

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PELOTON INTERACTIVE, INC.,

Petitioner,

v.

NEC CORPORATION,

Patent Owner.

IPR2023-01240

IPR2023-01241

Patent No. 9,769,427 B3

PATENT OWNER'S NOTICE OF DEPOSITION OF

CLIFFORD READER, PH.D.

VIA ZOOM

APRIL 19, 2024

REPORTED BY:

PATRICIA Y. SCHULER, CSR NO. 11949

Job no: 9088

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10 IPR2023-01240

11 IPR2023-01241

12 Patent No. 9,769,427 B3

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14
15 Remote Deposition of Cliff Reader, Ph.D., taken on
16 behalf of the Patent Owner via Zoom, with the deponent
17 in Escondido, California, beginning at 9:12 a.m. and
18 ending at 2:12 p.m., on April 19, 2024, before
19 PATRICIA Y. SCHULER, Certified Shorthand Reporter
20 No. 11949.
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22
23
24
25

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I-N-D-E-X

WITNESS:	EXAMINATION
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1 ESCONDIDO, CALIFORNIA; FRIDAY, APRIL 19, 2024

2 9:12 a.m.

3 THE VIDEOGRAPHER: We are now on the
4 record. Today's date is April 19, 2024, and the
5 time is 9:12 a.m. Pacific Daylight Saving Time.

6 This is the video deposition of Cliff
7 Reader, Ph.D in the matter of Peloton Interactive,
8 Inc. versus NEC Corporation, patent owner, filed in
9 the United States Patent and Trademark Office.
10 Case No. IPR2023-01240.

11 This deposition is taking place via web
12 videoconference with all participants attending
13 remotely.

14 My name is Marcela Sandoval, I am the
15 videographer representing TransPerfect Legal
16 Solutions.

17 Would the counsel of the conference
18 please identify yourselves and state whom you
19 represent, beginning with the questioning attorney.

20 MR. PALMIERI: On behalf of the patent
21 owner, NEC Corporation, my name is Nick Palmieri
22 with the firm Baker Botts. Also here with me is
23 Eliot Williams also of Baker Botts.

24 MR. SHARMA: Good morning, everyone. On
25 behalf of Peloton Interactive, Inc., petitioner,

1 this is Anupam Sharma from Covington & Burling. On
2 the call with Ms. Emily Mondry, also of Covington &
3 Burling. Also on the call is Ms. Janice Jabido from
4 Peloton Interactive, Inc.

5 THE VIDEOGRAPHER: Our court reporter
6 today is Patricia Schuler representing TransPerfect
7 Legal Solutions. The court reporter will now swear
8 in the witness.

9
10 CLIFF READER, PH.D.,
11 having been administered an oath, was examined and
12 testified as follows:

13
14 EXAMINATION

15 BY MR. PALMIERI:

16 Q. Okay. Well, good morning, sir. Would
17 you mind just stating your full name for the
18 record?

19 A. Clifford Reader.

20 Q. Thank you, Dr. Reader, and thank you for
21 your time today.

22 Before we get started, I just want to lay
23 down a few rules of the road for how we are going
24 to go through this. You have certainly done this
25 before, but just to make sure that we all have the

1 same understanding of what will happen.

2 The first, and arguably most important is
3 that if at any time you feel you need a break, just
4 let me know. I generally try to take breaks about
5 once an hour, but just speak up at any point and we
6 can certainly go on a break and go off the record.
7 The only request I would make is that we don't take
8 a break in the middle of a question. Just finish
9 answering a question and then we can go on a break.

10 Does that sound good?

11 A. That's fine. Thank you.

12 Q. If at any time you don't understand a
13 question, just let me know. I am happy to rephrase
14 it or provide some further explanation to help you
15 answer it.

16 If you do answer a question, though, and
17 unless you tell me otherwise, I am going to assume
18 that you understand the question.

19 Can we proceed with that understanding?

20 A. Yes, that's fine.

21 Q. Throughout this deposition, I will refer
22 to the petitioner Peloton Interactive, Inc., as
23 Peloton or just "the petitioner." I will refer to
24 the patent owner, NEC Corporation, as either "the
25 patent owner" or "NEC."

1 Is that all right?

2 A. That's fine.

3 Q. And generally, when I am referring to a
4 page number, I think all of the exhibits that we
5 have included here have a page number in the bottom
6 right corresponding with our exhibit. If I refer
7 to a page number, it will be that bottom-right
8 number rather than any other page numbers. If I
9 refer to something else like a paragraph or a
10 column, I will make that clear. But if I just saw
11 a page number, it will generally mean that
12 bottom-right page.

13 Before we begin, you understand you are
14 testifying here regarding your declaration
15 submitted in connection with two IPR petitions; is
16 that correct?

17 A. That is correct.

18 Q. And just for the record, those IPR
19 petitions are IPR2023-01240, as well as
20 IPR2023-01241; is that correct?

21 A. That is my understanding. And as
22 discussed, there is an errata to the latter one.

23 Q. Understood, yes.

24 Generally speaking, your -- sorry. Let
25 me rephrase that.

1 Referring to both of those different
2 proceedings, you submitted a different declaration
3 for each of those; is that correct?

4 A. I think that is correct, yes.

5 Q. But both of those petitions refer and
6 relate to the same patent, that is U.S. Patent
7 No. 9,769,427; is that correct?

8 A. Correct.

9 Q. Just throughout this, I will refer to
10 that as the '427 patent; is that okay?

11 A. That's okay.

12 Q. Would it be possible, Dr. Reader, to move
13 closer to the microphone that they have there?

14 A. You want me on the screen. We've moved
15 the mike closer to me. Can you hear me any better
16 now? I will try to speak a little louder.

17 Q. Got it. Okay. And I just mentioned the
18 '427. Okay.

19 Before we begin, Dr. Reader, is there any
20 information in either of your declarations and in
21 the associated errata sheet that you believe is
22 incorrect or that needs to be changed?

23 A. In the declaration I have particularly
24 been looking at is for the 420, and going through
25 that, there is a couple of typos in it. I don't

1 think there is any substance to the typos, but if
2 we happen to come across them, I will mention that.
3 But I didn't see anything else that was wrong.

4 Q. Understood.

5 And throughout this deposition, I will
6 refer to a number of exhibits that -- I believe you
7 have copies of everything. If at any time you
8 think it would be easier for me to share my screen
9 with those, I am happy to do so, but absent that, I
10 will assume you have a copy of the exhibits. If we
11 go into anything I did not send around, I will
12 share that in the chat with everyone and ensure
13 that you are able to follow along if that's okay.

14 A. That is good. Excellent.

15 Q. So, Dr. Reader, how many times have you
16 been deposed previously, approximately?

17 A. I don't know. I just always answer more
18 than 25.

19 Q. And do you know about how many times in
20 the last, say, five years?

21 A. No. Maybe five times or three.

22 Q. Okay.

23 A. I don't know.

24 Can I just mention one thing?

25 Q. Sure.

1 A. From my point of view, because I am on a
2 Mac, I can silence my phone and I can silence my
3 watch, but I can't silence the laptop. If I
4 receive a call during this deposition, let me
5 apologize in advance for the fact that the laptop
6 is actually going to ring like a phone. And I can
7 silence it, you know, within a second or two, but I
8 apologize if we get an interruption like that.
9 Which, unfortunately, is almost a certain to happen
10 in the first place. But that's just the way it is.

11 Q. Understood, and I appreciate the heads-up
12 on that. Again, if it is an important call that
13 you need to take, we can always take a break and go
14 off the record. But I appreciate the heads-up.

15 A. No, no, no, no. That's not going to
16 happen.

17 Q. And is there anyone else in the room with
18 you right now, Dr. Reader?

19 A. There's Anupam Sharma. Counsel is with
20 me.

21 Q. Anyone else?

22 A. No one else.

23 Q. Have you testified in relation to inter
24 partes reviews in the past? And by "inter parte
25 reviews," I will refer to those as IPRs as we have

1 been doing.

2 A. Yes, that has happened a number of times.

3 Q. Okay. Do you have an approximate count
4 of how many times that has occurred?

5 A. No. Again, I have not kept a log of
6 that. I would guess half a dozen times maybe.

7 Q. And do you know roughly the subject
8 matters of those previous testimonies?

9 A. Well, the work that I am involved in is
10 all aspects of digital media.

11 So the context for anything like that
12 as -- as being, you know, digital imaging, digital
13 video, digital audio, digital speech, transmission
14 of digital media. And I don't think there has been
15 IPRs with regard to design of equipment. But, you
16 know, in my work in general, it could involve the
17 design of televisions or setup boxes for video or
18 cell phones speech, for example.

19 Q. And were any of your previous testimonies
20 related to the streaming of video content over the
21 Internet?

22 A. Yes, I think that has happened several
23 times.

24 Q. Did you prepare for your deposition
25 today?

1 A. Yes.

2 Q. Can you describe how you prepared, of
3 course, without revealing any confidential
4 privileged information?

5 A. Yes. So I reviewed -- in brief, I
6 reviewed the documents that are listed as the
7 exhibits to my declaration, including, of course,
8 the declaration itself. And I reviewed the PTAB's
9 institution decision in this case.

10 Q. And approximately how long did you
11 prepare for that?

12 A. Oh, I have been spending some time on it
13 for a couple of weeks, but I don't know how many
14 hours.

15 Q. Can you give a rough estimation of the
16 hours, like, greater than 10, greater than 20?

17 A. I would think it -- certainly, it would
18 be greater than 20. But it could be 30 to 40
19 hours, just going back over everything. Because,
20 you know, it has been a year since -- well, a
21 substantial part of a year since the work was done
22 in the first patents.

23 Q. Understood.

24 And so as part of that, you reviewed all
25 of the exhibits that were cited in your

1 declaration; that's correct?

2 A. Correct.

3 Q. Did you meet with any attorneys or
4 counsel?

5 A. Yes. So counsel and I met yesterday for
6 the better part of the day, and we actually had a
7 meeting a couple of weeks ago, a day and a half.

8 Q. Did you speak with anyone else other than
9 those attorneys regarding preparations for this
10 deposition?

11 A. No.

12 Q. Okay. And have you spoken with anyone
13 employed by Peloton in preparation for today's
14 deposition?

15 A. Well, Janice has participated in some of
16 the meetings, but I don't think we have had an
17 extensive dialogue in the course of that.

18 Q. So over the past several weeks, would it
19 be accurate to say you've had about two meetings
20 with counsel in preparation?

21 A. That is correct.

22 Q. And, approximately, how long did you meet
23 with counsel to discuss this?

24 A. So, you know, the first meeting was a day
25 and a half, and then yesterday was roughly half a

1 day, approximately.

2 Q. And did you review any documents
3 specifically with counsel during those prep
4 sessions?

5 A. Well, to the extent that we discussed my
6 declaration and the exhibits cited in it, then,
7 yes. Yes, we discussed those, those documents.

8 Q. Did you discuss any documents outside of
9 your declaration that refreshed your recollection
10 of any facts or other details?

11 A. No, I don't think so. I don't think so.
12 (Exhibit 2 was marked for identification.)
13 (Exhibit 3 was marked for identification.)

14 BY MR. PALMIERI:

15 Q. Okay. And now I would just like to
16 introduce onto the record what I have marked as
17 Patent Owners' Exhibits 2 and 3.

18 Dr. Reader, if you just want to take a
19 quick look at those. Those are your declarations
20 submitted in support of the two different IPR
21 petitions.

22 Do you have those in front of you?

23 A. Yes, I have. Counsel has kindly printed
24 copies of those.

25 Q. And as I said before, happy to share them

1 on the screen as needed, but as long as you have a
2 physical copy, that's fine with me.

3 And just to note, let's look at --
4 looking at Exhibit 2. This is your declaration
5 submitted with the 1240 petition.

6 Do you have that document?

7 A. Yes, I do.

8 Q. And that is your signature on Page 1
9 there?

10 A. Yes, it is.

11 Q. Okay. And do you have any specific
12 corrections that you want to make to this at this
13 time?

14 A. No, I didn't -- like I said, there is one
15 or two typos in here that I noticed, and if we come
16 across them during the testimony today, then I
17 would be happy to point them out. But I did not
18 actually mark up an errata sheet because I don't
19 think -- I think it's obvious that they are typos
20 and I don't think it matters. There's nothing
21 major. So...

22 Q. Okay. And now I would just like to move
23 to what I have marked as Patent Owner's Exhibit 3,
24 which is your declaration for the 01241 petition.

25 Do you see that document?

1 A. Yes, I have a copy of that here too.

2 Q. And, again, that is your signature on the
3 first page; is that correct?

4 A. That is correct, yes.

5 Q. And other than the typos you mentioned
6 before, are there any specific corrections you want
7 to make in this? And actually, also excluding the
8 errata sheet that we mentioned previously.

9 A. I didn't look through this in preparation
10 for the deposition. So I don't know whether
11 they're the same there or not. I am not aware of
12 any changes.

13 Q. And if, as we go through it, we discover
14 some typos, you will point those out; is that
15 correct?

16 A. Yes.

17 Q. Okay. All right.

18 So now, just -- you can leave Exhibit 2
19 in front of you. While we won't refer to this
20 specifically, but we are going to go through some
21 background now, and you are welcome to turn to it
22 as needed.

23 So for your educational background,
24 Dr. Reader, you received a bachelor of engineering
25 from the University of Liverpool in 1970; is that

1 correct?

2 A. Correct.

3 Q. Can you describe what area of engineering
4 that was in?

5 A. So it was actually very -- the English
6 system is actually much more narrow than the U.S.
7 system. So you pick your major before you go to
8 university. And then, instead of having a system
9 in which you are selecting classes, the curriculum
10 is really established based upon the major that you
11 choose. And I chose something that they call
12 physical electronics.

13 So my classes were roughly 50 percent in
14 math. And then a wide range of classes all related
15 to the field of electronics, so semiconductors,
16 circuit design, and a few other classes to round
17 out my education, like thermodynamics, for example.

18 (Court reporter clarification.)

19 THE WITNESS: Including, for example,
20 thermodynamics.

21 BY MR. PALMIERI:

22 Q. Okay. And just to make sure I
23 understood, so your major in university was
24 physical electronics; is that accurate?

25 A. That's what they called it, yes.

1 Q. Okay. And then you received, in 1974,
2 your doctoral degree from the University of Sussex;
3 is that correct?

4 A. That is correct, yes.

5 Q. And your thesis was entitled "Orthogonal
6 Transform Coding of Still and Moving Images."

7 Is that accurate?

8 A. That's correct, yes.

9 Q. Can you describe the subject matter of
10 that thesis for me?

11 A. Certainly. And let me add that all of
12 the substantive work was actually done at the Image
13 Processing Institute at the USC in Los Angeles
14 where I was a visiting scholar.

15 The subject matter of the Ph.D. thesis
16 is, to describe it accurately, it's adaptive block
17 transform coding of images and video data. And at
18 that time, the approach of using transform coding
19 to code images and video was brand new. And before
20 I did my work, the way that that was being tackled
21 by almost everybody was to do a mathematical
22 modeling and statistical optimization of the math
23 model based upon measured statistics of the data.

24 And the observation of my thesis was that
25 that did not work very well because the statistics

1 of image data and video frames, which are a
2 sequence of still images, the statistics are what
3 are called "nonstationary." What that really means
4 is that the statistics are varying across the field
5 of the frame, and, in fact, this technique is in
6 use at this instant in time for both you and me
7 watching each other because what's happening right
8 now on this call is adaptive block transfer.

9 And I think it can be obvious to you that
10 the statistics of the blank wall behind me are
11 significantly different than the statistics of my
12 lips moving or the fine details of what's left of
13 my hair or the sharp contrast in edge between the
14 darkness of my jacket and the lightness of my shirt
15 and so on.

