

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

ACORN SEMI, LLC,)	
)	
Plaintiff,)	
)	
VS.)	CASE NO.
)	2:19-cv-000347-JRG
SAMSUNG ELECTRONICS CO., LTD.,)	
SAMSUNG ELECTRONICS AMERICA,)	
INC., SAMSUNG SEMICONDUCTOR,)	
INC., and SAMSUNG AUSTIN)	
SEMICONDUCTOR, LLC,)	
)	
Defendants.)	

REPORTER'S RECORD
TRANSCRIPT OF JURY TRIAL (VOLUME 2)
BEFORE THE HONORABLE JAMES RODNEY GILSTRAP
May 14, 2021; 8:27 a.m.
MARSHALL, TEXAS

Proceedings recorded in realtime via machine shorthand.

Dana Hayden, CCR, RMR, CRR, CRC
Deputy Official Court Reporter
Dana@ArkansasRealtimeReporting.com

APPEARANCES**FOR THE PLAINTIFF:**

Douglas James Dixon

Neil Gordon Anderson

Justin Jeffery Sorensen

Hueston Henningan, LLP

620 Newport Center Drive, Suite 1300

Newport Beach, CA 92660

(949) 226-6741

DDixon@hueston.com

Nanderson@hueston.com

JSorensen@Hueston.com

Daniel Vinson

Julia Haines

Hueston Henningan, LLP

523 West 6th Street, Suite 400

Los Angeles, CA 90014

213-788-4340

Dvinson@hueston.com

Jhaines@hueston.com

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

APPEARANCES (cont'd)

FOR DEFENDANTS:

Mark D. Fowler

Carrie L. Williamson

Erik Fuehrer

Alan A. Limbach

DLA Piper US LLP

2000 University Avenue

Palo Alto, CA 94303

650-833-2000

Mark.fowler@us.dlapiper.com

Carrie.williamson@dlapiper.com

Erik.fuehrer@dlapiper.com

Alan.limbach@us.dlapiper.com

David R. Knudson

DLA Piper US LLP

401 B Street, Suite 1700

San Diego, CA 92101

619-699-2700

David.knudson@dlapiper.com

1 APPEARANCES (cont'd)

2 Melissa Richards Smith

3 Gillam & Smith, LLP

4 303 South Washington Avenue

5 Marshall, Texas 75670

6 903-934-8450

7 Melissa@gillamsmithlaw.com

8
9 Michael J. McKeon

10 Ruffin B. Cordell

11 Michael J. Ballanco

12 Fish & Richardson PC

13 1000 Maine Ave., SW, Suite 1000

14 Washington, DC 20024

15 202-783-5070

16 Mckeon@fr.com

17 Ballanco@fr.com

18
19 Timothy John Rawson

20 Fish & Richardson PC

21 12860 El Camino Real, Suite 400

22 San Diego, CA 92128

23 858-678-5070

24 Rawson@fr.com

25

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

I N D E X
(JURY TRIAL - VOLUME 2)
May 14, 2021

WITNESSES IN CHRONOLOGICAL ORDER:

PAGE:

STEPHEN DELL

Cross-Examination By Mr. McKeon	330
Redirect Examination By Mr. Dixon	389
Recross-Examination By Mr. McKeon	405
Redirect Examination By Mr. Dixon	409
Recross-Examination By Mr. McKeon	409

EDWIN PINER

Direct Examination By Ms. Rayburn	412
Cross-Examination By Mr. Cordell	566

1 ***** PROCEEDINGS *****

2 THE COURT: Are the parties prepared to read
3 into the record those items from the list of preadmitted
4 exhibits used during yesterday's portion of trial?

08:27AM

5 MR. DIXON: For Acorn, yes, your Honor.
6 Neil Anderson will be doing that on behalf of Acorn.

7 THE COURT: Let's proceed to do that.

8 MR. ANDERSON: Would you like --

9 THE COURT: From the podium, please.

08:28AM

10 MR. ANDERSON: Morning, your Honor. On behalf
11 of Acorn, we are reading into the record

12 PTX Number 00009. To shorten this, I will omit the
13 zeros. Also, PTX-19, PTX-91, PTX-92, PTX-171, PTX-176,
14 PTX-179, PTX-180, PTX-451, PTX-456, PTX-457, PTX-874,

08:28AM

15 PTX-1087, PTX-1089, PTX-1099, PTX-1304, PTX-1306,
16 PTX-1308, PTX-2460, PTX-2470, PTX-2471, PTX-2473,
17 PTX-2458, PTX-432, PTX-433, PTX-443, PTX-444, PTX-446,
18 PTX-449, PTX-450, PTX-1101, PTX-1103, PTX-2454,
19 PTX-2455, PTX-2456, PTX-2459, PTX-2474, and lastly,

08:30AM

20 PTX-1179.

21 THE COURT: All right. Is there any objection
22 to that rendition from the Defendants?

23 MS. DEGNAN: No, your Honor.

24 THE COURT: Do Defendants have a similar a
25 rendition to offer into the record?

08:30AM

1 MS. DEGNAN: Yes, your Honor.

2 Defendants offer in DTX-42 and 62.

3 THE COURT: Any objection from Plaintiff?

4 MR. ANDERSON: No, your Honor.

08:30AM

5 THE COURT: All right. Thank you, counsel.

6 Do I understand, counsel, that with regard to

7 Dr. Piner's testimony, one or both attorneys intend to

8 use large board demonstratives or easels or something

9 other than examination or cross-examination from the

08:30AM

10 podium? If so, I want to talk about it before we get to
11 that particular point.

12 As I've told you in chambers, I like to know
13 what's going to happen before it happens. If that's not
14 the case, just tell me.

08:31AM

15 MR. DIXON: Your Honor, at this time, we do
16 have a large board demonstrative, I believe, that we are
17 contemplating using with Dr. Piner, we put it up on the
18 easel just to see, and I believe your Honor stated that
19 we would keep the easel over there, but we don't intend
08:31AM 20 to move it anywhere else.

21 THE COURT: But you don't intend to ask the
22 witness to come off the witness stand?

23 MR. DIXON: No, your Honor.

08:31AM

24 THE COURT: Anything from the Defendants of a
25 similar nature?

1 MR. CORDELL: No, your Honor. That's the first
2 I've heard of the board, but I'll confirm with counsel
3 about which one it is.

08:31AM 4 THE COURT: Well, going forward, not only
5 should I know what's going to happen, each side should
6 know what the other side's going to do. Not the
7 substance of it, obviously, but the mechanics of it.

8 All right. Thank you, counsel.

08:31AM 9 Mr. McKeon, would you like to go to the podium
10 and prepare for cross-examination?

11 MR. McKEON: Thank you, your Honor.

12 THE COURT: And, Mr. Dell, if you'll return to
13 the witness stand, please, sir.

08:32AM 14 As you know, I'll remind you, you remain under
15 oath.

16 And would you bring in the jury, please.

17 (Whereupon, the jurors enter the courtroom.)

18 THE COURT: Good morning, ladies and gentlemen.
19 Please be seated.

08:32AM 20 When we recessed for the day yesterday, the
21 Plaintiff had passed the witness with regard to the
22 examination of Mr. Stephen Dell.

23 We'll now proceed with cross-examination of
24 Mr. Dell by the Defendants.

08:33AM 25 Mr. McKeon, you may proceed.

1 MR. MCKEON: Thank you, your Honor.

2 STEPHEN DELL,

3 having been previously duly sworn, testified as follows:

4 CROSS-EXAMINATION

08:33AM 5 BY MR. MCKEON:

6 Q. Good morning, Mr. Dell. I don't think we've
7 formally met before. I'm Mike McKeon, and it's nice to
8 see you.

9 A. Nice to see you. Good morning.

08:33AM 10 Q. Well, let's start off with something easy. You're
11 not offering any opinions on any issues related to
12 infringement; is that right?

13 A. That's correct.

14 Q. So you're not offering any opinion about whether
08:33AM 15 Samsung uses Acorn's patents, correct?

16 A. That's correct.

17 Q. Now, I thought I heard you say something yesterday
18 on a couple occasions that there was some suggestion of
19 the great extent of use of Acorn's patents by Samsung.
08:33AM 20 Did I hear that correctly from you yesterday?

21 A. Yes, sir.

22 Q. Now, you weren't intending for the jury to believe
23 that was your opinion, were you?

24 A. It was my opinion on extent of use with respect to
08:33AM 25 sales of products that are accused.

1 Q. Well, I think we just established, sir, that you
2 don't have an opinion about whether Samsung used Acorn
3 patents, correct?

08:34AM

4 A. Well, I assume infringement, so that's part of the
5 analysis.

6 Q. Okay. So you're not offering opinions about whether
7 there's actually use within the wafers accused in this
8 case, correct?

08:34AM

9 A. No, I don't offer infringement opinions because I
10 assume that Samsung infringed.

11 Q. All right. Now, what you are offering, of course,
12 is what a reasonable royalty for Acorn's patents would
13 be if a jury finds infringement, right?

14 A. That's correct.

08:34AM

15 Q. And, of course, we know the goal here is to arrive
16 at a reasonable royalty, not an unreasonable royalty,
17 correct?

18 A. The damages statute calls for a reasonable royalty,
19 that's correct.

08:34AM

20 Q. Okay. And, in your opinion, I believe we heard
21 yesterday that you believe that a reasonable royalty
22 would be \$326 million in this case, correct?

23 A. It would be calculated as \$326 million, but it's
24 applied a running royalty of 3.5 percent applied to the
25 extent of use or the sales at issue.

08:34AM

1 Q. Well, the number you want the jury to take away from
2 your testimony is \$326 million; is that right?

3 A. Correct, based on a royalty -- running royalty of
4 3.5 percent.

08:35AM

5 Q. Now, you heard yesterday that Mr. Morgan [sic]
6 testified that Acorn never contacted Samsung before it
7 filed the complaint here in federal court; isn't that
8 right?

9 A. Yes.

08:35AM

10 Q. So there was really no actual negotiation between
11 Acorn and Samsung that occurred in 2015; isn't that
12 right?

13 A. That's correct. That's why it's called a
14 hypothetical negotiation.

08:35AM

15 Q. Okay. Right. And your job, of course, was to see
16 what the parties would arrive at and agree at in a
17 hypothetical negotiation; isn't that right?

18 A. That's correct.

08:35AM

19 Q. And you had a slide with the two parties in a room,
20 and your point there was Acorn and Samsung would walk
21 into the room in 2015, and in this room, it would have
22 that hypothetical negotiation; isn't that right?

23 A. Generally, that's correct.

08:36AM

24 Q. And unlike the real world, in the hypothetical
25 negotiation, both sides would come into the meeting in

1 that room with all the relevant facts right there on the
2 table; isn't that right?

3 A. Yes, that's correct.

08:36AM

4 Q. And I think you had a slide that says, "The cards
5 would be on the table facing up"; isn't that right?

6 A. Yes, sir.

7 Q. And I believe you said also that -- you told the
8 jury that all the information learned in this trial
9 would be shared in the hypothetical negotiation?

08:36AM

10 A. I don't recall that I said it that way, but it's the
11 same type of information that would be available in this
12 litigation would also be available at the hypothetical
13 negotiation.

08:36AM

14 Q. Okay. So unlike the real world, in this room, they
15 are going to know a lot of things about each other in
16 that hypothetical negotiation; isn't that right?

17 A. Yes, that's the construct.

08:36AM

18 Q. Okay. So both parties, for example, would know that
19 Acorn, in 2015, would have been in business for 17
20 years?

21 A. Yes.

22 Q. And they would also know that Acorn was in the
23 business of developing and licensing intellectual
24 property?

08:36AM

25 A. Yes, that's true.

1 Q. And both parties, of course, would know that in the
2 17 years that Acorn had been in business, it had not
3 been profitable; isn't that right?

4 A. Yes, they would know that information.

08:37AM

5 Q. And, in fact, both parties would also know that
6 Acorn never made and sold a product incorporating the
7 technology of the patents; isn't that right?

8 A. That's correct. They would understand their
9 business.

08:37AM

10 Q. And we heard from Mr. Morgan yesterday that --
11 Mr. Horgan yesterday that Acorn had not earned any
12 revenue off the asserted patents at that point in 2015;
13 isn't that right?

14 A. Correct.

08:37AM

15 Q. And, in fact, we also heard from testimony from
16 Mr. Horgan that, you know, Acorn certainly was out there
17 trying; they had extensive meetings and they were trying
18 to commercialize and get licensing revenue for the
19 asserted patents prior to 2015; isn't that right?

08:37AM

20 A. Yes, sir.

21 Q. And -- but at that point, in that meeting in 2015,
22 it never licensed these patents to anybody; isn't that
23 right?

24 A. That's correct. The first patent issued in 2014.

08:38AM

25 Q. Okay. And Mr. Horgan also told you about the

1 meetings with GlobalFoundries, TSMC, Applied Materials.

2 Do you recall that?

3 A. Yes, sir.

08:38AM

4 Q. So Samsung, of course, would know, going into this
5 meeting, about all the things we discussed, right? They
6 would know that Acorn had been trying to license these
7 patents, no one has taken a license to the patents, and
8 Acorn has not been profitable and Acorn doesn't make
9 products with a patent; Samsung would know all that

08:38AM

10 going into the meeting; isn't that right?

11 A. Yes. All that information would be known between
12 the parties.

08:38AM

13 Q. And you've, of course, seen evidence in this case
14 that Samsung concluded that having an oxide in the
15 contact region decreased the performance of Samsung's
16 products; isn't that right?

17 A. I'm sorry. Can you reask the question, please.

08:38AM

18 Q. Sure. You've also seen evidence in this case that
19 Samsung concluded that having an oxide in the contact
20 region decreased performance in Samsung's products?

21 A. Yes. It's obviously very technical, so outside of
22 my expertise; but, yes, I have seen Samsung indicating
23 that.

08:39AM

24 Q. Okay. And Acorn would know, right, in this room,
25 that Samsung tries to avoid the presence of oxide in the

1 source/drain context?

2 A. They would know that's one of the things Samsung
3 claims, but there would obviously be discussions about
4 that.

08:39AM

5 Q. Right. What would be in Samsung's head would be
6 like, "We don't use this." Samsung, in their head, "We
7 don't use this," and Acorn would know that Samsung
8 thinks -- that's their belief -- they don't use their
9 technology. That's all in the room; isn't that right?

08:39AM

10 A. It is under the technical analysis, that's correct.

11 Q. All right. Now, the hypothetical negotiation in
12 2015 in that room, we know the parties would only be
13 negotiating for a license to Acorn's four patents in
14 this case; isn't that right?

08:39AM

15 A. Yes, sir.

16 Q. So the hypothetical negotiation would not include
17 trade secrets, for example?

18 A. Generally, that's correct.

08:40AM

19 Q. Okay. And we know -- of course, you know what a
20 trade secret is, sir, right?

21 A. Yes, sir.

22 Q. Okay. It's something closely guarded and can be
23 quite valuable, right?

08:40AM

24 A. They can be, yes, to the extent that they are not
25 publicly disclosed.

1 Q. And, for example, sort of a famous one everybody
2 knows about is Coca-Cola, right? It's a trade secret,
3 they've got the formula, and nobody knows about it;
4 isn't that right?

08:40AM

5 A. Correct, other than the people under that
6 confidentiality.

7 Q. Sure. I mean, some people know about it. They make
8 it. But only certain people know about it, and the rest
9 of the world does not know about the formula for

08:40AM

10 Coca-Cola; isn't that right?

11 A. I think that's the premise of it, yes.

12 Q. Sort of the secret sauce? In a trade secret, you
13 have a secret sauce, and no one knows about; isn't that
14 fair?

08:40AM

15 A. Sure. Generally, that's fair.

16 Q. And, of course, that makes it different than a
17 patent, right, because a patent, of course, is published
18 and everyone can see it; isn't that right?

19 A. Yes, patents are published, I agree.

08:40AM

20 Q. And we heard already in this trial something about
21 process flow that are developed by semiconductor
22 companies. Do you recall that?

23 A. Yes.

24 Q. And we also heard that to set up a fab to build

08:41AM

25 these semiconductors, it's a lot of investment, billions

1 and billions of dollars of investment to get a fab;
2 isn't that right?

3 A. Correct, with respect to the real estate and
4 equipment and other things, that's right.

08:41AM

5 Q. And you also -- of course, you've been in this
6 business a long time doing this work. You also know
7 that in the semiconductor business, the process flows
8 are really, really valuable; that is the essence of the
9 fab; it is highly, highly valuable and confidential to a
10 semiconductor company; you know that too, right?

08:41AM

11 A. Some of them can be, yes, but not all.

12 Q. Okay. Well, if someone's going to spend billions of
13 dollars setting up a fab and have a process flow, that's
14 going to be really valuable to them, isn't it?

08:41AM

15 A. Again, generally, at a high level, there are certain
16 aspects of that that would be, yes.

17 Q. Well, sir, you are not going to put the process flow
18 on the Internet and post it, are they?

08:41AM

19 A. Again, you're also -- I'm not the technical expert.
20 You're talking about process flows, so I don't know all
21 the details in that regard; but the manufacturing of
22 semiconductors generally is available and known in the
23 industry. But if you're talking about something more
24 specific, then there could be --

08:42AM

25 Q. Well, we're -- are you finished with your answer,

1 sir?

2 A. No. I'm sorry.

3 Q. Well, we'll get into this later. But, of course,
4 process flows, right, are of the essence of the
08:42AM 5 semiconductor fab; you agree with that?

6 A. It's a -- more of a technical question. I don't
7 know that I can agree with that one way or the other.

8 Q. Okay. Well, what we do know, though, that Samsung
9 would not, of course, get any Acorn know-how or trade
08:42AM 10 secrets in this hypothetical negotiation?

11 A. That's correct.

12 Q. So no secret sauce going from Acorn to Samsung in
13 the hypothetical; isn't that right?

14 A. That's correct. It's only the patent rights.

08:42AM 15 Q. Now, the royalty that you came up with in the
16 hypothetical negotiation was 3.5 percent, right?

17 A. Yes, sir.

18 Q. And that's just for patents, correct?

19 A. That's correct.

08:42AM 20 Q. And even though some of the patents did not exist in
21 2015, it is your opinion that Samsung would negotiate a
22 license that would cover any layer-generated patent in
23 the family, correct?

24 A. That's correct.

08:43AM 25 Q. And that is because you believe Samsung would

1 negotiate a deal that provided it freedom to operate
2 without the need to enter into separate negotiations for
3 subsequently issued patents; isn't that right?

4 A. Yes, sir, that's correct.

08:43AM

5 Q. And, in fact, you believe that even if only one
6 patent was asserted in this case, your opinion would be
7 the royalty rate would still be 3.5 percent; isn't that
8 right?

9 A. Yes, that's correct.

08:43AM

10 Q. And similarly, if Acorn had more than the four at
11 issue in this case, you believe it would still be
12 3.5 percent, correct?

13 A. Well, I'm not sure which other four you would be
14 talking about, if they are related or not. There would
15 be some differentiation there.

08:43AM

16 Q. Well, let me ask again. So do you believe that if
17 Acorn had asserted more than four patents; for example,
18 five patents, you believe the rate would still be
19 3.5 percent, correct?

08:44AM

20 A. To the extent that the scope of the patents cover
21 the same claims and benefits, yes.

22 Q. And the royalty base you calculated reflects what
23 you call the cost of the accused wafer; is that right?

24 A. That's correct, yes.

08:44AM

25 Q. And I think sometimes you call it the value of the

1 wafer?

2 A. Correct.

3 Q. Now, of course, you agree that it's not like Acorn
4 invented everything on that wafer; you agree with that;
08:44AM 5 isn't that right?

6 A. I agree.

7 Q. And we also know by now, everybody in the courtroom
8 knows that this case is about a very specific oxide
9 layer in the contact in -- alleged to be in Samsung's
08:44AM 10 product. We know that's the issue in this case; isn't
11 that right?

12 A. Yes, a foundational layer in that process, correct.

13 Q. Okay. And you agree that there's a lot of other
14 technology and a lot of other stuff in that wafer that
08:44AM 15 has nothing to do with Acorn, right?

16 A. I would agree that there are other technologies in
17 the wafer, that's correct.

18 Q. Okay. Well, you're not saying that Acorn invented
19 all the technology in the wafer, are you, sir?

08:45AM 20 A. No, sir.

21 Q. And you, sir, as I recall your testimony, you did
22 not subtract anything from the wafer price to reflect
23 the value of all that other stuff that Samsung did;
24 isn't that right?

08:45AM 25 A. No, I disagree.

1 Q. Well, you had no further apportionment of the
2 royalty base because you didn't think it was necessary;
3 isn't that right?

08:45AM 4 A. I wouldn't say I didn't think it was necessary, but
5 I did apportion the royalty base as I discussed
6 yesterday.

7 Q. Let's get your deposition, if we can. And by the
8 way, you were deposed in this case, sir?

9 A. Yes, sir.

08:45AM 10 Q. And you were under oath; isn't that right?

11 A. That's correct.

12 Q. Let's get your deposition at 256-17 to 257-2, and
13 I'll read at 17.

08:45AM 14 "So you didn't take the cost -- the costs
15 values, as you're calling it, from the sale of that
16 wafer and subtract anything from the -- an individual
17 wafer price to reflect any other structures reflected in
18 the wafer itself, right?"

08:46AM 19 "No. To the extent I understand your
20 question, no, I did not do that, as it's not necessary."

