a 12:12:28

sample-and-hold system. 12:12:35

BY MR. ZUBLER: 12:12:35

Q. If I could ask you what page you're referring to of 12:12:36

your declaration, sir. 12:12:39

A. Well, I'm looking at a figure on the top of page 78. 12:12:40

Q. Okay. And so I'll ask the question again. 12:12:44

In your view, a sample-and-hold or voltage 12:13:02

sampling system uses a sampling aperture of negligible 12:13:09

duration. Correct? 12:13:14

MR. CHARKOW: Objection to form. 12:13:16

A. In this section of my declaration, I describe two 12:13:22

voltage sampling systems. One uses a sampling 12:13:30

aperture which is of negligible duration. That is 12:13:39

often called an impulse sampling system. But I also 12:13:46

described a track-and-hold system which does not use 12:13:50

an aperture of negligible duration. 12:13:56

MR. ZUBLER: All right. Could we actually 12:14:23

now bring up Tab 6, please, and mark that as 12:14:25

Exhibit 1027? 12:14:36

Please let me know when you have that available, Dr. Steer and Jason. 12:15:21 12:15:24

PLANET DEPOS TECH: I apologize, this is the tech. I did not hear a request over here. It broke up. 12:15:26 12:15:27 12:15:30

MR. ZUBLER: Okay. Can we have Tab 6 pulled up as Exhibit 1027? 12:15:31 12:15:35

PLANET DEPOS TECH: Understood. Please stand by. 12:15:39 12:15:40

MARKED FOR IDENTIFICATION: 12:15:46

EXHIBIT 1027 12:15:46

12:15 p.m. 12:16:25

PLANET DEPOS TECH: The document is now uploading. 12:16:25 12:16:26

The document is now uploaded. 12:16:27

MR. CHARKOW: I have it. 12:17:05

THE WITNESS: Yes, I have it too. 12:17:07

BY MR. ZUBLER: 12:17:08

Q. All right. Do you recognize this document, Dr. Steer? 12:17:10

A. Just a second here. Too many things open. 12:17:16

Yes. This is the U.S. -- United States patent by Tayloe. 12:17:21 12:17:25

BY MR. ZUBLER: 12:17:32

Q. And this is the primary reference at issue in the '444 patent IPR. Correct? 12:17:32 12:17:35

MR. CHARKOW: Objection. Form. 12:17:38

A. This is a reference that was presented in the IPR proceeding. 12:17:40 12:17:51

STENOGRAPHER: Donald, are you muted? 12:17:51

We're getting that background noise. 12:17:53

BY MR. ZUBLER: 12:17:58

Q. Did you study the Tayloe reference, Dr. Steer? 12:18:01

A. Yes, I've studied the Tayloe reference extensively. And I have a long section in my declaration regarding it. 12:18:05 12:18:10 12:18:13

Q. And are you familiar with Figure 3 of the Tayloe reference? 12:18:15 12:18:18

A. I'm familiar with that figure. 12:18:26

Q. And do you see switch 38 in that figure? 12:18:31

A. That switch is referred to as a commutating switch. 12:18:40

Q. And do you see capacitors 72, 74, 76, and 78? 12:18:46

MR. CHARKOW: Objection to form. 12:18:54

A. I see those four capacitors. 12:18:54

BY MR. ZUBLER: 12:18:58

Q. Switch 38 in Tayloe is closed and connected to each of the four capacitors for 25 percent of the input signal. Correct? 12:18:58 12:19:04 12:19:11

MR. CHARKOW: Objection to form. 12:19:12

A. Well, the time that it is closed is determined by that -- by the control signal 4F0. 12:19:29 12:19:32

BY MR. ZUBLER: 12:19:32

Q. Uh-huh. 12:19:32

A. So it's actually -- the input 36 is connected to output 42 for a quarter of 4F0. Then it's connected -- the input 36 is connected to '444 for another quarter of the time. And then the input is connected to the third output, 46, one quarter of the time. Then the input is connected to the fourth output for one quarter of the time. 12:19:35 12:19:40 12:19:49 12:19:52 12:19:59 12:20:05 12:20:08

BY MR. ZUBLER: 12:20:16

Q. And when the switch is closed and connected to each of those outputs, the switch is [audio distortion] connected to one of the four capacitors, 72, 74, 76, or 78. Correct? 12:20:16 12:20:18 12:20:26 12:20:29

MR. CHARKOW: Objection to form. 12:20:32

Sorry, Michael, just let me get my 12:20:35

objection in. 12:20:38

Objection to form. 12:20:39

A. Part of your question was clobbered. Could you -- and it was an important part. Can you please repeat it? 12:20:43 12:20:46 12:20:50

BY MR. ZUBLER: 12:20:50

Q. Sure. You just referred to the switch being closed which connected the input signal to outputs 42, 44, 46, and 48. Correct? 12:20:57 12:20:59 12:21:11

MR. CHARKOW: Objection to form. 12:21:12

A. It connect -- the input 46 is connected to those four outputs one at a time. 12:21:13 12:21:16

BY MR. ZUBLER: 12:21:24

Q. And -- and when the switch is closed and the input is connected to those outputs, the input to the switch is connected to one of the four capacitors. Correct? 12:21:24 12:21:36 12:21:41

MR. CHARKOW: Objection to form. 12:21:48

A. Yes. Could you repeat that question again, please? There's -- 12:21:53 12:21:59

BY MR. ZUBLER: 12:21:59

Q. When the switch is closed and the input is connected to one of those outputs, the input to the switch is 12:22:00 12:22:03

also connected to one of the four capacitors. Correct? 12:22:10 12:22:13

MR. CHARKOW: Objection to form. 12:22:14

A. So what we have here is one commutating switch which will be -- for a period of time, input 36 will be connected to output 42, which is connected to capacitor 72. 12:22:19 12:22:25 12:22:31 12:22:35

BY MR. ZUBLER: 12:22:48

Q. And similarly, the -- when the switch is closed and the input is connected to output 44, the input to the switch will be connected to capacitor 74. Correct? 12:22:48 12:22:54 12:23:01

MR. CHARKOW: Objection to form. 12:23:04

A. Your question is not quite correct, so I'll say it again. 12:23:08 12:23:18

So during the second time, commutating switch 38 connects input 36 to 44, which is connected to capacitor 74. 12:23:18 12:23:21 12:23:26

BY MR. ZUBLER: 12:23:34

Q. So why is input 36 not connected to capacitor 72? 12:23:38

MR. CHARKOW: Objection to form. 12:23:48

A. Could you repeat that question again, please? 12:23:55

BY MR. ZUBLER: 12:23:58

Q. Well, you seem to be drawing a distinction between connecting the input 36 to the output, and you seem to be saying that that's different than a connection between input 36 to one of the capacitors. Are you saying that the input 36 is not connected to the capacitors? 12:23:58 12:24:00 12:24:07 12:24:12 12:24:15 12:24:23

MR. CHARKOW: Objection to form. 12:24:24

A. I'm not saying that. But your question did not make sense, so I stated it in my words. 12:24:29 12:24:32

BY MR. ZUBLER: 12:24:37

Q. Will input 36 be connected to one of the capacitors during each of the quarter cycles of the input segment? 12:24:38 12:24:46 12:24:52

MR. CHARKOW: Objection to form. 12:24:53

A. I think the way I stated it is more precise, that during the first quarter period interval, input 36 is connected to output 42, which is connected to capacitor 72. Then, during the next interval, input 36 is connected to output 44, which is connected to capacitor 74. And then the third interval, input 36 is connected to output 46, which is connected to capacitor 76. Then, in the fourth interval, input 36 12:24:59 12:25:03 12:25:09 12:25:13 12:25:19 12:25:22 12:25:29 12:25:32

is connected to output 48, which was connected to capacitor 78. 12:25:36 12:25:40

BY MR. ZUBLER: 12:25:45

Q. During the first quarter period interval, is input 36 connected to capacitor 72? Yes or no? 12:25:45 12:25:49

MR. CHARKOW: Objection to form. 12:25:55

A. I agree with that. 12:25:59

BY MR. ZUBLER: 12:26:01

Q. If we could now turn to your declaration, sir, which is Exhibit 1022, and look at page 98. 12:26:18 12:26:21

A. Yes, I'm on 98. 12:26:46

Q. And you -- there's a footnote 13, and the second sentence says -- I'm sorry, the third sentence [as read]: And in order to get an average value as opposed to taking the measurement at a discrete instance in time, Tayloe needs to sample the input signal f1 over a longer period of time and with an alternative sample-and-hold system using apertures of negligible duration. 12:26:47 12:26:59 12:27:02 12:27:04 12:27:07 12:27:10 12:27:14 12:27:19

Do you see that? 12:27:20

A. The full footnote is [as read]: I note that Tayloe's use of 25 percent of the input signal, one quarter of 12:27:27 12:27:29

the wave, does not indicate or imply energy transfer. Tayloe is a type of track-and-hold system, and in order to get an average value as opposed to taking a measurement at a discrete instance in time, Tayloe needs to sample the input signal f1 over a longer period of time than with an alternative sample-and-hold system using apertures of negligible duration. This is why Tayloe uses 25 percent of the input signal one quarter of the wave as opposed to a smaller portion of a signal. 12:27:32 12:27:38 12:27:40 12:27:43 12:27:47 12:27:50 12:27:53 12:27:58 12:28:01 12:28:05

Q. And so the switch in Tayloe is closed and the input is connected to each of the four capacitors for one quarter of the wave. Correct? 12:28:13 12:28:16 12:28:19