16 So my thesis work was to adaptively code
17 image data, and I was the first to use this with
18 realtime video data.

19 Q. Did you seek any patent protection for
20 this new technique?

21 A. No, we did not file -- people just didn't
22 file patents very much in that time, in that era.
23 You know, the fundamental work in image coding and
24 video coding that was being done at USC and a few
25 other universities, in the U.S. in particular, and

1 very considerable innovation happened -- very
2 profound innovation happened, and people --
3 university professors were not filing patents at
4 that time, and so that never was patented.

5 Q. I believe in your declaration, you did
6 later, though, file for a couple of patents.
7 You're the named inventor on several patents in
8 around the year 2000, I believe; is that correct?

9 A. They were filed, I think, in the mid
10 '90s, and related to -- really related, I think, to
11 hardware and chip design for implementing advanced
12 video compression. And they were for Samsung.

13 Q. Can you describe what you mean by
14 advanced video -- was that advanced video
15 compression?

16 A. Right. So, you know, my work in the
17 early '70s was, you know, very, by modern
18 standards, was very straightforward. It was novel
19 and original at the time, but it was very
20 straightforward. And what happened in that field
21 over a period of decades has been, the advances in
22 semiconductor technology have allowed the
23 algorithms to become very considerably more complex
24 and sophisticated, while yet still being capable of
25 being implemented in products that are affordable

1 by all. That is an evolution that has happened
2 over time.

3 Q. Understood.

4 And so after you received your
5 doctorate degree in 1974, did you have any other
6 formal education or formal degrees that you have
7 received since?

8 A. No.

9 Q. And do you currently hold any
10 certifications or accreditations?

11 A. Well, I have been involved in
12 standardization activities over 30 years. And I
13 have been accredited as an expert to various
14 standards bodies. And at this time, I am only
15 active in one standards body. But I think that has
16 been the most significant type of accreditation
17 that I've had.

18 Q. You mentioned you are active in one
19 standards body nowadays. Which standards body is
20 that?

21 A. I am IPR subgroup chairman for the China
22 National Standards Committee, which is called AVS.

23 Q. And what do you do in that role?

24 A. Well, the IPR subgroup is responsible for
25 a number of tasks. But, basically, what the IPR

1 subgroup does is investigate the technical
2 proposals being directed towards the development of
3 a next generation standard, and offer for the
4 committee not -- definitely not any legal advice,
5 because none of the group are attorneys.

6 (Court reporter clarification.)

7 THE WITNESS: Not legal advice.

8 But what happens in the standards
9 groups -- and this is true of international
10 standards groups and proprietary standards groups
11 where I've done the same kind of work -- the task
12 is to look at the detailed -- it's a very, very
13 finely detailed activity. It's looking at the
14 very, very, very fine technical details and saying,
15 you know, are there, in fact, patents that cover
16 this technology?

17 So this is something I have done for --
18 well, in total, I suppose I have done it just about
19 30 years at this point, I guess, related to various
20 international video coding standards for the ISO,
21 MPEG, and DVD developments, for the ITUs sequence
22 of standards known as H.264 or 5. And as I said
23 currently, for the China National Standards, or the
24 AVS.

25 ///

1 BY MR. PALMIER:

2 Q. Understood.

3 Going back to, I guess now it would be
4 right after the time of your graduation.

5 What were you doing immediately after you
6 received your doctorate degree?

7 A. Well, I received an offer for a job,
8 actually, a mile or two down the road from where I
9 am sitting at the moment. In the time frame, the
10 Ford Motor Company had a division called Ford
11 Aerospace, which had two principal kinds of
12 business. They had -- they were in the satellite
13 communications business, but for the Defense
14 Department, not for consumer applications in that
15 time frame. And they also were involved in
16 reconnaissance, and so they hired myself.

17 And at the time, the U.S. defense --
18 various defense departments in the three-character
19 agencies of Washington, D.C. were in a transition
20 from using film for reconnaissance to doing what we
21 call soft-copy imaging.

22 So we -- we, and I mean the United States
23 by "we."

24 We were in the process of beginning to be
25 able to do military surveillance, either strategic

1 surveillance -- and this is in the Cold War, so
2 being able to track what the Soviet Union was doing
3 from satellites, or perhaps from aircraft.

4 So the transition was going on to doing
5 that using soft-copy digital imaging techniques
6 instead of film. And so that's how I got hired.

7 Q. And that time frame was roughly 1975 to
8 1981; does that sound accurate?

9 A. Yes. I worked for Ford Aerospace for
10 three years, and then I went to a division of TRW
11 for three or four years.

12 Q. Who is TRW?

13 A. Gosh. I don't know what the initials
14 stand for. It was a major corporation at that
15 time. It was in the defense industry.

16 Q. Okay. Doing kind of the same work that
17 you had been doing at Ford Aerospace?

18 A. Right. And there were applications to
19 that, also are land-based, because, you know, we
20 were developing -- well, I was involved in the
21 initial development of the cruise missile
22 technology, for example. And I was involved in
23 what is known as battlefield management systems.

24 You know, the idea was that the troops on
25 the front line would be sending intelligence data,

1 including image and video data, back to the
2 generals so that the tactical planning on the field
3 could be performed as rapidly and as efficiently
4 and as safely as possible.

5 I mean, if you want an example, this
6 includes the fact that by this point in time in the
7 late '70s, the Defense Mapping Agency had mapped
8 the entire surface of this planet to a classified
9 accuracy. But it was possible, for example, using
10 the kind of systems I was working on, to be able to
11 calculate -- given a particular position within the
12 terrain of our troops or the enemy troops, it was
13 possible to show where, using the three-dimensional
14 terrain data, the radar shadows existed so that we
15 could, for example, advance upon the enemy, either
16 with troops on the ground or with low-flying
17 missiles or whatever, we could do so using the
18 three-dimensional terrain to shadow us until the
19 last possible moment before that. And so all of
20 this imaging was playing a role in those
21 development standards.

22 Q. Around this time, and maybe it's better
23 to phrase it as near the end of your time at TRW,
24 you began teaching at Santa Clara University too?

25 A. Correct, yes. So universities here have

1 what are called "early bird classes." It's
2 actually quite a struggle because they start at
3 seven a.m. and the idea is that people who are
4 working in high tech can gain an education in an
5 emerging field like my field, that they had not had
6 the opportunity to do they were undergraduate
7 themselves or master students or whatever.

8 And so these classes in emerging
9 technologies were offered at 7 a.m., and people
10 would come to class and get credits in a field in
11 which, like I said, they had not previously been
12 able to get an education.

13 Q. So this was -- you did this in addition
14 to working at TRW, or you transitioned to teaching
15 from TRW?

16 A. Oh, no. I was teaching class once or
17 twice a week at 7 a.m. and then going to work.

18 Q. Okay. And those classes, just to make
19 sure I understand, they weren't really for enrolled
20 students or maybe not enrolled undergraduates, but
21 more for working professionals to supplement their
22 education?

23 A. That's right. I mean, their corporations
24 were paying the universities, their staff to attend
25 these classes. And, of course, they were getting

1 regular university credits and paying regular
2 tuition so they could accumulate those. So
3 perhaps, you know, some of my students, no doubt,
4 were -- had an undergraduate degree but not a
5 master's degree, but by going to these early-bird
6 classes and other classes, they could accumulate
7 credits perhaps to get a master's degree. So it
8 was structured that way.

9 Q. Understood.

10 I would like you to look in -- if you
11 want to look in Exhibit 2, at Paragraph 14. This
12 will be Page 9 of that document.

13 And just let me know when you are there.
14 It should be pretty early on.

15 A. Which paragraph number did you say?

16 Q. Oh, sorry, Paragraph 14.

17 A. 14.

18 Okay. Yes, I am there.

19 Q. This describes what you were doing from
20 1990 to 2001; is that right?

21 A. That is correct, yes.

22 Q. And can you describe who you were working
23 for at this time?

24 A. So for the first few years I was working
25 Cypress Semiconductor.

1 (Court reporter clarification.)

2 THE WITNESS: Cypress Semiconductor. And
3 then I moved to work for Samsung Semiconductor for a
4 number of years. So I worked for Samsung. And then
5 in the last three years, two or three years of that
6 time frame, I was working for a startup company. It
7 was called -- they spelled it lower case, N as in
8 Nancy, and then DSP, all upper case, D, David, Sam,
9 Paul.

10 BY MR. PALMIERI:

11 Q. Can you describe what your work looked
12 like at those companies, assuming it was roughly
13 similar between them?

14 A. No. There was a fair amount of variation
15 in that, and in part because I had transitioned
16 from being pure about -- I think throughout my
17 whole career, including even at the very beginning,
18 there was an aspect of my career that was technical
19 marketing. Because just going back to set context,
20 you know, when I was working at Ford Aerospace and
21 TRW, the marketing aspect of that was writing
22 proposals to the federal government and winning
23 bids to do, on the one hand, specific studies, on
24 the other hand perhaps to actually design, at least
25 prototype, devices or systems.

1 So in the beginning at Cypress, I was
2 still -- I had my foot still on -- the weight was
3 still on the foot that was pursuing the technical
4 engineering foot, but that shifted to put more
5 weight on the sort of marketing foot when I moved
6 to Samsung, because Samsung really was, at that
7 point, they were going through the transition
8 because consumer electronics was clearly going to
9 go from being analog technology to digital
10 technology. And Samsung did not have an in-house
11 strength in digital technology at that time. And
12 so they hired a number of people, including myself.

13 So I had a marketing director title at
14 Samsung, but yet that was still an extremely
15 technical activity and included -- and, in fact,
16 some of my clients at Samsung included managing a
17 software team that was about 60 people.

18 So at Cypress, we began a project led by
19 myself to design a semiconductor chip that could
20 implement the emerging MPEG 1 video coding
21 standards for both video and audio, and implement
22 the emerging ITU standards for video conferencing,
23 including video and speech. And we got to the
24 point at which we had a cycle-accurate simulation
25 of the design that could -- I joked that this was a

1 chip with only five pins because it needed power
2 and ground, and it needed a single bit stream
3 coming in, and then just produce video and audio.

4 But that design was not taken to full
5 development in the market, unfortunately, because,
6 actually, the MPEG-1 standard never became
7 commercially successful in the marketplace. That
8 was a great disappointment. But so I architected
9 that and then led the hardware and software design
10 to do that work at Cypress.

11 At Samsung, as I said, the emphasis
12 shifted to a technical marketing role. But what I
13 was doing was, then, doing all of the planning work
14 and so on to help Samsung move toward their digital
15 consumer electronics products, the setup boxes for
16 digital storage that became DVD, and, obviously,
17 for digital televisions.

18 So what evolved in Samsung, was that
19 Samsung decided to do a chip just basically like
20 the one I had been doing at Cyprus. And I ended
21 up, as I said, managing the software team of that
22 effort for two or three years.

23 From that point on, the next thing that
24 happened was that Samsung acquired a small company
25 here in Silicon Valley and asked me to go help

1 manage that. And they had -- when I took it over,
2 they had reached a point where they had developed a
3 single board that could be put into a PC that could
4 do MPEG video and coding and decoding. But they
5 had no -- they had no market for it. So what I did
6 was I paired it up with probably what was the
7 first -- probably the world's first PC-based DVD
8 authoring software that came from a company in the
9 Bay area.

10 And so what I ended up creating was a PC
11 that -- with this hardware board installed and with
12 the software installed. It became the world's
13 first DVD authoring system on PC. And that was
14 kind of a breakthrough because, you know, DVD a --
15 this is in the 1997, '98 time frame, DVD's weren't
16 launched until '97. And DVD authoring systems were
17 a quarter of a million dollars from Toshiba or
18 somebody like that. So being able to do it on a PC
19 was a pretty radical advance into the marketplace.
20 So that's what I did there.

21 And then the last piece was the startup
22 company. The startup company had designed chips,
23 semiconductor chips that could deinterlace analog
24 NTSC video and put it on a progressive television,
25 progressive, progressive scan television screen.

1 The company saw this as a transition
2 between, you know, the traditional analog TV, which
3 actually really had terrible quality, and HDTV,
4 which in the end of the '90s was still considered
5 to be beyond ordinary people's financial reach,
6 just way too expensive.

7 So we created this chip, and I got to run
8 sales and marketing for it. And we were selling
9 the chip to TV manufacturers and DVD manufacturers
10 so that you could, together with paid television
11 that was progressive scan, interlaced scan, yet a
12 very much higher quality picture on the screen than
13 a traditional analog interlaced TV.

14 Q. All right. Thank you for that.

15 I want to go back to some of the points
16 that you brought up during that explanation.

17 In particular, you mentioned the MPEG
18 standard, the Moving Picture Experts Group standard
19 1. And I believe in 1990, you became an accredited
20 delegate to that group; is that correct?

21 A. That is correct, yes.

22 Q. Can you describe what you did as an
23 accredited delegate to that group?

24 A. Well, I really threw myself into that
25 wholeheartedly because I was a technical

1 contributor to the standard. And because the whole
2 purpose for being there was that my group at Cyprus
3 was doing a design in parallel with the development
4 of the standard to produce a chip that would
5 implement the standard, I particularly participated
6 in an implementation subgroup of MPEG whose job was
7 to review all of the proposals that the video
8 coding experts were doing, the audio coding experts
9 were doing, and vet them for practicality in terms
10 of was it really going to take to actually put this
11 on a semiconductor die at an acceptable price.

12 So the implementation subgroup was
13 saying, look, you know, if you want to do this,
14 then you're talking about -- you know, you may have
15 a very sophisticated algorithm, but this is the
16 state of the art in semiconductor technology right
17 now. And you are calling out for doing so many
18 million multiplies per second, and that is just not
19 going to be affordable. So you've got to find a
20 different way to do that.

21 And in that particular case, you can do
22 binary arithmetic multiplies by doing shifts and
23 adds, for example. So but it's that kind of
24 technical low-level technical detail that was going
25 on.

1 But because it is an incredibly political
2 environment in this international standards arena,
3 and because of the need to support the
4 United States' best interests, I got into the
5 position of being the head of delegation for the
6 United States, that then allowed me to participate
7 in the overall management of this committee, and at
8 times was able to very strongly advance the
9 interests of the United States researchers and
10 their companies at AT&T Bell Labs against, really,
11 you could only just describe it in sort of
12 political efforts by saying the Europeans or by the
13 Japanese to advance their technology into the
14 standard as opposed to what the U.S. wanted to do.
15 So I became head of the delegation for a couple of
16 years and participated in the management of MPEG as
17 well.

18 The third thing that happened was, and
19 I've always thought that the head of MPEG did it in
20 the hope that he would overwhelm me with so much
21 work that I could not do as much on the political
22 front with the head of delegation position, but he
23 asked me to be the editor of the MPEG-1 standard.

24 And so then I led a team of editors of
25 the video group, the audio group, and something

1 called the systems group. And edited the whole
2 final MPEG-1 standard, which has ended up being
3 published. We basically completed the work and the
4 standard made it through the bureaucracy of Geneva
5 and got published in '93. So I had three roles.

6 Q. And you were also, I believe, a cofounder
7 of the MPEG-4 standard as well? Was your role
8 different in that than it was for the MPEG-1?

9 A. Yes. Because, based upon the impact on
10 my work, my job, and my wife and kids, being the
11 editor of the MPEG-1 standard, I was, again, I
12 declined to be an editor from that point on. And
13 in the case of the next generation of this going
14 forward, I saw an opportunity to develop a new
15 generation standard with a rather different
16 approach. And there was a group of us who were
17 like-thinking about that.