21 Did I read that correctly?

22 A. You did. That's after the apportionment step I
23 already did.

08:46AM 24 Q. Sir, the apportionment step you already did, you
25 weren't apportioning down from the wafer. You were --

1 these were downstream products you were talking about;
2 isn't that right?

3 A. No, sir.

08:46AM 4 Q. What we do know, though, is you believe it wasn't
5 necessary to go from the wafer price or the value, as
6 you call it, and go down; you didn't think that was
7 necessary; isn't that right?

08:46AM 8 A. No, sir. I disagree. I do think it's necessary,
9 and I did that as part of the analysis up to a portion
10 of the wafer that I used as the royalty base.

11 Q. Are you saying that you apportioned down from the
12 wafer price, the total wafer price? Are you saying that
13 you apportioned down to account for the contributions of
14 Samsung from the total wafer price?

08:47AM 15 A. Yes, sir, because the wafer price I used is actually
16 the cost of the wafer, not the retail price of the
17 wafer, as we consulted.

08:47AM 18 Q. Thank you, sir. Let me ask you this. Let's use
19 your lingo, the cost of the wafer price. Is it correct,
20 sir -- strike that.

21 It is correct you did not apportion down
22 from the cost of the wafer price, correct?

23 A. From the cost that I use, I didn't further apportion
24 from that level, but that is already apportioned cost.

08:47AM 25 Q. Now, in the hypothetical negotiation, the parties

1 would also have a broader understanding of the
2 semiconductor industry; isn't that right?

3 A. Yes, generally.

08:47AM 4 Q. In your report, you mention the semiconductor
5 industry has been around for half a century; isn't that
6 right?

7 A. Yes.

8 Q. And over the decades, semiconductor devices have
9 constantly been changing; isn't that right?

08:48AM 10 A. That's correct.

11 Q. For example, in your report, you explain that
12 manufacturers have been shrinking their devices at a
13 relatively constant pace?

14 A. Yes. As my overview of the industry, correct.

08:48AM 15 Q. And you explain in your report how this shrinkage of
16 transistor size is part of what is called Moore's law,
17 that the number of transistor per unit area doubles
18 roughly every two years; isn't that right?

19 A. Yes, that's correct.

08:48AM 20 Q. And Samsung, of course, the 14-nanometer devices are
21 a step in that progression; isn't that right?

22 A. In the -- and by "progression," you mean in the
23 shrinking of chips?

24 Q. Yes, sir.

08:48AM 25 A. That's correct.

1 Q. You're, of course, aware that prior to
2 14-nanometers, Samsung made other nodes like the
3 28-nanometer; isn't that right?

4 A. Yes, that's correct.

08:48AM

5 Q. And the 28-nanometer is not at issue in this case;
6 isn't that right?

7 A. No, it is not.

08:48AM

8 Q. And in your report, you also acknowledge three
9 fundamental issues that had to be addressed in order to
10 shrink the size of the transistor from the planer
11 28-nanometer approach to the FinFET 14-nanometer
12 approach, correct?

13 A. Yes, that's correct.

08:49AM

14 Q. And the first was the transistor geometry which
15 involved going from the planer to the three-dimensional;
16 isn't that right?

17 A. Yes.

18 Q. And the second -- well, let me ask one question
19 about that.

08:49AM

20 In your report, you said that Samsung
21 thought that the breakthrough solution that allowed it
22 to shrink from 28-nanometer to 14-nanometer was the 3D
23 FinFET technology; isn't that right?

08:49AM

24 A. I think I recall there was three issues that had to
25 be resolved for that breakthrough.

1 Q. Okay. Well, let's get your report at -- Dell report
2 at Paragraph 64. And we have it on the screen, sir.
3 You see, "The breakthrough solution, also referred to by
4 Samsung as a radical innovation, was the FinFET
08:50AM 5 technology, which unlike the conventional 2D planar
6 structure, where the gate sits over flat source/drain,
7 FinFET is a 3D structure that wraps around the gate
8 oxide -- that wraps the gate with the gate oxide around
9 the fin-shaped source/drain." Do you see that?

08:50AM 10 A. I do.

11 Q. Okay. So the 3D structure, as you quote here in
12 your report, that was what Samsung thought was a
13 breakthrough solution; isn't that right?

14 A. Correct. With the other technologies, including the
08:50AM 15 oxide and the source/drain technologies that were being
16 advanced.

17 Q. Well, you don't say that here in this paragraph;
18 isn't that right?

19 A. I do. That's what's at the very last sentence that
08:50AM 20 we talked about.

21 Q. You are not going to show the jury anything in this
22 case, sir, that Samsung thought the breakthrough
23 solution was oxide in the contact; you're not going to
24 show the jury anything like that, are you?

08:51AM 25 A. Well, that's more of the technical nature, so I

1 understand all of that from Dr. Piner, which I do
2 discuss in my report.

3 Q. Sir, I got on the screen here technical nature.
4 You're not afraid of putting technical nature in your
08:51AM 5 report. You say here in your report, the breakthrough
6 solution, in Samsung's opinion, in their mind when they
7 go to the hypothetical negotiation, in their mind, the
8 breakthrough solution was the 3D structure; isn't that
9 right?

08:51AM 10 A. Correct. This is quoting from Samsung's own
11 documents.

12 Q. And the second fundamental issue --

13 MR. MCKEON: You can take that down. Thank
14 you, Mr. Sayres.

08:51AM 15 Q. The second fundamental issue that had to be solved
16 to go from 28- to 14-nanometer was the source-to-drain
17 leakage; isn't that right?

18 A. Yes, sir.

19 Q. And the third fundamental issue that had to be
08:51AM 20 addressed was contact resistance, in your opinion,
21 right?

22 A. That's correct.

23 Q. And you understand that of the three technical areas
24 we just went over, your view is the asserted patents
08:51AM 25 only relate to the third issue, the contact resistance,

1 correct?

2 A. It's my understanding from Dr. Piner that that's the
3 case, yes.

08:52AM

4 Q. Okay. And when the parties sat down in that room at
5 the negotiation table, they would both recognize that
6 there's a lot of other cool technology in that wafer
7 that doesn't deal -- that goes beyond the contact
8 resistance; isn't that right?

08:52AM

9 A. Yes, they would acknowledge there were other
10 technologies but also acknowledge the technological
11 importance of each of those.

08:52AM

12 Q. Now, somebody you said yesterday I want to make sure
13 I'm clear on. You said that Acorn's patents -- you have
14 a view that Acorn's patents were foundational and
15 provided Samsung the ability to actually go to
16 14-nanometer node. Did I get that right?

17 A. Yes, sir, based on my understanding from Dr. Piner,
18 that's correct.

08:52AM

19 Q. Mr. Piner -- Dr. Piner told you that they were
20 foundational and you just repeated that in court
21 yesterday; is that right?

22 A. That's correct. Because it's technical in nature.

08:53AM

23 Q. Now, of course, Mr. Horgan had indicated yesterday
24 that he's not aware of whether other companies are using
25 his technology in the Acorn patents. Do you recall

1 that?

2 A. I recall some discussion about that yesterday.

3 Q. And we heard about the big four fabs yesterday. Do
4 you recall that?

08:53AM 5 A. Yes, sir.

6 Q. TSMC, UMC, GlobalFoundries, and then, of course,
7 Samsung. Do you recall that?

8 A. Yes, sir.

9 Q. And, of course, these big four fabs make
08:53AM 10 semiconductors; isn't that right?

11 A. Generally, yes.

12 Q. And all those global four, they do FinFETs; isn't
13 that right?

14 A. I don't know that I can speak to all four doing
08:53AM 15 FinFETs necessarily. I understand GlobalFoundries did
16 at one point and Samsung does. But --

17 Q. But for your opinions in this case, you didn't
18 research whether the other companies were using the
19 FinFET technology?

08:53AM 20 A. Well, I know that all those fabs have -- they
21 manufacture semiconductors; and as the semiconductor
22 structures have changed, they have evolved, but I didn't
23 look at some of those other fabs specifically, as that
24 wasn't part of my analysis.

08:54AM 25 Q. Well, we did hear Mr. Horgan tell you that Intel

1 does the FinFET, right?

2 A. That's correct.

3 Q. And, in fact, Intel has been doing FinFET technology
4 since 2011; isn't that right?

08:54AM 5 A. That's correct.

6 THE COURT: Mr. McKeon, could you slow down
7 just a little bit?

8 MR. McKEON: Sorry, your Honor. It's my bad
9 habit.

08:54AM 10 THE COURT: I want to make sure everybody
11 follows you.

12 MR. McKEON: Thank you. I appreciate that.

13 THE COURT: Please continue.

08:54AM 14 Q. So Intel was doing FinFETs since 2011; isn't that
15 right?

16 A. My recollection from the testimony is that's when
17 they introduced it or announced it.

08:54AM 18 Q. Okay. And Mr. Horgan testified yesterday that he's
19 never made a claim against Intel, he's never sent them a
20 letter, he's never sued them, and he doesn't even know
21 if they are using this technology; isn't that right?

22 A. I heard his testimony.

08:54AM 23 Q. So you're telling the jury, according to Mr. Piner,
24 that this -- these patents are foundational to go to the
25 FinFET technology; yet, Intel's out there and

1 apparently, you know, they don't have the foundation.

2 They are doing it, right?

3 A. Correct. Because we're looking at what Samsung is
4 using the technology for.

08:55AM

5 Q. Oh, so -- oh, I get it. So in A- -- in Samsung,
6 Acorn's patents are foundational; but when Intel has the
7 FinFETs since 2011, not so much? Is that what's going
8 on, sir?

08:55AM

9 A. I can't speak to what Intel's doing. That's not
10 what we're looking at in this case.

11 Q. Well, did you talk to Mr. Piner about that when he
12 was telling you that these were foundational? Did you
13 ask him whether anyone else in the industry was doing
14 the FinFET technology?

08:55AM

15 A. Generally, we had that discussion, but it was more
16 focused on Samsung since this case is involving Samsung
17 and their use of the Acorn patents.

08:55AM

18 Q. Now, you also mentioned, of course, the
19 Georgia-Pacific factors. And members of the jury
20 probably never heard that before, Georgia-Pacific
21 factors; isn't that right?

22 A. Yes, sir.

23 Q. And in the patent world, that's -- patent folks deal
24 with that issue; isn't that right?

08:55AM

25 A. Yes, and mostly valuation folks, but, yes.

1 Q. Right. And it's a famous case, and they -- a long
2 time ago, and it was that 15 factors; isn't that right?

3 A. Yes, that's correct.

4 Q. All right. Let's go to the --

08:56AM

5 MR. MCKEON: If I could have, your Honor,
6 Ms. Brunson give me the ELMO.

7 Q. Okay. I'm going to put up your slide on this. On
8 your slide here, these are the 15 factors; isn't that
9 right?

08:56AM

10 A. Yes, sir.

11 Q. And the very first factor, like Number 1 in this
12 really, really important list, is what I'm circling
13 here, right? And that very first factor is, "Royalties
14 received by the patentee for licensing of the
15 patent-in-suit." Do you see that?

08:56AM

16 A. I do.

17 Q. And, of course, this is important because if there's
18 a long history of licensing the patents-in-suit, that
19 will provide some useful data points about what the rate
20 should be in the case; isn't that right?

08:56AM

21 A. It can be. In some cases, it makes all the other
22 factors -- if you have an established licensing policy,
23 it changes the length of the other factors.

24 Q. But in this case, sir, you skip over one because
25 Acorn, in fact, doesn't have any licenses; isn't that

08:57AM

1 right?

2 A. No, sir, I didn't skip over it. I analyzed it, but
3 I recognized that they did not have any licenses.

08:57AM

4 Q. So you couldn't apply that Factor 1 in this case
5 because it had no licenses; is that fair?

6 A. That's not fair. I analyzed it and assessed it, so
7 I recognized that they didn't have any. So I did
8 analyze it as part of my analysis.

08:57AM

9 Q. Okay. And the second factor, of course Number 2,
10 behind Number 1 on the list, is Samsung, and I'm
11 circling that here on the ELM0, is the rates paid by the
12 licensee for use of other comparable patents. Do you
13 see that?

14 A. I do.

08:57AM

15 Q. And this is licenses that Samsung has; isn't that
16 right?

17 A. Correct, that they have entered into.

08:57AM

18 Q. Yeah. And the theory here is that if it's
19 comparable licenses, that Samsung goes around paying
20 other people for technology that's comparable, that's
21 relevant to this whole analyses; isn't that right?

22 A. It can be relevant; although understanding what the
23 agreements themselves are and their comparability is
24 another important aspect of that.

08:58AM

25 Q. Okay. And you reviewed almost, I think you said 20

1 agreements from Samsung that were in this case; isn't
2 that right?

3 A. Yes, sir.

08:58AM

4 Q. And these are actual deals that Samsung entered
5 into; isn't that right?

6 A. They were all settlements of litigation, but, yes.

7 Q. And I think you -- four of them, necessarily, you
8 identified that made the first cut. Do you recall that?

08:58AM

9 A. They were actually the four agreements that were --
10 that had technical comparability.

11 Q. Okay. The KAIST and the University of -- UNM
12 agreement, Katana agreement were among those; isn't that
13 right?

14 A. Yes. There was another one in there, as well.

08:58AM

15 Q. University of Illinois; isn't that right?

16 A. That's correct.

17 Q. Okay. And, now, out of the licenses that you
18 reviewed in this case, 20, you didn't see any of the
19 Samsung licenses, any evidence that Samsung ever paid
20 \$326 million for a license, did you?

08:59AM

21 A. Not in those select licenses, no.

22 Q. And out of the licenses you reviewed, the ones that
23 are at issue in this case, you didn't see any evidence
24 in this case that Samsung paid even \$200 million for a
25 license, did you?

08:59AM

1 A. No, not in those agreements.

2 Q. And you didn't see any evidence that Samsung ever
3 paid even \$100 million for a license in those
4 agreements; isn't that right?

08:59AM 5 A. I don't believe so, no.

6 Q. Yeah. And I don't want to -- we're in open court,
7 so I don't want to mention party names, okay? But
8 yesterday you testified about another license, and it
9 was a Samsung license, and what you know from the

08:59AM 10 agreement you looked at, the most Samsung ever paid in
11 all the agreements you looked at was \$52 million, wasn't
12 it?

13 A. Correct, for the agreements, only the 20 agreements
14 that were produced, as described.

09:00AM 15 Q. The agreements that the parties analyzed in this
16 case to look at the hypothetical negotiation, the
17 highest number of all of those was \$52 million; isn't
18 that right?

19 A. That's correct, for those agreements.

09:00AM 20 Q. And that is about 274 million more -- let me back up
21 a second.

22 You're asking the jury to conclude that the
23 hypothetical negotiation resulted in \$326; isn't that
24 right.

09:00AM 25 A. Yes, sir, based on a royalty -- running royalty of

1 3.5 percent.

2 Q. And that's about \$274 million more than the highest
3 amount Samsung's ever paid out of the 20 licenses that
4 you looked at; isn't that right?

09:00AM 5 A. Correct, for the agreements produced in this case.

6 Q. And, in fact, you said that Samsung -- let me, if I
7 can, just switch the slide and the ELM0 so we can round
8 ourselves. And this is a slide you presented yesterday;
9 isn't that right?

09:01AM 10 A. Yes, sir.

11 Q. And I think what you are saying in the slide is that
12 Samsung walks into the room and they are going to say,
13 "Okay, we're going to agree to pay Acorn 2 percent of
14 the wafer cost," as you say; isn't that right?

09:01AM 15 A. That's correct.

16 Q. Okay. And here Acorn's at 5 percent; isn't that
17 right?

18 A. Yes, sir.

19 Q. And 2 percent applied to your royalty base comes out
09:01AM 20 to be \$186 million; is that -- that sound right to you?
21 I did the calculator.

22 A. Generally, that sounds correct.

23 Q. Okay. And that number, the \$186 million, that would
24 be the starting number when Samsung walks into the room.

09:01AM 25 They are going to walk in, in your opinion, 2 percent,

1 they are going to walk in knowing all that stuff we
2 covered, and they are going to walk in and say, "You
3 know what? We're starting our negotiation at \$186
4 million." That's your opinion; isn't that right?

09:02AM

5 A. That's correct, based on the real-world licenses
6 that we've seen.

7 Q. And your opinion, then, is that Samsung would start
8 the negotiation with Acorn with an offer that is more
9 than triple the highest amount of the Samsung agreements
10 you reviewed in this case. That's their starting offer;
11 isn't that right?

09:02AM

12 A. Yes, it is, based on the analysis I presented
13 yesterday.

14 Q. And on the other side, when Acorn goes into the
15 room, they would demand 5 percent, right?

09:02AM

16 A. That's correct.

17 Q. And the 5 percent number -- I did the calculator --
18 that's \$465 million; isn't that right?

19 A. Yes, that sounds correct.

09:02AM

20 Q. So Acorn walks in the room, a company that has never
21 made anything, right, never produced anything under the
22 patents, never licensed the patents, they walk in the
23 room and their offer, starting offer is \$465 million;
24 isn't that right?

09:03AM

25 A. No, sir. Their offer is a 5 percent running royalty

1 based upon the sales of the products that would be
2 licensed under the agreement. That's the offer of how
3 the parties would negotiate.

09:03AM 4 Q. Sir, in the hypothetical negotiation, we are -- our
5 cards are up. We know what's going to happen. They
6 know that number's going to be \$465 million.

7 Mr. Horgan's smiling and he's in that negotiation table,
8 and very unsuccessful legacy program, but he's going to
9 go in there and say \$465 million. Isn't that he's going
09:03AM 10 to say?

11 A. No, he's going to request a royalty of 5 percent as
12 a starting point of his negotiation.

13 Q. Now, this 2-to-5 percent range that we see here on
14 the slide, that didn't come from Georgia-Pacific
09:03AM 15 Factor Number 1?

16 A. I'm sorry. Can you repeat the question.

17 Q. Sure. The 2-to-5 percent starting range here,
18 5 percent Acorn, 2 percent Samsung, that didn't come
19 from Georgia-Pacific Factor Number 1, did it?

09:04AM 20 A. Not Georgia-Pacific Factor Number 1, no.

21 Q. And the 2 to 5 percent didn't come from Number 2,
22 either; is that right?

23 A. Not specifically, no.

24 Q. So it didn't come from the Acorn agreement, didn't
09:04AM 25 come from the Samsung agreement, correct?

1 A. The rate itself did not, no.

2 Q. And I'm going to put this slide back up so we can
3 keep track of Number 1 and Number 2. So what we see
4 here is that you went all the way down to

09:04AM

5 Georgia-Pacific Factor 12, and those -- that's when you
6 get your rates; isn't that right?

7 A. The rates come from the analysis in Factor 12,
8 that's correct.

09:04AM

9 Q. Okay. Thank you. That's -- I appreciate that. You
10 went all the way down to 12, and out of the analysis
11 under 12 is where you get your rates; isn't that right?

12 A. Yes, but it's not all the way down. All the factors
13 are to be considered.

09:05AM

14 Q. And the agreements that you consider under
15 Factor 12, those were the ones produced to the parties
16 in this case; isn't that right?

17 A. That's correct.

18 Q. You went on the Internet, you went to Google and did
19 a little Googling and you found them; isn't that right?

09:05AM

20 A. No, sir, that's not correct. We didn't Google
21 these. These came from a reliable source that actually
22 provides this type of information.

23 Q. Well, you didn't go on the Internet and get them,
24 sir?

09:05AM

25 A. Technically they're sourced from the Internet, but

1 it's through a subscription, a company that provides
2 them to us.

3 Q. Okay. And it was a -- it's a database that you ran
4 through. A database is where you got these; isn't that
09:05AM 5 right?

6 A. Correct. A database used by valuation professionals
7 such as myself.

8 Q. And that database includes thousands of agreements;
9 isn't that right?

09:05AM 10 A. Yes, they did.

11 Q. And although you picked agreements with a range of
12 2 to 5 percent, there were other semiconductor
13 agreements with a much lower rate, such as .1 percent;
14 isn't that right?

09:06AM 15 A. Generally, they were; but those were on chip
16 revenue, not wafer revenue.

17 Q. They were -- here's my question, sir: There were
18 rates going down to .1 percent in that database for
19 semiconductor; isn't that right?

09:06AM 20 A. That's correct, they were royalty rates at that, at
21 that level.

22 THE COURT: Mr. McKeon, if you think the
23 witness is nonresponsive to your question, don't tell
24 him to answer your question. You visit with the Court,
09:06AM 25 okay?

1 MR. McKEON: Okay. Thank you, your Honor.
2 Appreciate that guidance.

3 Q. All right. Well, let's cut to the chase and let's
4 look at your list. And here's your -- the list you
09:06AM 5 presented to the jury. These are the four; isn't that
6 right?

7 A. Yes, sir.

8 Q. And you rely on that first one there, all the way to
9 the left. It's a 1999 technology transfer agreement
09:06AM 10 between Motorola and Chartered; isn't that right?

11 A. Yes, sir.

12 Q. Now, so we're clear, Acorn is not a party to that
13 agreement; isn't that right?

14 A. Correct.

09:06AM 15 Q. And Samsung is not a party to that agreement; isn't
16 that right?

17 A. Yes, that's correct.

18 Q. And you rely on this agreement for the 2-percent or
19 3-percent rate; isn't that right?

09:07AM 20 A. Yes. It provides a data point of 2 percent and 3
21 percent.