MR. CHARKOW: Objection to form. 12:28:21

A. Okay. Again, I -- your question doesn't make sense, and so I'll put it in my words. 12:28:31 12:28:34

So lot 38 is a commutating switch. In one position, input 36 is connected to output 42 and capacitor 72. In one position, commutating switch 38 connects input 36 to output 44, which is also connected to capacitor 74. And in a third position, input 36 is connected to output 46, which is 12:28:38 12:28:45 12:28:52 12:28:58 12:29:01 12:29:06

connected to capacitor 76. And in the fourth position of the commutating switch, input 36 is connected to output 48 and capacitor 78. 12:29:09 12:29:13 12:29:16

BY MR. ZUBLER: 12:29:23

Q. And so the switch is closed for -- strike that. 12:29:32

When the switch is closed and connects to each one of the outputs, 42, 44, 46, and 48, the switch connects to each of those outputs for 25 percent of the input signal. Correct? 12:29:43 12:29:47 12:30:00 12:30:06

MR. CHARKOW: Objection to form. 12:30:09

A. Again, your question doesn't make sense. I'll have to put it in my words again. 12:30:16 12:30:19

Commutating switch 38 has four positions. It does not make sense to say that commutating switch 38 is closed. In one position, input 36 is connected to output 42 and capacitor 72. In another position of the commutating switch, input 36 is connected to output 44 and capacitor 74. And in another position, input 36 is connected to output 46 and capacitor 76. In another position, input 36 is connected to output 48 and capacitor 78. 12:30:20 12:30:23 12:30:27 12:30:31 12:30:36 12:30:40 12:30:45 12:30:50 12:30:53

BY MR. ZUBLER: 12:30:58

Q. So switch 38 causes input signal 36 to be connected to output 42 for 25 percent of the input signal. Correct? 12:31:06 12:31:11 12:31:18

MR. CHARKOW: Objection to form. 12:31:19

A. In one position, commutating switch 38 connects the input 36 to output 42. 12:31:29 12:31:33

BY MR. ZUBLER: 12:31:40

Q. And that position covers 25 percent of the input signal. Correct? 12:31:41 12:31:45

MR. CHARKOW: Objection to form. 12:31:46

A. It is approximately 25 percent of the period of the input signal. 12:31:51 12:31:54

BY MR. ZUBLER: 12:32:05

Q. Tayloe -- going back to your declaration, in the paragraph that you just read, sir, you state [as read]: Tayloe needs to sample the input signal f1 over a longer period of time and with an alternative sample-and-hold system using [inaudible] negligible duration. 12:32:06 12:32:09 12:32:16 12:32:19 12:32:25 12:32:27

Do you see that language that you read a few minutes ago? 12:32:28 12:32:30

A. Could you tell me which page we're onto? I must 12:32:33

have... 12:32:36

Q. Yes. Page 98, footnote 13. And the second paragraph. 12:32:36

A. So let me read that because you broke up. 12:32:46

[As read]: Tayloe is a type of 12:32:48

track-and-hold system, and in order to get an average 12:32:50

value as opposed to taking a measurement at a 12:32:52

discrete instance in time, Tayloe needs to sample the 12:32:54

input signal f1 over a longer period of time than 12:32:57

with an alternative sample-and-hold system using 12:33:01

apertures of negligible duration. 12:33:04

Q. Tayloe [audio distortion] the input signal for a 12:33:09

longer period of time than a negligible duration. 12:33:12

Correct? 12:33:16

MR. CHARKOW: Objection to form. 12:33:17

A. The second word -- and I'm afraid -- I think you're 12:33:17

the only one that has some trouble here, so the 12:33:31

second word was clobbered. I don't know what you 12:33:31

said. 12:33:33

BY MR. ZUBLER: 12:33:34

Q. Sure. So if I'm understanding you correctly in this 12:33:34

paragraph, you're saying Tayloe samples the input 12:33:37

signal for a longer period of time than just a 12:33:40

negligible duration. 12:33:43

A. Correct. 12:33:47

MR. CHARKOW: Objection to form. 12:33:48

A. Correct. 12:33:52

BY MR. ZUBLER: 12:33:53

Q. Tayloe samples the input signal for a non-negligible period of time. Correct? 12:33:55 12:33:59

MR. CHARKOW: Objection to form. 12:34:01

A. Correct. 12:34:05

BY MR. ZUBLER: 12:34:06

Q. Tayloe discloses a non-negligible sampling aperture. Correct? 12:34:10 12:34:15

MR. CHARKOW: Objection to form. 12:34:16

A. In particular, Tayloe discloses that the switch is closed for 25 percent of the time. And as I wrote here, Tayloe needs to -- in my declaration, I wrote that [as read]: Tayloe needs to sample the input signal f1 over a longer period of time than an alternative sample-and-hold system using apertures of negligible duration. 12:34:34 12:34:39 12:34:47 12:34:50 12:34:52 12:34:56 12:34:59

BY MR. ZUBLER: 12:35:01

Q. And so Tayloe discloses a non-negligible sampling 12:35:03

aperture. 12:35:08

MR. CHARKOW: Objection to form. 12:35:09

A. That is correct. 12:35:10

BY MR. ZUBLER: 12:35:12

Q. You've described Tayloe as a track-and-hold sampler. Correct? 12:35:17 12:35:23

A. I'd like to see the language I actually used. 12:35:26

MR. CHARKOW: Objection to form. 12:35:33

A. I don't think I said exactly that. I think I said something a little bit different. 12:35:37 12:35:40

BY MR. ZUBLER: 12:35:41

Q. Fair enough. Let's look, again, at page 98, the same page we were looking at before in your declaration. 12:35:42 12:35:46

A. That's correct. And what I wrote is that [as read]: I note that Tayloe's use of 25 percent of the input signal, one quarter of the wave, does not indicate or imply energy transfer. Tayloe is a type of track-and-hold system. 12:35:49 12:35:52 12:35:55 12:35:57 12:36:02

Q. Track-and-hold systems were known before 1999. Correct? 12:36:03 12:36:12

MR. CHARKOW: Objection to form. 12:36:13

A. That is my understanding. 12:36:18

BY MR. ZUBLER: 12:36:38

Q. Dr. Steer, if I could ask you to now look at paragraph 286 of your declaration. 12:36:39 12:36:44

A. At what? 286? 12:36:50

Q. Correct. Take just a second to read that paragraph to yourself. 12:36:52 12:37:05

A. I've read paragraph 286. 12:37:26

Q. And you state there that [as read]: The proper construction of the term [inaudible] is "an element of an energy transfer system that stores non-negligible amounts of energy from an electromagnetic signal." 12:37:29 12:37:33 12:37:38 12:37:43

Correct? 12:37:48

A. Well, let me just -- I'll say that again because, again, some of your words wore clobbered. 12:37:48 12:37:49

[As read]: The proper construction of storage element is an element of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal. 12:37:52 12:37:53 12:37:56 12:38:02

Q. And now if I could ask you to turn to page 200 of your declaration -- paragraph 200. And if you could just read that to yourself for a moment. 12:38:06 12:38:17 12:38:36

A. I've read paragraph 200. 12:39:18

Q. And you state in paragraph 200, in the third sentence, that [as read]: An energy transfer system uses, one, a control signal having a pulse with a non-negligible aperture duration; and, two, a storage capacitor for storing and discharging non-negligible amounts of energy for driving a low impedance load. 12:39:22 12:39:27 12:39:32 12:39:37 12:39:43 12:39:47

Do you see that? 12:39:52

A. Yes, I do. 12:39:58

Q. So are those two requirements, the requirement of a non-negligible sampling aperture and storing non-negligible amounts of energy, are those two requirements redundant so that if a system of Tayloe discloses one, then you necessarily have the other one too? 12:39:59 12:40:04 12:40:09 12:40:13 12:40:19 12:40:21

MR. CHARKOW: Objection to form. 12:40:24

A. I disagree with that. Let me just -- let me qualify my answer here because I'm not too sure what I disagreed with. 12:40:27 12:40:35 12:40:38

So what is shown here -- what is described here is that, in an energy transfer system, there is a control signal having a pulse with a non-negligible aperture duration and a storage capacitor, which has a 12:40:40 12:40:43 12:40:48 12:40:52

very particular meaning here. And a storage capacitor stores and discharges non-negligible amounts of energy for driving a low impedance load. 12:40:56 12:41:01 12:41:05

So some of the important aspects here are the control signal with a non-negligible aperture -- sorry, a switch with the control signal having a non-negligible aperture, a storage capacitor which stores sufficient energy and discharges that energy when the switch is opened into a low impedance load. 12:41:09 12:41:11 12:41:16 12:41:20 12:41:26 12:41:29

BY MR. ZUBLER: 12:41:38

Q. So going back to my question, is having a non-negligible sampling aperture the same as storing non-negligible amounts of energy? 12:41:40 12:41:52 12:41:56

MR. CHARKOW: Objection to form. 12:42:01

A. Well, there is a play on words there. In particular, I -- it is exactly what this says. We are talking about an energy transfer system which has a switch which uses a control signal having a pulse with a non-negligible aperture duration, and it has a storage capacitor, and that storage capacitor has very particular properties because it is defined in -- it's defined in the specifications that the 12:42:25 12:42:33 12:42:36 12:42:40 12:42:44 12:42:47 12:42:52 12:42:55

storage capacitor is the special capacitor which can store and discharge non-negligible amounts of energy for driving a low impedance load. 12:43:00 12:43:03 12:43:07