18 And so I certainly was one of the people
19 who pushed to establish the MPEG-4 activity, and
20 then was asked if I would share it. And in the
21 first, probably, two and a half years, there was
22 just a single group that was essentially writing
23 the requirements and setting the framework for what
24 MPEG-4 would be, and so I headed up that group.

25 And then, upon the maturing of that

1 activity, then the video group took over developing
2 the MPEG-4 video part, and the audio group took
3 over the MPEG-4 audio part. There was another part
4 that was doing what we called synthetic natural
5 hybrid coding, where we were combining natural
6 imagery with synthetic computer-generated imagery.
7 So that was another part of it.

8 And there was also activity in face
9 recognition, and really the beginning of what,
10 today we are now calling augmented reality or
11 virtual reality. So we were actually doing that in
12 the MPEG-4 group. And so that is how that activity
13 went forward.

14 Q. Understood.

15 And I think this is right around that
16 time period as well, you are also involved in
17 creating the MPEG patent pool, the MPEG LA?

18 A. Yes, actually, when Cypress decided that
19 it was not a good decision to fund the full
20 development of that chip, then our group was
21 disbanded, and I had a brief period of consulting,
22 being a consultant. And it coincided with the fact
23 that the U.S. cable industries in particular, but a
24 lot of people in general, were looking at the issue
25 of how to manage all of the IPR related to the

1 emerging MPEG standards.

2 Q. Okay. Apologies, I don't want to
3 interrupt, but I just want to clarify.

4 "IPR" in this context meaning,
5 Intellectual Property Rights, correct?

6 A. Correct, yes.

7 Q. Sorry. Just to make sure because we're
8 talking about our interpartes reviews here a lot
9 here. So...

10 A. Sorry, yes. It could be confusing.

11 So, initially, what happened was
12 CableLabs, which is the R&D arm of the cable --
13 U.S. cable TV industry, hired me and a patent
14 attorney to develop a list of, potentially,
15 Standards Essential Patents, SEPs.

16 And so we did that task, and it continued
17 even after I was hired at Samsung. It was a very
18 major task to get this done. But, essentially,
19 what we did was to prepare a list of patents that,
20 between us, between my technical input and the
21 attorney's legal input, we thought were likely to
22 be Standards Essential Patents, and that -- and the
23 guy who started all of this at CableLabs ended up
24 leaving and founding the patent pool called MA LA
25 and MPEG LA where "LA" is licensing authority. And

1 he founded that, and so we really were the genesis,
2 if you like, of licensing for standards in that
3 area.

4 Q. And you mentioned in there that you
5 discovered the patents for this pool. So did you
6 and the attorney you worked with, you personally
7 searched through patents and found the patents in
8 the first place? Or were those provided to you
9 from someone else?

10 A. No, they -- when we began, I was the one
11 who provided, you know, keywords of searching,
12 because I could -- because I was interpreting the
13 underlying technology. In video, there is no
14 single algorithm because video -- or audio for that
15 matter, or speech for that matter, although,
16 speech, depending on -- let's leave speech out of
17 it. It's too complicated.

18 Q. Okay.

19 A. In the case of video coding, what we
20 refer to is the video coding that is performed. Is
21 performed by a set of video coding tools. And each
22 of these tools does some different but
23 complementary part of the overall task of coding
24 video data.

25 So I knew the right terms to use for

1 doing searching, and in that time frame, you know,
2 searching was -- there was no World Wide Web and
3 there was no Google Patent Search or something like
4 that. You did it all on the command line-type
5 tools that the industry, the patent search industry
6 at that time frame.

7 So I provided the tools. We ran the --
8 we had the searches run by companies who did that,
9 and then we started sifting through the results of
10 that. And in that time frame, we were doing it
11 with paper, not with computers.

12 Q. And so you performed that work for the
13 MPEG patent pool. And then in 2002, did you do
14 similar work for the H.264 standard?

15 A. Yes. The next instance of it was -- and,
16 of course, I was asked to do it because of the work
17 I had done earlier. Then, you know, in the 2002
18 time frame, the ITU, with a goal of video
19 conferencing, had teamed up with the ISO MPEG group
20 with a goal of consumer electronics. Video;
21 meaning television, DVD, and so on.

22 And so then there was a big discussion
23 going on about how many standards essential patents
24 were there and what was the licensing going to be
25 like and how complex was this going to be. And I

1 was invited as an individual expert to join the
2 committee and help the committee understand this
3 SEP situation that now this next generation of
4 standard was facing.

5 And ten companies commissioned me to
6 produce reports on something like eight different
7 video coding tools. So on a tool-by-tool basis, I
8 created the reports saying, look, here is this
9 video coding tool. Here is how it is developed.
10 Here's the situation with essential patents.

11 I created a patent database of my own at
12 that point in time, which included, of course, all
13 the patents that were publicly announced by MPEG LA
14 to be in their pool. But also involved searching
15 by me to go look for other patents from non-pool
16 members that could be considered standard
17 essential.

18 Q. You mentioned earlier also doing work
19 with the Chinese AVS standard.

20 Was that a similar type of arrangement,
21 similar work that you were doing?

22 A. Yes. That, then, followed, you know,
23 that followed in 2003, I think. I think that
24 started in 2003.

25 Q. You can look, I would say Paragraph 20 in

1 Exhibit 2, I think has that, it has 2003 if you
2 want to take a look.

3 A. Yes, that is correct. Yes. Yeah.

4 Q. Okay. And then in 2013, you did similar
5 work on the AV1 standard; is that correct as well?

6 A. That is correct, yes. Though I was asked
7 to do that same kind of -- the activity I was
8 describing already where, you know, I was looking
9 at the IPR related to a given video coding tool.
10 In -- I mean, this is in detail. Some of this is
11 very, very low-level detail that we're talking
12 about from a technical point of view.

13 Q. And then, finally, in 2017, similar work
14 with the H.265 or the HEVC standard as well?

15 A. Yes. A particular company that was
16 strong in the licensing business asked me to do the
17 same task over again, and I did that.

18 Q. Okay. And we have been talking -- you
19 know, you've just walked us through a number of
20 standards, and, you know, kind of set protocols
21 that you have worked on in the past. As you know,
22 at issue in the current petitions are two different
23 protocols.

24 I will call them the SIP standard,
25 session -- which stands for Session Initiation

1 Protocol, and the Session Description Protocol.

2 Are you familiar with those as well?

3 A. Yes, I am.

4 Q. And would you say they differ in -- or,
5 actually, sorry. Scratch that. Let me reask that.

6 Were you involved in developing either of
7 those protocols at all?

8 A. Not by attending the IETF meetings in
9 person the way that I had, for example, been
10 attending the other -- some of the other standards.
11 I wasn't involved in the IETF's development. In
12 that time frame -- beginning in the '90s, it was
13 very clear to us, meaning, the experts community,
14 coming from the traditional video/audio side, it
15 was very clear to us by -- well, by the time I even
16 started the work on MPEG-4, it was very, very clear
17 that the future was going to be video and audio
18 over IP Internet protocol.

19 So we, in general, were monitoring what
20 was happening in that field. Sometimes we were
21 interacting with those people because they weren't
22 experts in our field. You know, they were experts
23 in communication theory and in digital signal
24 processing and so on, but not necessarily in what
25 you have to do to get video and audio into human

1 eyes and human ears in real time. Which is a very
2 significant challenge.

3 So there was a lot of interaction like
4 that. But, basically, I, among others, were
5 monitoring what was happening with that rather than
6 being inside the development itself.

7 (Reporter clarification.)

8 THE WITNESS: I think I said being on the
9 inside something. Attending the meetings, something
10 like that. Monitoring, not participating in the
11 development inside the committee itself.

12 BY MR. PALMIERI:

13 Q. And so one more question.

14 So is there any known interaction or
15 partnership between the SIP standard and the SDP
16 standard and those other standards that you were
17 discussing earlier that you helped to develop?

18 A. I think that the standards groups
19 exchange liaison documents between them when that
20 is felt to be something that is very helpful on
21 both sides. So I think that the people who were
22 the heads of committees on those two sides, you
23 know, had formal -- conducted formal liaisons when
24 it was felt appropriate to do so.

25 So I think that that relationship

1 existed, but, you know, they -- I mean, both on the
2 international standard side, both of those are set
3 up by treaties and so on between nations, and I
4 think forced in Geneva. But that is a very, very
5 different standardization structure compared to the
6 IETF, which was, you know, I think, almost like
7 a -- initially, was almost like an ad hoc activity
8 that was developed between experts, you know, like
9 I said, in communication theory and so on.

10 MR. PALMIERI: Okay. We've been going for
11 a bit over an hour now. I think now would probably
12 be a good time for a break, maybe a five-minute
13 break if that works with everyone.

14 THE WITNESS: That's fine.

15 MR. PALMIERI: Okay. I think we can go
16 off the record.

17 THE VIDEOGRAPHER: Going off the record at
18 10:20 a.m.

19 (Recess taken.)

20 THE VIDEOGRAPHER: Back on the record at
21 10:32 a.m.

22 MR. PALMIERI: Okay. Thank you very much.
23 BY MR. PALMIERI:

24 Q. Dr. Reader, before the break, we were
25 discussing the SIP and SDP standards, as well as

1 the different standards that you had helped to
2 author and analyze previously.

3 My next question is whether there is any
4 inherent interoperability between the SIP and SDP
5 standards and the different standards that you were
6 discussing earlier.

7 A. No. I don't think there is. In -- I
8 don't think there is what I would call
9 interoperability. In the '90s, the international
10 standards bodies started developing standards for
11 the carriage of traditional digital media over IP,
12 meaning Internet protocol. So that was what that
13 side of the business was doing in that time frame.

14 Q. Apologies to interrupt.

15 To clarify, the international standards
16 there are the SIP and SDP standards that we have
17 been discussing, or the earlier ones?

18 A. No, I'm referring -- when I say,
19 "international standards," what I am referring to
20 are the standards that are developed by either ISO
21 or ITU.

22 Q. And do those include the SIP and SDP
23 standards?

24 A. No, they don't.

25 Q. Okay. And apology. I will turn it back

1 to you if you wanted to finish your thought.

2 A. No, I had actually concluded that.

3 Q. Okay. Excellent.

4 So -- and this is the follow-up on that
5 interoperability point.

6 So it would require some modification to
7 a system to implement both the SIP or SDP standard,
8 as well as one of those international standards
9 that we discussed earlier?

10 A. Well, no. Because the -- you know, in
11 terms of communication, communication takes place
12 in layers. And the layers are reasonably
13 self-contained. So if -- so let's try to make an
14 example here.

15 Within MPEG, so just within ISO MPEG, the
16 standards that were developed in the '90s had three
17 so-called parts to them. There was a video part,
18 an audio part, and then something called a systems
19 part. And the systems part was a set of tools that
20 allowed video and audio to be multiplexed together,
21 video and audio to be buffered for transmission,
22 both ends in a compatible way for the carriage of
23 metadata, and then timing information to provide
24 for realtime synchronization of both the
25 presentation of the media and the synchronization

1 of the video media with the audio media.

2 So that in itself was sort of a complete
3 package at a couple of layers, while yet, the video
4 coding part could be considered independent and
5 could be applied in a different way.

6 So just a few minutes ago, I described
7 the idea that the standards, the international
8 standards bodies started looking at the carriage of
9 their content over Internet protocol. And that was
10 an activity that was going on.

11 Within the consumer video industry, when
12 you take the way in which digital video is actually
13 broadcast, then, considering the terrestrial
14 broadcasting, the MPEG audio, the MPEG video, and
15 the MPEG systems are adopted by another committee
16 in the U.S. called ATSC, which is the committee
17 that, if I high-definition television and
18 broadcasting over the air. And the transmission
19 layer in this case was provided not by ISO and
20 MPEG, but by the ATSC adopting their suite of
21 standards.

22 And so then the MPEG standards content is
23 cared over the ATSC transmission standards. And
24 the same thing can happen between, you know, the --
25 kind of the same thing happens with the carriage of

1 digital media data over a different transmission
2 environment, which is the World Wide Web or the
3 global Internet.

4 So you absolutely do have a situation in
5 which the video coding standards and the audio
6 coding standards can be -- that are created by ISO
7 and ITU can be carried over the Internet protocol
8 standards established by the IETF.

9 And that is how, today, you know, you're
10 watching Netflix or YouTube or other streaming
11 media. That's how that was done.

12 Q. So just to make sure I understand, the
13 SIP SDP standards could be operating at a separate
14 layer from those international standards that we
15 were discussing earlier?

16 A. That's a good way to put it. And,
17 certainly, on -- I'm not sure whether the
18 terminology applies to the language of IETF, so I
19 will speak to the traditional, I'll say
20 broadcasting side and so on.

21 What we call -- we call the coding of,
22 say, audio and video data into a coded bit stream,
23 we call that source coding, S-O-U-R-C-E, coding.
24 While carriage of that coded bit stream over some
25 kind of communication network, that is called

1 channel coding.

2 And historically, those two have been --
3 those two have been distinct. There isn't -- there
4 isn't some kind of coding technique in which those
5 two things, the source coding and the channel
6 coding, are wrapped up together in a single
7 standard or in a single suite of algorithms. That
8 is not the traditional method.

9 Q. Understood. And I appreciate that
10 explanation.

11 I would like to move now into your
12 declarations again. And for the purpose of this, I
13 just want to first look at what I have marked as
14 Exhibit 2, your declaration in the 1240 case. And
15 in particular, on Page 7, there is a table there,
16 and if you can just let me know when you have
17 opened up to that page.

18 A. I have it.

19 Q. And that table there right after
20 Paragraph 5, that sets out the grounds for
21 challenging the claims of the '427 patent that are
22 listed there; is that correct?

23 A. That is correct.

24 Q. And there are four total grounds; is that
25 correct?

1 A. Yes.

2 Q. And within those grounds, there is a
3 total of five different references that are used in
4 various combinations; is that right?

5 A. That is correct, yes.

6 Q. And the first reference in there, Ueda,
7 U-E-D-A, do you see that reference?

8 A. Yes.

9 Q. And that is -- that is used in each of
10 the grounds challenging these claims, correct?

11 A. Correct.

12 Q. And to your knowledge, does Ueda there
13 refer to U.S. Patent application Publication
14 No. 2009/0094321? I'm sorry. I might have that
15 number slightly off. Hold on.

16 And you can look back -- if you jump to
17 Page 5.

18 A. Yeah, the table on Page 5 has that.

19 Q. Okay.

20 A. Exhibit 1003.

21 Q. And jumping back to the table on Page 7
22 again, there is also what is referenced as the SIP
23 standard in that table as well?

24 A. Yes.

25 Q. And that is, again, used in all four of

1 the grounds?

2 A. Correct.

3 Q. And then there is an additional three
4 references in there that are used in different
5 varieties, the first being the SDP standard.

6 Do you see that?

7 A. Yes.

8 Q. Then there is a reference to
9 Bechtolsheim, which is U.S. Patent application
10 Publication No. 2009/0100496?

11 A. Yes.

12 Q. And then, finally, there is a reference
13 to a last reference called Cohee, which is U.S.
14 Patent Publication No. 2010/0010884.

15 Do you see that reference as well in
16 there?

17 A. That's correct, yes.

18 Q. And now I'd like to just jump over to
19 your declaration in the 1241 case. This is marked
20 as Patent Owner's Exhibit 3. And, again, this will
21 be on Page 7.

22 MR. SHARMA: Just to make one quick
23 interruption to check with the court reporter. Is
24 the microphone working okay now?

25 THE REPORTER: Yes, it is working great.

1 It's just at the end of the sentences, he drifts
2 off, so just speak a little louder, but the mike is
3 great. The quality is great.