22 Q. Okay. And you say here, we see right here, this is
23 the -- where my pen is, that's where the agreement is.

24 You've got 2 to 3, and you've got number of patents, a
09:07AM 25 portfolio you've got listed there; is that right?

1 A. That's correct.

2 Q. All right. Let's take a look at that agreement.

3 MR. MCKEON: If I can get PTX-182, Mr. Sayres,
4 and let's just go to the first page.

09:07AM

5 Q. And this is the agreement here, right, sir? It's
6 between Motorola and Chartered; isn't that right?

7 A. Yes, sir.

09:07AM

8 Q. And, of course, as the agreement says, this is a
9 Technology Transfer and License Agreement; isn't that
10 right?

11 A. That's correct.

12 Q. And Chartered paid 3 percent under this agreement up
13 to a certain point and then paid 2 percent after that;
14 isn't that right?

09:07AM

15 A. Yes, after a certain level of royalties were paid.

16 Q. And you don't know the amount of royalties that were
17 actually paid under these rates, the actual dollars that
18 were paid, do you?

19 A. No. I don't have that information.

09:08AM

20 Q. And the 2 percent rate that you say Samsung walks
21 into the room, the 2 percent rate comes from this
22 agreement; isn't that right?

23 A. Not in isolation, no. There's a number of licenses
24 I look at that provide that range of rates.

09:08AM

25 Q. Well, this is -- the 2 percent number, though, comes

1 from here? You considered other things, but this is the
2 one that you get it from; isn't that right?

3 A. Generally, yes.

09:08AM 4 Q. Okay. Now, yesterday -- and on the slide here, you
5 say that the agreements include patents; is that right?

6 A. Correct.

7 Q. Okay. And let's look at that more closely.

8 MR. MCKEON: Paragraph -- please pull up that
9 agreement, 182 -- 182-3, PTX-182-3. Then go to 110.

09:09AM 10 Q. Now, sir, this is the definition of "intellectual
11 property" that's licensed under the agreement; isn't
12 that right?

13 A. Yes, sir.

09:09AM 14 Q. And I might be missing something. My eyes are
15 getting bad, I'm getting older, but let me look at this.
16 Means, "All intellectual property including but not
17 limited to copyrights, trade secrets and know-how, but
18 specifically excluding patents." Do you see that?

19 A. I do.

09:09AM 20 Q. The definition, sir, of this agreement you get the
21 rate from doesn't -- it excludes that, correct?

22 A. Under this definition, that's what this says, yes.

09:09AM 23 Q. So you rely on this agreement for these rates,
24 2 percent, 3 percent, as part of your analysis for the
25 hypothetical negotiation for a patent license in an

1 agreement that isn't a patent license, correct?

2 A. No, that's not correct.

3 Q. Now, what we do know, of course, here is that in
4 addition to the license rights, the copyrights, trade
09:10AM 5 secrets and know-how, Motorola gave certain technology
6 to Chartered so that Chartered could make and sell
7 products to Motorola and others, correct?

8 A. Yes, sir, that's correct.

9 Q. Okay. And let's look up, if I can, at PTX-182-6.
09:10AM 10 And if I can go to 2.1.

11 And it says here, "Motorola will provide to
12 CSP and CSM, Chartered, design rules, target library
13 information, toolset lists, process flows."

14 Do you see that?

09:10AM 15 A. I do.

16 Q. So this license, sir, that, under the definition of
17 the intellectual property, doesn't include patents, but
18 it does include the secret sauce, right?

19 A. It does include the secret sauce but also does
09:11AM 20 include patents, when you look at the totality of the
21 agreement.

22 Q. The totality of this agreement, you're saying,
23 includes patents, sir?

24 A. Yes, it does, because it also references an
09:11AM 25 agreement signed concurrently with this agreement.

1 Q. Well, that's very interesting. Agreement signed
2 concurrently with it. Is that what you're saying?

3 A. Yes, sir.

4 Q. And concurrently would mean the same day?

09:11AM

5 A. Or effective the same day, correct.

6 Q. Okay. And you're saying there's an agreement signed
7 with this, the same day, that tells you includes
8 patents?

09:11AM

9 A. Yes. In fact, even the provisions in this agreement
10 talk about rates paid for patent rights.

11 Q. Well, let's look at that, sir. Because I'm looking
12 here at two exhibits on your slide. PTX-182, we were
13 just looking at. That's the technology transfer; isn't
14 that right?

09:11AM

15 A. Yes, sir.

16 Q. There's another agreement here; isn't that right?

17 A. That's correct.

18 Q. PTX-171; isn't that right?

19 A. Yes, sir.

09:12AM

20 Q. Why don't we look at that one. If we go to PTX-171,
21 this is a Patent License Agreement, isn't it?

22 A. Yes, it is.

23 Q. And this is between Motorola and Chartered, right?

24 A. Correct.

09:12AM

25 Q. And if we look at this agreement, sir, this is

1 licensing patents; isn't that right?

2 A. Yes, it is.

3 Q. And this agreement, sir, that you have on your
4 slide, you said something about concurrently or
09:12AM 5 herewith, it's dated 2003.

6 A. That's correct.

7 Q. Okay. It's not concurrently herewith. It's 2003.
8 It's four years later.

9 A. Yes, from the date perspective. I was referring to
09:12AM 10 the other provision in the agreement which references
11 this agreement.

12 Q. Well, we're going to get to that in a minute, okay?
13 But this agreement that you have on your slide and you
14 told the jury to go look at, this is the Patent License
09:13AM 15 Agreement?

16 A. Correct.

17 Q. And the other agreement excluded patents, correct?

18 A. Yes, in the provision that you showed me, that's
19 correct.

09:13AM 20 Q. This agreement includes patents, correct?

21 A. Yes, sir.

22 Q. And did you tell the jury, sir, in your testimony
23 yesterday the royalty rate that's in this agreement for
24 patents? Did you tell the jury that yesterday? I

09:13AM 25 didn't hear it.

1 A. Yes, it does include -- both agreements we're
2 talking about include rights or royalties paid for
3 patents.

4 Q. Well, let's look at Section 4.1.2 at PTX-171-10.

09:13AM

5 And, sir, that rate there is .2 percent; isn't that
6 right?

7 A. Correct, on semiconductor chips.

8 Q. So in the patent license, sir, in the patent license
9 between Motorola and Chartered, the rate is .2, correct?

09:13AM

10 A. Correct, for the licensed products in that
11 agreement.

12 Q. And your testimony here today, sir, is that Samsung
13 is going to walk into the room, going to walk into that
14 room, sir, and they've got the technology transfer
15 agreement that has a 2-to-3 percent rate, they know

09:14AM

16 about it, right, and it excludes patents in the
17 definition, and they are going to walk into the room
18 with an actual patent license that's .2 percent to
19 Motorola's patents, and they are going to walk into that

09:14AM

20 room and they are going to say, "Boy, patent license or
21 a technology transfer license that includes the secret
22 sauce," the secret sauce, and they are going to say,
23 "You know what? Yeah, we won't do .2. We should give
24 Acorn the 3 percent." That what Samsung is going to
25 conclude; is that what your testimony is?

09:14AM

1 A. It is, because it's important to understand --

2 Q. Is that what your saying?

3 A. Yes, that is what I'm saying.

4 MR. McKEON: Sorry, your Honor.

09:14AM

5 THE COURT: Let's limit your answers to the
6 questions asked. Mr. Dixon is going to ask follow-up
7 questions in a minute.

8 Go ahead, Mr. McKeon.

9 MR. McKEON: Thank you, your Honor.

09:15AM

10 Q. And what we do know, sir, from basic math, 2 percent
11 is 10 times more than .2 percent, right?

12 A. Mathematically, that's correct.

09:15AM

13 Q. And, sir, I don't know. In a negotiation in the
14 real world, if I was looking at two agreements, I'm
15 going to go in there; in the real world, if I had a data
16 point of .2 and a data point of 2 percent, somebody
17 that's buying a house, you're going to go to the .2,
18 right? You aren't going to go to the 2 percent; isn't
19 that, like, fair?

09:15AM

20 A. That's not fair. You have to understand what you're
21 paying it on.

22 Q. Now, one thing about the agreement we should look up
23 again is if we get --

09:15AM

24 MR. McKEON: Mr. Sayres, if you go to the first
25 page. It's -- 1821 is the Bates page. Is PTX-181. The

1 date of the agreement there, sir, is May of 1999. Do
2 you see that?

3 A. I do.

09:16AM

4 Q. So this agreement was entered into about 15 years
5 before the hypothetical negotiation?

6 A. That's correct.

7 Q. And you believe that the semiconductor technology
8 from 1999 is similar to the Acorn technology in the
9 hypothetical negotiation; isn't that right?

09:16AM

10 A. In terms of technical contribution, they are
11 similar, yes.

12 Q. Well, the semiconductor world, sir, is very
13 different in 1999 than it is today, and certainly in
14 2015; isn't that right?

09:16AM

15 A. Sure. I would defer to the technical experts; but
16 generally, I understand that to be the case.

17 Q. And I don't know about you, sir. 1999 seems, to me,
18 at least, a long time ago. Do you agree with that?

19 A. Yes, sir.

09:16AM

20 Q. And, in fact, I peeked at your resume. In 1999,
21 sir, you were barely out of high school. Did you know
22 that?

23 A. I did know that, yes.

09:16AM

24 Q. In fact, Blockbuster was big then. Remember
25 Blockbuster Video, you went down to Blockbuster and

1 rented the video. That was a big deal in 1999. Do you
2 remember that?

3 A. That was a big date night for me and my wife back
4 then, yes. Or my soon-to-be wife, I should say.

09:17AM

5 Q. All right. Good for you. And, in fact, Ms. Smith
6 over here tells me that there was a Blockbuster Video in
7 the parking lot of Kroger here in Marshall back in 1999.
8 Did you know that?

09:17AM

9 A. I don't know that I could say that one way or the
10 other.

11 Q. And VHS tapes, they were being used widely in 1999
12 when this agreement was formed; isn't that right?

13 A. Yes. I don't disagree with that.

09:17AM

14 Q. And, of course, you know that the process node size
15 in 1999 was very different than it was in 2015, and
16 certainly today; isn't that right?

17 A. Yes.

18 Q. 1999, 14-nanometers was a pipe dream; isn't that
19 right?

09:17AM

20 A. Again, I'm not a technologist or a technology
21 expert. I don't know. I think we heard some of the
22 patents were filed for in 2001. So, again, I don't know
23 I can say that one way or the other.

09:18AM

24 Q. Well, what we do know, though, is the
25 Motorola/Chartered agreement, that wasn't covered or

1 talking about 14-nanometer technology in 1999; isn't
2 that right?

3 A. No, it wasn't talking about nodes. It was talking
4 about oxide, formation of oxides in semiconductors.

09:18AM 5 Q. You --

6 THE COURT: Just a minute. Mr. Dell, he didn't
7 ask you what it was talking about. He asked you was it
8 talking about 14-nanometers, and the answer is, "No, it
9 wasn't."

09:18AM 10 So don't try to give an explanation every time
11 you say "yes" or "no." Just, if it calls for a "yes" or
12 "no" answer, give that. If it calls for an explanation,
13 give it. But limit your answers to the questions asked,
14 all right?

09:18AM 15 THE WITNESS: Understood.

16 THE COURT: Let's continue.

17 MR. McKEON: Thank you, your Honor.

18 Q. All right. Let's go to the next agreement. You
19 have a Mitsubishi/IBIS agreement.

09:18AM 20 MR. McKEON: If we can go back to the ELM0,
21 please, Ms. Brunson.

22 Q. And this is Mitsubishi/IBIS, and we've got that here
23 where my finger is. Do you see that?

24 A. Yes, sir.

09:18AM 25 Q. And you're pointing to this one agreement here, and

1 you have 2.5 percent. Right?

2 A. That's correct.

3 Q. Okay. And again, this agreement, neither Acorn or
4 Samsung are involved in this agreement; isn't that
09:19AM 5 right?

6 A. That's correct.

7 Q. And you understand that, based on publicly reported
8 data, Mitsubishi actually only paid \$700,000 in
9 royalties under this agreement; isn't that right?

09:19AM 10 A. I understand there was that payment, yes.

11 Q. Let's get your deposition, please, at 232-18 to 23.

12 Question: "Now, based on IBIS's 10-Ks,
13 Mitsubishi has appeared to pay only the \$700,000 initial
14 license fee under the 1999 IBIS/Mitsubishi license
09:20AM 15 agreement, correct?"

16 Answer: "Based on what's been publicly
17 reported, that's what I understand."

18 That was your testimony, correct, sir?

19 A. That's correct.

09:20AM 20 Q. Thank you. Now, the 1999 Mitsubishi agreement
21 actually identifies a 1994 business development
22 agreement between the parties; isn't that right?

23 A. Yes, it does.

24 Q. And under that business development agreement,
09:20AM 25 Mitsubishi bought products from IBIS; isn't that right?

1 A. Generally, that's correct.

2 Q. And the parties entered into this agreement we have
3 here, later on in 1999; and in this agreement,
4 Mitsubishi wanted the know-how and process technology in
09:20AM 5 connection with the products that it actually bought;
6 isn't that right?

7 A. That was part of the license, correct.

8 Q. So this agreement, again, this wasn't just about
9 patents; isn't that right?

09:21AM 10 A. Correct.

11 Q. IBIS, under this agreement, provided Mitsubishi
12 process flow, energy and dose requirements, and other
13 things so Mitsubishi could replicate the conditions in
14 its factory; isn't that right?

09:21AM 15 A. That is correct.

16 Q. They got the secret sauce, right?

17 A. I don't know how I could define it as being "secret
18 sauce."

19 Q. Process flow, sir, semiconductor business. They all
09:21AM 20 know it's very, very valuable, very, very secret. They
21 got the secret sauce, didn't they?

22 A. All I can say is they got the technology that's
23 described in the agreement.

24 Q. You didn't speak to anybody who was involved in the
09:21AM 25 negotiation of the Mitsubishi/IBIS agreement, did you?

1 A. No, sir.

2 Q. Nobody from Mitsubishi and IBIS told you that the
3 2.5 percent rate was for patent rights as opposed to
4 other stuff in the agreement, correct?

09:21AM

5 A. No, I didn't speak to anybody.

6 Q. And, yet, you put on your slide here the full
7 2.5 percent, even though we know under this agreement
8 they got the secret sauce as well, correct?

09:22AM

9 A. That's correct, I put the 2.5 percent on the slide
10 here.

11 Q. Now, this agreement is also dated 1999, right? So
12 this is 16 years before the hypothetical negotiation;
13 isn't that right?

14 A. Yes, that's correct.

09:22AM

15 Q. It's an old one, correct?

16 A. It's an agreement that was in existence at the time
17 of the hypothetical.

18 Q. All right. Let's look at another one you picked,
19 the IBM/IBIS, moving over here. You see that? You got
20 4.75. Do you see that?

09:22AM

21 A. Yes, sir.

22 Q. And just so we're clear here --

23 MR. McKEON: And why don't we pull up, if I can
24 have Mr. Sayres pull up PTX-2473.

09:22AM

25 Q. And this is the agreement, sir; is that right?

1 A. Yes, it is. It's one version of the agreement, yes.

2 MR. McKEON: Mr. Sayres, would you pull up a
3 bit here to see the Internet file? Yeah.

09:23AM

4 Q. So earlier we had a discussion about you going on
5 Google. Remember Google, we talked about that?

6 A. I remember your question, yes.

7 Q. Yeah. You went onto Google to get this one, didn't
8 you?

9 A. No, sir.

09:23AM

10 Q. Well, this is from the SEC government website; isn't
11 that right?

12 A. That's correct. That's correct.

13 Q. Okay. Now, this agreement here, sir, again, it
14 should be obvious, but Acorn is not a party; isn't that
15 right?

09:23AM

16 A. Correct.

17 Q. Samsung's not a party, correct?

18 A. That is correct.

09:23AM

19 Q. And you got 4.75 percent rate out of this agreement,
20 correct?

21 A. Yes.

22 Q. And we know, sir, that this agreement that you are
23 relying on for that rate does not cover patent rights,
24 correct?

09:23AM

25 A. I don't believe that's correct.

1 MR. McKEON: Well, let's pull up PTX-2473-4,
2 please. And can we go to 3.1 and 2.

3 Q. 3.1, sir, this is the definition of license. "IBM
4 hereby grants to IBIS a worldwide, nonexclusive
09:24AM 5 royalty-bearing license, revocable only pursuant to
6 Section 6, under IBM's trade secrets in the licensed
7 products." You see that?

8 A. I do.

9 Q. Trade secrets, that's secret sauce stuff, right?

09:24AM 10 A. Under your definition, yes.

11 Q. What does it say under 3.2?

12 It says, "Doesn't include patents"; isn't
13 that right, sir?

14 A. Under this specific section, that's correct.

09:24AM 15 Q. So, as I understand, sir, I thought we were on the
16 same page. The hypothetical negotiation, we're walking
17 into a room, and we're trying to determine license
18 rights for patents; isn't that right?

19 A. Correct.

09:25AM 20 Q. And you rely on this agreement that neither Acorn or
21 Samsung is a party with, that doesn't even include
22 patents, correct?

23 A. I disagree that it actually does include patents
24 when you look at the totality of the agreement.

09:25AM 25 Q. Well, sir, this is the license definition, and you

1 are trying to tell the members of the jury this includes
2 patents?

3 A. This provision does not include patents, I agree.

4 MR. McKEON: Now, Section 3.3, if we could go
09:25AM 5 to that section, please, Mr. Sayres.

6 Q. "Nothing in this agreement shall be construed as
7 amending or modifying in any way a Patent License
8 Agreement between the parties signed concurrently
9 herewith."

09:25AM 10 Do you see that?

11 A. I do.

12 Q. And this agreement that you have here is dated 2002,
13 right?

14 MR. McKEON: Mr. Sayers, maybe go up.

09:26AM 15 Q. This is a 2002 agreement; isn't that right, sir?

16 A. Yes, this agreement was executed in this 2002,
17 correct.

18 Q. All right. So the, "Concurrently herewith" is
19 referencing another agreement that's also dated 2002;
09:26AM 20 isn't that right?

21 A. I believe it's referencing a 2000 agreement.

22 Q. A 2000 agreement?

23 A. Correct.

24 Q. "Concurrently herewith," sir. It's -- you're saying
09:26AM 25 this agreement is referencing another agreement that's

1 two years before the agreement?

2 A. Yes. In fact, the effective date of this agreement
3 is actually 2000. It's a retroactive effective date, as
4 I understand it.

09:26AM

5 Q. It's a retroactive effective date, sir?

6 A. Based on my review of the agreement, yes.

7 Q. Well, let's do this. Let's go to, if we can --

8 MR. McKEON: Let me go to the ELM0, if I can,
9 Ms. Brunson.

09:27AM

10 Q. In the agreement you have here, sir, you've got
11 listed here PTX-2473, which we're looking at. You see
12 that?

13 A. That's correct.

09:27AM

14 Q. And you've got PTX-180 on your slide; isn't that
15 right?

16 A. Yes, sir.

17 Q. And if I go to PTX-180, if you'll pull that up,
18 please. And we see, sir, that the date of this
19 agreement -- well, first of all, this is a Patent

09:27AM

20 License Agreement; isn't that right?

21 A. Yes, sir.

22 Q. Okay. So the royalty rate that you were relying on,
23 and you told the jury to look at, was in the trade
24 secret agreement; it's not in this agreement; isn't that
25 right?

09:27AM

1 A. Correct, it's not in -- specifically in this
2 agreement.

3 Q. And this particular agreement, sir, is dated
4 December 15th, 2000; isn't that right?

09:27AM

5 A. Correct.

6 Q. That's two years before, before the 2002 agreement
7 we have 4.75 rate, right?

8 A. I agree it's two years before, yes.

09:28AM

9 Q. And, in fact, this agreement here, sir, right below
10 it says, "Under the license agreement between the
11 parties dated December 15, 2000, know-how agreement."

12 Do you see that?

13 A. I do.

09:28AM

14 Q. This is referencing a 2000 know-how agreement, not a
15 2002 know-how agreement, correct?

16 A. That's correct.

17 Q. So the agreement that you have on the slide, sir,
18 this patent agreement doesn't even relate to the 2002
19 agreement that you have on your slide; isn't that right?

09:28AM

20 A. No, I disagree.

21 Q. Well, you're disagreeing with the language of this
22 agreement that talks about a December 15th, 2000
23 know-how agreement?

09:28AM

24 A. Correct. Because if you look at the know-how
25 agreement, it is -- actually shows this date of the

1 December 15, 2000.

2 Q. Okay. Well, why don't we go back to the know-how
3 agreement, then, and we'll do that. If we can go back
4 to our know-how agreement, which was PTX-2473. This is
09:29AM 5 the trade secret agreement. And tell me, sir, where --
6 where is the date?

7 A. If you go to -- the effective date is the first
8 place to go.

9 Q. Well, sir, I'm talking about the reference to the
09:29AM 10 Patent License Agreement. Where is the 2000 license
11 agreement referenced in here?

12 A. So we would have to walk through a number of the
13 different clauses, but if you -- you have to put
14 together a little bit of piece of the different terms of
09:29AM 15 the agreement itself.

16 Q. Sorry, sir. I didn't understand that. I didn't
17 understand a word you just said. Where is the 2000 --
18 2000 Patent License Agreement referenced in here? Just
19 tell me where.

09:29AM 20 A. If you look, as a first place, you can look at the
21 top -- top third of the agreement. It talks about a
22 know-how license of December 18th, 2000. Then you also
23 look at the effective date of this agreement being
24 December 15th of 2000.