So your question was, does a switch with a control signal having a non-negligible aperture equate to storing non-negligible amounts of energy. 12:43:10 12:43:15 12:43:19

But the way the patent is written and the way that the patent specifications are written, more is required of the element that stores energy than simply just storing energy. There needs to be -- the storage capacitor must store and discharge non-negligible amounts of energy for driving a low impedance load. 12:43:23 12:43:25 12:43:28 12:43:32 12:43:37 12:43:40 12:43:44

BY MR. ZUBLER: 12:43:47

Q. I'm asking you a very specific question. You stated before that Tayloe has a non-negligible sampling aperture. Does that mean that Tayloe also stores non-negligible amounts of energy? 12:43:47 12:43:52 12:43:57 12:44:00

MR. CHARKOW: Objection to form. 12:44:05

A. What I have stated here [as read]: It must store and discharge non-negligible amounts of energy for driving a low impedance load. 12:44:12 12:44:16 12:44:19

So these -- this -- non-negligible amounts of energy isn't just any old energy, it's the storage capacitor must store and discharge non-negligible amounts of energy for driving a low impedance load. So the storage element, the element that stores energy, has a very particular requirement. 12:44:21 12:44:25 12:44:29 12:44:33 12:44:36 12:44:39

BY MR. ZUBLER: 12:44:52

Q. And I'm -- I'm just asking you -- I don't think you're focusing on my question, Dr. Steer. My question is very specific. It says, will -- if you have a system like Tayloe that has a non-negligible sampling aperture, will that system store non-negligible amounts of energy? 12:45:03 12:45:10 12:45:14 12:45:19 12:45:25 12:45:29

MR. CHARKOW: Objection to form. 12:45:31

A. In particular, the energy that is stored on the capacitor, or a storage capacitor as defined in an energy transfer system, must store and discharge non-negligible amounts of energy for driving a low impedance load. 12:45:34 12:45:42 12:45:48 12:45:51 12:45:55

BY MR. ZUBLER: 12:45:56

Q. I understand that, sir, but that's not answering my question. Could you try my question? And I'll repeat 12:45:56 12:45:59

it. 12:46:05

My question is, if you have a system like 12:46:05

Tayloe that has a non-negligible sampling aperture, 12:46:10

will that system necessarily store non-negligible 12:46:15

amounts of energy? 12:46:21

MR. CHARKOW: Objection to form. 12:46:26

A. Not in the sense that those terms are used in the 12:46:30

patent to describe an energy transfer system which 12:46:36

includes a switch with a control signal having a 12:46:39

pulse with a non-negligible aperture duration and a 12:46:42

storage capacitor for discharging non-negligible 12:46:46

amounts of energy for driving a low impedance load. 12:46:49

BY MR. ZUBLER: 12:46:58

Q. Could you have a non-negligible sampling aperture and 12:46:58

yet not store non-negligible amounts of energy? 12:47:07

MR. CHARKOW: Objection to form. 12:47:10

A. Again, those words have very particular meaning as it 12:47:22

relates to an energy transfer system and as defined 12:47:25

in the patent. And in particular, in an energy 12:47:29

transfer system, there is a switch which uses a 12:47:33

control signal having a pulse with a non-negligible 12:47:35

aperture or duration, and it also has a storage 12:47:40

capacitor, a capacitor that stores energy for storing and discarding non-negligible amounts of energy for driving a low impedance load. 12:47:43 12:47:48 12:47:52

BY MR. ZUBLER: 12:47:53

Q. Sir, you keep telling me what an energy transfer system is, but that's not my question. My question is simpler than that. I'm trying to break down the elements of what -- the parts of an energy transfer system. And one of the parts of an energy transfer system, according to ParkerVision and you, is that the [inaudible] element must store non-negligible amounts of energy from an input electromagnetic signal. There are other requirements, but one of the requirements is that. 12:47:54 12:47:58 12:48:04 12:48:10 12:48:13 12:48:16 12:48:24 12:48:28 12:48:32 12:48:35

And so what I'm asking is, if a system like Tayloe has a non-negligible sampling aperture, will that system necessarily store non-negligible amounts of energy? 12:48:36 12:48:41 12:48:48 12:48:51

MR. CHARKOW: Objection to form. 12:48:52

A. My answer is that you cannot -- is based on the fact that you cannot break an energy transfer system down into parts and check off the parts. An energy 12:49:03 12:49:08 12:49:11

transfer system is a whole system, which includes a switch, which uses a control signal having a pulse with a non-negligible aperture or duration, and it includes a storage capacitor which stores energy for storing and discharging the non-negligible amounts of energy for driving a low impedance load. 12:49:20 12:49:22 12:49:25 12:49:27 12:49:31 12:49:35

So my final -- my answer is that you cannot break down an energy transfer system into a part -- into its parts. All of those parts are required. 12:49:37 12:49:39 12:49:44 12:49:47

BY MR. ZUBLER: 12:50:04

Q. And, sir, an infringement analysis necessarily requires -- or an invalidity analysis necessarily requires the parties to break down the elements and check the boxes about whether pieces are shown or not shown. I don't see how you can do either of those analyses without going through the different requirements. So I don't think you're answering my question and I don't think you're fairly disputing my question. 12:50:12 12:50:16 12:50:21 12:50:24 12:50:27 12:50:32 12:50:34 12:50:38 12:50:41

Are you really saying -- 12:50:46

MR. CHARKOW: Objection. 12:50:47

BY MR. ZUBLER: 12:50:50

Q. Are you really saying you can't answer whether a system like Tayloe, that has non-negligible sampling aperture, will also have -- will also store non-negligible amounts of energy? 12:50:51 12:50:56 12:51:08 12:51:14

MR. CHARKOW: Objection to form. 12:51:17

A. I believe I've answered your question as -- as completely as I can. And my answer -- 12:51:21 12:51:30

BY MR. ZUBLER: 12:51:33

Q. Regardless -- go ahead. 12:51:34

A. My answer is that you cannot break down an energy transfer system into pieces and check off each of those pieces. In particular, an energy transfer system uses a switch with a control signal having a pulse with a non-negligible aperture or duration and a storage capacitor for storing and discharging non-negligible amounts of energy for driving a low impedance load. 12:51:36 12:51:40 12:51:43 12:51:50 12:51:53 12:51:55 12:51:58 12:52:00

Q. Let's put aside entirely the definition of transfer system and whether or not Tayloe is an energy transfer system. Let's just put that aside. 12:52:03 12:52:11 12:52:13

Will a system by Tayloe in which a 12:52:16

non-negligible sampling aperture is used, will that necessarily store non-negligible amounts of energy? 12:52:19 12:52:22

MR. CHARKOW: Objection to form. 12:52:27

A. Again, your question has a play on words. Just switching words around. And I have answered your question multiple times in the most complete way I know, and you've used words that are used in defining an energy transfer system, and so I must fall back and respond using words that don't have hidden meaning. 12:52:31 12:52:40 12:52:43 12:52:48 12:52:52 12:52:58 12:53:04

And in an energy transfer system, there is a switch which uses a control signal having a pulse with a non-negligible aperture or duration and a storage capacitor for storing and discharging non-negligible amounts of energy for driving a low impedance load. 12:53:05 12:53:08 12:53:11 12:53:15 12:53:19 12:53:21

BY MR. ZUBLER: 12:53:33

Q. Dr. Steer, looking at the Tayloe reference, Tayloe discloses a direct conversion receiver with capacitors, but each have a capacitance of 0.3 microfarads. Correct? 12:53:34 12:53:41 12:53:45 12:53:51

A. Can you point me to where -- 12:53:54

MR. CHARKOW: Objection to form. 12:53:55

Sorry, Michael. 12:53:57

THE WITNESS: Sure. 12:53:57

MR. CHARKOW: Objection to form. 12:54:00

Go ahead, Michael. 12:54:00

A. Can you point me to where he says that? 12:54:02

BY MR. ZUBLER: 12:54:05

Q. Sure. Column 5, line 49, describes a prototype direct-conversion receiver. 12:54:05 12:54:13

A. Yeah. So "A direct-conversion receiver which utilizes a Tayloe product protector" -- being the modest person he is -- "has been built. Receiver design is the same as direct-conversion receiver 30 utilizing an analog multiplex and a digital counter as shown in Figure 7. 12:54:24 12:54:27 12:54:29 12:54:33 12:54:38 12:54:41

"The analog multiplexer is a Texas Instruments SN74BCT3253D. The digital counter is an industry standard 74ACT163. The analog multiplexer is a 5 volt part which has an effective input range of substantially 0 to 4 volts. Bias network 34 bias is the input of the analog multiplexes to substantially 2 volts. 12:54:43 12:54:46 12:54:51 12:54:57 12:55:01 12:55:05 12:55:09

"This represents the inability to handle input signals of up to substantially +19 DVM. This is advantageous in part because typical maximum signal ranges for prior art diode mixers is substantially +7 DVM. 12:55:09 12:55:12 12:55:18 12:55:21 12:55:25

"A further advantage is that analog multiplexers capable of operating at higher voltages can be readily obtained or easily designed, thereby increasing the dynamic range further." 12:55:25 12:55:28 12:55:32 12:55:36

I think -- I thought that you were pointing me to line 45 in column 5. 12:55:39 12:55:40

Q. Well, I was -- I said 49, so you've read right to it, and the next line is where I was directing you. 12:55:44 12:55:48

A. So [as read]: The prototyped direct-conversion receiver has an input bandwidth of roughly 1 kilohertz centered at 7 megahertz. This was accomplished with resistor 32 at 50 OEMs and each of the capacitors at 0.3 microfarads." 12:55:51 12:55:53 12:55:56 12:55:59 12:56:03