4 MR. SHARMA: Thank you.

5 BY MR. PALMIERI:

6 Q. Dr. Reader, can you just let me know when
7 you are in Exhibit 3?

8 A. Yes, I am in Exhibit 3.

9 Q. And you see there on Page 7, a similar
10 table to what we were just looking at, correct?

11 A. Yes.

12 Q. And this lists the patents -- or,
13 apologies. This lists a series of grounds
14 challenging the claims of, again, the '427 patent,
15 correct?

16 A. Right. The claims, what's different is
17 that the claims in the two different petitions are
18 not the same.

19 Q. So there are a different set of claims
20 challenged in each of the petitions, correct?

21 A. Correct, yes.

22 Q. But each of the grounds between the two
23 references rely on the same combination of
24 references; is that correct?

25 A. That is correct.

1 Q. And, obviously, they are applied to two
2 different claims, but the grouping of references is
3 the same for each of the grounds?

4 A. Yes.

5 Q. So as I refer to these, just for the sake
6 of simplification, is it safe that if you make a
7 comment or conclusion regarding one of these
8 references, that it would apply equally between
9 both declarations?

10 A. I think that is correct, yes.

11 Q. And, obviously, if at any time you
12 disagree or think it applies differently, please
13 let me know. But just for the sake of simplicity,
14 if you make a statement about a reference in one
15 declaration, is it safe to conclude that that
16 applies equally to the second declaration as well?

17 A. I think that is correct, yes.

18 Q. Okay. So we will move forward with that
19 understanding, and, of course, you let me know if
20 you think that changes at any point. But I think
21 that will simplify how we go through these quite a
22 bit.

23 (Exhibit 1 was marked for identification.)

24 MR. PALMIERI: And now I would like to
25 mark as Exhibit -- Patent Owner's Exhibit 1. This

1 is the '427 patent that we have been referring to.
2 This is U.S. Patent No. 9,769,427.

3 Dr. Reader, can you please bring that up
4 and let me know when you have it up in front of
5 you.

6 A. Yes, I have that in front of me now.

7 Q. Okay. And do you recognize this
8 document?

9 A. Yes.

10 Q. Do you know approximately the first time
11 that you saw this document?

12 A. About just over a year ago.

13 Q. To your knowledge, did you ever review
14 this patent in connection with any of your patent
15 pool work that we had been discussing earlier?

16 A. No, I hadn't seen it before.

17 Q. And prior to about a year ago in
18 connection with these petitions, do you recall ever
19 seeing this patent?

20 A. No, I had not seen it before.

21 Q. Do you recall seeing any of the other
22 priority documents that are cited on the face of
23 that patent?

24 A. You mean like the foreign application?

25 Q. Let me clarify that. Do you recall

1 seeing where it says at Element 30 on the first
2 page, the foreign application priority data. Do
3 you recall ever seeing that foreign application?

4 A. No, I had not seen it.

5 Q. And in Element 86 there, a few lines up,
6 it references a PCT application. Do you recall
7 ever seeing that PCT application?

8 A. I had not seen that.

9 Q. Have you ever reviewed either of those
10 priority documents in connection with your work in
11 these petitions?

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

13 Q. So you have never reviewed or looked at
14 that Japanese priority document?

15 A. No, I have not.

16 Q. And you've never looked at the PCT that
17 is referenced there?

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

19 Q. Okay. I would like to go back to your
20 Exhibit 2. And this is your declaration in the
21 1240 case. If you could open it up to Page 12,
22 there is a heading on that page "Legal Standards
23 and Background." And just let me know when you get
24 there.

25 A. I am there.

1 Q. Okay. In Paragraph 25, you set forth a
2 definition for a person of ordinary skill in the
3 art. And for the purpose of this, I will refer to
4 as either POSITA or a POSA. I think throughout
5 this, you refer to a POSITA. But you see that
6 definition in there?

7 A. Yes.

8 Q. And can you please describe what you
9 believe a person of ordinary skill in the art would
10 be?

11 A. Well, I think it is just expressed
12 succinctly in this Paragraph 25. You know, it is a
13 hypothetical person of ordinary skill in the art at
14 the time of the alleged invention. And as it says,
15 the art is the field of technology to which it is
16 related.

17 (Reporter clarification.)

18 THE WITNESS: Related.

19 I'm actually having to sit a little bit
20 back because of holding the document in front of
21 the table. There is some danger of me holding the
22 document over the microphone, so I'm sorry. I'm
23 just wrestling with this exhibit a little bit.

24 BY MR. PALMIERI:

25 Q. Okay. And so, Dr. Reader, can you then

1 jump down to Page 16 of your declaration here.

2 A. I'm there.

3 Q. And on this page and then the following
4 page, do you give a definition of what you believe
5 a POSITA for the present petitions would be?

6 A. That's correct.

7 Q. And can you describe that in your own
8 words?

9 A. Let me just take a moment, please.

10 Q. Um-hmm.

11 A. I think that is expressed here in my
12 Paragraph 37. So basically, it says that I have
13 considered the prior art and approaches in the
14 prior art and the types of problems that have been
15 addressed in the past and how that has evolved.
16 And then looking at the sophistication of the
17 technology and the education required to be a
18 person of ordinary skill in the art.

19 And then, as it says here, I have placed
20 myself back in the time of the alleged invention
21 considering the technology available at the time
22 and the engineers and professions in the field with
23 whom I have worked and their level of education,
24 and so on.

25 So that sets the context for what the

1 person of ordinary skill in the art should be, and
2 that led me to say, yes, I think, you know, in
3 terms of being working in the field and the
4 sophistication and state of the art and so on in
5 the field, that having a bachelor degree in an
6 appropriate field like electrical engineering or
7 computer science and two to three years of
8 experience researching, designing, or developing
9 content delivery systems, and related to that the
10 hardware and software or firmware that it takes to
11 do that.

12 That that is basically what the skills
13 and education level of a POSITA should be, or
14 something that amounts to the same thing.

15 Q. And you refer in here to, in
16 Paragraph 38, the time of the alleged invention.

17 Do you have an opinion on when that time
18 is?

19 A. Well, we see that, you know, the Japanese
20 filing date, the foreign application priority date
21 that we were looking at just a moment ago is
22 November 18, 2008, so that sets the time frame for
23 considering who a POSITA would be.

24 Q. And just to double-check, that date would
25 be November 18, 2008 for that Japanese application,

1 and I'd ask you, you can look to Paragraph 41 of
2 your declaration if you would like.

3 A. That is what it states, yes.

4 Q. Okay. And to check, you believe that you
5 fit the definition of a POSITA at this time period?

6 A. I think so, yes.

7 Q. Okay. And you make a reference to, I
8 believe, related -- related hardware, software, and
9 firmware.

10 Do you have any opinion on what would be
11 included within that general label?

12 A. Well, I think it is important to
13 understand that, in this field, there's a couple of
14 things going on. I think I already mentioned
15 earlier today that, actually, the state of the art
16 in underlying semiconductor technology has been a
17 major factor in the evolution of this field because
18 the number of multiplies per second in an example
19 that you could do in, say 2008, was very different
20 than the number of multiplies per second you could
21 do in a single semiconductor chip 10 years earlier.
22 And it wasn't even possible to do a multiply on a
23 single chip until TRW, in fact, introduced a single
24 chip multiplier in the late 1970s.

25 So what has evolved over time, and it

1 does depend on the application, because, for
2 example, you know, the military has a significantly
3 bigger budget than an ordinary family at home. So
4 the military can do things, you know, by spending a
5 ton of money that you and I wouldn't be able to
6 spend that kind of money on.

7 But the balance between -- the reason it
8 states here hardware, software, and firmware, is
9 that the balance between those things in terms of
10 how to implement this capability has been evolving,
11 and fortunately, in a very positive way, but has
12 been evolving throughout this whole period that
13 we're talking about here.

14 So when you pick a point in time like
15 2008, then you say, okay, so what was it you could
16 do in 2008 that you couldn't do in 1998, and isn't
17 as much as you could do in -- this year.

18 Q. Understood.

19 Do you have a rough idea of when you
20 would have first met this definition of a POSITA in
21 your experience?

22 A. Well, you know, as we discussed, I have
23 been deposed a lot of times, and that is because I
24 have written a lot of expert reports and
25 declarations, and this has been discussed -- it's

1 been discussed over and over again as to what is
2 realistic? What really makes -- what really is
3 actually, I'm going to say supportable, to say,
4 look, the person who could really understand this
5 would have this much education or this much
6 experience, and it would be specifically in certain
7 given areas of the technology.

8 And so this definition here is something
9 that was discussed between me and counsel during
10 the preparation of this. Like I said, somewhat --
11 something like a year, beginning something like a
12 year ago. And this definition is quite consistent
13 with what I have used in other declarations and
14 expert reports.

15 Q. Understood.

16 I would like to jump back a little bit
17 earlier in your declaration here, back into the
18 Legal Principles section. And in particular, on
19 Page 14 in the section that begins with
20 "Obviousness." Just let me know when you are
21 there.

22 A. I'm there.

23 Q. And you provide in this section, your
24 understanding of obviousness, which I don't think
25 we need to go over in significant detail right now,

1 but I want to ask a couple questions on some of
2 these subpoints. In particular, in Paragraph 33 on
3 Page 15, you make a reference to "inherency" in
4 prior art references.

5 Do you see that?

6 A. I do.

7 Q. And throughout your declaration, you rely
8 on inherency for several features; is that correct?

9 A. Yes. That happens multiple times.

10 Q. So would it be fair to say that if you
11 don't refer to something as being "inherent," then
12 you believe that it was explicit in these
13 references?

14 A. Not without looking at individual cases,
15 I would not agree to that, no.

16 Q. Okay. Moving on to Paragraph --
17 apologies. Moving up to Paragraph 31. Let's see.
18 In the last sentence of it, in the last line right
19 before Paragraph 32, it mentions "whether the
20 claimed invention as a whole would have been
21 obvious."

22 Do you have an opinion on what the phrase
23 "as a whole" means in the context of obviousness?

24 A. Yes. I think what matters, then, and I
25 think there has been a lot of -- what I have read

1 is -- over the last few years, there has been quite
2 a lot of legal discussion on this point, all the
3 way up to the Supreme Court.

4 The key here is the, you know, is that
5 "as a whole" means that as a whole considering the
6 prior art. Given what is in the prior art, is
7 that, taken as a whole, obvious to a person of
8 ordinary skill in the art. That is the criteria
9 for doing the analysis and reaching the
10 conclusions.

11 Q. So would it be your understanding that a
12 patent element should not be taken out of context
13 of the remaining elements? Does that apply to what
14 you understand "as a whole" would mean in this
15 context?

16 A. I think that -- let me try to answer your
17 question this way: I believe that, if you take a
18 claim as a whole, then you cannot perform an
19 analysis in which you just take an individual
20 element and do some kind of matching of that
21 element to some piece of technology, and then
22 independently go off and take another element and
23 do that exercise reaching whatever conclusion you
24 do on that against some piece of prior art.

25 You can't do an exercise in which you do

1 that for one limitation after another, possibly
2 pointing to this piece of prior art or that piece
3 of prior art as in going element to element, and
4 then say, okay, I finished the job. This is done.

5 Because if those -- if, in fact, by doing
6 that, you effectively, from a technical point of
7 view, pointed in different directions to each piece
8 of prior art that you believe you've matched the
9 elements up to, then the claim as a whole wouldn't
10 be rendered obvious by the collection of all those
11 pieces of art that you pointed to.

12 You -- my understanding is, and the
13 exercise that I performed in preparing this
14 declaration and offering my opinions is to say,
15 yes, everything -- let's say it this way,
16 everything hangs together. Everything is, as a
17 whole, obvious, based upon the prior art.

18 Q. Understood.

19 In addition in these declarations, you
20 also discuss claim construction a fair amount. And
21 in particular, this begins on Page 26, if you want
22 to turn there. And just let me know, of course,
23 when you are there.

24 A. I am there now.

25 Q. Okay. And can you describe in your own

1 words what you believe "claim construction" means
2 in the context of these IPR petitions?

3 MR. SHARMA: Objection; form.

4 BY MR. PALMIERI:

5 Q. Let me rephrase that.

6 Can you explain your understanding of
7 what "claim construction" means as applied to -- to
8 a patent?

9 A. I think this is covered, if you look at
10 Page 13, in my Paragraph 26.

11 So for an IPR, the claims must be
12 construed in accordance with the ordinary and
13 customary meaning as understood by a POSITA. That
14 is provided -- that's a legal point provided to me
15 by counsel.

16 Q. And you understand that claim
17 construction should be both the text of the patent
18 specification, the claim language itself, and the
19 prosecution history of the patent?

20 A. And that's correct. And that is also
21 expressed in this paragraph.

22 Q. Going back, then, to Page 26, I believe
23 it was. You have proposed in here three terms for
24 claim construction; is that correct?

25 A. No, I don't think that is correct. There

1 are three terms discussed here, but I did not
2 propose three claim constructions.

3 Q. Okay. So do you propose a claim
4 construction for the term "equipment specification
5 information"?

6 A. Let me just read to you what it says.

7 So Paragraph 63, "My opinion for the
8 purposes of this petition, this claim term should
9 be construed to mean an identifier for identifying
10 the user equipment."

11 Q. And why did you -- apologies. I didn't
12 mean to interrupt.

13 A. No, I was just going to say that I -- you
14 can, then, see that I follow on here and explain
15 what I mean by that.

16 Q. So in your opinion, have you posed a
17 claim construction for the term "equipment
18 specification information"?

19 A. That is the intent of this Paragraph 63.

20 Q. Okay. And is it accurate to say that
21 proposed construction is, as identified on
22 Paragraph 63, "an identifier for identifying the
23 user equipment"?

24 A. 63 is an example, yes.

25 Q. And is there -- do you have an opinion on

1 why a claim construction is required for the
2 purpose of this petition for this term?

3 A. No, I don't have an opinion on that.

4 Q. So may I, then, ask why you have included
5 a construction in your declaration?

6 A. I think it must have come about by
7 discussion with counsel that it was appropriate to
8 put there.

9 Q. Okay. And did you come up with this
10 construction on your own?

11 A. No. I think this construction came about
12 as a result of discussions that I had with counsel
13 in the early part of the project.

14 Q. Okay. So can you say whether you
15 determined this construction, or whether this
16 construction was provided to you?

17 A. No. I'm not sure.

18 Q. And if we move on to the next page, and
19 in particular, Figure 7, which is reproduced here
20 from the '427 patent.

21 Do you see that?

22 A. I do, yes.

23 Q. And part of the proposed construction is
24 "an identifier for identifying the user equipment";
25 that's correct?

1 A. That's correct, yes.

2 Q. You've highlighted in red two elements of
3 this figure.

4 Can you explain in your own words how
5 those highlighted elements fit within your claim
6 construction?

7 A. So what is in here is the -- it's part of
8 the SIP invite message, and it is identifying one
9 of the participants. I'm sorry. "Participants" is
10 identifying one of the participants in a particular
11 communication, and the identification consists of
12 an address of that participant.

13 So that identifies -- for the purposes of
14 the communication established with the session
15 setup, that identifies the equipment. In this
16 example given here, of one of two participants in
17 an exchange.

18 Q. So by identifying -- let me rephrase that
19 real quick.

20 Would you agree that identifying the
21 participant here is equivalent to identifying the
22 user equipment as proposed in the construction?

23 A. Well, you'll notice it is not identifying
24 the person by name. If you look at the first
25 instance in Figure 7, there is a "from" code and

1 the name "Alice." So that would identify one of
2 the people who is going to be in this exemplary
3 call, but then the "SIP: Alice@Atlanta.com" is
4 identifying the user equipment, because that is how
5 the system is going to identify the equipment
6 that -- where Alice is connected from. Let me try
7 and say it that way.