09:30AM 25 Q. It doesn't reference in -- the December 2000 patent

1 license, correct, sir?

2 A. Because it's the other way around. The patent
3 license references the know-how agreement.

4 Q. All right. 2002, we know that is twelve years?

09:30AM

5 MR. McKEON: Will you take that down,
6 Mr. Sayres? Thank you.

7 Q. 2002, we know that is twelve years before the
8 hypothetical negotiation; isn't that right?

9 A. That's correct.

09:30AM

10 Q. And we've also established already that, under this
11 agreement, that 4.75 rate, that covers trade secrets;
12 isn't that right?

13 A. That's the royalty payment under the agreement,
14 correct.

09:30AM

15 Q. Right. That's IBM's -- it comes -- with that rate
16 comes IBM's trade secrets; isn't that right?

17 A. Trade secrets and patents, correct.

18 Q. Well, we just established, sir, that under the 2002
19 trade secret agreement, that just covers -- that
20 agreement just covers the trade secrets, right?

09:31AM

21 A. Yes, the agreement covers trade secrets, I agree.

22 Q. Now, you agree, sir, that Samsung/Acorn would not
23 have used the full 4.75 rate as a benchmark during the
24 negotiation, correct?

09:31AM

25 A. That is correct.

1 Q. And even though you -- and what that means basically
2 is that they should go down from there; isn't that
3 right?

4 A. That's correct.

09:31AM

5 Q. And despite that, sir, on your slide, you've got
6 4.75. You didn't tell the jury they should go down from
7 there, did you?

8 A. No. I indicated where that is a data point within
9 the range I considered.

09:31AM

10 Q. But you believe the 4.75 rate is not -- is not a
11 rate, a proper benchmark rate for a patent license,
12 correct, in the IBIS/IBM arrangement, correct?

13 A. I'm sorry. I didn't hear the last part.

09:32AM

14 Q. You believe that 4.75 percent rate is not applicable
15 to just the patent license, correct?

16 A. No, I disagree. In terms of my range; is that what
17 you're asking?

09:32AM

18 Q. Let me do that again. We're losing each other. I
19 just want to be clear that you agree that the 4.75 rate,
20 you've got to go down from there because that included
21 the trade secrets, correct?

22 A. And we're talking about only this agreement. Is
23 that what your question is?

24 Q. That's right, yeah.

09:32AM

25 A. Yes, I acknowledge that because of the trade secret

1 rights that there would be some acknowledgment of that;
2 and therefore, there would be some downward pressure on
3 that rate specifically.

09:32AM 4 Q. Now, you didn't speak to anybody personally involved
5 in negotiating the IBIS/IBM agreement, correct?

6 A. That's correct.

7 Q. Nobody from those companies said, "Oh, this is why
8 we agreed to the 4.75 rate," correct?

09:33AM 9 A. I did not have that specific discussion with anyone,
10 no.

11 Q. All right. We're getting there, Mr. Dell. Let's go
12 to your last one here. This was the ASM/Atomera. Do
13 you remember that?

14 A. Yes, sir.

09:33AM 15 Q. And you get the 5 percent rate from that agreement;
16 isn't that right?

17 A. That's correct.

18 Q. And this one, again, was eight years before that
19 2015 hypothetical negotiation; isn't that right?

09:33AM 20 A. Generally, that's correct.

21 Q. And I think, if I recall your testimony, this is the
22 rate -- the 5 percent rate that you say Acorn would use
23 when they walk into the negotiation room, correct?

24 A. Acorn would use a 5 percent rate, yes.

09:33AM 25 Q. And you get that from this agreement; is that right?

1 A. Not isolated to this agreement, but this is one of
2 the supporting data points for that rate.

3 Q. Now, you say that Acorn would ask for 5 percent in
4 the hypothetical negotiation, 5 percent of the wafer
09:34AM 5 value, correct?

6 A. Correct. It would enter the negotiation with that
7 starting rate.

8 Q. But you agree, sir, that this agreement required
9 Atomera to pay 5 percent of net royalty revenue,

09:34AM 10 correct?

11 A. No, it was not isolated to that.

12 Q. Well, let's look at your expert report, if I can get
13 the Dell report at Paragraph 230. And here you say,
14 "According to the agreement's description in Atomera's
09:34AM 15 annual report" -- this is your report quoting this --

16 "the ASM license is coterminous with patents licensed by
17 ASM, which expires on January 18, 2015, and requires the
18 company to pay ASM a royalty of 5 percent of net royalty
19 revenue."

09:34AM 20 Correct?

21 A. That's correct.

22 Q. Doesn't say there about wafer value; isn't that
23 right?

24 A. In that statement, it does not, no.

09:35AM 25 Q. And you understand that -- your understanding about

1 this arrangement here was based on a 10-K document that
2 Atomera filed with the Securities & Exchange Commission,
3 right?

4 A. That's correct.

09:35AM

5 Q. And, of course, when someone files a document with
6 the Securities & Exchange Commission, you've got to be
7 right, right? You want to be accurate and correct;
8 isn't that right?

9 A. That's my understanding, yes.

09:35AM

10 Q. And you cite to this 10-K in a footnote in your
11 expert report; isn't that right?

12 A. As the source of this statement?

13 Q. Yes.

14 A. Yes, that's correct.

09:35AM

15 Q. Okay. Let's go to the 10-K. Go to PTX-1094 at 11,
16 please. And if we go here, we see here, in the middle
17 of that paragraph that says, "We have entered," says,
18 "The ASM license is coterminous with patents licensed by
19 ASM, which expires on January 8, 2019, and requires us
20 to pay ASM a royalty of 5 percent of net royalty
21 revenue." Do you see that?

09:36AM

22 A. I do.

23 Q. That's where you got it from; is that right?

24 A. Yes, sir.

09:36AM

25 Q. And, of course, you understand that 5 percent of net

1 royalty revenue is not the same thing as 5 percent of
2 wafer revenue, correct?

3 A. Correct. For that calculation, that would be
4 correct.

09:36AM 5 Q. For that calculation?

6 A. Yes. If you were -- based on what you asked, if you
7 were applying a royalty on wafer -- or on royalties,
8 then that would be different than applying a royalty on
9 wafers.

09:36AM 10 Q. Right. It's a big difference, isn't it? 5 percent
11 of the royalty wafer value, or price, is very different
12 than 5 percent of a royalty revenue that you might get
13 from licensing, correct?

14 A. It could be, yes.

09:37AM 15 Q. And then you also -- you have no evidence that
16 anyone paid 5 percent of wafer revenue under this
17 agreement, correct?

18 A. I haven't seen that, no.

09:37AM 19 Q. You've not -- you didn't speak to anyone who was
20 involved in negotiating this agreement, ASM and Atomera,
21 correct?

22 A. No, sir, not specifically.

23 Q. Nobody at ASM or Atomera told you why they agreed to
24 that 5 percent rate, correct?

09:37AM 25 A. No, sir. I did not speak with anyone.

1 Q. And what you do agree with is the only scenario
2 where ASM gets paid 5 percent of wafer price is if
3 Atomera itself makes and sells a wafer, correct?

4 A. That's correct.

09:37AM

5 Q. Let's go to another 10-K that you cite in your
6 report, PTX-1094. This is a -- the 2016 10-K. And if
7 we can go to Page 5 of that, please. And we see here at
8 Page 5, second paragraph, "We do not intend to design or
9 manufacture integrated circuits directly." Do you see

09:38AM

10 that?

11 A. I do.

12 Q. So this is the 10-K that says -- they tell the
13 Securities & Exchange Commission that, "We're actually
14 not going to make any. We don't intend to"?

09:38AM

15 A. Correct. 13 years ago, that's correct.

16 Q. Right. And they make that statement to the SEC.
17 And what we do know, then, is that the 5 percent rate,
18 if they are not making anything, then they are not going
19 to pay that 5 percent rate on wafer price; isn't that
20 right?

09:38AM

21 A. At that time in 2016, is what you mentioned this
22 agreement was from -- or this 10-K was from, that's
23 correct.

24 Q. I mean, you know, in these hypotheticals -- strike
25 that.

09:39AM

1 In these real-world negotiations, I mean,
2 Atomera could go into that room and know that it's not
3 going to actually make wafers and they could say, you
4 know, "It could be 50 percent. We're not going to make
09:39AM 5 this stuff. I don't care." That could have happened,
6 right?

7 A. I can't speak to that.

8 Q. You don't know that because you haven't talked to
9 anybody and this agreement was pulled from a database;
09:39AM 10 isn't that right?

11 A. No, I don't necessarily -- I definitely didn't speak
12 to anybody, I agree.

13 Q. And you also considered -- let me ask you this way:
14 You, of course, are aware that in reality, under this
09:39AM 15 agreement, Atomera only paid \$7,000 in royalties; isn't
16 that right?

17 A. I believe that's what they reported, yes.

18 Q. And you haven't seen, Mr. Dell, any evidence that,
19 in this 5 percent rate that you are relying on for your
09:39AM 20 opinion in this case, you haven't seen any evidence that
21 Atomera paid more than \$7,000 in royalty under this
22 agreement, correct?

23 A. That's correct.

24 Q. And, in your opinion, Acorn would walk into the room
09:40AM 25 in the hypothetical negotiation and demand from Samsung,

1 as their first offer, that 5 percent, nearly a half a
2 billion dollars, based on a license that only generated
3 \$7,000 in royalties; isn't that right?

09:40AM

4 A. No, sir. They would seek a 5 percent royalty rate
5 as their offer.

6 Q. And, yet, you get that royalty rate from a license
7 in which only \$7,000 was paid under, correct?

8 A. I agree \$7,000 was paid under that license.

9 Q. Thank you, Mr. Dell.

09:40AM

10 MR. McKEON: Your Honor, I pass the witness.

11 THE COURT: Redirect, Mr. Dixon?

12 MR. DIXON: Yes, your Honor.

13 THE COURT: Let's proceed.

14 REDIRECT EXAMINATION

09:41AM

15 BY MR. DIXON:

16 Q. Good morning, Mr. Dell.

17 A. Good morning.

09:41AM

18 Q. Now, Mr. McKeon asked you a few questions about the
19 challenges the semiconductor industry faced in shrinking
20 the size of the transistor, correct?

21 A. Yes.

22 Q. And do you recall that you identified or he asked
23 you to identify the three fundamental problems?

24 A. Yes.

09:41AM

25 Q. And do you recall what those were, those three

1 problems?

2 A. Yes. The contact resistance, the geometries or the
3 3D FinFET structure, as well as the source/drain
4 problems that were being encountered.

09:41AM

5 Q. Now, I know you're not a technical expert, Mr. Dell;
6 but you did speak to Dr. Piner to understand the
7 importance of the patented technology; is that correct?

8 A. Yes, I did.

09:42AM

9 Q. And based upon your discussions with Dr. Piner, did
10 you get an understanding as to which of those three
11 problems may have been more important to solve than the
12 others?

09:42AM

13 A. Yes, I did. He explained that the contact
14 resistance was the fundamental or foundational problem
15 that had to be solved for many of those other things to
16 occur.

17 Q. And which of those three problems do you understand
18 the patented technology to relate to?

19 A. Contact resistance.

09:42AM

20 Q. Now, you didn't just rely upon Dr. Piner, though,
21 did you?

22 A. Not explicitly, no.

23 Q. Did you go to look at Samsung's own documents?

24 A. I did, yes.

09:42AM

25 MR. DIXON: And, Mr. Guevara, if we could put

1 up PTX-594. And if we could go to -- scroll down to the
2 next page, to the translated section, I'm afraid.

3 Scroll through this. Is this what -- actually, we can
4 put this document down for a moment. Let's put up Slide
09:43AM 5 26 from Mr. Dell's examination. Thank you.

6 Q. Before we get to Samsung's documents, is this one of
7 the documents you relied upon?

8 A. Yes, it is.

9 Q. And is this a document that is talking about the
09:43AM 10 importance of contact resistance?

11 A. Yes, it is, in the industry.

12 Q. So it wasn't just Dr. Dell; it was industry
13 documents, as well?

14 A. Well, I appreciate you calling me "doctor." I think
09:43AM 15 you meant Dr. Piner.

16 Q. I did. Thank you.

17 And did you rely upon some Samsung documents?

18 A. Yes, I did.

19 Q. And what did you see in the Samsung documents
09:43AM 20 regarding the importance of solving the issue of contact
21 resistance?

22 A. The importance of Samsung being able to solve that
23 problem so it could compete against its competitors, as
24 well as the deposition testimony we talked about
09:43AM 25 yesterday.

1 Q. And was it your understanding that Samsung had to
2 address this contact resistance problem in order to make
3 the 14-nanometer transistor?

09:44AM

4 A. That's correct. There was testimony I talked about
5 yesterday that if they -- if the contact resistance
6 wasn't correct that the chips may not work; so
7 everything else on top of it wouldn't work.

8 Q. Now, Mr. McKeon also asked you about --

9 MR. DIXON: We can take that down, Mr. Guevara.

09:44AM

10 Q. Mr. McKeon also asked you some questions about the
11 Samsung agreements that you considered. Do you recall
12 that?

13 A. I do.

09:44AM

14 Q. Now, was there an important difference between the
15 Samsung agreements and the hypothetical negotiation
16 license that caused you to put less emphasis or less
17 importance on them?

18 A. Yes, there was.

19 Q. And what was that, Mr. Dell?

09:44AM

20 A. All the Samsung agreements were settlements of
21 litigation where Samsung contested the validity and
22 enforceability of the patents. They disputed
23 infringement, as well. And importantly, there was no
24 economic discussion between the parties, the licensees
25 of those parties, about how much sales were at issue.

09:45AM

1 So the amounts paid were in no way based upon Samsung's
2 actual sales data that would be relevant to those
3 accused products.

09:45AM

4 Q. And so did you believe that, as an expert in patent
5 valuation and damages, that those settlement agreements
6 were less helpful?

7 A. That's --

8 MR. McKEON: Your Honor, object to that's
9 leading there.

09:45AM

10 THE COURT: Sustained as to leading.

11 Q. Mr. Dell, then, did you have an opinion in terms of
12 how helpful those documents may have been in connection
13 with your analysis of the reasonable royalties in this
14 case?

09:45AM

15 A. Yes, I did.

16 Q. And what was that opinion?

17 A. Well, from a valuation perspective, because it's
18 unknown how the parties arrived at the payment amount,
19 it's not a good indicator or valuation metric from which
20 to measure what the infringement or value of the
21 infringement would be in a case such as this where we
22 know the sales and extent of use.

09:45AM

23 Q. Mr. Dell, Mr. McKeon also asked you some questions
24 about our royalty base. Can you remind the ladies and
25 gentlemen what you used as your royalty base?

09:46AM

1 A. I used the cost of the semiconductor wafers as sold
2 from Samsung Austin to Samsung Korea.

3 Q. Is that the same thing as revenue?

4 A. No, it is not.

09:46AM 5 Q. How is it different, sir?

6 A. Because it's an internal cost to Samsung, as we saw
7 yesterday, from Mr. Kim's testimony; and because of
8 that, it doesn't represent the sale as if they were to
9 sell it to a customer as an end product.

09:46AM 10 Q. And Mr. McKeon also put up on the screen, if we can
11 put up Mr. Dell's deposition transcript, Page 256,
12 starting with Line 17 through 257.

13 MR. McKEON: Your Honor, I'm going to object to
14 the use of Mr. Dell's deposition transcript here.

09:46AM 15 THE COURT: What's your objection?

16 MR. McKEON: This is an out-of-court statement,
17 your Honor. It's his own deposition.

18 THE COURT: What's your response, Mr. Dixon?

09:47AM 19 MR. DIXON: Your Honor, Mr. McKeon purported to
20 read Mr. Dell's answer but did not read the complete
21 answer, and I believe that the entire thing is needed
22 for context so that the jury can understand what was
23 left out and why it's relevant.

09:47AM 24 THE COURT: So this is for optional
25 completeness?

1 MR. DIXON: Yes, your Honor.

2 THE COURT: All right. You may proceed.

3 MR. DIXON: Thank you.

09:47AM

4 Q. So, Mr. Dell, do you recall that Mr. McKeon read
5 your deposition testimony here starting at Line 17?

6 A. Yes, I do.

7 Q. And he -- your answer starts at Line 22, correct?

8 A. Yes, it does.

09:47AM

9 Q. And, now, Mr. McKeon stopped at the word "necessary"
10 on Line 24. Do you recall that?

11 A. I do.

09:47AM

12 Q. But you actually provided a more complete answer.
13 After "necessary," there's a comma, and you said, "Given
14 the comparable licenses, as well as my understanding of
15 the benefits of the Acorn patents to the accused
16 products or the accused wafers." Do you see that
17 portion, sir?

18 A. I do.

19 Q. And is that important in understanding your answer?

09:48AM

20 A. Very, yes.

21 Q. In what way, sir?

09:48AM

22 A. Because it puts in context that not only was there
23 an the initial apportionment step, that even the royalty
24 rates that we've relied upon themselves are apportioned;
25 and when we look at real-world licensing transactions

1 where parties agree to pay royalty rates, they actually
2 pay on the wafer revenue.

3 Q. Thank you.

4 MR. DIXON: Mr. Guevara, if we can now put up
09:48AM 5 PTX-594-39.

6 Q. Mr. Dell, this was the Samsung document I put up
7 previously, talking about contact resistance and the
8 importance thereof.

9 MR. DIXON: And if we could highlight the
09:48AM 10 bottom portion saying, "Contact resistance dominates
11 device performance."

12 Q. Do you see that, sir?

13 A. Yes, I do.

14 Q. Does that also inform your analysis, in terms of
09:48AM 15 solving the contact resistance issue in order to enable
16 the 14-nanometer technology?

17 A. Yes, it does.

18 Q. Thank you, Mr. Dell.

19 MR. DIXON: We can take that down, Mr. Guevara.

09:49AM 20 Q. Now, Mr. McKeon also asked you some questions about
21 the industry licenses that you relied upon, and he
22 suggested a couple of times that you may have found
23 these just through Google; is that accurate?

24 A. Yes, I understand that was his question.

09:49AM 25 Q. Okay. Did you find these documents through just

1 Googling?

2 A. No, not at all.

3 Q. Could you explain to the ladies and gentlemen of the
4 jury the process you went about in order to identify
09:49AM 5 these documents?

6 A. Yes. So there are two databases that my company
7 subscribes to where we pay for services to get access to
8 comparable transactions or comparable agreements. These
9 are two well-known and reliable sources that the
09:49AM 10 industry in valuation relies upon.

11 As Mr. McKeon even asked, there's thousands --
12 tens of thousands of agreements in these databases. So
13 we query that database for relevant technologies using
14 search terms, including some of the terms within the
09:50AM 15 patents themselves, the Acorn patents, and we get a set
16 of results back; and as part of that analysis, the next
17 step, as I talked about yesterday, was going through
18 those agreements with Dr. Piner to determine their
19 technical comparability.

09:50AM 20 Q. And in your experience, Mr. Dell, is it reasonable
21 to rely upon this database and this search industry to
22 identify these industry licenses?

23 A. Absolutely. This is not only relevant for
24 litigation, but even in my work as a licensing
09:50AM 25 professional. This is the same type of analysis we do

1 when analyzing reasonable royalty rates in the industry
2 when assisting companies licensing in the real world.

3 Q. Let's turn to PTX-182. Mr. McKeon asked you some
4 questions about these industry licenses, correct?

09:50AM

5 A. Yes.

6 Q. And PTX-182 is the Chartered/Motorola agreement; is
7 that correct?

8 A. Yes, it is.

09:51AM

9 Q. And he pointed out, in Section 1.10 on Page 3, that
10 there was an exclusion to patents under this agreement,
11 correct?

12 A. Yes.

13 Q. Now, is it your understanding, though, that this
14 agreement does relate to patent royalties as well?

09:51AM

15 A. Yes, it does.

16 Q. And so if we turn to -- let's see -- Page 17 at 7.5,
17 we see references to royalties in this subsection,
18 correct?

09:51AM

19 A. Correct. This is what I showed on my demonstrative
20 yesterday.

21 Q. Okay. And do you see a reference there in 7.5.1 to
22 a 3 percent royalty?

23 A. I do.

09:51AM

24 Q. And then in 7.5.2 a reference to a 2 percent
25 royalty?

1 A. Correct.

2 MR. DIXON: And then let's turn to Page 18,
3 Mr. Guevara, at 7.8, and it goes on to Page 19.

09:52AM

4 Q. And is this the section you relied upon, Mr. Dell,
5 to identify a reference to patent licenses?

6 A. Yes, it is.

7 Q. And what portion were you relying upon, sir?

09:52AM

8 A. If you look at the bottom portion, it talks about
9 the portion of the royalties that are payable under the
10 Patent License Agreement, so the very last two lines.

11 Q. Could you read those, please.

09:52AM

12 A. Yes. It says that, "The below are in consideration
13 of the licenses and covenants for the technologies that
14 are the subject of this agreement granted in the Patent
15 License Agreement entered into between Motorola and
16 Chartered on," and the date is blank.

17 MR. DIXON: Mr. Guevara, if we could split the
18 screen and put on the other side of the screen PTX-171.

09:53AM

19 Q. Mr. Dell, is this the patent license agreements that
20 you understand is referred to in that section that you
21 just read from the Chartered/Motorola agreement?

22 A. Yes, it is.

09:53AM

23 Q. Thank you, Mr. Dell. Mr. McKeon also asked you some
24 questions about the IBM/IBIS agreement, which is 2473,
25 if we could put that up on the screen.