Okay. I thought you said picofarad before. Sorry. 12:56:09 12:56:13

Q. No. If I did, I misspoke. I meant to say microfarads. 12:56:14 12:56:20

So we can agree, sir, that Tayloe discloses a direct-conversion receiver with capacitors each having a capacitance of 0.3 microfarads. Correct? 12:56:21 12:56:23 12:56:26

A. That is true. 12:56:32

MR. CHARKOW: Objection to form. 12:56:34

A. That is correct. 12:56:35

BY MR. ZUBLER: 12:56:36

Q. Does -- strike that. 12:56:37

Do the capacitors 72, 74, 76, and 78, disclosed in Tayloe, store non-negligible amounts of energy? 12:56:40 12:56:47 12:56:51

MR. CHARKOW: Objection to form. 12:56:51

A. Well, the non-negligible energy that they store must drive a low impedance load. So in that sense, the capacitors in Tayloe, in his prototype system, do not store the non-negligible energy that is described in the patent because that non-negligible energy must be able to describe -- must be able to drive a low impedance load. 12:57:07 12:57:17 12:57:21 12:57:27 12:57:30 12:57:34 12:57:37

BY MR. ZUBLER: 12:57:42

Q. The capacitors do store, though, non-negligible amounts of energy. Correct? 12:57:42 12:57:45

MR. CHARKOW: Objection to form. 12:57:48

A. When that system is operating, those capacitors will store electrical energy. 12:57:54 12:57:58

BY MR. ZUBLER: 12:58:02

Q. Able to store non-negligible amounts of energy. Right? 12:58:02 12:58:06

MR. CHARKOW: Objection to -- 12:58:07

[Simultaneous Speaking] 12:58:07

MR. CHARKOW: Objection to form. 12:58:08

THE WITNESS: Sorry. 12:58:09

A. Those capacitors do not store non-negligible energy that will drive a low impedance load. 12:58:10 12:58:20

BY MR. ZUBLER: 12:58:22

Q. Regardless of whether they drive a low impedance load, do those capacitors store non-negligible amounts of energy? Yes or no? 12:58:22 12:58:26 12:58:31

MR. CHARKOW: Objection to form. 12:58:32

Counsel, you can't limit it to yes or no. He can answer how he wants. Objection to form. 12:58:33 12:58:36

MR. ZUBLER: Keep your objections to the form, please. 12:58:39 12:58:40

MR. CHARKOW: Okay. 12:58:42

A. You are using a term "non-negligible energy" which is used in the patent and it has a very particular meaning. The capacitors that stored non-negligible amounts of energy must drive a low impedance load. 12:58:49 12:58:53 12:58:56 12:59:00

BY MR. ZUBLER: 12:59:07

Q. So you can't answer one way or the other whether the Tayloe capacitors store non-negligible amounts of energy. 12:59:07 12:59:11 12:59:16

MR. CHARKOW: Objection to form. 12:59:17

A. Capacity -- the capacitors in Tayloe will store electrical energy, but they will not store non-negligible amounts of energy that can be discharged into a low impedance load. 12:59:23 12:59:26 12:59:29 12:59:31

BY MR. ZUBLER: 12:59:34

Q. Can you answer whether the capacitors will store non-negligible amounts of energy? 12:59:35 12:59:41

MR. CHARKOW: Objection to form. 12:59:45

[Simultaneous Speaking] 12:59:45

MR. CHARKOW: Sorry, Michael. 12:59:47

Objection to form. 12:59:48

Go ahead. 12:59:55

A. I've answered that question at least 20 times and I 12:59:56

don't know how to express it any other way. 13:00:05

Non-negligible amounts of energy is a very specific term in the patent and capacitors must store non-negligible amounts of energy for driving a low impedance load. 13:00:09 13:00:11 13:00:18 13:00:22

And so in terms of the patent, "non-negligible amounts of energy" is a very specific term and the non-negligible amounts of energy must drive a low impedance load. 13:00:23 13:00:25 13:00:29 13:00:32

Let me put that -- let me take that back. 13:00:36

The capacitors must store and discharge non-negligible amounts of energy for driving a low impedance load. 13:00:40 13:00:44 13:00:47

BY MR. ZUBLER: 13:00:47

Q. Sir, I understand your position that non-negligible amounts of energy, you say, must drive a low impedance load in the context of the patent, but you, yourself, distinguished there. You said, "non-negligible amounts of energy is a very specific term." And you said, "the non-negligible amounts drive a low impedance load." 13:00:47 13:00:54 13:00:59 13:01:01 13:01:03 13:01:06 13:01:09

When you said "they must drive a low 13:01:12

impedance load," you're describing what those non-negligible amounts of energy have to do. I'm just asking you about what the non-negligible amounts of energy offer, not what they do. 13:01:15 13:01:17 13:01:19 13:01:23

Can you answer whether the capacitors in Tayloe store non-negligible amounts of energy? 13:01:26 13:01:32

MR. CHARKOW: Objection to form. 13:01:38

A. In my answer to a previous question, I said that energy drove a load, and then I corrected myself. Of course, energy itself does not drive. So let me repeat my answer maybe the 21st time, and maybe one -- if you ask me a hundred times, I don't see how I'm gonna -- how I can change my answer. I'm being honest and truthful here. I just hope that one of those hundred answers, I don't -- don't get clobbered in translation. 13:01:47 13:01:51 13:01:56 13:02:03 13:02:08 13:02:11 13:02:14 13:02:17 13:02:23

So my answer is -- and I need to go back to my disclosure here. I lost my place, of course. 13:02:24 13:02:26

I think we can all agree that Tayloe does not have a system that drives a low impedance load. So non-negligible amounts of energy -- let me just find that section. 13:02:54 13:03:02 13:03:07 13:03:13

BY MR. ZUBLER: 13:03:56

Q. I'm sorry, are you looking for something, sir, or are you waiting for a question? 13:03:56 13:04:00

A. No. I'm looking. I'm just wondering where -- I just lost where I was. Sorry, it will -- sorry it's taking time. 13:04:01 13:04:07 13:04:11

MR. CHARKOW: Counsel, while he's looking, are we getting close to a stopping point for a break for lunch? It's 1:00 and I don't know if Dr. Steer has eaten or not, but it's getting late. 13:04:28 13:04:30 13:04:33 13:04:37

MR. ZUBLER: Yeah. That's fine -- 13:04:40

[Simultaneous Speaking] 13:04:40

MR. ZUBLER: That's fine if we want to take a lunch break now, unless Dr. Steer wants to complete a statement. 13:04:45 13:04:45 13:04:51

THE WITNESS: No. I think I need to get some food. I had an early start to the day, so it's been -- I ate breakfast at 5:30, so -- actually, 5:00 today, so I need to get going. 13:04:51 13:04:53 13:04:56 13:05:02

MR. ZUBLER: Okay. Let's go -- let's take a break. 13:05:03 13:05:05

VIDEO TECHNICIAN: Going off the record. 13:05:05

The time is 1:05 p.m. 13:05:07

(Off the record at 1:05 p.m.) 13:05:08

(Back on the record at 1:54 p.m.) 13:54:20

VIDEO TECHNICIAN: Going back on the record. The time is 1:54 p.m. 13:54:22 13:54:24

BY MR. ZUBLER: 13:54:25

Q. Hello again, Dr. Steer. During any of our breaks today, have you had any communications with counsel? 13:54:27 13:54:33

A. No. 13:54:37

Q. Just a few more questions, sir, about non-negligible amounts of energy being stored. 13:54:37 13:54:49

If -- assume for the moment, for the sake of argument, that Tayloe has a high impedance load. Do the capacitors store non-negligible amounts of energy? 13:54:53 13:54:58 13:55:09 13:55:12

MR. CHARKOW: Objection to form. 13:55:13

A. One is being used. I do not need to assume because I know that Tayloe has a high impedance load. The capacitors in Tayloe do store energy but they do not store non-negligible amounts of energy, as described in the patent. 13:55:16 13:55:22 13:55:26 13:55:32 13:55:38

BY MR. ZUBLER: 13:55:38

Q. So is it your testimony that only an energy transfer system can store non-negligible amounts of energy? 13:55:39 13:55:48

MR. CHARKOW: Objection to form. 13:55:51

A. My testimony is that non-negligible amounts of energy is defined in the patent in the context of an energy transfer system. And in particular to that, the storage element, which is also defined in claim construction, stores and discharges non-negligible amounts of energy for driving a low impedance load. That is my testimony. 13:55:53 13:55:58 13:56:05 13:56:08 13:56:11 13:56:15 13:56:19

BY MR. ZUBLER: 13:56:20

Q. Can a system that is not an energy transfer system store non-negligible amounts of energy? 13:56:30 13:56:35

MR. CHARKOW: Objection to form. 13:56:40

A. I do not have an opinion on that. 13:56:51

BY MR. ZUBLER: 13:56:53

Q. Are you saying that the phrase "non-negligible amount of energy" is defined only in the context of an energy transfer system? 13:56:53 13:56:56 13:57:01

MR. CHARKOW: Objection to form. 13:57:01

A. Well, in the context of the '444 patent, non-negligible amounts of energy is -- as I've been 13:57:04 13:57:08

describing it, is used in -- together with the storage element, which does have a claim construction. 13:57:11 13:57:15 13:57:17

And in this case, a storage element stores and discharges non-negligible amounts -- negligible -- let me say that again. 13:57:20 13:57:22 13:57:26