8 Q. So that segment, which begins with "SIP"
9 within the brackets there, specifically identifies
10 a user equipment?

11 A. That is identifying the user equipment
12 that is used within the SIP protocol to set up the
13 session for communication.

14 Q. Okay. Moving on now. I would like to
15 move on to Page 28.

16 And this is a term -- it is quite a long
17 term, but it says, "The one or more connection
18 control servers executes a process for guaranteeing
19 a communication bandwidth required for transmitting
20 content data as a process for establishing the
21 connection."

22 Do you see that term?

23 A. I see that, yes.

24 Q. And have you proposed a construction for
25 this term?

1 A. No, I did not.

2 Q. Okay. What do you discuss in this
3 Paragraph 64?

4 A. What's discussed in this paragraph, first
5 of all, as you can see at beginning, I received
6 advice from counsel regarding this term, and that
7 advice or this information from counsel was that,
8 at least it should cover the embodiments that are
9 disclosed in the '427 patent itself.

10 So then this Paragraph 64, following on
11 from that is, then, discussing what it is that the
12 '427 patent discloses in its embodiment related to
13 this term.

14 Q. So you don't believe that this term
15 requires any construction, this section simply sets
16 out the plain and ordinary meaning of the term?

17 MR. SHARMA: Objection; form.

18 THE WITNESS: This Paragraph 64 sets out
19 how I interpreted this term -- sorry, this -- yes,
20 this term, based upon review of the claim and review
21 of the patent specification itself.

22 And I'm aware that in my work that a
23 patent applicant is entitled to be their own
24 lexicographer, and they are entitled to come up
25 with a definition of terms that they find is

1 appropriate to describing their alleged invention.

2 So what is -- what seems to be described
3 here -- and we can go down and look at the '427
4 specification if you would like -- but it seems
5 here that the patent discloses -- as a minimum,
6 discloses how one should interpret this language.

7 BY MR. PALMIERI:

8 Q. And in your opinion, that interpretation
9 should be "a standard process performed by SIP
10 servers using SIP messages"; is that correct?

11 A. That is the conclusion that I reached
12 based upon reading the referenced sections of the
13 specification that are in the middle of this
14 paragraph. And those sections seem to be the only
15 place -- seem to me to be the only place where one
16 can find the right interpretation of this language.

17 Q. And can you describe this standard
18 process that you are pointing to in this paragraph?

19 A. Let's go to the '427 patent itself.

20 Q. And that would be Patent Owner's
21 Exhibit 1.

22 A. I think we are best looking at the
23 citation in Column 15.

24 Q. And would that be Column 15, Lines 35
25 through 40, which you cite in here?

1 A. I am looking at it a little earlier to
2 get context. If you can give me a minute or two.

3 Q. Yeah, sure. Take your time.

4 A. Thanks.

5 Let me begin by saying that it is kind of
6 a good idea to read a little bit earlier than that
7 to set the context, because if you begin with -- if
8 you actually begin Column 15 in the paragraph that
9 begins Line 14, then this lays out kind of a nice
10 sequence of events that tells you how you get to
11 the pinned cite that's actually in my declaration.

12 But it is telling you that the -- if we
13 begin at 14, and the paragraph beginning at Line 14
14 and the paragraph beginning at Line 21, those are
15 talking about the service control features, part
16 40.

17 So this is where the process actually
18 begins. And so that Part 40 performs certain
19 functions that relate to the language that we're
20 discussing here.

21 Q. And if I can just interrupt you for one
22 second, there.

23 Also on that line -- is that 14? Sorry,
24 sorry.

25 Please continue, actually. I think I

1 just read ahead a little bit.

2 A. Okay. And then the part 40 passes the
3 result of its work to the core IMS part, 30, that
4 is the core IMS, the core IMS part is passed this
5 information, and then in turn, beginning on the
6 line of paragraph that begins, then, Line 29, the
7 core IMS part 30 then passes the information down
8 to the transport functions, part 80.

9 Q. And if -- apologies. Let me just
10 interrupt for a second there.

11 So on Line 26 in there, it notes, "The
12 bandwidth guarantee instruction is transmitted as
13 an OK message of a SIP message"; is that correct?

14 A. That's correct, yes.

15 Q. So the bandwidth guarantee instruction is
16 then -- is passed as a SIP message?

17 A. That is what it says, yes.

18 Q. To the transport function part.

19 And that's on Line 30.

20 A. Just one second.

21 Q. Okay.

22 A. Well, we get the complete story hereby,
23 as you say, and including the fact that the
24 bandwidth guarantee instruction is transmitted as
25 an OK message and a SIP message then, and that is

1 how it gets from 40 to 30, right?

2 Q. And does it say the bandwidth guarantee
3 process itself is executed by the SIP messages?

4 A. What it says is that part 40 is -- just a
5 moment.

6 The paragraph beginning on Line 14 is the
7 set of steps that part 40 goes through to prepare
8 what is eventually going to be transmitted by this
9 SIP message. So the SIP message can't execute
10 anything. It is not a -- it's just a message.

11 Q. The SIP message won't be executing the
12 bandwidth guarantee process?

13 A. No. A communication message is not
14 something that executes; processes execute things,
15 not messages that are sent between processes.

16 Q. Would it be accurate to say that the
17 transport function part is what is executing the
18 bandwidth guarantee function?

19 A. Well, it begins by doing what is
20 described in the paragraph at Line 14, right? So
21 it does certain things as described in that
22 paragraph, and then sends the result of that to the
23 IMS core part 30 using a SIP message for that
24 transmission in Lines 26 to 27.

25 And then starting at 29, "Upon receiving

1 the bandwidth guarantee instruction, the core part
2 transmits to the transport functions part the
3 received communication bandwidth information and
4 communication channel specification information to
5 specify the communication channel," right?

6 So that -- so the part 30 forwards this
7 information from the part 40, and it forwards it to
8 the transport functions part 80, right? And then,
9 starting at Line 35: "Thus, the transport functions
10 part 80 executes a process to guarantee the
11 communication bandwidth represented by the received
12 communication bandwidth information on the
13 communication channel specified by the received
14 communication channel specification information."

15 And this is current. And then in
16 parentheses, it says, "(bandwidth guarantee
17 process.)" But if I may continue, we then have:
18 Upon completion of that bandwidth guarantee
19 process, "the core IMS part 30 transmits a
20 transmission preparation completion notification to
21 the user equipment... then "the transmission
22 preparation completion notification contains the
23 received media delivery specification information
24 and play-list information." And "the transmission
25 preparation completion notification is transmitted

1 as an OK message of a SIP message."

2 So that is the complete path from the
3 part 40, which begins the process, to sending it to
4 the part two, which is the recipient.

5 Q. Okay. I would like to go back to your
6 declaration, Exhibit 2 again, on Page 29.

7 A. Yes, I'm there.

8 Q. Okay. And this term is "at a same
9 time ... transmitting the play-list
10 information ... to the user equipment, which has
11 transmitted the content delivery request."

12 Do you see that section at the top of the
13 page?

14 A. I do, yes.

15 Q. Okay. And have you proposed a
16 construction of this term?

17 A. Just one moment.

18 Well, again, if you look at -- if you go
19 to the next page, I mean, I'm not proposing a
20 construction. I don't have an opinion on that.
21 And, again, I received advice from counsel that, at
22 least, this claim term is to cover what is
23 disclosed in the '427 patent embodiments. And so
24 then there's another discussion of that based upon
25 that beginning position.

1 Q. Now, I am -- let me just see here.

2 Again, here on the end of Paragraph 67,
3 you end this sentence by saying, "The timing of the
4 OK messages with respect to the process bandwidth
5 guarantee process is a standard process performed
6 by SIP servers using SIP messages."

7 Similar to the bandwidth guarantee
8 process you discussed earlier.

9 A. That's correct.

10 Q. Okay. And you note in here the -- sorry,
11 I'm just trying to find the paragraph.

12 In Paragraph 66, you point to an
13 amendment made by the patent owner during
14 prosecution.

15 Do you see that?

16 A. Yes.

17 Q. And there, the "Patent owner
18 characterized claim as stating that 'the first
19 transmitter is configured to transmit play-list
20 information at a same time that the one or more
21 connection control servers executes a process for
22 establishing the connection.'"

23 Do you see that?

24 A. Yes, I do.

25 Q. And then in the next sentence you cite to

1 the patent owner's argument. And in particular, a
2 portion of it that says, "The present system can
3 perform the process of establishing a connection
4 and transmitting play-list information together in
5 order to deliver the play-list information to the
6 user immediately when the connection is
7 established;" is that correct?

8 A. Yes, and it continues to say why that is
9 positive. It says, "Thereby improving the user
10 experience." That is what patent owner argued.

11 Q. And then going, again, to the last
12 sentence of Paragraph 67, you state that, "The
13 specification does not elaborate further on the
14 timing of transmitting the play-list information
15 relative to executing the bandwidth guarantee
16 process;" is that correct?

17 A. Yes.

18 Q. Okay. And the portion that we just
19 discussed above, the argument in the prosecution
20 history, that is about timing with respect to
21 the -- sending a play-list information along with
22 the connection process; is that correct?

23 A. That's what that says, yes.

24 Q. And the connection process, according to
25 the claims and the patent, is separate from the --

1 the play-list -- apologies. Let me strike that and
2 resay that.

3 The connection process is separate from
4 the bandwidth guarantee process according to the
5 claims?

6 A. Would you like to go to the claim
7 language and --

8 Q. Yes. And let me pull it up in
9 particular, and let me, also rephrase that question
10 a little bit.

11 So Claim 1, the relevant portion is
12 Column 37, which is on Page 41 of Patent Owner's
13 Exhibit 1. And it is around Line 13 that this
14 starts.

15 A. So you are on Column 37; is that correct?

16 Q. That is correct, yes.

17 A. Okay. And can you please repeat your
18 question?

19 Q. Yes. So there are two processes that are
20 listed -- that are included in this claim, correct?
21 It is the "A process for guaranteeing a
22 communication bandwidth," as the first. And
23 second, "There is a process for establishing the
24 connection."

25 Do you see both of those?

1 A. You're actually going to need to point me
2 to --

3 Q. Yes.

4 A. -- the line you are looking at.

5 Q. Certainly.

6 A. It's a very big paragraph, or very long
7 limitation it seems.

8 Q. Yes. Beginning at Line 15.

9 A. Yes.

10 Q. "The one or more connection control
11 servers," and then going to Line 18.

12 A. Okay.

13 Q. Are the two processes that I am talking
14 about.

15 A. So you're talking about the "one or more
16 connection control servers executes a process for
17 guaranteeing a communication bandwidth required for
18 transmitting content data as a process for
19 establishing the connection, transmit the play-list
20 information via the one or more connection control
21 servers to the user equipment, which has
22 transmitted the content deliver request." And then
23 it goes on to talk about the play-list. I'm sorry.
24 I am not understanding.

25 Q. Let me perhaps explain a little bit

1 further.

2 So there is this limitation in here on
3 Line 14 of "at a same time."

4 And that "at a same time" limitation
5 refers to different things that the claim recites
6 as occurring. The first is executing bandwidth
7 guarantee as part of the connection process; is
8 that paraphrased correctly?

9 MR. SHARMA: Objection; form.

10 THE WITNESS: You are reading -- so, I'm
11 sorry.

12 So if we read the first part of it, then
13 starting back on Line 13, "Wherein the first
14 transmitter is configured to, at the same time that
15 the one or more connection control servers executes
16 a process for guaranteeing the communication
17 bandwidth required for transmitting content data as
18 a process for establishing the connection." That's
19 the first part of it, right? Yes?

20 BY MR. PALMIERI:

21 Q. Yes.

22 A. And then the other half of "at the same
23 time" is "transmit the play-list information via
24 the one or more connection control servers to the
25 user equipment"...

1 Those are the two things, correct?

2 Q. That's right. If we want to go back to
3 the amendment that we discussed earlier, the patent
4 owner explains -- and this is on Page 29 of
5 Exhibit 2, the patent owner explains this term as
6 stating that "the process of establishing a
7 connection and transmitting play-list information
8 together."

9 A. Okay.

10 Q. So the timing they are discussing -- and
11 please correct me if I'm wrong -- is the connection
12 process in connection with that play-list
13 transmission; would that be accurate?

14 A. Well, those are the two things that are
15 being discussed in the -- in what's in my Paragraph
16 66 with regard to what was going on in the file
17 history at that time.

18 Q. Okay.

19 A. So it was those two things, yes.

20 Q. And the bandwidth guarantee process is a
21 subpart of the overall connection process.

22 Is that your understanding?

23 MR. SHARMA: Objection; form.

24 BY MR. PALMIERI:

25 Q. Let me rephrase that.

1 A. Thank you.

2 Q. Is the bandwidth guarantee process the
3 entirety of what needs to occur in order for a
4 connection to occur?

5 A. No, I don't believe so.

6 Q. So there are other steps in the
7 connection process beyond just the bandwidth
8 guarantee that is recited by the claims?

9 A. And we have, depending on whether we are
10 looking at examples or sometimes being at the
11 overall description of the system, there are a
12 whole number of things that have to happen to set
13 up the connection. When we look at some of the
14 figures where we see the handshaking process going
15 on, then you can see for each line of the
16 handshaking that something else is happening. And
17 it can be as simple as an ACK, it can be as simple
18 as that. It can be something more -- in the
19 communication, it can be something much more
20 complex than a single acknowledge that, yes, I got
21 the last one. But there's lots of things that are
22 going on to create the complete communication setup
23 by SIP.

24 MR. PALMIERI: Okay. We've been going for
25 a bit more than an hour now. Now is probably a good

1 time to take a break if that works?

2 We can go off the record.

3 THE VIDEOGRAPHER: Going off the record at
4 11:38 a.m.

5 (Recess taken.)

6 THE VIDEOGRAPHER: We are back on the
7 record at 12:36 p.m.

8 MR. PALMIERI: Okay. Thank you.

9 BY MR. PALMIERI:

10 Q. Dr. Reader, before our technical
11 difficulties, we had some breaks.

12 During those breaks, did you discuss the
13 substance of your testimony with anyone other than
14 the court reporter?

15 A. No.

16 (Exhibit 5 was marked for identification.)

17 (Exhibit 6 was marked for identification.)

18 BY MR. PALMIERI:

19 Q. Okay. Moving on, I would like to now
20 bring in what is marked as patent owners'
21 Exhibit No. 5. And this is something we mentioned
22 earlier. This is the Ueda reference, and that is
23 U.S. 2009/0094321.

24 And, Dr. Reader, just let me know when
25 you have that in front of you.

1 A. I do, thank you.

2 Q. Okay. Do you recognize this reference?

3 A. Yes, I do.

4 Q. Okay. When did you first see this
5 reference, that you know of?

6 A. In the same time frame of about a year
7 ago.

8 Q. Okay. And this is -- this Ueda reference
9 is the primary reference for each of the grounds of
10 invalidity brought in both of these petitions,
11 correct?

12 A. That is correct, yes.

13 Q. Can you describe the technology covered
14 and described in Ueda?

15 A. If you can take a look at my declaration,
16 on Page 31 is where I started an overview of this
17 art.

18 I mean, how much detail would you like me
19 to go into?

20 Q. Just a high-level overview of the
21 technology in Ueda in your own words.

22 A. Okay. So Paragraph 70 gives us an
23 introduction in which it talks about the content
24 delivery system. And that's got a server
25 delivering content and the play-list to user

1 equipment via a network. And also noted in this
2 overview is that the server also generates an
3 allowed processing list, and may have an
4 authentication processing unit.