1 Okay. Is this the IBM/IBIS agreement,
2 Mr. Dell?

3 A. Yes, it is. It's one agreement.

09:53AM

4 Q. And it says, "Amended and restated license
5 agreement." Do you see that, sir?

6 A. Yes.

09:53AM

7 Q. Now, in the middle of the screen there, there are
8 the words, "FIA-2000-0027," and right below that, it
9 says "IBIS know-how license, December 18th, 2000,
10 amended and restated." Do you see that, sir?

11 A. Yes, by do.

12 Q. Do you have an understanding as to what the
13 significance is to those words "amended and restated"?

09:54AM

14 A. Yes. Generally speaking, it's at a later point in
15 time, the agreements were amended to reflect continuing
16 development between the companies.

09:54AM

17 Q. And so even though this agreement may be dated after
18 2000, do you have an understanding as to how this may
19 relate back to that original December 18th, 2000
20 agreement?

09:54AM

21 A. I do. In fact, even though the agreement is dated
22 December -- or, excuse me, November 14th of 2002, the
23 effective date of the agreement is actually December
24 15th, 2000, which is the same date as the Patent License
25 Agreement.

1 Q. Let's take a look at the effective date language.
2 You referred to it a couple times. I don't think the
3 jury's had an opportunity to see it yet.

09:54AM

4 THE COURT: Mr. Dixon, you just made a long
5 statement about what we're going to show and what it is.
6 You need to refrain from sidebar comments. Ask the
7 witness a question; he will answer the question. All
8 right?

09:55AM

9 MR. DIXON: Thank you for the guidance, your
10 Honor.

11 If we could turn to PTX-2473-2, Section 1.5.

12 Q. Is that the effective date that you are referring
13 to, Mr. Dell?

14 A. Yes, it is.

09:55AM

15 Q. Now, Mr. Dell, do you believe that this amended and
16 restated Patent License Agreement relates to the
17 know-how agreement between IBIS and IBM?

18 A. Yes, I do.

19 Q. And is that know-how agreement PTX-180?

09:55AM

20 A. This is the Patent License Agreement.

21 Q. Thank you, sir. The know-how agreement is -- so
22 many agreements -- 176. This is still -- this is just
23 another version of the amended and restated Patent
24 License Agreement?

09:56AM

25 A. That's correct. The agreement we were looking at

1 before was the Patent License Agreement that's related
2 to the amended and restated license.

3 Q. 180 is the magic number. My apologies. Nope.

09:56AM 4 THE COURT: We don't need to know what the
5 magic number is. Quit making statements or I'll swear
6 you in and put you on the witness stand. Ask questions.

7 MR. DIXON: Thank you, your Honor.

8 THE COURT: All right. That's not guidance.
9 That's the basic rules how cross-examinations are done.

09:56AM 10 MR. DIXON: Thank you, your Honor.

11 THE COURT: Let's proceed.

12 Q. So if we look at Document 180, sir, PTX-180, and
13 looking at the second paragraph there. Do you see a
14 reference to a license agreement dated
09:57AM 15 December 15th, 2000?

16 A. Yes, sir, I do.

17 Q. And you do you see that it's referring to a certain
18 -- licensing of certain know-how and other rights?

09:57AM 19 A. That's correct. In the -- in that section, as well
20 as in the -- roughly the middle portion of that
21 paragraph, it talks specifically about the know-how
22 agreement.

23 Q. And it indicates in here that no patent licenses are
24 expressed or implied or granted under either party under
09:57AM 25 the know-how agreement, correct?

1 A. That is correct.

2 Q. And so this is the agreement that's licensing other
3 rights?

09:58AM

4 A. The know-how agreement is the agreement for
5 licensing other rights. The agreement that this is in
6 is the Patent License Agreement, which is licensing
7 patent rights.

8 Q. And do you know what the royalty was that was agreed
9 to under the IBM/IBIS agreement for the patent rights?

09:58AM

10 A. The agreement, actually, the royalty was
11 4.75 percent.

12 Q. And if we turn to Section 2.1 here of PTX-180, does
13 this identify what the royalty rate is?

09:58AM

14 A. It does in that it, in the very last sentence;
15 indicates that the royalty for the license granted under
16 the patent license is payable by IBIS under the know-how
17 agreement.

18 Q. And what was that license amount?

19 A. 4.75 percent of wafer revenue.

09:58AM

20 Q. Thank you, sir. Now turning to the ASM/Atomera
21 agreement. That's Document 1179, PTX-1179. Now,
22 Mr. McKeon -- strike that.

23 What's the date of this ASM/Atomera agreement?

24 A. December 22nd, 2006.

09:59AM

25 Q. And Mr. McKeon asked you some questions about a 10-K

1 that was roughly 13 years later from 2016?

2 A. Yes, he did.

3 Q. And do you have an understanding as to what -- how
4 Atomera's business model in 2016, during that 10-K, may
09:59AM 5 have related back to its business model when it entered
6 into the ASM/Atomera agreement?

7 A. Yes. Based upon my review of the documents and the
8 information, they had shifted their business model to a
9 licensing model subsequent to this agreement.

09:59AM 10 Q. Mr. McKeon also pointed out that only \$7,000 in
11 royalties may have been paid under this agreement. Do
12 you recall that?

13 A. I do.

14 Q. Is that relevant to your analysis?

09:59AM 15 A. No, given it's based upon the extent of use. So in
16 one way, it's indicative of why a running royalty makes
17 the most economic sense, because they pay for use; but
18 it also provides an indication -- the agreement itself
19 shows what two willing parties that entered into a
10:00AM 20 negotiation willingly agreed to in terms of the
21 agreement itself and paying a running royalty on wafer
22 revenue.

23 Q. Thank you.

24 MR. DIXON: No further questions, your Honor.

10:00AM 25 THE COURT: You pass the witness? Mr. Dixon,

1 you pass the witness?

2 MR. DIXON: I pass the witness, yes, your
3 Honor.

10:00AM

4 THE COURT: Is there additional
5 cross-examination?

6 MR. McKEON: Just briefly, your Honor, if I
7 may.

8 THE COURT: You may.

9 RE-CROSS-EXAMINATION

10:00AM

10 BY MR. McKEON:

11 Q. Okay, Mr. Dell. You had a brief discussion with
12 Mr. Dixon about the Motorola/Chartered agreements. Do
13 you recall that?

14 A. I do.

10:00AM

15 Q. Okay. Why don't we pull up, if we can, PTX-182 at
16 19. And you reference this Paragraph 7.8 in the
17 agreement.

18 By the way, the date -- so we're clear, the
19 date of this agreement, the know-how agreement, is 1999,
20 correct?

10:01AM

21 A. That's correct.

22 Q. And this clause that we're looking at here, 7.8, is
23 in that 1999 agreement, correct?

24 A. That is correct.

10:01AM

25 Q. And it has a reference here, it talks about, "In

1 consideration of the licenses and covenants for the
2 technologies that are the subject of the agreement
3 granted in the Patent License Agreement." Do you see
4 that?

10:01AM

5 A. Correct.

6 Q. And you discussed this with Mr. Dixon just now,
7 right?

8 A. Yes, I did.

10:01AM

9 Q. But there's no actual Patent License Agreement
10 actually identified here; isn't that right?

11 A. That's correct. That portion is blank.

12 Q. But we do know, based on what happened, was they
13 ended up entering into an actual Patent License
14 Agreement years later in 2003, correct?

10:01AM

15 A. That's correct.

16 Q. And if we look at PTX-171, this is the agreement
17 that they actually entered into, correct?

18 A. That's correct.

10:02AM

19 Q. And in this agreement, sir, if we go to -- give me
20 one second there -- 3.1, Clause 3.1 in PTX-171-6, in
21 this agreement for the patents that you relied on, in
22 the discussion with Mr. Dixon, you talk about 7.8, this
23 is the agreement that ended up going between Motorola
24 and Chartered; isn't that right?

10:02AM

25 A. Subsequently, yes.

1 Q. And in this agreement, the rate is .2; isn't that
2 right, sir?

3 A. Yes, the rate is .2, applied to the licensed
4 products identified.

10:02AM

5 Q. And, sir, you talked about the database, you looked
6 up this database, and you think you mentioned thousands
7 and thousands of available licenses in that database;
8 isn't that right?

9 A. Yes. For a variety of technologies, that's correct.

10:03AM

10 MR. McKEON: Okay. If Ms. Brunson can get the
11 ELMO, thank you.

12 Q. And of the thousands and thousands of licenses you
13 looked at in your search, these are the four you came up
14 with?

10:03AM

15 A. No, sir. I -- there was more that came out of the
16 results, but these are the four that were the most
17 comparable.

18 Q. These are the ones you picked to show the jury?

19 A. No, sir. Dr. Piner actually provided me guidance in
20 that.

10:03AM

21 Q. All right. But these are the ones you're presenting
22 to the jury, sir, right?

23 A. That's correct. These are the most comparable.

24 Q. And of the thousands that you've looked at in that
25 database, these are the four you presented to the jury,

10:03AM

1 correct?

2 A. That's correct.

3 Q. And of the four, we've got the Motorola/Chartered
4 trade secrets and know-how put in that, correct?

10:03AM 5 A. They do include that, correct.

6 Q. IBIS/Mitsubishi, trade secrets and know-how are
7 included in that, correct?

8 A. As well as patents, correct.

9 Q. IBM/IBIS, trade secrets and know-how included in
10:04AM 10 that, correct?

11 A. Yes, that's correct.

12 Q. All three of those are the secret sauce; isn't that
13 right? They got secret sauce with those; isn't that
14 right?

10:04AM 15 A. Yes, some of them do include that, correct.

16 Q. And of the thousands of licenses you looked at in
17 that database, of the four you decided to present to the
18 jury, three of them have secret sauce; isn't that right?

19 A. Three of them include other technology, correct.

10:04AM 20 Q. Thank you, Mr. Dell.

21 MR. McKEON: No further questions, your Honor.

22 THE COURT: All right. You pass the witness?

23 MR. McKEON: I pass the witness.

24 THE COURT: Is there redirect, Mr. Dixon?

10:04AM 25 MR. DIXON: Yes, your Honor.

1 THE COURT: Proceed.

2 REDIRECT EXAMINATION

3 BY MR. DIXON:

10:04AM 4 Q. Mr. Dell, were you able to account for the inclusion
5 of the secret sauce in analyzing those agreements?

6 A. Yes, I was.

7 Q. And were you able to still use those agreements in
8 your reasonable royalty analysis?

10:05AM 9 A. Yes, I was. Some of -- as I mentioned yesterday,
10 there was significant upfront consideration paid as part
11 of some of those agreements, and I removed that from my
12 analysis.

13 MR. DIXON: I pass the witness, your Honor.

14 THE COURT: Further cross-examination?

10:05AM 15 MR. McKEON: Just one question, your Honor, if
16 I may.

17 THE COURT: I can count to one.

18 RECROSS-EXAMINATION

19 BY MR. McKEON:

10:05AM 20 Q. Mr. Dell, just to be clear here, now, we've had a
21 lot of discussion this morning and a lot of testimony
22 provided; but you agree, of course, though, that there's
23 no damages in this case if the jury finds there's no
24 infringement, correct?

10:05AM 25 A. I think the Court will instruct the jury in how to

1 calculate damages.

2 Q. Well, is there a mystery here, sir? If there's no
3 infringement, you agree the damages are zero. There's
4 no damages; isn't that right?

10:05AM 5 A. That's correct.

6 THE COURT: Just a minute. Yes?

7 MR. DIXON: Your Honor, I object to this line
8 of questioning. It's outside the scope of my limited
9 redirect.

10:05AM 10 THE COURT: Overruled. Answer the question.

11 A. I'm sorry. Can you repeat the question, please?

12 Q. Sure. Thank you, Mr. Dell.

13 You agree that if the jury finds no
14 infringement in this case, there are no damages,
15 correct?

10:06AM

16 A. I believe that the Court will instruct on that, but
17 my understanding is that to the extent that there is no
18 infringement, they will not reach the question of
19 damages.

10:06AM

20 Q. Well, so let me just make sure I'm clear. You've
21 been doing this for a long time. You've testified in
22 five trials. You know the basic principle here. If
23 there's no infringement, there's no damages, correct?

24 A. That's correct. They would not get to that

10:06AM

25 question.

1 Q. Thank you.

2 MR. McKEON: No further questions, your Honor.
3 Pass the witness.

4 THE COURT: Mr. Dixon, anything further?

10:06AM

5 MR. DIXON: Nothing further, your Honor.

6 THE COURT: You may step down, Mr. Dell.

7 Ladies and gentlemen of the jury, we're going
8 to take a short recess at this juncture. If you will
9 simply close your notebooks and leave them there in your
10 chairs in the jury box. Follow all the instructions
11 I've given you about your conduct, including, of course,
12 not to discuss the case with each other, and we'll be
13 back. The jury's excused for recess.

10:06AM

14 (Whereupon the jurors exit the courtroom.)

10:07AM

15 THE COURT: Counsel take five minutes, then I
16 want to see counsel in chambers, including the cardboard
17 box with the wooden models in it. Court stands in
18 recess.

19 (Recess from 10:07 a.m. to 10:33 a.m.)

10:33AM

20 THE COURT: Plaintiff, are you prepared to call
21 your next witness?

22 MR. DIXON: We are, your Honor.

23 THE COURT: All right. Let's bring in the jury
24 then.

10:33AM

25 (Whereupon, the jurors enter the courtroom.)

1 THE COURT: Please be seated.

2 Plaintiff, call your next witness.

3 MR. DIXON: Thank you, your Honor. Acorn calls
4 Dr. Edwin Piner, who will be examined by

10:34AM 5 Ms. Christy Rayburn.

6 THE COURT: All right. Dr. Piner, if you'll
7 come forward and be sworn, sir.

8 (Whereupon, the witness was duly sworn.)

9 THE COURT: Please come around, sir; have a
10:34AM 10 seat on the witness stand.

11 DR. EDWIN PINER,
12 having been first duly sworn, testified as follows:

13 DIRECT EXAMINATION

14 BY MS. RAYBURN:

10:35AM 15 Q. Good morning, Dr. Piner.

16 A. Good morning.

17 Q. Will you please introduce yourself to the jury.

18 A. Sure. My name is Eddie Piner. I'm a professor of
19 physics at with Materials Science, Engineering,

10:35AM 20 Commercialization program at Texas State University.

21 Q. What is your role in this case?

22 A. So my role is to serve as a technical expert to
23 evaluate materials present in this case to see -- to
24 determine infringement or not.

10:35AM 25 Q. And what are you prepared to testify about today?

1 A. So I'm prepared to testify to various documents that
2 I have reviewed from Samsung, various parts that I have
3 analyzed as a part of my evaluation, as well as
4 Samsung's witness testimony.

10:36AM

5 Q. Let's start with your personal background. Where do
6 you live?

7 A. I live in New Braunfels, Texas.

8 Q. Do you have any children?

10:36AM

9 A. I do. My wife and I have two sons, the oldest of
10 which graduated yesterday from Texas A&M.

11 Q. Now, how much time have you spent working on this
12 case?

13 A. I've spent over 400 hours total.

14 Q. And you're being compensated for your time?

10:36AM

15 A. Yes, I am.

16 Q. Are the Defendants' experts in this case also being
17 compensated for their time?

18 A. I have seen documentation that shows, yes, that they
19 are being compensated as well.

10:36AM

20 Q. Your compensation -- your opinion in this case isn't
21 dependent on your compensation, right?

22 A. That is correct, it is not.

23 Q. And your compensation isn't dependent on the outcome
24 of this case?

10:36AM

25 A. That was also correct.

1 Q. Now, did you prepare some slides to help the jury
2 with your testimony?

3 A. I did.

4 Q. Dr. Piner, what is your educational background?

10:36AM

5 A. So I received my bachelor's and my Ph.D. in 1993 and
6 1998 respectively, both in materials science engineering
7 and both from North Carolina State University.

8 Q. And what did you do professionally after receiving
9 your Ph.D.?

10:37AM

10 A. So for my Ph.D., I spent about a dozen years in
11 industry with a company called ATMI Epitronics, and
12 then -- for a couple of years, and then about ten years
13 with a start-up company called Nitronex Corporation,
14 before joining, as I stated before, with Texas State
15 University.

10:37AM

16 I came into Texas State with an associate
17 professor around late 2009, early 2010 and was promoted
18 and received a tenure in 2013 to full professor.

19 THE COURT: Dr. Piner, pull the microphone a
20 little closer to you, please.

10:37AM

21 THE WITNESS: Okay.

22 Q. What subjects do you teach at Texas State
23 University?

10:37AM

24 A. So the primary courses that I teach are associated
25 with materials science and engineering for our Ph.D.

1 program there, but I've also taught device physics,
2 semiconductor materials, a variety of courses related to
3 semiconductors and semiconductor devices.

10:38AM

4 Q. Does your role as professor of physics at Texas
5 State University involve anything in addition to
6 teaching classes?

10:38AM

7 A. Yes. In fact, my appointment at Texas State is
8 primarily a research appointment. What that means is my
9 research load is somewhere around 60 or 70 percent of my
10 time, and the other 20 to 30 percent would be the
11 courses that I teach, and then there's a service load
12 that I also have to do.

13 Q. And what is your research directed to?

10:38AM

14 A. So my research is directed towards materials science
15 and engineering, specifically semiconductor or
16 electronic materials, and looking to improve the
17 performance of those materials.

18 Q. Have you served as a member of any engineering
19 societies or advisory boards?

10:38AM

20 A. I have. I am currently a member of the Institute of
21 Electronic and Electrical Engineers, a senior member, as
22 a matter of fact. I'm also a member of the Materials
23 Research Society.

10:39AM

24 Q. Have you published scholarly articles on the topic
25 of semiconductor devices?

1 A. I've published many articles, over a hundred
2 peer-reviewed, and more than that in terms of
3 proceedings and presentations over the years.

4 Q. Has your academic work been recognized by others?

10:39AM

5 A. It has, in a number of cases. I received -- my
6 students especially receive awards for the work that I
7 directed on their behalf. I've been invited to speak on
8 a number of occasions at conferences and at companies.

9 Q. How is your research funded?

10:39AM

10 A. So it's -- so in general, university research is
11 funded through grants and contracts that are competitive
12 in nature. So currently I have a Department of Defense
13 contract that's directed towards certain aspects of my
14 research, and I'm on the tail of a National Science
15 Foundation grant that provides, again, the funding. And
16 that funding goes towards, again, that research that I
17 have, more importantly, helping me pay the graduate
18 students that are in the lab and that are helping to get
19 their Ph.D.s and master's degrees.

10:40AM

20 Q. Have you obtained any patents for your work?

10:40AM

21 A. I have, yeah. To date, I have over 30 patents that
22 have been issued as of -- from the inventions that I
23 have been a part of.

24 Q. Now, you are going to be asked to give your opinion
25 regarding whether Samsung infringes Acorn's asserted

10:40AM

1 patents. Related to that, do you have experience
2 serving as an expert and testifying about patent
3 infringement?

10:40AM

4 A. I do. I have been an expert on -- in several other
5 cases prior to this one. That includes depositions,
6 testimony at trial.

7 Q. What is your experience with transistor technology
8 in particular?

10:40AM

9 A. So transistor technology especially, that is what
10 I've been focusing on, in terms of the performance
11 benefits that I was talking about before, from my
12 research. For the last 20 years, it's been
13 predominantly targeting transistor performance
14 improvement.

10:41AM

15 MR. RAYBURN: Your Honor, at this time,
16 Plaintiff would tender Dr. Edwin Piner as a qualified
17 expert witness in the field of semiconductor and
18 transistor devices, pursuant to Federal Rule of Evidence
19 702.

10:41AM

20 THE COURT: Is there objection?

21 MR. CORDELL: No objection, your Honor.

22 THE COURT: All right. Without objection, the
23 Court will recognize this witness as an expert in that
24 designated field. Please continue.

10:41AM

25 Q. Dr. Piner, what will you be covering today?

1 A. There will be several areas that I will be covering
2 today, so I'll start with a general technology
3 background. Then I'll spend some time, quite a bit of
4 time, on infringement. Then I'll also be talking to
10:41AM 5 several issues with regards to -- or several aspects
6 with regards to the invention itself; first of all, the
7 value of it, and then second of all, how Samsung was
8 knowledgeable of it.

9 And then the last couple components that
10:41AM 10 are shown on the slide here have to do with the damages
11 side of the case. So I'll speak to the technical
12 comparability of the various license agreements that
13 you've already heard about, and then also talk about the
14 smallest saleable patent practicing unit, which in this
10:42AM 15 case is a wafer.

16 Q. Now, as an expert, would you explain to the jury how
17 you conducted your analysis?

18 A. Sure. So generally, how it works, I start with my
19 experience and my background, and then I will take that
10:42AM 20 and I will analyze; in this case, there are four
21 patents-in-suit, the '336, the '167, the '691 and the
22 '395. See a lot more of those.

23 I then proceeded to acquire, purchase
24 10 Samsung devices, and I tore those down,
10:42AM 25 reverse-engineered them. And along the way, numerous

1 Samsung documents were provided over the course of this
2 case specifically targeting regarding the 14-nanometer
3 process and devices.

10:43AM 4 I reviewed those materials, and then I also,
5 along the way, as the testimony came forward in the
6 case, I reviewed several of Samsung's witnesses.