The storage element stores and discharges non-negligible amounts of energy for driving a low impedance load. And I said that that is in the context of the '444 patent. 13:57:27 13:57:30 13:57:34 13:57:35

BY MR. ZUBLER: 13:57:38

Q. Does the phrase "non-negligible amount of energy" have meaning outside the context of an energy transfer system? 13:57:38 13:57:42 13:57:49

MR. CHARKOW: Objection to form. 13:57:49

A. I've only been asked to have an opinion in the context to the '444 patent. That phrase, if it's used outside the context to the '444 patent, I have no opinion. 13:57:53 13:57:56 13:58:04 13:58:06

BY MR. ZUBLER: 13:58:07

Q. Dr. Steer, Tayloe integrates samples over time to induce an ample voltage. Correct? 13:58:31 13:58:43

MR. CHARKOW: Objection to form. 13:58:47

A. I have a detailed analysis of what Tayloe discloses and how that integration is performed. 13:58:48 13:58:53

BY MR. ZUBLER: 13:58:55

Q. I understand that. But I'm just asking you the question, does Tayloe integrate samples over time to produce an average voltage? 13:58:59 13:59:03 13:59:08

MR. CHARKOW: Objection to form. 13:59:12

A. I cannot recall the precise language in Tayloe. I may be able to find that language. 13:59:13 13:59:18

BY MR. ZUBLER: 13:59:25

Q. You don't have an understanding about how Tayloe operates with regard to voltages? 13:59:26 13:59:28

MR. CHARKOW: Objection to form. 13:59:30

STENOGRAPHER: Doctor, I'm not sure if you're thinking or if you answered and I missed it. 13:59:48 13:59:51

THE WITNESS: I have not given an answer yet. 13:59:55 13:59:57

A. I do have a detailed understanding of how Tayloe works. I have an extensive statement in my declaration where I describe how Tayloe works and the disclosure in Tayloe as it relates to Tayloe only 13:59:59 14:00:02 14:00:12 14:00:15

working with voltages. 14:00:18

BY MR. ZUBLER: 14:00:23

Q. I understand that, sir. But my job today is to ask you questions and your job today is to answer those questions about your analysis. 14:00:23 14:00:26 14:00:28

So I'm asking you, based on your analysis, does Tayloe integrate samples over time to produce an average voltage? 14:00:30 14:00:33 14:00:37

MR. CHARKOW: Objection to form. 14:00:39

A. I'm sorry, Counsel. I thought your last question was whether I had an understanding. Tayloe does integrate over quarter periods of the input signal, and I provide a very good example of that on page 99. 14:00:43 14:00:45 14:00:53 14:01:02

BY MR. ZUBLER: 14:01:11

Q. And the energy that's stored on the capacitor is accumulated over multiple cycles of the RF signal. Correct? 14:01:16 14:01:21 14:01:25

MR. CHARKOW: Objection to form. 14:01:25

A. Well, according to Tayloe, the outputs of the commutation switches, which are labeled 42, 44, 46, 48 -- and I'm reading from paragraph 254 of my declaration. 14:01:35 14:01:39 14:01:43 14:01:47

So "According to Tayloe, outputs 42, 44, 46, 48 represent average values of the input signal f1 during quarter waves of a period. Output 42 represents the average value of the input signal during the first quarter wave of the period and is termed the zero degree output. Output 41 represents the average value of the input signal during the second quarter wave of the period and is termed the 90 degree output. 14:01:48 14:01:52 14:01:57 14:02:00 14:02:03 14:02:07 14:02:11 14:02:14 14:02:17

"Output 46 represents the average value of the input signal during the third quarter wave of the period and is determined -- and is termed 180 degree output. Output 48 represents the average value of the input signal during the fourth quarter wave of the period and is termed the 270 degree output." 14:02:18 14:02:21 14:02:25 14:02:28 14:02:32 14:02:35

So what Tayloe is describing there is that the integration occurs over one quarter of one period. 14:02:39 14:02:43

BY MR. ZUBLER: 14:02:49

Q. And it [inaudible] an average [inaudible] over that period. Correct? 14:02:49 14:02:57

MR. CHARKOW: Objection to form. 14:02:58

BY MR. ZUBLER: 14:02:59

Q. Strike that. 14:02:59

It produces an average voltage over that 14:03:00

quarter period. Correct? 14:03:02

MR. CHARKOW: Objection to form. 14:03:03

A. What Tayloe says is exactly what he says and I just 14:03:07

read -- I read that out. So Tayloe -- 14:03:10

BY MR. ZUBLER: 14:03:15

Q. Go ahead. 14:03:15

A. -- is the average value of the input signal during 14:03:15

the first quarter wave of the period. So Tayloe is 14:03:18

integrating the voltage signal over a quarter wave of 14:03:24

the period. 14:03:34

He also presents his Figure 4, which he 14:03:35

uses to guide his description of how his system 14:03:40

works. 14:03:44

Q. Is Tayloe capturing an instantaneous voltage value of 14:03:44

the input signal? 14:03:55

MR. CHARKOW: Objection to form. 14:03:56

A. Counsel, you dropped out there. Could you please 14:03:58

repeat your question? 14:04:01

BY MR. ZUBLER: 14:04:02

Q. Sure. Is Tayloe capturing an instantaneous voltage 14:04:03

value of the input signal? 14:04:07

MR. CHARKOW: Objection to form. 14:04:09

A. Tayloe is saying that he integrates the input signal 14:04:15
over quarter periods of the input signal. 14:04:18

BY MR. ZUBLER: 14:04:24

Q. I understand that. But I'm asking you to interpret 14:04:28
Tayloe and give me your analysis of it. Is Tayloe 14:04:32
capturing the instantaneous voltage value of the input 14:04:35
signal? 14:04:40

MR. CHARKOW: Objection to form. 14:04:40

A. Tayloe describes that he integrates the input signal 14:04:41
over a quarter period. 14:04:45

BY MR. ZUBLER: 14:04:54

Q. I mean, sir, if -- I mean, if -- is the best answer 14:04:55
you can give to my question just repeating then 14:04:57
quoting Tayloe? 14:05:00

MR. CHARKOW: Objection to form. 14:05:05
Counsel -- 14:05:07

Sorry, Michael. Hold on. 14:05:07
Objection to form. Counsel, was that a 14:05:09
question? 14:05:11

MR. ZUBLER: Yes, it is. 14:05:16

MR. CHARKOW: Okay. Objection to form. 14:05:17

A. I think it's important to be accurate, and the most accurate I can be is to use Tayloe's own words. 14:05:23 14:05:30

BY MR. ZUBLER: 14:05:36

Q. Sir, based on your extensive experience and expertise, is integrating an input signal over a quarter period the same as capturing an instantaneous voltage value of the input signal? 14:05:36 14:05:41 14:05:43 14:05:48

MR. CHARKOW: Objection to form. 14:05:50

A. Well, I believe that Tayloe is a type of track-and-hold system and he's integrating the input signal over time. And as a result of integrating over time, he's establishing an average value of the voltage during that quarter interval. 14:05:54 14:06:00 14:06:08 14:06:11 14:06:14

BY MR. ZUBLER: 14:06:20

Q. Sir, can you please focus on my question? Is integrating an input signal over a quarter period the same as capturing an instantaneous voltage value? 14:06:21 14:06:23 14:06:27

MR. CHARKOW: Objection. Form. 14:06:32

A. I think the best answer to that question is to use Tayloe's own words. 14:06:46 14:06:51

BY MR. ZUBLER: 14:06:56

Q. Sir, I'm asking you to interpret Tayloe's own words and explain them in terms of whether they are the same as just capturing an instantaneous voltage value of the input signal. 14:06:56 14:06:59 14:07:06 14:07:13

MR. CHARKOW: Objection to form. 14:07:14

A. What I have done in my declaration is to use Tayloe's own words to describe how Tayloe's system operates, and I believe that's the most accurate description. 14:07:20 14:07:26 14:07:33

BY MR. ZUBLER: 14:07:37

Q. Do you know what an instantaneous voltage value is? 14:07:38

MR. CHARKOW: Objection to form. 14:07:43

A. I do know what an instantaneous voltage value is. 14:07:45

BY MR. ZUBLER: 14:07:52

Q. Does Tayloe capture an instantaneous voltage value? 14:07:57

MR. CHARKOW: Objection to form. 14:08:02

A. Tayloe is very clear that he is integrating the voltage over time. He's integrating the voltage over one quarter period. And so Tayloe is capturing an average voltage. 14:08:08 14:08:11 14:08:15 14:08:20

BY MR. ZUBLER: 14:08:23

Q. Sir, I understand that. But the question I asked is, does that average voltage constitute an instantaneous 14:08:23 14:08:31

voltage value? Can you provide me with a yes-or-no answer to that question? 14:08:36 14:08:39

MR. CHARKOW: Objection to form. 14:08:41

A. Well, Tayloe is integrating over a quarter period and he's averaging the voltage out, so he's taking many instantaneous values and averaging them together. 14:08:48 14:08:52 14:08:56

BY MR. ZUBLER: 14:09:10

Q. Will using average voltages tend to even out random noise fluctuations on the RF signal? 14:09:11 14:09:17

MR. CHARKOW: Objection to form. 14:09:20

A. Let me repeat what I think you said because you broke up. 14:09:23 14:09:26

Will averaging the voltages in Tayloe average out random noise fluctuations on the input signal. 14:09:28 14:09:34 14:09:38