5 And on the next page, now what we see is
6 an overview of this system. So we've got --
7 actually, in Figure 6, we've got two servers
8 illustrated. And so the patent focuses on
9 describing the activities of the servers with
10 respect to the first one, the Unit 191 shown in
11 Figure 6. But there are, in fact, two illustrated
12 here, and they are connected via a network which is
13 illustrated as a cloud, which is a common way of
14 illustrating diverse heterogeneous networks.

15 (Reporter clarification.)

16 THE WITNESS: The mike is right here.

17 THE VIDEOGRAPHER: This is the
18 videographer. I would probably recommend for you
19 guys to switch the profiles and have Dr. Record's
20 computer be the one that is activated, because he
21 does sound like he is very far away.

22 THE WITNESS: We've got a remote speaker
23 and mike, so we're not using the mikes on the
24 laptops. We just seem to be having a lot of audio
25 problems today. And I am trying to speak up as much

1 as I can, but the mike is even closer to me than the
2 mike on the laptop, so it's the best we have at the
3 moment.

4 And then Figure 6 also shows us a content
5 providing device and shows us a Unit 100, which is
6 an optical disk that contains some of the content
7 that related system works with.

8 BY MR. PALMIERI:

9 Q. And is Ueda generally directed to Blu-ray
10 disk Java technology?

11 A. Well, you know, that is used for the
12 principal embodiments that Ueda discloses. My
13 understanding, that Ueda is not limited to that,
14 but that is how he chose to illustrate this
15 invention.

16 Q. Can you describe what is meant by Blu-ray
17 disk Java technology?

18 A. Can you point me to something you are
19 particularly --

20 Q. Yeah, if we are in Exhibit 5, Paragraph
21 126.

22 A. So my understanding of what is being
23 described in Paragraph 126 is that we've got a java
24 application, and Java is a scripting language
25 originally created by Sun Microsystems here. And

1 it's simply saying that this Java application can
2 be made available by recording it on a Blu-ray
3 disk. So in this case, it is talking about the
4 Blu-ray disk being -- acting as either a ROM or a
5 RAM for storing that Java application.

6 Q. And is the Java programming language or
7 the Java scripting language, I think you called it,
8 is that compatible with the SIP standard?

9 A. Well, really, those -- I mean, the SIP
10 standard is agnostic to whatever language it is --
11 can be embodied in or called from or summoned. I
12 mean, they're not related in that way.

13 Q. Okay. Have you personally ever
14 programmed Java using the SIP standard? That --
15 that language might not be clear, but I am hoping
16 you can get what I am trying to ask about.

17 A. Yeah, I know what you are saying.

18 In terms of being a programmer myself, I
19 outlined earlier how my career advanced. And the
20 last time I was writing code was when I was at the
21 beginning of the project at Cypress. And after
22 that, I was managing software programmers, but not
23 writing code myself since that time frame. So it
24 has been a long time.

25 Q. Are you aware of anyone who has

1 programmed in Java using the SIP standard?

2 A. I am really not sure how to answer that
3 question.

4 Q. Let me try to reword it a little bit.

5 Are you aware of any applications which
6 use Java programming to -- sorry. Let me rephrase
7 that again.

8 Are you aware of any programs or
9 applications which program in Java based on the SIP
10 standard protocol standard?

11 MR. SHARMA: Objection; form.

12 THE WITNESS: I am still finding it very
13 hard to answer your question because, you know, the
14 SIP standard is a standard for establishing a
15 session, right? So if you want to set up a session
16 of communication on an IP network, then you can use
17 the tools of the SIP standard to do so.

18 Whatever programming environment you use
19 to invoke SIP and so on, is -- I think the best way
20 I said it before is, SIP could be called from any
21 number of different languages to invoke it and
22 actually use its tools.

23 BY MR. PALMIERI:

24 Q. So a Java application can be used to
25 invoke messages using the SIP standard? Would that

1 be an accurate way to describe it?

2 A. I think that would be my understanding,
3 but Java wouldn't be the only way that you could do
4 that.

5 Q. Sure.

6 THE VIDEOGRAPHER: Counsel, I'm sorry to
7 interrupt, but I need to go off the record real
8 quick.

9 MR. PALMIERI: Okay.

10 THE VIDEOGRAPHER: We're going off the
11 record at 12:48 p.m.

12 (Recess taken.)

13 THE VIDEOGRAPHER: Okay. We are back on
14 the record at 12:52 p.m.

15 BY MR. PALMIERI:

16 Q. Okay. Dr. Reader, continuing from where
17 I left off.

18 Does Ueda discuss the SIP standard at
19 all?

20 A. I don't think so. I think if I recall
21 correctly, he doesn't.

22 Q. Does it discuss the SDP standard at all?

23 A. I think that is also correct.

24 Q. And in your declaration, you concede
25 certain elements of the '427 patents are not

1 founded in Ueda; is that correct?

2 A. Well, it's not quite as simple as that.
3 It is that aspects of certain limitations are not
4 disclosed by Ueda.

5 Q. Understood.

6 A. I mean, as we said, some of these
7 limitations are incredibly long, so that is why we
8 try to break them down logically.

9 Q. But it's safe to say at least portions of
10 the claims of the '427 patent are not expressly
11 disclosed in Ueda?

12 A. I think my declaration is laid out quite
13 well in this regard. I mean, I hope I can make
14 that claim.

15 I think if you look at the way that it is
16 structured, you can see that in many, many cases
17 the way that we structured it, then, Ueda alone
18 discloses the limitation as a whole or a portion of
19 a limitation to which the deck is referring, and I
20 think we managed to organize the data such that I
21 could provide an opinion which is, I think, clean
22 and clear on that.

23 Q. Understood.

24 So let's -- on the note of your report,
25 let's switch back to Exhibit 2, your declaration

1 again. And in particular, I want to go to Page 61.
2 And this will be the heading directly before
3 Paragraph 133. And Paragraph 133, unhelpfully,
4 starts on the next page, but I want to start at
5 that heading.

6 A. So the heading with the No. 3?

7 Q. Yes, that is the one.

8 A. Yes, okay.

9 Q. So here you start the heading by saying,
10 "The SIP standard teaches," and then you go through
11 a claim element -- or I should say part of a claim
12 element; is that right?

13 A. That is correct, yes.

14 Q. By identifying it in this way, is this an
15 indication that you do not believe that Ueda
16 discloses this claim element, this portion of the
17 claim element?

18 A. Okay. So please clarify which you want
19 me to answer.

20 Q. Yeah, so by identifying the SIP standard
21 as teaching this feature, is that an admission that
22 Ueda does not teach that feature, in your mind?

23 A. What I am talking about here, in
24 particular, and this is going to happen in multiple
25 instances, is that the SIP standard discloses the

1 connection control servers. And Ueda -- the way
2 that Ueda is -- the way that the Ueda patent
3 specification is disclosed, it is not concerned
4 with talking about what we see, actually, on the
5 facing page.

6 If you just look to the left, we see
7 Figure 6, again, happens to be there on Page 60.
8 So Ueda does not spend time discussing what's in
9 this cloud labeled "Network" in Figure 6. He
10 doesn't do that.

11 And so the SIP standard is expressly
12 talking about the connection control servers, and
13 that's why this sublimitation, if you like, here is
14 discussed in the context of the SIP standard and
15 not in Ueda.

16 Q. Is it your belief that Ueda does disclose
17 this information about the one or more connection
18 control servers?

19 A. Well, it's my opinion that Ueda discloses
20 the existence of such things through Figure 6, and
21 the fact that the network is shown in Figure 6 as
22 having two servers and having a network that uses a
23 very common illustration of a generic network as --
24 symbolically as a cloud.

25 So, yes, I think Ueda discloses the fact

1 that there are interstitial elements within that
2 cloud. I guess that's the way that we do things in
3 the art. But he doesn't -- Ueda doesn't need to
4 describe them in order to disclose his invention.
5 So he is focused on his invention, and he is not --
6 he does not concern himself in his detailed
7 descriptions in going into things that may very
8 well be there, but which are incidental or
9 unnecessary for him to go into the detail of for
10 his invention.

11 Q. So, Dr. Ready, does Ueda explicitly
12 describe one or more connection control servers
13 being configured to receive equipment specification
14 information transmitted by a user equipment?

15 A. No, he does not explicitly describe that.

16 Q. Okay. Does Ueda describe, again,
17 explicitly, a process -- sorry. Let me rephrase
18 that.

19 Does Ueda describe explicitly the one or
20 more communication control servers executes a
21 process for guaranteeing a communication bandwidth
22 required for transmitting content data as a process
23 for establishing the connection?

24 A. Where are you quoting from, please?

25 Q. This will be on Page 90 in your

1 Declaration right before Paragraph 186, beginning
2 with "2."

3 A. And did you read onto the record the
4 bolded text there for Item 2 completely?

5 Q. I read into that the part within the
6 quotation marks.

7 A. Okay.

8 Q. The full text says, "The SIP Standard
9 teaches that the one or more connection control
10 servers executes a process for guaranteeing a
11 communication bandwidth required for transmitting
12 content data," so on and so on.

13 A. Thank you.

14 Ueda does not explicitly disclose that.
15 He does not explicitly disclose connection control
16 servers.

17 (Exhibit 4 was marked for identification.)

18 BY MR. PALMIERI:

19 Q. And I would like to move on now to
20 another exhibit. This will be Exhibit -- I have
21 marked this as Patent Owner's Exhibit No. 4.

22 And this is the SIP standard that we have
23 been discussing.

24 And please let me know when you have that
25 in front of you, Dr. Reader.

1 A. I have that.

2 Q. Okay. And going off on the first page
3 here, in the top left, it indicates a Network
4 Working Group.

5 Do you know what that Network Working
6 Group refers to?

7 A. That's a -- in my understanding, that's a
8 subgroup of the body that establishes the IETF
9 standards.

10 Q. And to your knowledge, that group created
11 the SIP standard that is within this document?

12 A. I think if you are talking about
13 creation, then the list of people on the right-hand
14 side may be the people who truly created it.
15 Sometimes there is also a list at the end of a
16 standard, so just a moment. I don't know if this
17 is true at the end.

18 Q. It does, if I may point you to Page 267.

19 A. Yeah, I mean, there's a list. So this
20 says -- this gives the address of authors. So --
21 but you notice on the opposite page there's
22 acknowledgments as well.

23 So the way that IETF works is
24 considerably less formal than these, you know,
25 Geneva-based institutions. So they do things in a

1 more -- well, I guess, in a less formal way, shall
2 I say.

3 Q. Understood.

4 Going back to the first page of the SIP
5 standard again.

6 I would like you to look at the last
7 sentence on that page, which says, "SIP runs on top
8 of several different transport protocols."

9 Do you see that sentence?

10 A. Yes, I see it.

11 Q. Can you describe what a transport
12 protocol is?

13 A. Well, there is -- again, going back to
14 something we discussed earlier in the day,
15 communication systems in general and the standards
16 associated with communication standards are layered
17 standards. And it's common practice for the layers
18 to be independent of each other, at least to the
19 maximum extent that is practically and sensibly
20 realizable.

21 So what is being expressed here is that,
22 you know, the SIP, when it says, "on top of," it
23 means it is a layer above the transport protocols.
24 And then the transport protocols are a layer of
25 this communication hierarchy that are responsible

1 for -- responsible for the -- I'm trying to think
2 of a good way to express this.

3 They're responsible for the actual
4 transmission and reception of the data itself, but
5 even they are not the lowest layer of this stack of
6 protocols or standards for protocols.

7 Q. What would be the lowest layer?

8 A. Well, there is a physical layer in which,
9 literally, you know, you actually have bits of
10 information that are going along wires or being
11 transmitted wirelessly over the air. And there is
12 a physical layer at the very bottom where you
13 literally actually have electrical signals taking
14 place.

15 Q. I would like to now move to Page 9 of the
16 SIP standard.

17 A. Okay.

18 Q. And in the last paragraph there, there is
19 a sentence that begins "typically," and then it
20 lists a number of protocols, I believe.

21 Do you see that sentence?

22 A. Yes.

23 Q. So are these listed protocols, would
24 those be transport protocols?

25 A. They are examples of transport protocols,

1 yes.

2 Q. Is the SIP standard itself a transport
3 protocol?

4 A. No. As we read a few moments ago, it is
5 a layer above the transport protocol layer.

6 Q. Okay. And just briefly, Dr. Reader, I
7 would like to go back into the '427 patent. That
8 is Patent Owner's Exhibit 1. And in particular, I
9 would like to go to Page 4, which includes
10 Figure 2.

11 A. Yes, I am there.

12 Q. And at the bottom of that figure, there
13 is a box labeled "80."

14 Do you see that box?

15 A. Yes.

16 Q. And that box is labeled "Transport
17 Functions Part"; is that correct?

18 A. That is correct, yes.

19 Q. Is a transport function different from a
20 transport protocol?

21 A. Well, let's go see -- I'm not exactly
22 sure off the top of my head how the '427 describes
23 that part 80. Just a moment.

24 Q. Yeah. Let me -- I am finding where it is
25 discussed in there too.

1 There is a reference to it, if you want
2 to go to Column 7, Line 51 to 55 discusses it. And
3 that is on Page 26 of the PDF.

4 A. Thank you, yes.

5 Well, it introduces it there. And, of
6 course, there it is not saying anything about
7 protocols.

8 Would you like to ask another question on
9 that, or...

10 Q. Sure. Sure. If we want to go back to
11 Figure 2 again.

12 A. Yes.

13 Q. Within that transport functions part
14 labeled "80," there is another part called the
15 "Bandwidth Guarantee Part 81."

16 A. Yes.

17 Q. Do you see that?

18 A. Yes.

19 Q. So is it fair to say that the bandwidth
20 guarantee part is within the transport functions
21 part?

22 A. That's the way that it's illustrated
23 here, sure.

24 Q. And apologies. I'm just looking.

25 If we go into Column 15 again, which I

1 think we were at before. And in particular, Line
2 35 to 40.

3 A. Yes.

4 Q. That is describing that the transport
5 functions part executes a process to guarantee the
6 communication bandwidth; is that accurate?

7 A. That's what that says there, yes.

8 Q. So is it safe to say that that transport
9 functions part is what is executing the bandwidth
10 guarantee process?

11 A. We actually read through this exhibit
12 earlier today, right. And we had the -- if we just
13 jump back up to remind ourselves of what was
14 happening with that, then, starting at Line 14, we
15 had the service control functions part 40 beginning
16 a sequence of steps of executing certain processes.
17 And then that brings us down to where you are
18 pointing, which is, you know, the -- given the data
19 that it has been provided from the part 40 through
20 the core IMS part 30, and down to this part 80,
21 this transport functions part 80, we have this
22 information passing down through there, and then we
23 reach the point that you are talking about, where
24 it says, "The transport functions part 80 executes
25 a process to guarantee the communications bandwidth

1 represented by the received communications
2 bandwidth information on the communication channel
3 specified by the received communications channel
4 specification information." Right? And that --

5 Q. And if I can have a follow-up there, so
6 that, what you just read, is describing the
7 bandwidth guarantee process; correct, that last
8 bit?

9 A. Well, it literally, in parentheses, it
10 calls that -- I mean, the patent inventor chose to
11 label that as the bandwidth guarantee process.
12 That's what it is called.

13 Q. And that is separate from the bandwidth
14 guarantee instruction that is shown in the previous
15 paragraph?

16 A. Well, that has been used as a part of
17 reaching this bandwidth guarantee process, right?
18 I mean, there's a whole sequence of events that
19 actually take place here involving the data that I
20 was just reading to you.