7 And then in general, there's, building off of
8 the experience and my background, as I said before; much
9 of that is based on other published data or published
10:43AM 10 documents, patents for example, other patents outside of
11 those in this case, technical publications, and
12 particularly those regarding semiconductor materials.

13 Q. Dr. Piner, would you briefly describe the type of
14 technology that's at issue in this case?

10:43AM 15 A. Sure. So in its simplest form, the technology at
16 issue here is what's called a transistor; and that
17 transistor has the illustration, as shown here, is made
18 up basically of three components: a source, a gate, and
19 a drain.

10:43AM 20 And to put it most simply, the current, or
21 the electricity, is flowing through across the source in
22 the drain, and the gate is there to modulate, if you
23 will, or to cause that current to stop and start, or to
24 turn it on and turn it off.

10:44AM 25 In this particular example that I'm

1 showing, this also includes an aspect of the current
2 case, and more than just generally a transistor, in that
3 the source and the drain and even the region under the
4 gate is shaped like a fin. And so we'll be talking --

10:44AM

5 I'll be talking more about that later, but this is the
6 starting point of a FinFET, or a fin-type transistor.

7 Q. Do you have a physical model with you today that
8 will help you describe what you're talking about --

9 A. I do.

10:44AM

10 Q. -- in regards --

11 A. I do.

12 MR. RAYBURN: Your Honor, at this time may
13 Dr. Piner stand up to demonstrate his physical model?

10:44AM

14 THE COURT: Dr. Piner, I'll allow you to stand
15 and use the model that's behind you. If you can
16 demonstrate it sitting down, you're not required to
17 stand. Given that while you're standing, you won't be
18 in front of the microphone, please make sure you're
19 heard with any answers to questions you're asked.

10:45AM

20 Counsel, proceed with your next question.

21 Q. Dr. Piner, where in the physical model you're
22 demonstrating is the fin we just discussed?

23 A. Okay. So the model is here behind me. And so this
24 is a -- it's a wooden block diagram, so it's somewhat
25 simplified. But if I remove a couple of the

10:45AM

1 components -- and I'll explain these in a second, but
2 this gray region that I'm indicating here over the
3 middle would be the fin part of it, as is also
4 illustrated on the slide; and so that would -- the fin
5 will go in a length direction along the device.

10:45AM

6 Q. Can you then show us the source, gate, and drain?

7 A. Sure. And so since I'm holding it, I'll start with
8 the gate. And so the gate sits between the source and
9 the drain. This will be -- if we look at it in

10:46AM

10 different orientations, we can now see how the, relative
11 to the picture, for example, how we will have a source
12 structure, a gate structure, and a drain structure. And
13 I'll be explaining more of that later.

14 Q. What types of Samsung devices include these
15 transistors?

10:46AM

16 A. So all of Samsung's devices that are manufactured
17 according to its 14-nanometer FinFET include these types
18 of devices. In fact, in the terminology where it says,
19 "FinFET," the F-E-T part, which I haven't discussed yet,
20 is short for "fuel effect transistor"; and so the key
21 part there is that "transistor" term, again.

10:46AM

22 And so the way this build up on each of these
23 transistors, as is shown on the right-hand side of the
24 slide there, you have billions of these located on a
25 specific chip. That chip would be the processor, for

10:46AM

1 example, in Samsung's products.

2 And just by way of one example, here is a
3 picture of a Samsung phone in which that processor would
4 be located.

10:47AM

5 Q. Can you give us a sense of the actual size of the
6 FinFET device that your model depicts?

10:47AM

7 A. Yes. So I guess the one way to think about the
8 dimensions of these things, in order to get billions of
9 these transistors onto these chips, they are clearly
10 small; and by way of example, with this model as a
11 reference, if I were to take a human hair and set beside
12 it, the width of that human -- excuse me, this model
13 would be 1/1,000th the width of a human hair.

10:47AM

14 Or another way to think about it would be,
15 if I were to set that human hair here beside this, it
16 would be as tall as a 100-story building relative to
17 this model that I'm showing you.

10:48AM

18 Q. Do any other Samsung products, aside from phones,
19 include the transistors that you will be discussing
20 today?

10:48AM

21 A. Yes. So these processors are made of what's called
22 a wafer; and that wafer would contain at least hundreds,
23 if not thousands, up to 10,000 of these processors; and
24 in each processor would contain billions of these
25 transistors, and so you start to get a sense of how many

1 total transistors there are, if you take a billion times
2 10,000, for example, or a thousand, depending on exactly
3 how many there are, as to how many transistors are
4 contained on these semiconductors wafers I'm
10:48AM 5 illustrating here.

6 Q. And so how does a chip relate to a wafer?

7 A. So a chip is one piece of that wafer. So the chip
8 is copy -- is reproduced over and over again on the
9 wafer, and I actually have an example of a wafer here,
10:49AM 10 if you'd like me to show that.

11 Q. Please, will you show us your example wafer.

12 A. So here is a 300-millimeter wafer. This is not a
13 Samsung wafer, to be clear. This is just an example.
14 But if you can see in the back, there are thousands of
10:49AM 15 what looks like a repeating unit on this wafer, and this
16 is actually the size wafer that Samsung uses. This is a
17 300-millimeter wafer. This is the size that Samsung
18 does use in their processing.

19 And so each of those units that look like it's
10:49AM 20 repeating would be a chip, and each of those chips would
21 go into a processor, and each of those chips, again,
22 contains billions of those transistors.

23 Q. You've described today a FinFET. Can you explain to
24 the jury what is Samsung's 14-nanometer FinFET process?

10:49AM 25 A. So, you know, so there is a couple of terms that

1 I'll be using. So there is a process that is called a
2 14-nanometer FinFET that actually is the way, the
3 manufacturing steps, if you will, that Samsung employs
4 to then produce the 14-nanometer FinFET, or the
5 14-nanometer transistor.

10:50AM

6 So that process is -- they put layers down on
7 the wafer, they remove parts of that layer, they put
8 other materials into or around that part where they
9 remove, and they will continue to do that over and over
10 again.

10:50AM

11 One way, by a loose analogy, would almost be
12 like a very small 3D printing machine that will print
13 little bits of this device one at a time; and over the
14 course of many steps, you will result in the
15 14-nanometer FinFET product.

10:50AM

16 Q. Dr. Piner, does this image of a FinFET represent the
17 structure that you will be discussing today?

18 A. Not exactly. There's another key element that's
19 important to the discussion today; and that is the

10:51AM

20 contact to those source/drains. And so by ways of
21 example, I'm showing here in the illustration. So the
22 transistor in and of itself is extremely important, but
23 then also it's important to be able to give the current,
24 to get the electricity to the source, and so that can go
25 through the gate or under the gate and into the drain.

10:51AM

1 And so we have to make contact to those regions, it's
2 called.

3 By way of analogy, a way to think about it
4 is like a very, very small wire that's coming down and
10:51AM 5 placed on top of that source.

6 And so I won't do the back one; but just by way
7 of example, so it will be an illustration here. There
8 would be a contact that would be made to the source and
9 the drain, as well as the gate not shown here. That
10:52AM 10 would sit on the back side as well.

11 And once you have that complete, now you have
12 the key elements to consider doing the analysis on
13 Samsung's FinFET process specific to the Acorn patents.

14 Q. Dr. Piner, what does this image from PTX-00650
10:52AM 15 reflect?

16 A. So this is we're now building it up into a larger
17 picture, more of these devices that are present on these
18 chips; and so here, I'm showing what's more exemplary of
19 the Samsung products. And so what I'm showing would be
10:52AM 20 several fins that are connected together under the metal
21 contacts.

22 Those fins, the tops of those fins have
23 particular features, thicker shapes especially, that
24 help identify or that do identify them as the
10:52AM 25 source/drain regions, and that's important.

1 And then on top of those source/drain regions,
2 there is an interface -- material interface layer; and
3 to that is, there is a contact, or in this case now,
4 just calling it a metal. This is showing more of the
10:53AM 5 detail behind how these transistors are created in their
6 final form in Samsung's processors.

7 Q. Now, when you refer to "source/drain regions"
8 together like that, what do you mean?

9 A. So the way these devices operate, there's -- the
10:53AM 10 distinction of the source or the drain is where the
11 current begins and ends; but in terms of the context of
12 the patents-in-suit, there is no difference between
13 those and, in fact, they are manufactured at the same
14 time, substantially the same way, with one small
10:53AM 15 exception: that is, there are two different types of
16 source/drain contacts. One is called PMOS and the other
17 is called an NMOS. The "P" and the "N" are important in
18 the context of what I'll be showing you today.

19 But the NMOS is the particular transistor
10:54AM 20 that I focused on in my analysis, and that is being --
21 that's infringing the Samsung -- excuse me, that is
22 infringing Acorn's patents, not PMOS.

23 But in total, we're talking about half the
24 transistors are comprised or made up of the NMOS and the
10:54AM 25 other half are made up of the PMOS.

1 Q. Is there a particular portion of the NMOS
2 transistors that you analyzed for this case that's
3 important to this case?

4 A. Yes. So the key part would be that source/drain
10:54AM 5 region; and above that region, there is some material,
6 some interface layers; and then on top of those
7 interface layers would be the contact. I'm just showing
8 that simply here as a metal.

9 And also what I'm showing here in this
10:54AM 10 particular slide, as we'll be seeing in a number of
11 examples that I'll be showing, there are a couple
12 different views that I need to familiarize you with. So
13 first would be the front view of the Y-cut. So that
14 would be looking as I actually have the model placed
10:55AM 15 here before you, so coming across one of the fins and
16 looking at this device along this perspective. So
17 that's called the front view or the Y-cut.

18 And so the schematics, if you can go back.
19 Sorry.

10:55AM 20 Yeah, so if we look at the schematic in the
21 middle of the slide, I'm showing to the right now an
22 example image of what this looks like in one of the
23 products, one of Samsung's products that I have
24 reverse-engineered, or torn down. And so we can see the
10:55AM 25 characteristic shapes of this view in that image.

1 If we go to the next slide. So another vantage
2 point that will come into the discussion today would be
3 what's called the side view, or the X-cut. And so if I
4 were to rotate the model 90 degrees and cut along the
10:55AM 5 fin in this direction and then view it along this angle,
6 that would be the side view, or the X-cut.

7 And by way of example here is actually a
8 Samsung -- an image that Samsung produced showing what
9 the source/drain region with the metal on top looks like
10:56AM 10 from that perspective.

11 Q. So relevant to this slide, can you explain what
12 portion of these transistors is important to this case,
13 from your perspective?

14 A. So there are -- many parts of it are important, but
10:56AM 15 probably the most important part of it would be the
16 interface layer. And so below you have -- we have the
17 source/drain, and I'm showing the two different views,
18 again, just for a complete reference.

19 Above, or the topmost of these images, would be
10:56AM 20 the contact. And so in between those two, there's an
21 interface layer; and generally speaking, the way that
22 would be viewed in these different perspectives or from
23 these different directions would be as I'm illustrating
24 here on this slide. So it looks slightly different from
10:57AM 25 the different perspectives.

1 Q. Does the interface layer play a role in contact
2 resistance?

3 A. Absolutely. It is critical to the contact
4 resistance and the operation of these source/drain
10:57AM 5 regions in the transistor.

6 Q. What is the significance of contact resistance to
7 the Samsung-accused devices?

8 A. Well, as Samsung has indicated, and I agree, the
9 contact resistance is critically important to the
10:57AM 10 performance of these devices. In these particular
11 regions of the transistor, it is desirable to have --
12 it's not possible; if you could get no contact
13 resistance, that would be the best case, but as low as
14 you can get it is critically important.

10:57AM 15 Particular as these devices have scaled
16 smaller and smaller, over the many past generations,
17 that contact resistance has become more and more of a
18 problem because the contact area has gotten so small
19 that that contact resistance has just really elevated
10:57AM 20 itself to the forefront in terms of the problems that
21 Samsung's had to face and overcome.

22 Q. Is there only one 14-nanometer FinFET -- is there
23 only one 14-nanometer FinFET process used by Samsung?

24 A. No. Samsung has several process families, they're
10:58AM 25 called. I'm just giving you a list of some of those

1 here. Yeah, there are these process families or
2 different process flows that Samsung uses to manufacture
3 their 14-nanometer FinFET.

10:58AM

4 Q. Are there any differences between the families that
5 are important, for the purposes of your infringement
6 opinion today?

10:58AM

7 A. No. Specific to the patents-in-suit, these families
8 -- the differences in terms of how Samsung processes,
9 these families are before the source/drain regions are
10 formed. These happen during the fin formation
11 primarily, and they have no impact in terms of the
12 devices that are -- the source/drain regions of these
13 devices.

10:59AM

14 Q. Dr. Piner, for context for your discussion, would
15 you help remind the jury about the Acorn patents?

10:59AM

16 A. Sure. So there are three -- excuse me, four
17 patents-in-suit, and I'm listing those here. The '336
18 Patent, the '167, the '691, and the '395. And there's a
19 longer number to that in the art, but we typically refer
20 to the last three digits for convenience.

21 All of the patents have the same title,
22 which is: "A method for depinning the Fermi-level of a
23 semiconductor at an electrical junction and devices
24 incorporating such junctions."

10:59AM

25 All four also share or have the same

1 inventors, Daniel E. Grupp and Daniel J. Connelly. And
2 then the parent patent of all these was filed in the, I
3 believe, 2002 time frame, but these particular patents
4 were issued July 1st of 2014 for the '336,

11:00AM

5 October 4, 2016 for the '167, February 27th of 2018 for
6 the '691, and finally, October 2nd of 2018 for the '395.

7 Q. For the purposes of the record, Dr. Piner, can you
8 please tell us the exhibit numbers of those four
9 patents.

11:00AM

10 A. Yeah. So exhibits -- exhibit numbers for these
11 patents are PTX-1298, 1304, 1308, and 1306, for the
12 record.

13 Q. What invention are the patents directed to
14 generally?

11:00AM

15 A. So in general, the patents are directed to
16 semiconductor materials and improving or reducing the
17 contact resistance in the source/drain regions.

18 Q. Dr. Piner, for your information and analysis, did
19 you analyze specific claims of the '336, '167, '691, and
20 '395 Patents?

11:00AM

21 A. I did. So between -- or across these four patents,
22 there are eight claims that are alleged for infringement
23 in this case; and they are, as shown on the slide,
24 Claim 13 of the '336, Claims 1 and of 6 the '167, Claims
25 6, 8 and 19 of the '691, and Claims 17 and 20 of the

11:01AM

1 '395 Patent.

2 Q. Now, did the Court provide definitions for the
3 patent claim terms?

4 A. Yes, it did. So we'll be seeing more of this later;
11:01AM 5 but there are certain elements of the claim terms that
6 can be a little bit harder to understand; and so to help
7 better understand those, the Court has construed the
8 four that I'm showing here specifically of interest and
9 the Court's construction.

11:01AM 10 So the claim term is on the left and the
11 Court's instruction of that term is on the right.

12 Q. And you applied these definitions in your analysis,
13 right?

14 A. That is correct, I did.

11:01AM 15 Q. What are the devices that you analyzed for
16 infringement?

17 A. So the devices, I mentioned before there were 10
18 total. And so here is a list of the Samsung devices
19 specifically. You'll notice the first one on the list
11:02AM 20 is actually an iPhone 6S Plus. That was a
21 Samsung-produced chip that was sold to Apple in that
22 time frame. Then there are several other Samsung Galaxy
23 phones, some smaller tablets; and then the last couple
24 at the bottom were also chips manufactured by Samsung
11:02AM 25 and sold to Nvidia for their graphics cards.

1 And as I pointed out before, in the
2 second-to-right column showing the different process
3 families as I've already identified, that these
4 processors were produced by, and so I covered, again,
11:02AM 5 through these ten products several of these process
6 families.

7 Q. So how did you analyze each of these devices listed
8 on this slide for infringement?

9 A. So the first thing I did was I went on the open
11:02AM 10 market. Which, these were used at this time. These are
11 older phones now.

12 I purchased those, I tore those apart and did
13 some very detailed analysis of the source/drain regions
14 to ascertain the -- you know, what was there, what
11:03AM 15 materials were present and how they were located.

16 Q. Was there any difference between the transistors you
17 analyzed across the ten different devices that you
18 inspected?

19 A. Yeah. So across the process families, no. As I've
11:03AM 20 already stated, there are no differences. However, in
21 reviewing some of Samsung's documents that were
22 provided, there was one step, specifically what's called
23 the RF etch step, which I'm highlighting in the
24 rightmost column, where that was changed over the course
11:03AM 25 of each of these families.

1 So the family, each family started out
2 including the RF etch, and at some point along the way,
3 that step was removed. And so what I've shown here on
4 this chart would be the products that I analyzed, did it
5 include the RF etch step or not.

11:04AM

6 Q. And does the inclusion or not of the RF etch step
7 have any impact on your infringement opinion today?

8 A. No. Actually, no. At the end of the day, it makes
9 no difference, from my perspective.

11:04AM

10 Q. Now, Dr. Piner, the transistors you analyzed, if
11 they infringe, then do the chips made from those
12 transistors also infringe?

13 A. That is correct.

14 Q. And --

11:04AM

15 THE COURT: Stop. Just a minute. Dr. Piner,
16 pull the microphone a little closer. One of our jurors
17 is having trouble hearing you, and I'm having trouble
18 hearing you, too. So let's make sure you're heard by
19 everybody.

11:04AM

20 THE WITNESS: Absolutely. Thank you, sir.

21 THE COURT: Continue, please, counsel.

22 Q. And is the same true for the wafers that include the
23 chips that include the transistors, Dr. Piner?

24 A. That is correct.

11:04AM

25 Q. And is the same true for the phones that include the

1 chips that include the transistors?

2 A. Yes, that is correct.

3 Q. Please tell us about the claims of the '395 Patent.

4 A. So we'll start with the '395, and there are two
11:05AM 5 claims, again, the 17 and the 20, that are alleged for
6 infringement by Samsung in this case.

7 Q. Will you tell us about Claim 17, please.

8 A. Yes. What I'm showing here is a breakdown of both
9 Claims 17 and 20. When I say "breakdown," the 17a, 17b,
11:05AM 10 17c is what I'm referring to.

11 And so just for convenience, to make it
12 easy for us -- hopefully help make it easy for us to
13 understand and discuss. But anyway, starting with 17a,
14 there is a call-out for an electrical junction
11:05AM 15 comprising the source or drain of a transistor, said
16 source or drain comprising a semiconductor; a metal
17 electrical contact to said source or drain; and an
18 interface layer disposed between and in contact with
19 said source or drain and said metal electrical contact."

11:06AM 20 17b goes on to add, "To continue with that
21 saying said source or drain being electrically connected
22 to said metal electrical contact through said interface
23 layer, and said interface layer comprising an oxide of
24 titanium and an oxide of the semiconductor." And I've
11:06AM 25 broken that out to 17c.

1 Q. Then how does Claim 20 relate to Claim 17?

2 A. So Claim 20 begins by calling out the electrical
3 junction of Claim 17; and so in patent terminology, what
4 that means is that Claim 20 depends on Claim 17, as a
5 dependent claim, it's called. So Claim 20 has to have
6 the elements that are identified in Claim 17; and then
7 to that, it also adds, "Wherein said metal electrical
8 contact includes tungsten."

11:06AM

9 THE COURT: Ms. Rayburn, would you also pull
10 the microphone a little closer and speak up?

11:06AM

11 MR. RAYBURN: Yes, your Honor.

12 THE COURT: Thank you.

13 MS. RAYBURN: At this time, may I put up the
14 demonstrative that's representative of the demonstrative
15 on screen now?

11:07AM

16 THE COURT: You want to use the easel with the
17 board?

18 MR. RAYBURN: Yes, your Honor.

19 THE COURT: You may do that. If you'd like to
20 move the easel, you may; you can leave it where it is.

11:07AM

21 MR. RAYBURN: Thank you, your Honor.

22 THE COURT: All right.

23 Q. How did you analyze the first element, Dr. Piner?

24 A. So the first element, there are three particular
25 features that are called out; and so what I -- the first

11:07AM

1 thing I did was to consider the -- look at the parts and
2 to see if those particular elements were present in the
3 parts that I reverse-engineered, or tore down.

4 And so by way of example, here are some
11:08AM 5 pictures that I took along the way, meaning along the
6 teardown process. And so in this image, I'm showing the
7 front and the back of this -- this is the Galaxy A7, and
8 I actually have that phone here as an example, if I can
9 show it.

11:08AM 10 Q. Will you please do so?

11 A. So this is the phone that I'm showing here on the
12 image. Again, this is the Galaxy A7, the front and the
13 back. So go to the next slide.

14 So the process is once I've acquired it, I need
11:08AM 15 to get into the chip part of it. And so the first step
16 would be to separate out the phone. So with this phone,
17 the back part needs to be pried open, and that would
18 yield two parts; and the part that is of interest to me
19 would be -- a lot of you are probably familiar with the
11:08AM 20 battery part of the phone. So that's a big part of this
21 Galaxy A7. But here around the battery is a circuit
22 board, and on the circuit board are mini chips doing
23 various functions for the phone.

24 But in particular, the chips that are -- that
11:09AM 25 Samsung produced for this phone with this 14-nanometer

1 FinFET, one of those is highlighted on -- it's hard to
2 see, I know. But it's actually not there anymore
3 because I removed it from the phone. I still have the
4 cover. And so here is the cover portion of that chip,
5 just to give a feel for the size of these Samsung
6 processors. So this would be the part that I then
7 proceeded to do the detailed analysis.