BY MR. ZUBLER: 14:09:39

Q. Correct. 14:09:40

MR. CHARKOW: Object to the form. 14:09:42

A. So that's a good question. Let me think through that. 14:09:44 14:10:00

So in an actual RF system, the -- so the only noise fluctuations -- of course, this 14:10:03 14:10:09

includes -- this includes interfering signals. In communications, noise includes interfering signals as well, not just [audio distortion] noise. 14:10:12 14:10:18 14:10:21

If that noise -- if that input wave form has noise on it, noise is a random variation, so the only random variations that would appear in a quarter period would need to be at much higher frequencies than the input electromagnetic signal, such as harmonics and -- very high harmonics. 14:10:27 14:10:31 14:10:40 14:10:43 14:10:47 14:10:52

So by averaging over a quarter period, Tayloe's system is not removing noise in a real system because, in a real system, a real down-converter system, there would be no harmonics of the input signal. 14:10:55 14:10:59 14:11:04 14:11:08 14:11:12

BY MR. ZUBLER: 14:11:13

Q. How is the amount of energy that's stored in a capacitor quantified? 14:11:13 14:11:20

MR. CHARKOW: Objection to form. 14:11:24

A. The units of energy are joules. 14:11:30

BY MR. ZUBLER: 14:11:39

Q. And [inaudible] is the product of voltage and charge. Correct? 14:11:40 14:11:45

MR. CHARKOW: Objection to form. 14:11:46

A. Counsel, you chopped up there. Could you repeat that, please? 14:11:49 14:11:51

BY MR. ZUBLER: 14:11:51

Q. Yes. Energy is the product of voltage and charge. Correct? 14:11:52 14:11:55

MR. CHARKOW: Objection to form. 14:11:58

A. Not correct. Although I should also add that you need to talk about, energy for what? I think that's more accurate. So energy for what system? 14:12:13 14:12:16 14:12:24

BY MR. ZUBLER: 14:12:30

Q. The energy stored on a capacitor is the product of voltage and charge. Correct? 14:12:30 14:12:34

A. No, that's incorrect. 14:12:36

MR. CHARKOW: Objection to form. 14:12:38

[Simultaneous Speaking] 14:12:38

MR. CHARKOW: Sorry, Michael. Just let me get my objections in. 14:12:40 14:12:43

Objection to form. 14:12:44

A. Sorry, that is incorrect, and that is a common error undergraduates make. 14:12:45 14:12:50

BY MR. ZUBLER: 14:12:52

Q. Can you please explain the error? 14:12:56

MR. CHARKOW: Objection to form. 14:12:58

A. Okay. As I teach my second-year students, the way to calculate the energy stored on a capacitor is that you need to start off with a capacitor with zero voltage on it and then you need to integrate over time until you get to the final voltage. 14:13:00 14:13:05 14:13:08 14:13:12 14:13:17

BY MR. ZUBLER: 14:13:27

Q. And the energy that is stored when you reach that final voltage will be a product of voltage and charge. Correct? 14:13:27 14:13:34 14:13:39

MR. CHARKOW: Objection to form. 14:13:40

A. Incorrect. It's a very common mistake people make. 14:13:47

BY MR. ZUBLER: 14:14:01

Q. A capacitor can be configured as an integrator. Correct? 14:14:11 14:14:16

MR. CHARKOW: Objection to form. 14:14:16

A. So there are many ways that you could use a capacitor to implement an integration function. So a capacitor could be used in a circuit to integrate or a capacitor on its own could be used to integrate as well. 14:14:27 14:14:34 14:14:39 14:14:42 14:14:47

BY MR. ZUBLER: 14:14:48

Q. And if a capacitor is used as an integrator, it will integrate the charge that flows into the capacitor. Correct? 14:14:49 14:14:52 14:14:54

MR. CHARKOW: Objection to form. 14:14:59

A. So if we have charge flowing onto a capacitor, that capacitor will accumulate the charge. There will be an operation of -- of integration, of course, so the -- at the end of a charging cycle, the total -- and we're talking about DC here -- the total charge will be the integral of all the charges that's gone onto that capacitor. 14:15:09 14:15:16 14:15:27 14:15:30 14:15:36 14:15:39 14:15:45

BY MR. ZUBLER: 14:15:46

Q. And when a capacitor operates as an integrator in this fashion, it stores energy. Correct? 14:15:46 14:15:50

MR. CHARKOW: Objection to form. 14:15:54

A. When a capacitor operates that way, we, of course, have charge that flows onto one plate and flows off the other plate of the capacitor. That separation of charge forms an electric field and the energy is stored in that electric field. 14:15:56 14:16:06 14:16:10 14:16:16 14:16:19

BY MR. ZUBLER: 14:16:21

Q. And so the answer to my question is, yes, a capacitor -- when a capacitor operates as an integrator, it's [inaudible]. Right? 14:16:26 14:16:29 14:16:31

MR. CHARKOW: Objection to form. 14:16:36

Sorry, Michael. 14:16:36

Objection to form. 14:16:36

STENOGRAPHER: I also didn't hear the last word of that. 14:16:42 14:16:44

A. Yeah, I think you need to -- 14:16:45

[Simultaneous Speaking] 14:16:45

A. Sorry. 14:16:46

Counsel, I think you need to repeat that question. 14:16:52 14:16:53

BY MR. ZUBLER: 14:16:53

Q. Sure. When a capacitor operates as an integrator, it stores energy. Correct? 14:16:53 14:16:59

MR. CHARKOW: Objection to form. 14:17:03

A. So, first of all, capacity can be used by an integrator several ways. But if we talk about the way we were talking about before -- where a capacitor accumulates charge -- as the capacitor accumulates more and more charge, it will store more and more 14:17:13 14:17:16 14:17:19 14:17:22 14:17:27

energy in the electric field. 14:17:29

BY MR. ZUBLER: 14:17:56

Q. Dr. Steer, you state in your declaration that [as read]: Track-and-hold is voltage sampling because track-and-hold uses readings of voltage across a capacitor in order to down-convert, and energy is not discharged from the capacitor to form the [inaudible]; is that a true statement? 14:18:12 14:18:26 14:18:29 14:18:31 14:18:35 14:18:41

MR. CHARKOW: Objection to form. 14:18:43

A. So there was some words missing in your question so I think the court reporter has probably missed them as well. 14:18:45 14:18:52 14:18:53

BY MR. ZUBLER: 14:18:54

Q. Okay. 14:18:54

A. Could you repeat your question, please? 14:18:55

Q. Sure. We've talked about track-and-hold systems. Correct? 14:18:57 14:19:00

A. We have not talked about them yet. 14:19:06

Q. Well, we mentioned them previously. Correct? 14:19:10

A. Yes. 14:19:13

Q. Okay. And you take the position in your declaration that [as read]: In a track-and-hold system, energy is 14:19:14 14:19:19

not discharged from the capacitor to form the down-converted signal. 14:19:23 14:19:26

Correct? 14:19:27

MR. CHARKOW: Objection to form. 14:19:28

A. I want to see exactly what I said. I did talk about track-and-hold. I just can't remember where I did that. 14:19:32 14:19:46 14:19:48

BY MR. ZUBLER: 14:19:49

Q. Well, let's just separate it for a minute. 14:19:49

A. I have found where I talked about it. I talked about it in paragraph 144, where I said [as read]: Another implementation of sample-and-hold is track-and-hold. In track-and-hold, the same or equivalent circuit configurations to an impulse sample-and-hold circuit is used. In track-and-hold, the switch is connected to the holding capacitor for a tracking interval and the voltage that is sampled and held on the holding capacitor is the voltage at the end of the tracking interval. 14:19:53 14:19:56 14:20:00 14:20:04 14:20:07 14:20:10 14:20:13 14:20:16 14:20:18 14:20:21

BY MR. ZUBLER: 14:20:22

Q. Okay. Let me backtrack for a second. Let's talk about sample-and-hold. All right? 14:20:22 14:20:28

A. Okay. 14:20:32

Q. Your report discusses sample-and-hold systems. 14:20:32

Correct? 14:20:36

A. That's correct. 14:20:37

Q. In a sample-and-hold system, is energy discharged from the capacitor to form the down-converted signal? 14:20:37 14:20:40

MR. CHARKOW: Objection to form. 14:20:45

A. An impulse sampling system, which is one type of sample-and-hold system, has a high impedance load. Energy from the capacitor is not discharged through the high impedance load, or negligible amounts of energy are dissipated in -- discharged into the high impedance load. And the -- that discharge of energy will -- there will be discharge of energy, of course, but there are many different circuit configurations that are used to get rid of the energy on that capacitor. 14:20:46 14:20:52 14:20:56 14:21:02 14:21:08 14:21:11 14:21:16 14:21:21 14:21:24 14:21:27

But during the holding period, the concept is to hold the voltage on the capacitor constant while it is read off. So the down-converted signal, in that case, is derived from the voltage on the capacitor. A discharge of energy anywhere is not used to form the 14:21:28 14:21:30 14:21:33 14:21:41 14:21:48

down-converted signal. 14:21:50

BY MR. ZUBLER: 14:21:54

Q. What energy is used to form the down-converted signal? 14:21:54

MR. CHARKOW: Objection. Form. 14:22:04

A. No energy is used to conform the down-converted signal. 14:22:05 14:22:15

BY MR. ZUBLER: 14:22:25

Q. Dr. Steer, you say, in paragraph 209 of your report, that [as read]: The high impedance load is specifically included to prevent the holding capacitor from discharging energy. 14:22:25 14:22:37 14:22:42 14:22:48