21 Q. And does the SIP standard do each of
22 those functions?

23 A. So what we are moving towards is having a
24 set standard message that is going to convey the
25 results of that execution.

1 Q. So the SIP message will take the results
2 from that process and transmit them?

3 A. That is my understanding, yes.

4 (Exhibit 7 was marked for identification.)

5 BY MR. PALMIERI:

6 Q. I would like to move on to another
7 reference, and this will be Plaintiff's Exhibit 7,
8 what I will call "Bechtolsheim." And for the
9 record, this is U.S. Patent application Publication
10 No. 2009/0100496.

11 A. I have it.

12 Q. Okay, excellent. Dr. Reader, you've seen
13 this reference before, I assume?

14 A. Yes.

15 Q. Can you please describe the technology in
16 this reference in a few sentences?

17 A. Let's go back again and see what I -- I
18 probably characterized it reasonably succinctly in
19 my dec.

20 I am on Page 43 of my declaration.

21 Q. Got it.

22 A. So as briefly as I can, in the case of
23 Bechtolsheim, we've got a cable TV network system.
24 And this is -- specifically, he is talking about
25 content on demand, often known as video on demand

1 where you can get a particular movie that you want
2 to watch or something like that.

3 So he is describing a system for doing
4 that in the context of the way cable TV networks
5 work, and then this system can supply content on
6 demand to a user, and then what he calls subcontent
7 data that is advertising that is tailored to the
8 particular subscriber who has placed the on-demand
9 request.

10 Q. And you noted that this was cable TV, it
11 was directed to cable TV; is that correct?

12 A. His embodiment is -- uses the cable TV
13 system as the network environment for doing this,
14 yes.

15 Q. Does it reference the SIP standard?

16 A. No, it does not.

17 Q. And now, let's -- I would like to move
18 back into the -- to your declaration again, in
19 particular on Page 51 of Exhibit 2.

20 A. I am there.

21 Q. And in this section, you describe the
22 motivation for a POSITA to combine Ueda with the
23 SIP standard and Bechtolsheim; is that accurate?

24 A. Yes.

25 Q. So sorry. I didn't -- I think you broke

1 up slightly there.

2 A. Yes, that is correct.

3 Q. And as part of the motivation in the last
4 sentence of the first paragraph there, you state,
5 "Bechtolsheim itself teaches such a motivation."
6 You cite to Paragraph 38 of Bechtolsheim, which
7 says, "A stream which consistently requires higher
8 bandwidth than the configured rate may produce
9 poorer quality video;" is that right?

10 A. That is correct, yes.

11 Q. And we can go into Bechtolsheim if you'd
12 like to look at that paragraph, but my question on
13 this statement is, does that refer to an ongoing
14 system which checks for the bandwidth that is being
15 requested, or is that a one-time check at the start
16 of a stream?

17 A. Let me just look.

18 Q. Of course. And it is Paragraph 38 in
19 Bechtolsheim, Exhibit 7.

20 A. So you're specifically -- right. In
21 Paragraph 38, okay.

22 Q. Yep.

23 A. Yes. Is there a -- you asked is this a
24 one-time thing or an ongoing thing?

25 Q. Yes, yes.

1 A. So -- well, specifically, what is being
2 addressed here in Paragraph 38, it says, "Prior to
3 operation."

4 So in Paragraph 38, at least,
5 Bechtolsheim is referring to the initiation of a
6 session using his invention.

7 Q. And in terms of integration with the SIP
8 standard, would a POSITA be required to modify
9 either the SIP standard or Bechtolsheim to make the
10 two systems interoperable?

11 A. Well, the issue here, I think, is to say,
12 given that you have a SIP standard, given that you
13 have the invention of Bechtolsheim, could a person
14 of ordinary skill in the art design a system as a
15 whole that would take advantages of both of those
16 two constituent parts. And the answer is, it is
17 very definitely, yes, you could do that.

18 Q. And according to Paragraph 112, what
19 motivation would a POSITA have to make that
20 combination?

21 A. So the SIP standard is a protocol for
22 establishing sessions that can be directed towards
23 generic data types. If you read the overview of
24 the SIP session, then all different kinds of data
25 could be part of the session that is established by

1 SIP.

2 In my field, a key issue is what happens
3 in a networked environment when you're dealing with
4 realtime data.

5 And what Bechtolsheim discloses, is a way
6 of handling realtime data under realistic network
7 conditions such as those that would be set up with
8 the SIP standard.

9 So the combination of the SIP standard
10 and the Bechtolsheim invention is going to give
11 you -- is going to give you these advantages in
12 terms of how you are going to get Bechtolsheim's
13 realtime data across a network where the setup of
14 the session to do so has been facilitated with the
15 SIP standard.

16 Q. Okay. And jumping back about one page
17 onto Page 50 in the same declaration. In these two
18 paragraphs -- sorry. In Paragraphs 109 and 110,
19 you describe the combination of SIP and the SDP
20 standard; is that correct?

21 A. That's correct, yes.

22 Q. And in this section, you describe how the
23 two could be integrated with one another, in
24 particular the sentence, "The SIP messages are
25 commonly formatted using SDP."

1 Do you see that?

2 A. Yes.

3 Q. Do you provide a similar explanation for
4 the combination of SIP and Bechtolsheim?

5 A. It's not the same situation because the
6 SIP standard explicitly references the SDP standard
7 and vice versa. So the SIP standard, you know,
8 doesn't reference the Bechtolsheim patent, but
9 the -- so the circumstances are different between
10 the two combinations. And I can expound on that if
11 you wish.

12 Q. No. So I guess my question, then, is, if
13 Bechtolsheim and the SIP standard do not reference
14 one another, do you provide any explanation for how
15 the two could actually be integrated with one
16 another?

17 A. So with the invention of Bechtolsheim and
18 what he discloses about how to manage this
19 situation, again, bearing in mind that we're
20 talking about layered protocols here, then the SIP
21 standard could establish a session in which
22 Bechtolsheim is used as a part of how that session
23 is actually implemented. And Bechtolsheim
24 discloses ways in which you can manage realtime
25 data delivery, you know, in a, you know, in a

1 network environment.

2 Q. Does the SIP standard contemplate or
3 discuss that, I believe you called it "realtime
4 data management"?

5 A. The SIP standard does not discuss it in
6 those terms, but the SIP standard is -- you can see
7 numerous references in the SIP standard to being
8 able to carry media data. And the SIP standard,
9 obliquely, shall I say, refers to it by referring
10 to transport protocols that are explicitly
11 developed by IETF to transport realtime data.

12 Q. So would Bechtolsheim be a transport
13 protocol in that case?

14 A. No. The way that Bechtolsheim works -- I
15 think maybe I have to give you -- I think I have to
16 give you a little bit of an example.

17 Q. Sure.

18 A. You were at -- in Bechtolsheim, where?

19 Q. We were at 38 on Page 9.

20 A. All right. Okay. So Bechtolsheim here
21 refers to techniques that are used in the video
22 coding field to -- as a way to manage this
23 situation. What is not called out clearly by
24 Bechtolsheim is this -- the very last words of the
25 Paragraph 38, "may produce poorer quality video."

1 Okay.

2 So here is the situation. If you have
3 no -- if you simply try to send coded video across
4 a network that may establish -- may suffer from
5 congestion, if you try to do that, and you don't do
6 anything special, then what is going to happen is
7 that possibly from the outset -- and you asked me
8 the question, well, is he talking about how you
9 would set up a session, or is it what happens
10 during the session?

11 So let's say we are just at the moment
12 talking about what you asked, which is setting it
13 up at the beginning. So if you set up the session
14 at the beginning, and, in fact, the realtime media
15 stream you want to transmit, the network does not
16 have enough bandwidth and you don't do anything
17 about that, then if it's visual data you're talking
18 about, then the visual data is going to get
19 corrupted. It may mean that, instead of showing
20 continuous smoothly moving video, instead,
21 everything happens in jerks, and it's not
22 continuous video. It may be that the picture
23 itself is going to break up and not even be
24 pleasant to look at.

25 What Bechtolsheim tells us, and he tells

1 us a little bit about that in Paragraph 37 as well,
2 but sticking with Paragraph 38, he says in the
3 middle of that paragraph, "In some embodiments, the
4 B frames are dropped."

5 Well, what we do in our art is that, if
6 we want to establish a session, a realtime video,
7 and if the bandwidth is not fully available, the
8 network is congested, then, indeed, we may set up
9 the session so that, instead of transmitting 30
10 frames a second, we only transmit 20 or 15 or 10.

11 So the video quality will not be perfect,
12 but it won't have the kind of very disruptive flaws
13 that it is going to have if we do nothing, right?
14 And that is what Bechtolsheim is talking about
15 there.

16 Does that make sense?

17 Q. Yes, yes. That's very helpful. I
18 appreciate that.

19 (Exhibit 8 was marked for identification.)

20 BY MR. PALMIERI:

21 Q. Okay. I would now like to move on into
22 the last reference used in these grounds, and that
23 is Cohee, marked as Patent Owner's Exhibit No. 8.
24 And for the record, that is U.S. 2010/0010884.

25 And just let me know when you have that

1 open, Dr. Reader.

2 A. I do.

3 Q. And do you recognize this reference?

4 A. Yes, I do.

5 Q. And when was the first time you saw this
6 reference? Was it around the same time as the
7 previous ones?

8 A. That's right.

9 Q. Okay. And can you describe, again, in
10 high-level terms what this reference is directed
11 to? And if it would be helpful, it is on Page 45
12 of your declaration that you provide a description.

13 A. Thanks. So in Cohee's application is the
14 ability to publish advertisements, video ads. So
15 this is talking about being in a network
16 environment and being able to deliver -- being able
17 to deliver clips of data and advertising content
18 across a network. And what distinguishes Cohee is
19 that the various advertisements that might be shown
20 are not co-located in a single server system, but
21 instead may be distributed anywhere across the
22 Internet.

23 Q. Understood.

24 And then moving into your declaration
25 again, and in particular, Page -- I believe it is

1 51. 51 to 52.

2 A. Yes, I am there.

3 Q. In this section, you provide a motivation
4 to combine Ueda and Cohee; is that correct?

5 A. Yes, that's correct.

6 Q. You don't describe the SIP standard or
7 the SDP standard or Bechtolsheim in this
8 motivation; is that correct?

9 A. That is correct.

10 Q. Is there a reason that you did not
11 address those other elements?

12 A. I think the focus was, here, on looking
13 at what the advantages are to taking the Ueda
14 disclosure and adding the functionality of Ueda's
15 invention to it. And this goes back to, you know,
16 what we were discussing long ago today, which is
17 that Ueda -- Ueda is disclosing his invention. And
18 to disclose his invention, he's really focused on
19 what the invention is, and so he described it only
20 in terms of here's a server, here's a client.
21 There's a network between them, but Ueda's not
22 interested in the details of that network or how
23 that works.

24 Ueda does show us that he's got two
25 servers, so we know that he at least contemplates

1 that multi-process or multi-server environment. He
2 does not go into any details on it.

3 Ueda teaches us, you know, what's going
4 to happen if you take Ueda's poor invention and
5 then want to use it in an application environment
6 in which the content is spread among diverse
7 servers located in different places on the network.

8 Q. Understood.

9 And if we want to go to Page 150, I
10 believe, of your declaration.

11 A. Yes, I'm there.

12 Q. And this is describing the portion of
13 Element 2B that, in your opinion, Cohee teaches; is
14 that correct?

15 A. That is right, yes.

16 Q. Could you just describe in your own words
17 what that feature is, or subfeature might be the
18 better term?

19 A. Well, I think most succinctly probably,
20 we can see that on Page 152 at the top of the page,
21 or a bit down. "More particularly, Cohee teaches
22 that the play-list contains a reference in the form
23 of a URL to each media clip and does not include
24 the media data itself."

25 So it is just telling us here that Cohee

1 has -- Cohee provides an environment in which, yes,
2 we've got a play-list, and that is telling us the
3 order in which we might have main content, a movie,
4 an advertisement that is shown during commercial
5 breaks in the presentation of the movie, and but
6 those advertisements don't come necessarily from
7 the same server that is providing that movie
8 content.

9 He is disclosing a mechanism by which,
10 through the use of URLs, that content can be
11 fetched and displayed during those commercial
12 breaks from anywhere that you like.

13 Q. So would it be safe to say that Cohee
14 discloses certain information about the play-list
15 that would be beneficial to the overall stream?

16 MR. SHARMA: Objection; form.

17 BY MR. PALMIERI:

18 Q. Let me rephrase that. Would it be safe
19 to say that Cohee at least teaches information
20 about the play-list that is being transmitted?

21 MR. SHARMA: Objection; form.

22 THE WITNESS: I think what is said at
23 the -- you know, again, it's in the same paragraph,
24 Cohee teaches -- starting on Page 151, "Cohee
25 teaches that the video ad server 115 stores a

1 play-list," and "Cohee teaches the play-list
2 includes instructions for rendering separately
3 stored media clips together."

4 And so the play-list contains -- as we
5 read before, the play-list contains a reference in
6 the form of a URL for each media clip and that the
7 play-list doesn't have the media data.

8 BY MR. PALMIERI:

9 Q. So Cohee relates to the play-list that
10 would be transmitted, and it modifies the content
11 to include those URLs or URIs?

12 MR. SHARMA: Objection; form.

13 THE WITNESS: Well, the functionality that
14 Cohee is teaching is that -- that play-lists could
15 contain URLs that point to different locations on
16 the Internet.

17 BY MR. PALMIERI:

18 Q. Understood.

19 And the '427 patent claims, in particular
20 Claim 1 if you want an example, has specific
21 language related to the transmission of the
22 play-list information; is that correct? And I
23 would be happy to point you to a particular portion
24 if that is helpful.

25 A. Let's go to a particular portion.

1 Q. Sure. So if we go back to Exhibit 1,
2 which is the '427 patent, and, again, to
3 Paragraph -- sorry -- Page 41, Column 37.

4 A. Yes.

5 Q. And, again, beginning at Line 14. And I
6 am going to slightly cut a little bit of language,
7 but I hope you can follow me. It states, "Wherein
8 the first transmitter is configured to... transmit
9 the play-list information via the one or more
10 connection control servers to the user equipment
11 which has transmitted the content delivery
12 request."

13 Is that accurate for the portion I read?

14 A. Yes. That is correct, yes.

15 Q. So the '427 describes play-list
16 information that is being transmitted; is that
17 correct?

18 A. It is saying that. Well, this is what is
19 being claimed here, yes.

20 Q. And as we just discussed, Cohee also
21 relates to the play-list information; is that
22 correct?

23 A. Yes, that is correct.

24 Q. Okay. But this play-list information, as
25 you have explained it in previous elements,

1 involves either the SIP standard in combination
2 with the SDP standard, or the SIP standard in
3 combination with Bechtolsheim.

4 Is that accurate regarding the
5 transmission?

6 MR. SHARMA: Objection; form.

7 THE WITNESS: I mean, what I discuss in my
8 declaration is the way in which the SIP standard
9 alone can carry a play-list. Yeah, sorry. That's
10 not correct.

11 I disclose the way in which the SIP
12 standard can set up a session including a
13 play-list. And it can do that alone. It can do it
14 explicitly within the standards documents
15 themselves by the SIP session message carrying SDP
16 messages that show you the play-list. But this
17 is -- you know, the SIP standard is setting up a
18 session, right? And it is setting up a session to
19 establish the session, and the play-list is a part
20 of setting up that session.

21 BY MR. PALMIERI:

22 Q. So the play-list is a part of setting up
23 the connection with respect to the SIP standard, as
24 you explained it in your declaration?

25 A. In the way that I've explained it

1 multiple different ways.