11:09AM

8 Q. Can you explain what you are showing on this screen,
9 Dr. Piner?

11:09AM

10 A. Yes. So that detailed analysis requires some fairly
11 complicated equipment. On the left-hand side is a
12 picture of a transmission electron microscope that
13 includes one type of chemical analysis that I conducted.
14 And on the right-hand side is another transmission
15 electron microscope that I use for imaging and as well
16 as doing an additional, a second type of chemical
17 analysis on these chips.

11:10AM

18 Q. And what are you showing on this slide which
19 contains a reference to PTX-00373?

11:10AM

20 A. Yes. So in this slide, now I've taken the chip that
21 I've shown you and I have cut it in half through a
22 specialized process, removed a portion, a very small
23 portion of the cross-section of that chip; and now I'm
24 starting to do the imaging analysis of that chip. And
25 even at this magnification, we can already start to make

11:10AM

1 out the fins, as I'm showing in the model, along with
2 that mushroom-shaped region on the tops of certain parts
3 of those fins, which is indicating the source/drain
4 region of these devices. And then on top of all that
11:11AM 5 would be a dark contrast region, which is part of the
6 metal contact.

7 Q. Dr. Piner, for context, can you tell us how many of
8 the pedestal-type structures you're showing here on this
9 slide are fitting onto that chip you just demonstrated?

11:11AM 10 A. So -- yes. So we're looking at, again, the scale
11 bar there is 200 nanometers. So, again, if I were to
12 put a -- in this image relative to that scale bar, that
13 human hair would have a width of, in this case, about
14 1 -- it would be about 500 times larger than this image
11:11AM 15 that I -- well, of that part of the image that I'm
16 showing here, or one of those pedestals, I should say,
17 to be fair.

18 Q. Can you tell what materials are depicted in this
19 image?

11:11AM 20 A. There are certain characteristics that I can
21 determine from this contrast image, and particularly
22 when I compare those to other documents. But they
23 are -- yes, from my experience, there are certainly some
24 things that I can learn and know about from these
11:12AM 25 images.

1 Q. Okay. Can you tell us about some of the materials
2 you can identify, just based on the structure of these
3 images?

11:12AM 4 A. Yes. So I walked through quite a bit of this just a
5 moment ago. And so just for reference, including this
6 schematic on the left to help hopefully visualize what's
7 shown in the image on the right, and so that bottom
8 portion is comprised or is made up of silicon and then
9 that dark chunk of material at the tops, that is
11:12AM 10 tungsten.

11 Q. What are you showing in Slide 32?

12 A. And so Slide 32 is also building off of
13 Exhibit PTX-373 now, going in at high magnification. So
14 if I continue to zoom in further and further, we could
11:12AM 15 start to get additional detail. But for reference at
16 this point, I'm highlighting again the silicon fin and
17 the mushroom-shaped structure, the top, indicating it's
18 a source/drain region; and above that, now, that very
19 dark contrast is the tungsten.

11:13AM 20 Q. And now what are you showing, Dr. Piner?

21 A. So if we -- if I step in one more magnification,
22 zooming in just a little bit -- well, quite a bit more
23 and then highlighting again, for the purposes of
24 appreciating the different parts of this structure,
11:13AM 25 we're now seeing the top. In the bottom of this image,

1 we're seeing the top of that silicon fin and the
2 source/drain region on that fin, and then -- and that's
3 highlighted in the red overlay. And on the top of this
4 image is the bottom of the tungsten contact.

11:13AM

5 Q. What are you demonstrating now, Dr. Piner?

6 A. So there's another layer in this structure that I
7 haven't talked about yet, and that is below the
8 tungsten, Samsung places a layer of titanium nitride;
9 and so I'm highlighting that here in blue for visual
10 reference.

11:14AM

11 Q. In your understanding, is there any dispute in this
12 case about whether Samsung places a layer of titanium
13 nitride there?

14 A. That is not in dispute. Samsung acknowledges
15 placing that layer there.

11:14AM

16 Q. Okay. Dr. Piner, now that we've stepped through
17 this, how do you determine or confirm that each of these
18 materials are what you say they are?

19 A. So, so far I've shown you some images with some
20 contrast and picking out various features that are of
21 interest, and there is one last layer of, in between the
22 titanium nitride and the silicon, that, in this image,
23 I'm just calling it the interface at this time.

11:14AM

24 And so, yeah, if we stop here for a moment and
25 do a breakdown of Claim Element 17a, I've highlighted

11:15AM

1 for ease, again, of reference, color-coding the
2 different regions in the image that I'm showing to the
3 different elements in that claim language.

4 And so when 17a calls out, "A source or drain
11:15AM 5 of a transistor, said source or drain comprising a
6 semiconductor," that is present in Samsung's
7 14-nanometer FinFETs by the silicon at the bottom. And
8 silicon is a very well-known semiconductor; so that's
9 the connection to the specific terminology there.

11:15AM 10 The blue region, going next in order, "A metal
11 electrical contact to said source or drain." So I'm
12 highlighting the titanium nitride blue for
13 correspondence, but that also includes the tungsten.

14 And as I understand, I think yesterday in
11:15AM 15 opening, that Samsung recognizes the titanium nitride to
16 be a metal. So that connection has been established
17 already.

18 And then the last part, the green, the
19 interface, as is represented in Claim Element 17a, it
11:16AM 20 calls out, "An interface layer disposed between and in
21 contact with said source or drain and said metal
22 electrical contact."

23 And so a couple of elements there: It's got to
24 be between and in contact with said source or drain. So
11:16AM 25 the interface layer, as I'm showing you the image,

1 contacts the silicon, so that part's met; and the
2 interface layer must contact the metal electrical
3 contact, and it's contacting the titanium nitride above,
4 so that element is also met.

11:16AM

5 Q. Okay. Now with that explanation, Dr. Piner, how can
6 you -- how did you confirm that those elements are what
7 you say they are?

11:16AM

8 A. So an additional level of analysis that I conducted
9 was doing a chemical analysis, or mapping the elements
10 that are present within these FinFET devices, and
11 specifically within these source/drain regions.

11:17AM

12 What I'm showing here on this slide is one
13 example of the data that I collected. This is in
14 Exhibit PTX-373, and there's more than a hundred slides
15 of data that I -- that's the totality of the data I
16 collected that's included. I'm not going to walk
17 through all that.

11:17AM

18 But just for reference, so the way this data is
19 represented or the way it's collected. So, again, the
20 image behind that yellow on the left-hand side is the
21 microscopy image that I've already shown. And then what
22 I do is go in, and within certain regions -- in this
23 case within the yellow boxed region -- I do the chemical
24 analysis, or the elemental analysis that I just

11:17AM

25 mentioned.

1 And so it's showing, for reference, the image
2 taken from that region. On the left side, this is
3 called SIM; it's a different type of microscopy that
4 enables this chemical analysis to be conducted.

11:18AM

5 And then each of the different color-coded
6 images to the right of that SIM image represent the
7 different elements that I analyzed. So silicon shown in
8 red, oxygen in green, titanium in light blue, nitrogen
9 in dark blue, and tungsten in the purple.

11:18AM

10 Q. And so what I'm showing here, again, we start to
11 build up these structures. And so for reference, the
12 schematic is on the left, that I've shown before. The
13 image, again, the TEM image is shown to the right.

11:18AM

14 And now I'm highlighting, first of all, the
15 silicon; and so what I see in the image -- or, excuse
16 me, in the elemental analysis is a very intense silicon,
17 a signal from the silicon in the bottom portion of that
18 region that I analyzed; and that is overlapping with the
19 silicon source/drain predominantly.

11:19AM

20 If we go to the next. So if we look now at the
21 other end of the structure, there's the tungsten signal;
22 and what's very clear here is that the tungsten is
23 overlapping with that very dark contrast band at the top
24 of this structure, which again indicates, as I've

11:19AM

25 already shown schematically, that that work -- as I've

1 represented in the TEM images -- that that is, in fact,
2 tungsten.

3 So if we keep going, here is the titanium
4 signal. And so the titanium is very intense in a band
11:19AM 5 just below where the tungsten was and then it gradates
6 down from there. So that is an indication -- that is
7 the indication of the presence of a lot of titanium.

8 And looking at nitrogen next, so there is a
9 band that overlays with that portion below the tungsten;
11:19AM 10 and if we look at the titanium and the nitrogen side by
11 side, we see the correspondence between the Ti and the
12 and the nitrogen signal that's indicating that is
13 Ti nitride, or titanium nitride, in these structures.

14 Q. Is there any significance if the titanium appears
11:20AM 15 brighter than the nitrogen in this image?

16 A. Yes. So there's one aspect of this type of analysis
17 that's important, is that lighter elements, nitrogen in
18 this case, compared to the heavier elements, or like
19 titanium and tungsten, as well as silicon, it just
11:20AM 20 naturally, in these characterization techniques, does
21 not produce as intense a signal even when the elemental
22 ratios may be the same; and, in fact, this is a good
23 example of that, where this is titanium nitride, but the
24 signals aren't the same, even though the titanium and
11:20AM 25 the nitrogen are approximately equal ratios.

1 Q. Okay. Now that you have performed that -- or
2 demonstrated that elemental analysis, can you explain
3 how it lines up to your opinion with regard to Claim
4 Limitation 17a?

11:21AM

5 A. Sure. So now, with all of that analysis conducted,
6 again, the silicon at the bottom, you have -- for
7 corresponding coloring, I'm showing the red language in
8 17a that requires a source or drain of a transistor,
9 said source or drain comprising a semiconductor. That
10 is the silicon.

11:21AM

11 A metal electrical contact to said source or
12 drain, which is the titanium nitride and the tungsten;
13 and the chemical, the elemental analysis shows the
14 titanium nitride and the tungsten present, so that is
15 met.

11:21AM

16 And then the last part of it is stating, "An
17 interface layer disposed between and in contact with
18 said source or drain and said metal electrical contact."
19 And so there is that interfacial region between the
20 titanium and nitride -- the titanium nitride and silicon
21 that satisfies that component of this claim element.

11:21AM

22 Q. And you performed this analysis for each of the
23 devices that you looked at?

24 A. I did, that's correct.

11:22AM

25 Q. And were your conclusions consistent across all ten

1 devices for this claim element?

2 A. Yes, and -- yeah, that's correct, my conclusions
3 were consistent for the ten devices that I analyzed;
4 and, again, that data is in PTX-373.

11:22AM

5 Q. Does that complete your analysis with regard to
6 Claim Limitation 17a of the '395 Patent?

7 A. Yes, it does.

8 Q. May I check it off as infringed, Dr. Piner?

9 A. Yes, you may.

11:22AM

10 Q. Just to formalize that, what infringes Claim
11 Limitation A of the '395 Patent?

12 A. So specifically, what I analyzed for infringement
13 would be Samsung's products that are produced according
14 to its 14-nanometer FinFET process, Infringe Claim 17a.

11:22AM

15 Q. One question on Claim 17a. Why do you consider this
16 an electrical junction?

17 A. Sure. So an electrical junction is a term,
18 basically, that indicates that there is electricity
19 across, flowing across this junction; and as I've

11:23AM

20 already indicated with that contact at the top, that's
21 actually how you get -- that's how you wire, if you
22 will, to the source or drain region.

23 And so with the current or the electricity
24 coming in through that contact, it flows or crosses that
11:23AM 25 interface layer in order to enter into the source or

1 drain of the transistor, as the claim language
2 indicates. And so that is the way to visualize that
3 electrical junction as the overall descriptor of this
4 claim element -- actually of all Claim 17a -- or of all
5 claims limitations. Excuse me.

11:23AM

6 Q. What is the next claim element that you analyzed
7 with regard to Claim 17 of the '395 Patent?

8 A. Yeah. So this actually is substantially what I was
9 just describing, as well, before. So here, 17b

11:24AM

10 specifically calls out a source or drain being
11 electrically connected to said metal electrical contact
12 through said interface layer. And as I just indicated,
13 the current comes in through or to the contact or back
14 out of it, depending if you're talking the source or
15 drain; it flows through that interface layer and then
16 into or out of the semiconductor, depending on the
17 direction of how it's -- how the voltage is applied.

11:24AM

18 So, yes, so we've got a source or drain
19 electrically connected to said metal electrical contact
20 through -- through the interface layer.

11:24AM

21 Q. Does that complete your analysis with regard to
22 Claim Limitation 17b?

23 A. Yes, it does.

24 Q. May I check it off as infringed?

11:24AM

25 A. Yes.

1 Q. What is the next claim limitation you analyzed,
2 Dr. Piner?

3 A. So the next claim limitation for Claim 17 in the
4 '395 would be 17c, which calls out, "Said interface
5 layer comprising an oxide of titanium and an oxide of
6 the semiconductor."

7 So in order to -- in order to -- well,
8 there's two -- there's two parts to this, clearly. One
9 would be an oxide of titanium and then separately -- and
10 then an oxide of the semiconductor. And so this is
11 actually one case where -- or one example where the
12 Court's construction, I think, would help us -- or
13 should help us a little bit.

14 And so when the claim calls out, "Said
15 interface layer comprising an oxide of titanium and an
16 oxide of the semiconductor," Court has defined that or
17 has construed that to mean, "Said interface layer
18 comprising a layer of an oxide of titanium and a
19 distinct layer of an oxide of the semiconductor."

20 Q. And is that the language you applied in your
21 analysis, Dr. Piner?

22 A. Yes. And so to help -- in the analysis of this
23 claim language, I'm inserting here additional
24 descriptors that the Court helped us -- or defined for
25 us.

1 And so now the read for 17c would go as,
2 "Said interface layer comprising a layer of an oxide of
3 titanium and a distinct layer of an oxide of the
4 semiconductor."

11:26AM

5 Q. What is an oxide?

11:26AM

6 A. So one way to think about an oxide would be a
7 material that contains oxygen, and it's bonded to or
8 it's connected to the other material present within that
9 -- within that region or within that layer. And so an
10 oxide would be that process that's occurring.

11:26AM

11 So silicon and oxygen bonding together is
12 the starting point for silicon oxide, or it would be
13 like a water molecule is an oxide of, if you will, as a
14 rough example, but of two hydrogens bonded to an oxygen.
15 That's something like an oxide.

16 Q. How did you evaluate whether the Samsung-accused
17 products practice Claim Element 17c?

11:27AM

18 A. Right. So for Claim Element 17c, what I looked at,
19 which we haven't discussed yet, the last piece of this
20 puzzle, would be the oxygen signal, which is shown in
21 green in the elemental analysis that I showed you
22 previously. And so there are a couple of features of
23 that, or very -- that are apparent to me, which are
24 those bands of intensity, oxygen intensity located in
25 that interface region between the silicon and the

11:27AM

1 titanium nitride.

2 Q. And what did those bands of increased intensity
3 represent to you?

4 A. So two bands present. The lower band is overlapping
11:27AM 5 with the silicon -- the silicon signal to the left of
6 it, or the red signal; so that's indicating to me an
7 oxide of silicon, which is a semiconductor, as the claim
8 language calls out.

9 The upper band is overlapping with titanium
11:28AM 10 strongly and then aluminum to silicon, and so I've
11 identified that upper band as a separate and distinct
12 layer of titanium silicon oxide, which is a metal oxide.

13 Q. Now, is oxygen one of the heavier elements or one of
14 the lighter elements?

11:28AM 15 A. Now, along -- as I was talking about nitrogen
16 before, oxygen is also a lighter element; and so
17 similarly, oxygen being a lighter element compared to
18 silicon, titanium, and tungsten, even for equivalent
19 amounts of that oxygen, it's not going to be as intense.

11:28AM 20 It's just how these chemical signatures appear in the
21 data.

22 Q. So what was your conclusion based on the chemical
23 signature of oxygen that you're seeing in this data?

24 A. So my conclusion is that there is a layer of silicon
11:28AM 25 oxide above the silicon and a separate or a distinct

1 layer of titanium silicon oxide above that are present
2 in the interface layer between the semiconductor and the
3 contact.

4 MR. RAYBURN: Your Honor, at this time, may I
11:29AM 5 draw on the slide to illustrate the areas Dr. Piner's --

6 THE COURT: You can do that at any time,
7 counsel.

8 MR. RAYBURN: Thank you, your Honor.

9 Q. So am I highlighting something that you're talking
11:29AM 10 about right now, Dr. Piner?

11 A. Sure, yeah. So the upper band, the upper oxygen
12 band that I was referring to before is within the boxed
13 region that's shown on the screen. And then
14 correspondingly, the lower band is just below that, and
11:29AM 15 we see how that overlaps with the silicon signal.

16 And so that band of oxygen with the silicon
17 indicates that a silicon oxide, whereas the upper band
18 overlapping with titanium and some silicon is indicative
19 of titanium silicon oxide.

11:30AM 20 Q. Reviewing this data, Dr. Piner, was there any
21 question in your mind as to whether you were viewing an
22 amount of oxygen sufficient to give rise to a layer of
23 silicon oxide and a layer of titanium silicon oxide?

24 MR. CORDELL: Your Honor, I hate to object, but
11:30AM 25 may we have a sidebar?

1 THE COURT: All right. Ladies and gentlemen.
2 This is a matter I'll need to take up outside your
3 presence. If you'll simply leave your notebooks in your
4 chairs. This should not take long, hopefully just a
11:30AM 5 minute or two. But following all the instructions I've
6 previously given you, I'm going to ask you to retire to
7 the jury room at this time.

8 (Whereupon, the jurors exit the courtroom.)

9 THE COURT: All right. Be seated.

11:31AM 10 Mr. Cordell, what's the issue?

11 MR. CORDELL: The issue is this, your Honor:
12 What Dr. Piner put in his report was an explanation
13 of -- he said that the signals were more intense, but
14 what he never did do is translate that into an elemental
11:31AM 15 concentration, and that's what I think he just did on
16 the stand, and I think that's what Ms. Rayburn's about
17 to go into.

18 THE COURT: Do you want to respond to that,
19 Ms. Rayburn?

11:31AM 20 MR. RAYBURN: Your Honor, there is no question
21 that Dr. Piner's -- at least his second supplemental
22 report says, "Reviewing these bands, there is no
23 question in my mind that I saw an amount sufficient to
24 constitute a layer of silicon oxide and a layer of
11:31AM 25 titanium silicon oxide." I believe that's what he just

1 said. I was moving on to that.

2 MR. CORDELL: I think those paragraphs were
3 struck, your Honor. So what Ms. Rayburn just quoted was
4 from Paragraph 29 of the supplemental report where he
11:32AM 5 talks -- he says verbatim, "There is no question in my
6 mind that the levels of oxygen depicted in this line
7 scan are sufficient to give rise to the layer of silicon
8 oxide and the distinct layer of titanium silicon oxide,"
9 and then he goes on from there.

11:32AM 10 THE COURT: And it's your understanding that,
11 under previous order, the Court struck that paragraph or
12 paragraphs?

13 MR. CORDELL: Yes, your Honor. That one may be
14 more pointed toward the line scan. I'll see if I can
11:32AM 15 find the more general EDX analysis.

16 MR. RAYBURN: Your Honor, if I may. I was
17 actually referring to the February 8th report, which was
18 not struck, which at Paragraph 38 says, "For me, though
19 I was reviewing intensity data as opposed to percentage
11:32AM 20 data, there was no question that the amount of oxygen
21 that I was observing was sufficient to constitute two
22 layers of oxide at the interfacial region."

23 THE COURT: Take a moment, Mr. Cordell, and
24 then I'll hear your response.

11:33AM 25 MR. CORDELL: Thank you, your Honor. So --

1 THE COURT: And, Ms. Rayburn, you are going to
2 have to speak up at the podium. I got two notes from
3 members of the jurors that said they couldn't -- members
4 of the jury that said they couldn't hear you.

11:33AM

5 MR. RAYBURN: Thank you, your Honor. I will
6 try to do so.

11:33AM

7 MR. CORDELL: So Ms. Rayburn is correct that
8 Paragraph 38 was not struck, but it does not refer to
9 the -- what I'll call the color pattern analysis at all.
10 It refers to a Samsung document, where Dr. Piner offers
11 an opinion based on the sort of squiggly line scans
12 rather than the colored version.

11:34AM

13 So it turns out, in this case, we believe that
14 Dr. Piner's analysis on the line scans is distinct from
15 the color patterns; and the color patterns in
16 particular, he did not offer this elemental opinion.

11:34AM

17 THE COURT: And when you say "color patterns,"
18 we reviewed the demonstratives that were used in
19 chambers this morning. I didn't hear -- I didn't hear
20 objections at that point that mirror the objections I'm
21 hearing now.

22 MR. CORDELL: Well --

11:34AM

23 THE COURT: Are you talking about the actual
24 concentration of the colors, or are you talking about
25 the red lines that she drew around the darker and

1 lighter areas? Are you talking about this last question
2 she asked the witness before you objected? Can you
3 direct me to where your real concern is?

11:34AM 4 MR. CORDELL: Yes, your Honor. If I could have
5 the demonstrative back up. Unfortunately, I can't see.

6 THE COURT: Go to the podium if you need to.

7 MR. CORDELL: Thank you, your Honor. I can do
8 it from here. I can see.

9 Our primary concern is that what I think I just
11:35AM 10 heard Dr. Piner do is relate the variations in intensity
11 to actual concentrations in conjunction with his
12 opinions about the mass of the various elements, and we
13 didn't see that before.

14 In fact, he relied most heavily on the line
11:35AM 15 scan analysis when he attempted to quantify the
16 percentage concentrations and did not instead, refer to
17 what I'll call the color scans that we see on Slide 50.