In the context of a voltage sampling system. 14:22:51 14:22:54

Do you recall that statement? 14:22:54

A. I recall -- 14:22:57

MR. CHARKOW: Objection to form. 14:22:58

A. Okay. So let me just look at paragraph 209, and I need to go back to see what we're talking about here. 14:22:59 14:23:08

I am talking about a sample-and-hold, a voltage sampling system. And, of course, there must be hundreds of different types of sample-and-hold systems, so this is the general view. 14:23:11 14:23:14 14:23:20 14:23:22

I do have a diagram from -- it's either from the '444 patent or the '551 patent, at the top of page 78, and that is what I'm talking to in paragraph 209. So I'm saying that this voltage sampling system includes a switch, a control signal for controlling the switch, a holding capacitor for holding the voltage across the capacitor, and a high impedance load. 14:23:27 14:23:35 14:23:38 14:23:41 14:23:47 14:23:50 14:23:53 14:23:56

And unlike an energy transfer system, a sample-and-hold system uses a control signal having a pulse with a negligible aperture, and a holding capacity for holding a constant voltage across the capacitor, and a high impedance load. 14:23:58 14:24:02 14:24:05 14:24:10 14:24:14

BY MR. ZUBLER: 14:24:29

Q. So is it fair to say that in a voltage sampling system, in your view, there will be a high impedance load -- I'm sorry, strike that. 14:24:29 14:24:33 14:24:36

Dr. Steer -- 14:24:44

A. Yes. 14:24:46

Q. -- is it your position that in a voltage sampling system, there will be a high impedance load and energy is not discharged from the capacitor to form the 14:24:46 14:24:51 14:24:59

down-converted signal? 14:25:02

MR. CHARKOW: Objection to form. 14:25:04

A. The section we're talking about at the moment is describing a sample-and-hold system that is -- and one -- which is -- this particular one is one of the inventions which is disclosed in the '444 patent. 14:25:07 14:25:15 14:25:21 14:25:24

The parts that are inventive, I have not read so far in paragraph 209, but, generally, that figure on the top of page 78 applies to sample-and-hold systems. 14:25:30 14:25:35 14:25:41 14:25:48

So what we have here, the -- if you like, the key features here is that there is a holding capacitor, a holding capacitance, which is a term reserved in the patent for sample-and-hold systems. And what happens in the operation of this system is that a signal will flow from the input electromagnetic signal. There will be some current which transfers charge to the holding capacitor. 14:25:54 14:25:57 14:26:00 14:26:07 14:26:11 14:26:14 14:26:22 14:26:25

The voltage on that holding capacitor builds up to the voltage on the input EM signal. And when the switch is open, the holding capacitance does not discharge any significant energy to the load. 14:26:29 14:26:32 14:26:36 14:26:40

Indeed, the high impedance load is specifically included to prevent the holding capacitor from discharging energy, which would degrade the voltage measurements and adversely affect the system performing sample-and-hold. 14:26:44 14:26:48 14:26:51 14:26:55 14:26:57

MR. CHARKOW: Objection. 14:27:00

I'm sorry. Go ahead. 14:27:01

BY MR. ZUBLER: 14:27:04

Q. [Audio distortion] high impedance load effectively infinite? 14:27:05 14:27:09

MR. CHARKOW: Objection to form. 14:27:09

A. Well, "infinite" never exists, so -- infinite load never exists. I think it -- it's -- and then we get to a discussion of what's the difference between a high impedance load and infinity. The high impedance load here prevents the holding -- the holding capacitor from discharging energy, and as a result, the holding capacitor maintains the voltage that was sampled from the input signal. 14:27:15 14:27:19 14:27:27 14:27:30 14:27:37 14:27:40 14:27:45 14:27:50

BY MR. ZUBLER: 14:27:56

Q. So if the impedance is not infinite, then some energy will flow to the load. Correct? 14:27:56 14:28:05

MR. CHARKOW: Objection to form. 14:28:07

A. Any energy that flows into that high impedance load would be incidental. It would not be significant. 14:28:10 14:28:18

BY MR. ZUBLER: 14:28:23

Q. Dr. Steer, I'd like to ask you now about another document. 14:28:53 14:28:56

MR. ZUBLER: Could we please pull up Tab 13 and mark that as Exhibit 1028? 14:28:58 14:29:01

PLANET DEPOS TECH: Understood. Please stand by. 14:29:14 14:29:15

MARKED FOR IDENTIFICATION: 14:29:18

EXHIBIT 1028 14:29:18

2:29 p.m. 14:29:18

PLANET DEPOS TECH: The document is currently uploading. 14:29:40 14:29:41

The document is currently uploaded. 14:30:04

MR. ZUBLER: Dr. Steer and Counsel, please let me know when you're able to view the document. 14:30:07 14:30:09

THE WITNESS: I have Exhibit 1028 in front of me. 14:30:41 14:30:43

BY MR. ZUBLER: 14:30:45

Q. And is this your declaration that you submitted in the 14:30:45

'474 IPR proceeding? 14:30:49

A. It certainly looks like it. 14:30:56

Q. And what I'd like to ask you to do is to go to two of the same sections in each of your two reports, the '444 and the '474. And specifically, the sections that relate to secondary considerations. 14:30:59 14:31:10 14:31:14 14:31:18

So in the '444 declaration, I believe it starts on page 86. In the '474 declaration, it begins on page 111. 14:31:22 14:31:25 14:31:34

A. Okay. "Long-felt need." Is -- so -- 14:31:53

Q. Yes. I guess -- here, let me get to the actual page myself. I'm sorry. Yes, beginning with "long-felt need." 14:32:00 14:32:05 14:32:15

Do you see that? 14:32:15

A. Yes, I do. 14:32:16

Q. Now, as I review these two sections in the '444 and the '474 declarations, they appear to me to be identical except for the different claims in the patent that are at issue in each one; is that fair? 14:32:17 14:32:24 14:32:27 14:32:32

MR. CHARKOW: Objection to form. 14:32:40

A. I certainly used a big part of the '444 declaration as the basis for the '474 declaration. I imagine I 14:32:42 14:32:54

edited -- well, edit -- of course, I edit all the time, and every time I edit, I make a change. So they may not be exactly the same, if that's the point. I don't know. 14:33:05 14:33:07 14:33:11 14:33:14

BY MR. ZUBLER: 14:33:14

Q. Yeah, I'm not trying to attack you for using the same language in both of them. I'm really just trying to establish, for simplicity, so we don't have to go through questions -- the same questions today and tomorrow -- 14:33:15 14:33:19 14:33:21 14:33:25 14:33:28

A. Okay. 14:33:29

Q. -- that, substantively, it appears to me that your secondary consideration analysis is the same in both declarations except, of course, you modify that analysis to respect the particular patent and claims at issue in each declaration. 14:33:30 14:33:33 14:33:38 14:33:42 14:33:47

MR. CHARKOW: Objection. Form. 14:33:52

[Simultaneous Speaking] 14:33:52

MR. CHARKOW: Sorry, Michael. 14:33:54

Objection to form. 14:33:55

A. I would expect that what you said is correct. I don't see why -- I think it -- I think that would be 14:33:56 14:34:05

correct, what you've said. 14:34:07

BY MR. ZUBLER: 14:34:08

Q. Now, let's look at the section in your '444 declaration. We'll keep using that as our reference point. So I'm referring to Exhibit 1022. And if you could look at paragraph 239, which begins the section Copying and Commercial Success. 14:34:16 14:34:38 14:34:44 14:34:48 14:34:52

A. Correct. Yes. So it begins -- yes, paragraph 239. 14:34:54

Q. Are you familiar with any ParkerVision patents that practice Claim 3 of the '444 patent? 14:35:05 14:35:10

MR. CHARKOW: Objection to form. 14:35:15

A. You didn't break up, but -- 14:35:19

BY MR. ZUBLER: 14:35:22

Q. And I think I misspoke. Let me repeat the question. 14:35:22

Are you familiar with any ParkerVision products that practice Claim 3 of the '444 patent? 14:35:26 14:35:29

MR. CHARKOW: Objection to form. 14:35:34

A. Let me -- let me just read because I don't have -- let me just read that claim. It is a while since I've looked at ParkerVision products. I've looked at quite a few. Let me look at Claim 3. 14:35:49 14:35:53 14:35:58 14:36:02

Yes, I am familiar with ParkerVision 14:36:25

products that practice that. I don't know the name or the model. I can't recall that. 14:36:27 14:36:34

So, yes, I have seen a product which does that. I want to say, Eddie I and Eddie II. The WiFi product, I do not recall looking at all the details inside it. So I have seen what -- what's described in Claim 3 in a product -- ParkerVision product. 14:36:40 14:36:44 14:36:57 14:37:02 14:37:09

BY MR. ZUBLER: 14:37:14

Q. And do you know if any of those products were commercially successful? 14:37:17 14:37:18

MR. CHARKOW: Objection to form. 14:37:25

A. It is some time since I looked at product data. I believe that the wireless modem product was sold. I believe that it received some praise in the literature, in the more trade literature, so I think praise is one measure of success. I actually remember -- I don't know whether I wrote that here or not, but I remember one statement was, an editor of one of those trade magazines said that it was the best WiFi unit that he had tested. I think that that is -- that is praise. 14:37:27 14:37:38 14:37:45 14:37:51 14:38:02 14:38:06 14:38:09 14:38:11 14:38:14 14:38:18

As for -- I think your question, though, 14:38:22

was about commercial success, and I would say that commercial success was probably mixed, or else, instead of a Linksys modem, I'd have a ParkerVision modem. 14:38:25 14:38:30 14:38:35 14:38:40