2 Q. Understood.

3 So the play-list, according to Cohee,
4 would be involved in that setup process using the
5 SIP standard; is that correct?

6 A. Yes, I mean the SIP standard -- you know,
7 the SIP standard is agnostic to what is in the
8 play-list; it just is setting up a session that
9 really involves a play-list.

10 Q. But you provide no explanation of
11 integrating Cohee with the SIP standard
12 specifically, despite the overlap in their
13 play-list information?

14 A. Well, the Cohee -- the nature of the
15 Cohee play-list in which the entries in the
16 play-list can include URLs to diverse locations on
17 the Internet would be part of the structure of the
18 play-list that the SIP standard can set up.

19 Q. Can you point to the position in your
20 declaration where you describe how the SIP standard
21 can be formatted in that way using Cohee?

22 A. Well, as I just said, the SIP standard is
23 agnostic to what is in the play-list. So anywhere
24 in my declaration where I've illustrated the
25 operation of SIP embodies that.

1 Q. Do you affirmatively state anywhere in
2 your declaration that the SIP standard messages can
3 be formatted according to Cohee?

4 A. That is really not a correct way to
5 express it. What's in my declaration is that the
6 SIP standard has multiple different ways in which a
7 play-list can be transmitted for setting up the
8 session, right?

9 What is in the play-list is not something
10 that the SIP standard is concerned about.

11 Q. And can you point to a point in your
12 declaration where you make that statement?

13 A. I don't think I've stated that directly
14 in the terms of the way you are putting the
15 question there.

16 What is -- what's in my declaration is
17 the fact that the nature of SIP is this layering --
18 a layering process that I talk about and that
19 you've talked about today where we've discussed the
20 relationship between the SIP standard establishing
21 protocols for establishing a session as distinct
22 from the transport layer that we've already read,
23 SIP standard is sitting on top of and that is going
24 to carry the data.

25 Well, in terms of the SIP being able to,

1 in a number of different ways with or without SDP,
2 the way the SIP standard can carry a play-list is
3 not within the SIP standard talking about what is
4 inside the play-list. To the SIP standard, the
5 play-list is -- could be just simply strings of
6 ASCII text, for example, it could be. I mean,
7 there's a number of different ways it's disclosed
8 to do it. But the SIP standard itself doesn't care
9 what is inside the play-list.

10 Q. Okay. Understood.

11 I would like to move back to Patent
12 Owner's Exhibit 4. That's the text of the SIP
13 standard again. And Page 10 specifically.

14 A. I am there.

15 Q. Okay. And on Page 10 in, let's see, the
16 third paragraph down beginning, "SIP does not
17 offer." The last sentence in that paragraph says,
18 "Since SIP messages and the sessions they establish
19 can pass through entirely different networks, SIP
20 cannot and does not provide any kind of network
21 resource reservation capabilities."

22 Do you see that sentence?

23 A. Yes.

24 Q. Can you explain in your opinion what
25 "network resource reservation capabilities" means

1 in this context?

2 A. I think that this statement here is
3 saying that the SIP standard is not a standard. I
4 mean, the phrase network -- sorry -- "network
5 resource reservation," that, those three words,
6 "network," "resource," "reservation," if one could
7 reverse network resources, then, to me, I think the
8 plain language of that would mean that there was
9 some way in which it is possible to allocate
10 network resources to a particular task or to a
11 particular user or to a particular transmission,
12 and this is a statement that the SIP standard does
13 not do that.

14 Q. Would bandwidth be considered a network
15 resource in this context?

16 A. Bandwidth could be considered a network
17 resource, yes.

18 Q. So would it be fair to say that the SIP
19 standard cannot perform a bandwidth reservation?

20 MR. SHARMA: Objection; form.

21 THE WITNESS: Well, this takes us back to
22 the '427 patent itself and what it says is involved
23 in the process of what language was used there is
24 talking about bandwidth. And what we read there is
25 that the inventor of the '427 patent defined a

1 process, which the '427 patent says is implemented
2 using SIP OK 200 messages.

3 BY MR. PALMIERI:

4 Q. I would like to go back to the '427.
5 This is Exhibit 1 again on Page 29. And in
6 particular, in Column 13, Lines 59 through 64.
7 Just let me know when you are there.

8 A. I'm there.

9 Q. Okay. And that paragraph states, "The
10 core IMS part 30 thus receives the content delivery
11 request. Subsequently, the core IMS part 30
12 executes a bandwidth reservation process as
13 preparation for guaranteeing a communication
14 bandwidth. The core IMS part 30 then transmits the
15 received content delivery request to the service
16 control functions part 40, step B501."

17 Is that an accurate statement of what the
18 patents says?

19 A. Yes.

20 Q. In that context, is the bandwidth
21 reservation process part of guaranteeing a
22 communication bandwidth process?

23 MR. SHARMA: Objection; form.

24 THE WITNESS: In the language that -- in
25 the terminology that is used in the '427 patent,

1 what is being said here is that there is something
2 called a "bandwidth reservation process." And this
3 is in the language of the inventor of the '427. And
4 it goes on to say, "In preparation for guaranteeing
5 a communication bandwidth."

6 So whatever the '427 means by "bandwidth
7 reservation process" is indeed executed by the core
8 IMS part 30.

9 And what we read earlier when we were
10 over the page in Column 15 was a sequence of events
11 by which the core IMS part 30 participates in what
12 ultimately results in SIP OK 200 messages being --
13 SIP 200 OK messages being sent ultimately to the
14 user.

15 BY MR. PALMIERI:

16 Q. And that core IMS part 30 is separate
17 from those SIP messages?

18 A. I think if you go to Column 15 at 26 to
19 27, the bandwidth guarantee instruction is
20 transmitted as an OK message of a SIP message.

21 Q. And is it your opinion that the bandwidth
22 guarantee instruction is a process for guaranteeing
23 a bandwidth?

24 MR. SHARMA: Objection; form.

25 THE WITNESS: It is a process in the

1 language of the '427 patent. What the '427 patent
2 means by that is not elaborated upon. So the
3 language is used. It is used, as I said earlier,
4 the patent owner is -- sorry, the inventor, the
5 patent drafter is entitled to the act as their own
6 lexicographer, and how they define the terms is
7 something that they are absolutely entitled to have
8 the flexibility and freedom to do. And that is what
9 apparently occurred in this particular case.

10 But we have to interpret -- well, I have
11 to interpret the language in terms of what the
12 disclosure says.

13 And the disclosure is not very complete
14 or very detailed in terms of exactly what is meant
15 here.

16 What we know is the result of this is
17 that we have a SIP OK message going from IMS part
18 30 down to the part 80, and then part 80 does some
19 things, and, finally, we get another OK message of
20 the SIP standard being used to carry the result of
21 that.

22 BY MR. PALMIERI:

23 Q. And when you say that a part 80 does some
24 things, are those things the bandwidth guarantee
25 process?

1 A. They are what the inventor called the
2 bandwidth guarantee process.

3 MR. PALMIERI: Okay. We've been going for
4 a bit. I think we can take a five-minute break. I
5 don't really have too many more questions, but let's
6 take a quick break and then we can reconvene.

7 THE WITNESS: Thank you.

8 MR. PALMIERI: All right. We can go off
9 the record.

10 THE VIDEOGRAPHER: Going off the record at
11 1:59 a.m. Thank you.

12 (Recess taken.)

13 THE VIDEOGRAPHER: We are back on the
14 record at 2:10 p.m.

15 MR. PALMIERI: All right. Excellent.

16 BY MR. PALMIERI

17 Q. Dr. Reader, I have one last question.

18 During any of the breaks during the
19 deposition today, did you discuss the substance of
20 your testimony with anyone other than when you were
21 clarifying statements with the court reporter?

22 A. No, I didn't.

23 MR. PALMIERI: And that is all of my
24 questions.

25 Counsel, if you have any questions, I

1 will pass the witness to you.

2 MR. SHARMA: Thank you. Just a couple of
3 very quick questions.

4
5 EXAMINATION

6 BY MR. SHARMA:

7 Q. Dr. Reader, does Exhibit 2 contain your
8 declaration that you submitted in the IPR2023-01240
9 case?

10 A. Yes, that's correct.

11 Q. And does Exhibit 3 contain your
12 declaration that you submitted in IPR Case No.
13 IPR2023-01241?

14 A. Yes. I think that is right, yes.

15 Q. In light of the deposition today, would
16 you like to modify any of your opinions that you
17 expressed either in Exhibit 1 or in Exhibit 2?

18 A. No, I have no modifications needed.

19 MR. SHARMA: Thank you very much.

20 We can go off the record, unless the
21 patent owner has any questions?

22 MR. PALMIERI: Nothing else from me.

23 THE VIDEOGRAPHER: Okay to conclude?

24 MR. PALMIERI: All set.

25 THE VIDEOGRAPHER: This concludes today's

1 video deposition of Dr. Cliff Reader. We are going
2 off the record at 2:12 p.m.

3 (The remote videotaped deposition of
4 CLIFF READER, Ph.D., concluded at
5 2:12 p.m.)
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9 I, CLIFF READER, Ph.D., do hereby declare under the
10 penalty of perjury that I have read the foregoing
11 transcript; that I have made any corrections as appear
12 noted, in ink, initialed by me, or attached hereto;
13 that my testimony as contained herein, as corrected,
14 is true and correct.

15 EXECUTED this ____ day of _____,
16 20____, at _____, _____.
17 (City) (State)

18
19 _____
20 CLIFF READER, Ph.D.
21
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23
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25

1 I, Patricia Y. Schuler, a Certified
2 Shorthand Reporter of the State of California, do
3 hereby certify:

4 That the foregoing proceedings were taken
5 before me at the time and place herein set forth;
6 that any witnesses in the foregoing proceedings,
7 prior to testifying, were duly sworn; that a
8 verbatim record of the proceedings was made by me
9 using machine shorthand which was thereafter
10 transcribed under my direction; that the foregoing
11 transcript is a true record of the testimony given.

12 Further, that if the foregoing pertains
13 to the original transcript of a deposition in a
14 Federal Case, before completion of the proceedings,
15 review of the transcript [X] was [] was not
16 requested.

17 I further certify I am neither
18 financially interested in the action nor a relative
19 or employee of any attorney or party to this
20 action.

21 IN WITNESS WHEREOF, I have this date
22 subscribed my name.

23 Dated: April 25, 2024

24 _____
25 PATRICIA Y. SCHULER
CSR NO. 11949

DEPOSITION ERRATA SHEET

CASE NAME: PELOTON INTERACTIVE, INC., V. NEC
CORPORATION, PATENT OWNER

DEPOSITION DATE: APRIL 19, 2024
WITNESS NAME: CLIFF READER, PH.D.

Reason Codes: 1. To clarify the record.
2. To conform to the facts.
3. To correct transcription errors.

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19 _____ Subject to the above changes, I certify that the
20 transcript is true and correct.

21 _____ No changes have been made. I certify that the
22 transcript is true and correct.

23 _____
24 CLIFF READER, Ph.D.
25

A				
ability 113:14 able 10:13 24:25 25:2 26:10 27:12 32:18 35:8 61:5 110:8 113:16,16 121:25 absent 10:9 absolutely 49:4 126:7 acceptable 34:11 accreditation 22:16 accreditations 22:10 accredited 22:13 33:19,23 accumulate 28:2,6 accuracy 26:9 accurate 14:19 18:24 19:7 25:8 67:20 75:16 83:13 91:1 102:6 105:23 118:13 119:4 124:17 accurately 19:16 ACK 84:17 acknowledge 84:20 acknowledgments 97:22 acquired 31:24 act 126:5 acting 89:4 action 131:18,20 activated 87:20 active 22:15,18 activities 22:12 87:9 activity 23:13 30:15 36:19 37:1 37:8,12 42:7 45:7 48:10 actual 99:3 ad 45:7 116:25 adaptive 19:16 20:8 adaptively 20:16 add 19:11	adding 114:14 addition 27:13 65:19 additional 52:3 address 69:12 97:20 114:11 addressed 58:15 107:2 adds 34:23 administered 6:11 admission 93:21 adopted 48:15 adopting 48:20 ads 113:14 advance 11:5 26:15 32:19 35:8,13 advanced 21:11,14 21:14 89:19 advances 21:21 advantages 107:15 108:11 114:13 advertisement 116:4 advertisements 113:14,19 116:6 advertising 105:7 113:17 advice 23:4,7 71:6 71:7 77:21 Aerospace 24:11 25:9,17 29:20 affirmatively 121:1 affordable 21:25 34:19 agencies 24:19 Agency 26:7 agnostic 89:10 120:7,23 ago 14:7 48:6 55:12 55:17 59:21 62:12 86:7 100:4 114:16 agree 63:15 69:20 ahead 74:1 air 48:18 99:11 aircraft 25:3 algorithm 34:15 39:14	algorithms 21:23 50:7 Alice 70:1,6 Alice@Atlanta.c... 70:3 alleged 57:14 58:20 59:16 72:1 allocate 123:9 allowed 21:22 35:6 47:20 87:3 Alto 3:18,20 amendment 78:13 83:3 amount 29:14 65:20 amounts 59:14 analog 30:9 32:23 33:2,13 analysis 64:9,19 analyze 46:2 Angeles 19:13 announced 41:13 answer 7:15,16 10:17 64:16 90:2 90:13 93:19 107:16 answering 7:9 Anupam 3:16 6:1 11:19 apologies 38:2 46:14 53:13 63:17 67:11 74:9 80:1 101:24 apologize 11:5,8 apology 46:25 apparently 126:9 APPEAL 1:3 2:3 appear 130:11 APPEARANCES 3:1 applicant 71:23 application 4:15,17 4:21,23 51:13 52:9 55:24 56:2,3 56:6,7 59:20,25 61:1 88:24 89:1,5 90:24 104:9	113:13 115:5 applications 24:14 25:18 90:5,9 applied 48:5 54:1 66:7 applies 49:18 54:12 54:16 apply 54:8 64:13 appreciate 11:11 11:14 50:9 112:18 approach 19:18 36:16 approaches 58:13 appropriate 44:24 59:6 68:7 72:1 approximate 12:3 approximately 10:16 13:10 14:22 15:1 55:10 April 1:17 2:18 5:1 5:4 131:23 132:3 architected 31:8 area 18:3 32:9 39:3 areas 62:7 arena 35:2 arguably 7:2 argued 79:10 argument 79:1,19 arithmetic 34:22 arm 38:12 arrangement 41:20 art 34:16 57:3,9,13 57:15 58:13,14,18 59:1,4 60:15 63:4 64:6,6,8,24 65:3,8 65:11,17 86:17 95:3 107:14 112:5 ASCII 122:6 asharma@cov.co... 3:21 asked 31:25 35:23 36:20 40:16 42:6 42:16 106:23 111:7,12 aspect 29:18,21 aspects 12:10 92:3 associated 9:21	98:16 assume 7:17 10:10 104:13 assuming 29:12 ATSC 48:16,20,23 attached 130:12 attend 27:24 attending 5:12 43:8 43:10 44:9 attorney 5:19 38:14 39:6 131:19 attorneys 14:3,9 23:5 attorney's 38:21 AT&T 35:10 audio 12:13 30:21 31:3 34:8 35:25 37:2,3 39:14 43:17,25 47:18,20 47:21 48:1,14 49:5,22 87:24 augmented 37:10 authentication 87:4 author 46:2 authoring 32:8,13 32:16 authority 38:25 authors 97:20 available 58:21 89:2 112:7 AVS 22:22 23:24 41:19 AV1 42:5 aware 17:11 71:22 89:25 90:5,8 a.m 2:17 5:2,5 27:3 27:9,17 45:18,21 85:4 127:11
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