BY MR. ZUBLER: 14:39:09

Q. You state, sir, in this paragraph on commercial success, paragraph 239 -- 14:39:10 14:39:16

A. Yes. 14:39:21

Q. -- you say [as read]: Qualcomm and others in the industry transitioned away from superheterodyne receivers and mixer technology and began to use the energy transfer (energy sampling) system set forth in Claim 3 of the [inaudible] patent. 14:39:21 14:39:24 14:39:29 14:39:31 14:39:35

Do you see that? 14:39:38

A. Yes, I see that. 14:39:39

Q. And you then say [as read]: Today, energy transfer (energy sampling) systems as set forth in Claim 3 of the '444 patent have been adopted by nearly the entire industry. 14:39:48 14:39:52 14:39:55 14:39:59

Do you see that? 14:40:00

A. Are we still looking at paragraph -- which paragraph are we looking at now? 14:40:05 14:40:08

Q. Same paragraph, 239. It was just the subsequent sentence. 14:40:09 14:40:12

A. Oh, yes. Okay. It's on -- continues onto the next page. So let me just read it again. Sorry, I'm just -- 14:40:14 14:40:17 14:40:23

Q. Sure. And just to be clear, I was referring to the sentence that begins "in particular," and then the sentence that begins "today." 14:40:23 14:40:26 14:40:28

A. Yeah, that is correct. 14:40:30

Q. Are you aware, sir, that ParkerVision sued Qualcomm for patent infringement in 2011? 14:40:42 14:40:47

A. I remember -- I recall that before I started working through Mintz, that there was a court case earlier on. I do not know, date-wise, but it was before 2015. I recall that -- I recall that they -- that ParkerVision was successful in the jury trial. I recall that it went to -- on appeal and that that verdict from the jury trial was overturned. 14:40:54 14:41:02 14:41:07 14:41:13 14:41:21 14:41:27 14:41:33

Are we talking about the same one? 14:41:38

Q. Yes, sir, we are. 14:41:40

And so you're aware that the federal circuit affirmed the district court's [audio 14:41:46 14:41:50

distortion] judgment of noninfringement as to all claims that ParkerVision asserted against Qualcomm in 2011? 14:41:55 14:41:58 14:42:01

MR. CHARKOW: Objection to form. 14:42:03

A. Unfortunately, you broke up. Could you please repeat that question? 14:42:05 14:42:10

BY MR. ZUBLER: 14:42:12

Q. So you're aware that the federal circuit affirmed the district court's judgment of noninfringement as to all claims that ParkerVision asserted against Qualcomm in 2011. 14:42:13 14:42:17 14:42:21 14:42:24

MR. CHARKOW: Objection to form. 14:42:26

A. Okay. So you -- "affirmed" means that -- I'm sorry. I'm not too good on all these legal terms. "Affirmed" means that they didn't overturn them? 14:42:31 14:42:35 14:42:39

BY MR. ZUBLER: 14:42:44

Q. So the history of the case is that there was a jury verdict in favor of Qualcomm, but the district court issued a judgment of noninfringement. 14:42:44 14:42:49 14:42:54

A. Hmm. 14:42:54

Q. Federal circuit affirmed that. Were you aware of that, sir? 14:42:57 14:43:01

MR. CHARKOW: Objection to form. 14:43:01

A. I am -- I am not -- I have not studied that case at all. I read the federal circuit court opinion on that case, but I -- I really don't -- I don't know the patents and I don't know what was involved in that case. I just read the circuit -- federal circuit opinion. 14:43:03 14:43:10 14:43:12 14:43:16 14:43:20 14:43:23

BY MR. ZUBLER: 14:43:24

Q. And the '551 patent was asserted in that case. Correct? 14:43:25 14:43:29

MR. CHARKOW: Objection to form. 14:43:29

A. I have no knowledge of that. 14:43:34

BY MR. ZUBLER: 14:43:35

Q. Are you aware that ParkerVision sued Apple, in Germany, for patent infringement in 2016? 14:43:37 14:43:41

MR. CHARKOW: Objection to form. 14:43:46

A. I was not aware of that. I was aware that something happened in Germany that ParkerVision was involved in, but I didn't know who the other parties were. 14:43:49 14:43:54 14:44:02

BY MR. ZUBLER: 14:44:05

Q. Are you aware that ParkerVision asserted an energy transfer patent against Apple? 14:44:05 14:44:08

MR. CHARKOW: Objection to form. 14:44:10

A. I'm aware of the work I did when Mintz was representing ParkerVision -- this is in that 2016 timeframe -- and Apple was one of the parties in that. 14:44:13 14:44:26 14:44:29 14:44:34

BY MR. ZUBLER: 14:44:35

Q. Do you know the outcome of the German litigation where ParkerVision asserted an energy sampling patent against Apple? 14:44:35 14:44:39 14:44:41

MR. CHARKOW: Objection to form. 14:44:44

A. I do not. 14:44:45

MR. CHARKOW: Can we take a break soon? 14:45:03

MR. ZUBLER: Sure. 14:45:05

[Simultaneous Speaking] 14:45:05

MR. ZUBLER: Yeah, if we can take a break, this would be a perfect time. 14:45:07 14:45:09

MR. CHARKOW: Okay. Can we take like -- can we take 15 minutes? I've just got to... 14:45:11 14:45:12

MR. ZUBLER: Sure. 14:45:15

MR. CHARKOW: Michael, is that okay for you? 14:45:17 14:45:19

THE WITNESS: Yeah, that's good. 3:00 is 14:45:20

good. 14:45:21

MR. CHARKOW: Okay. 3:00. Great. 14:45:22

MR. ZUBLER: Thank you. 14:45:24

VIDEO TECHNICIAN: We're going off the record. The time is 2:45 p.m. 14:45:24 14:45:25

(Off the record at 2:45 p.m.) 14:45:39

(Back on the record at 3:02 p.m.) 15:02:08

VIDEO TECHNICIAN: Going back on the record. The time is 3:02 p.m. 15:02:14 15:02:16

MR. ZUBLER: I have no further questions at this time. 15:02:19 15:02:21

MR. CHARKOW: Okay. So I need to -- can I take a break, then? I've got to gather my thoughts. Can we take -- I need like -- well, let's go off the record. We can go off the record. 15:02:26 15:02:28 15:02:32 15:02:39

VIDEO TECHNICIAN: Going off the record. The time is 3:02 p.m. 15:02:41 15:02:42

(Off the record at 3:02 p.m.) 15:27:25

(Back on the record at 3:27 p.m.) 15:27:25

VIDEO TECHNICIAN: Going back on the record. The time is 3:27 p.m. 15:27:26 15:27:29

MR. CHARKOW: Good afternoon, Dr. Steer. 15:27:33

THE WITNESS: Good afternoon, Counsel. 15:27:36

EXAMINATION 15:27:36

BY MR. CHARKOW: 15:27:36

Q. Just two questions. In your deposition testimony today or in your declaration that you submitted in this case, did you opine on any patents other than the '444 patent? 15:27:39 15:27:46 15:27:49 15:27:52

A. No, I did not. 15:27:56

Q. In your deposition testimony today or in your declaration that you submitted in this case, did you opine on patent infringement of any claim of any ParkerVision patent by Intel, Qualcomm, or any other entity? 15:27:58 15:28:02 15:28:04 15:28:08 15:28:11

A. No. 15:28:13

MR. CHARKOW: That's all I've got, Todd. 15:28:15

Todd? 15:28:26

MR. ZUBLER: Yes. Thank you. I was just looking at the transcript. Could I go off the record one minute and I'll be right back. If you give me just a few minutes. 15:28:27 15:28:29 15:28:32 15:28:37

MR. CHARKOW: Sure. Yep. 15:28:39

VIDEO TECHNICIAN: Going off the record. 15:28:40

The time is 3:28 p.m. 15:28:42

(Off the record at 3:28 p.m.) 15:39:26

(Back on the record at 3:39 p.m.) 15:39:26

VIDEO TECHNICIAN: Going back on the record. The time is 3:39 p.m. 15:39:27 15:39:28

MR. ZUBLER: I have no further questions at this time. 15:39:29 15:39:33

MR. CHARKOW: And I have no further questions at this time. I think we can go off the record. 15:39:35 15:39:36 15:39:40

Thank you, Dr. Steer, for your time. 15:39:41

THE WITNESS: Thank you. Goodbye, everyone. 15:39:43 15:39:45

MR. ZUBLER: Thank you, Dr. Steer. 15:39:45

MR. CHARKOW: Bye. 15:39:48

VIDEO TECHNICIAN: Going off the record. The time is 3:39 p.m. 15:39:48 15:39:49

(Proceedings concluded at 3:39 p.m.)

CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

I, ALISON C. WEBSTER, Certified Reporter and Notary Public within and for the State of Michigan do hereby certify:

That MICHAEL STEER, Ph.D., the witness whose deposition is hereinbefore set forth, was duly sworn by me before the commencement of such deposition and that such deposition was taken before me and is a true record of the testimony given by such witness.

I further certify that the adverse party, PARKERVISION, INC., was represented by counsel at the deposition.

I further certify that the deposition of MICHAEL STEER, Ph.D., was conducted virtually on Wednesday, July 28, 2021, commencing at 9:11 a.m. to 3:39 p.m.

I further certify that I am not related to any of the parties to this action by blood or marriage, I am not employed by or an attorney to any of the parties to this action, and that I am in no way interested, financially or otherwise, in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 2nd day of August, 2021.

My commission expires: May 1, 2023

Allison C. Webster

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