18 THE COURT: All right.

19 MR. RAYBURN: I do have a response, your Honor.

11:35AM 20 THE COURT: Let me hear your response.

21 MR. RAYBURN: In Exhibit H on Page 25 of
22 Dr. Piner's original report, he said that, "The oxygen
23 bands reflect a significant noticeable amount of oxygen
24 at that layer, far more than a mere trace amount."

11:36AM 25 I may not have been reading that word for word,

1 your Honor, so let me make sure I have it perfect.

2 "I understand that Samsung has contended that
3 the interface layer" --

4 THE COURT: Slow down.

11:36AM

5 MR. RAYBURN: I apologize.

6 He writes in Exhibit H of his initial report,
7 "I understand that Samsung has contended that the
8 interface layer comprises only titanium silicide and
9 that there is no or only trace amounts of oxide at the
10 interface." Lots of cites.

11:36AM

11 "I disagree. As described above, with respect
12 to Claim Limitation 1b, the images reproduced above
13 clearly show at least one continuous layer of oxide
14 within the interface layer, and more particularly, a
15 continuous layer of titanium silicon oxide and a
16 distinct continuous layer of silicon oxide."

11:36AM

17 MR. CORDELL: He has already testified that he
18 believes there's a layer there. He's entitled to
19 express that opinion. What he can't do is come back and
20 say, "Look, it's right there. I can see it in the
21 picture," because that's not what he did.

11:37AM

22 THE COURT: All right. I'm persuaded that the
23 objection is well founded. I think what Plaintiff's
24 counsel is effectively trying to do is equate the line
25 patterns with the colors that are on the slide here; and

11:37AM

1 when I say, "Line patterns," I mean what typically looks
2 like a line graph that's in his report.

3 What relief, if any, are you requesting,
4 Mr. Cordell?

11:37AM

5 MR. CORDELL: Well, I would request, your
6 Honor, that counsel move on from this, first; but more
7 than that, that for the purposes of closing argument,
8 they not make reference to Dr. Piner's opinions pointing
9 to the -- his perceived concentrations of oxygen at any
10 particular point.

11:38AM

11 He can talk about the overall concentration, he
12 can talk about there being some because, as he said,
13 it's there; but what he can't say is, "I can see a layer
14 of oxide here because the concentration of oxygen is
15 that high."

11:38AM

16 We can also asked that the jury be instructed
17 to ignore the last question and answer.

18 THE COURT: Yeah, I'm not going to prejudge
19 closing arguments today. We are still in the -- at
20 least in the middle of the Plaintiff's case-in-chief. I
21 will instruct the jury to ignore the last question and
22 answer.

11:38AM

23 MR. CORDELL: Thank you, your Honor.

24 MR. RAYBURN: Your Honor, if I may say one more
25 thing. In the exhibits to Dr. Piner's expert report,

11:38AM

1 where he explains the infringement and specifically the
2 layers of oxide, first he shows the color pictures, and
3 he says, "These represent layers of oxide."

4 Then he says, "Another way to analyze this is
11:38AM 5 to do a line scan," and then he shows the line scan.

6 But at the point he has hit the line scan, he
7 has already made an opinion that these pictures
8 represent layers of oxide.

9 THE COURT: Well, I hear what you're saying,
11:39AM 10 but I'm persuaded that the objection is well founded,
11 and I'm going to sustain the objection, and I'm going to
12 ask the jury to ignore the last question and answer.

13 MR. CORDELL: Thank you, your Honor.

14 THE COURT: Whether or not there needs to be
11:39AM 15 something further done at the time of closing, I'll be
16 open to discussion with counsel at that time.

17 MR. CORDELL: Thank you, your Honor.

18 THE COURT: I'm going to charge this time
19 that's been consumed to the Plaintiff. Let me see if I
11:39AM 20 can get the last question and answer on my very small
21 screen up here.

22 All right. Let's bring the jury back in,
23 please.

24 (Whereupon, the jurors enter the courtroom.)

11:41AM 25 THE COURT: Please be seated.

1 Ladies and gentlemen of the jury, I'm going to
2 instruct you to ignore the last question and the last
3 answer between counsel and Dr. Piner before I sent you
4 out of the courtroom. I think I have that before me,
11:41AM 5 and if I do, I'd like to read it to you.

6 The last question appears to be, "So I'm
7 highlighting something that you're talking about right
8 now, Dr. Piner?"

9 His answer was, "Sure, yeah. So the upper
11:42AM 10 band, the upper oxygen band that I was referring to
11 before is within the boxed region that's shown on the
12 screen, and then accordingly, the lower band is just
13 below that. And we see how that overlaps with the
14 silicon signal, and so the band of oxygen with the
11:43AM 15 silicon signal indicates that a silicon oxide, whereas
16 the upper band overlapping with the titanium and some
17 silicon is indicative of titanium silicon oxide."

18 All right. Let's proceed with the remainder of
19 Plaintiff's direct examination.

11:43AM 20 Q. Dr. Piner, how does the testimony you just gave
21 relate to your understanding of Samsung's process?

22 A. So, yeah, there were several features that I was
23 able to observe of Samsung's process, when reviewing
24 their documents; and along -- so in a short overview,
11:44AM 25 what I learned from Samsung's documents was that the

1 source or drain -- source and drain are formed; that a
2 native oxide grows; that the native oxide is not fully
3 removed; then a titanium layer is added on top of the
4 structure that's present so far; a titanium nitride
11:44AM 5 layer is added or placed on top of the titanium layer;
6 and then a heating process occurs that is adding some
7 additional oxygen to the structure.

8 Q. And is there any dispute in this case that native
9 oxide grows on the source/drain region?

11:44AM 10 A. No, that is not in dispute.

11 Q. And what is your basis for believing that the
12 heating process adds additional oxygen?

13 A. So it's based, first of all, on my general
14 experience in this area but then also on Samsung's
11:45AM 15 documents that indicate that process occurring.

16 Q. Have you prepared a demonstrative to illustrate your
17 opinion on this?

18 A. I have, yeah, so with some slides and some animation
19 included. And so if we start with the first step. So,
11:45AM 20 again, for reference, the part in the red would be the
21 silicon source/drain regions in these 14-nanometer
22 FinFET products; and I'm illustrating here the native
23 oxide that forms on top of that silicon source/drain.

24 So what Samsung says is happening, there is a
11:45AM 25 particular process step called a SiConi™ etch that

1 removes all of that native oxide. Following that, there
2 is a layer of titanium, metal titanium that is formed on
3 the silicon source/drain; and then on top of that,
4 titanium, nitride is placed.

11:46AM

5 And then following that titanium nitride
6 formation, a heating step, as I've indicated before,
7 occurs. And one of the things that that heating -- the
8 primary thing that heating step does is to cause the
9 titanium that was present, along with the silicon

11:46AM

10 underneath, to form what's called a titanium silicide,
11 or a mix of the titanium and the silicon.

12 Q. Okay. So what are you showing on this slide?

13 A. So what I'm showing is what is happening in these
14 process steps. And so the starting point is the same.

11:46AM

15 So the native oxide occurs. Samsung employs the SiConi™
16 etch step, but it does not completely remove all of the
17 native oxide.

18 On top of that, these sequence of steps are the
19 same as before; these are not in dispute. Samsung forms
20 the titanium layer and then it forms the titanium
21 nitride layer on top of the titanium.

11:46AM

22 And then when the heating step occurs, during
23 the heating step, there is a process by which oxygen
24 comes in through the titanium nitride layer and

11:47AM

25 interacts or reacts with the titanium, as well as the

1 oxygen below in the silicon oxide and, thereby, there is
2 a two-layer structure that is formed, a layer of silicon
3 oxide on the silicon source/drain, and a layer of
4 titanium silicon oxide above it and below the titanium
5 nitride.

11:47AM

6 Q. Do you have any support for your opinion that a
7 layer of titanium reacted onto a layer of silicon oxide
8 can form what you're calling a titanium silicon oxide in
9 this case?

11:47AM

10 MR. CORDELL: Objection, your Honor. This
11 relates to the matter we covered in chambers this
12 morning.

13 THE COURT: What's your response, Ms. Rayburn?

11:47AM

14 MR. RAYBURN: Your Honor, my response is that
15 Dr. Piner is going to testify consistently with how I
16 described his testimony this morning, which is that the
17 literature supports the idea that a layer formed in this
18 way can give rise to a metal oxide silicide.

11:48AM

19 MR. CORDELL: Under 403, your Honor, his choice
20 of literature is -- well, it's going to violate
21 Rule 403.

22 MR. RAYBURN: Your Honor, my understanding is
23 we addressed precisely this this morning.

11:48AM

24 THE COURT: Well, let me make it clear to both
25 counsel again and the jury as well: This discussion and

1 these slides are for the purpose of identifying
2 background material on the state of the art.

3 Under no circumstances should the jury
4 consider or compare Samsung patents to Acorn patents for
11:48AM 5 purposes of determining infringement.

6 The only correct comparison for the determining
7 the issue of infringement is between the language in the
8 asserted claims of the Acorn patents, as I have
9 construed them, to the accused Samsung products.

11:49AM 10 A comparison of any claim language from
11 Samsung patents or, for that matter, ladies and
12 gentlemen, a comparison with anything else other than
13 the asserted claim language of the Acorn patents
14 compared to the accused products manufactured and sold
11:49AM 15 by Samsung is incorrect.

16 That's the only correct comparison for
17 purposes of determining infringement.

18 I allowed these slides this morning for the
19 purpose of background information on the state of the
11:49AM 20 art, and that's the only reason they should be used.

21 To the extent you can use them in that fashion,
22 I'll allow you to proceed.

23 MR. RAYBURN: Thank you, your Honor.

24 Q. In your opinion, then, is a process similar to the
11:49AM 25 one you described resulting in a metal silicon oxide

1 known in the art?

2 A. Yes.

3 Q. Is there any other information that supports your
4 opinion with regard to Claim Limitation 17c?

11:50AM 5 A. So with regards to the 17c --

6 Q. And let me caution you, Dr. Piner. Did you review
7 other devices in addition to the 7880 device you were
8 just discussing?

9 A. I did, yes. I've shown a lot of the data from my
11:50AM 10 7880 -- or for the Exynos 7880 processor; and so for
11 completeness here of data, I collected for a different
12 Samsung processor, the Exynos 7420 and it's showing, you
13 know, substantially similar results to what I was
14 previously showing.

11:50AM 15 Q. And what are you showing here?

16 A. So here is -- I mentioned before another analysis
17 technique that I employed to do chemical analysis, as
18 well, elemental analysis. And so this is some data from
19 that type of analysis that's called EELS.

11:51AM 20 But in this image to the left, so the
21 contrast is modified because of the way the image is
22 collected, but it's the same structure as we've seen
23 before with a silicon source/drain before, the tungsten
24 above. And what's shown here in the chemical or the
11:51AM 25 elemental analysis -- and that this is the oxygen

1 intensity signal on the right -- and what is shown would
2 be two continuous and distinct layers of oxide at the
3 interface between the silicon source/drain and the
4 contact.

11:51AM 5 Q. Did you analyze the oxygen presence in the
6 transistors you reviewed in any other way?

7 A. I did. So in addition to doing these, what are
8 called maps, it's also helpful to do another approach
9 with these data called a line scan. And so a line scan
11:51AM 10 basically takes that region that I've shown the mapping
11 data from, and it compiles the data in a graph-type form
12 so that it can often be helpful in understanding some of
13 the details.

14 And so what I've shown here would be one
11:52AM 15 example. This is for the Exynos 7880 that I
16 reverse-engineered. And so the above image is, again,
17 from that region of the source/drain and the contact.
18 And so I've turned it on its side here just to -- for
19 alignment purposes to the line scans that I performed.

11:52AM 20 And so if we break this down. So the first
21 region -- and this is in Exhibit PTX-265, as well as
22 373. And so if we look to the left-hand side, we see a
23 signal, a strong silicon signal indicated by the black
24 curve, if you'll click, please. Just for highlighting
11:52AM 25 purposes. So I'm referring to that left-hand part of

1 the graph, which corresponds, again, to the silicon
2 source/drain region in the image above. And so we see a
3 strong silicon signal there, which is indicating the
4 silicon presence.

11:53AM

5 If we look to, now, the far right-hand side of
6 the data of the line graph, we see a strong signal of
7 tungsten, again, corresponding to that dark region that
8 we've seen to be tungsten.

11:53AM

9 And the next region would be below the
10 tungsten, which identified as the titanium nitride. And
11 so if we look into that region, what we see is the
12 titanium signal, which is the purplish, and the
13 nitrogen, which is the bluish, and we see those
14 predominantly present in that region, which indicates
15 that that is Ti nitride.

11:53AM

16 And the two regions in between now, which I've
17 indicated are silicon oxide and titanium silicon oxide,
18 there, the oxygen signal intensity shows these peaks or
19 these bumps or humps in the data right in those
20 locations; and I circled those for convenience so you
21 can see them.

11:54AM

22 But the left-hand side, corresponding with the
23 silicon signal, is how I'm making my determination of
24 silicon oxide; and then on the right-hand side,
25 corresponding to the titanium, some silicon and the

11:54AM

1 oxygen peak again in this titanium silicon oxide.

2 Q. Dr. Piner, do you see the -- on the legend on the
3 left side of the graph, do you see the X-15
4 demarcations?

11:54AM

5 A. Yes. So the legend that I'm including here, of
6 course, in addition to identifying which lines, which
7 color goes with which element, I also took the oxygen
8 and the nitrogen raw intensity signals and multiplied
9 those by a factor of 15, in this case.

11:54AM

10 Again, I did because, as I've already said,
11 these are light elements; they don't have as strong an
12 intensity naturally as the heavier elements, and so I do
13 this just to make it easier to see them in the same
14 image and have them overlap.

11:55AM

15 THE COURT: Just a minute, Dr. Piner.

16 MR. CORDELL: Again, your Honor, I'm sorry to
17 interrupt, but I need another sidebar.

11:55AM

18 THE COURT: Ladies and gentlemen, it's five
19 minutes until noon. I'm confident Ms. Clendening has
20 your lunch waiting for you. We're going to break for
21 lunch. I'll take this up with counsel outside of your
22 presence over the lunch break.

11:55AM

23 If you will take your notes to the jury
24 room; follow all the instructions I've given you,
25 including not to discuss the case among yourselves.

1 Enjoy your lunch, and in approximately an hour, we'll be
2 back to continue with this examination.

3 The jury is excused for lunch.

4 (Jury exits the courtroom.)

11:56AM

5 THE COURT: Against the prospect that this
6 process may be an ongoing feature of our trial, if this
7 is needed in the future, Mr. Cordell, I would prefer you
8 simply say that you have an issue you need to take up
9 with the Court outside the jury's presence.

11:56AM

10 By calling it a sidebar, you may be equating,
11 in the jury's mind, with the nonquestion statements from
12 the podium that I referred to as sidebars earlier, and I
13 don't want the jury confused about that.

11:56AM

14 MR. CORDELL: I see. Yes, your Honor, thank
15 you.

16 THE COURT: Now, with that, what is the issue?

11:56AM

17 MR. CORDELL: The issue is that the witness is
18 now testifying that the reason why he used the
19 multiplier is because these elements are lighter,
20 meaning, I assume, that their atomic weight is smaller.
21 That is nowhere in his report. It was something that he
22 did discuss in deposition, but it was not in his report,
23 and he's not able to do it here.

11:57AM

24 MR. RAYBURN: Your Honor, may I read from
25 Paragraph 38 of his --

1 THE COURT: If you'll wait until I call on you,
2 Ms. Rayburn --

3 MR. RAYBURN: Apologize.

4 THE COURT: -- it would be much better. The
11:57AM 5 only lawyer in this entire trial who's gone to the
6 podium and immediately jumped into examination without
7 waiting for the Court to tell them to proceed or to give
8 them lead to proceed has been you. I would prefer a
9 higher level deference from you to the Court in
11:57AM 10 consistency with your cocounsel and other counsel in the
11 case. All right?

12 Now I'll hear from you in response to that.

13 MR. RAYBURN: Your Honor, in Paragraph 38 of
14 Dr. Piner's February 8, supplemental report, which was
11:57AM 15 not stricken, he wrote, "One thing to note regarding the
16 above three line scans is that, for my analysis, I
17 multiplied the oxygen and nitrogen intensity signals by
18 15 to better show visually how those signals rose and
19 fell in relation to the other elements at the interface.
11:58AM 20 I did so because light elements, like oxygen and
21 nitrogen, naturally exhibit lower intensity signals than
22 heavier elements like tungsten, even for the same amount
23 of material."

24 "For me, though I was reviewing intensity
11:58AM 25 data as opposed to atomic percentage data, there was no

1 question that the amount of oxygen that I was observing
2 was sufficient to constitute two layers of oxide at the
3 interfacial region."

4 THE COURT: What's your response, Mr. Cordell?

11:58AM

5 MR. CORDELL: My apologies, your Honor.

6 THE COURT: I'll overrule the objection. I'll
7 charge this time to the Defendant. And given that it's
8 noon and the jury has left for lunch, we will do the
9 same. We'll reconvene in approximately an hour.

11:58AM

10 With that, the Court stands in recess.

11 (Recess from 11:58 a.m. to 1:08 p.m.)

12 THE COURT: Dr. Piner, if you'll return to the
13 witness stand, please, sir. And, Ms. Rayburn, you may
14 return to the podium.

01:09PM

15 Mr. Dixon, you have something?

16 MR. DIXON: Your Honor, I do have a
17 housekeeping item, if now is appropriate.

18 THE COURT: Depends on what it is. Go ahead.

01:09PM

19 MR. DIXON: Your Honor, Dr. Piner is the last
20 witness that Acorn will be calling. We had subpoenaed
21 one of Samsung's employees, Mr. Hong-Lae Park, but we're
22 told that he would not be here in time for us to examine
23 him in our case-in-chief. We, therefore, reached an
24 agreement with Samsung that we would be able to go
25 beyond the scope of his direct in our cross-examination;

01:09PM

1 and, therefore, we will not rest after Dr. Piner left
2 the stand because we would be obtaining or adducing
3 additional evidence through our cross-examination of
4 Mr. Park that would be relevant to our case-in-chief.

01:10PM

5 THE COURT: And do we know when Mr. Park will
6 be available to testify as a part of your case-in-chief
7 and Samsung's case-in-chief?

01:10PM

8 MR. CORDELL: The good news is, your Honor, he
9 has arrived. He's actually gotten the vaccine, and we
10 feel like he could go on today. So we'll put him on as
11 close to the end of their case as possible.

12 THE COURT: Is he available to follow
13 Dr. Piner?

14 MR. CORDELL: He is.

01:10PM

15 THE COURT: Do you want to put him on after
16 Dr. Piner and then rest your case?

01:10PM

17 MR. DIXON: We could do that, your Honor. I
18 think, given the way the parties have worked out the
19 agreement, that they wanted to put him on their direct
20 and we would then cross him pursuant to the agreement we
21 had reached.

01:10PM

22 THE COURT: All right. I have no problem with
23 that, and I'll recognize the agreement that Plaintiff's
24 cross-examination is not limited by the scope of the
25 Defendants' direct.

1 I do think for clarity purposes, Mr. Dixon, it
2 would be better after Dr. Piner steps down and I ask you
3 to call your next witness. It would be better for you
4 to announce that subject to your cross-examination of
01:11PM 5 Mr. Park, Plaintiff rests. So we make it clear that's a
6 part of your case-in-chief; but I need to signal for the
7 jury that the we're transitioning from your case to the
8 Defendants' case.

9 So if you will make that announcement and
01:11PM 10 just make it subject to or conditioned upon, whatever
11 you'd like to say, preserve your position; but
12 otherwise, the jury will then begin to think that the
13 next witness is the Plaintiff's witness, and it could
14 get confusing.

01:11PM 15 So if you don't have a problem with that, I'll
16 agree to go forward as you-all have agreed with that
17 caveat.

18 MR. DIXON: No problem at all. Thank you so
19 much, your Honor.

01:11PM 20 THE COURT: Mr. Cordell, fine with you?

21 MR. CORDELL: Fine with me. Thank you.

22 THE COURT: All right. Let's bring in the
23 jury, please.

24 (Whereupon, the jurors enter the courtroom.)

01:12PM 25 THE COURT: Welcome back, ladies and gentlemen.

1 Please be seated.

2 Ladies and gentlemen, I was taking up a matter
3 outside your presence raised by the Defendant when you
4 left for lunch. I've overruled that objection, and
01:12PM 5 we'll proceed with the remainder of Plaintiff's direct
6 examination of Dr. Piner.

7 Ms. Rayburn, you may proceed.

8 MR. RAYBURN: Thank you, your Honor.

9 Q. Hello again, Dr. Piner.

01:12PM 10 A. Hello.

11 Q. Will you please remind the jury what we were
12 discussing right before we broke for lunch?

13 A. Sure. So we were reviewing the data that I
14 collected for Samsung's Exynos 7880 part, and I had just
01:12PM 15 got through, I believe, pointing out the bumps or the
16 oxygen peaks present in the silicon oxide and the
17 titanium silicon oxide layers of interface region for
18 this 14-nanometer FinFET product.

19 Q. And can you please explain what the "times 15"
01:13PM 20 identifiers in the top left of that slide signify?

21 A. Right, yes. So, in brief, again, the "times 15"
22 indicates that I multiplied the signals by a factor of
23 15; because oxygen and nitrogen being light elements,
24 they just -- they naturally do not exhibit as strong or
01:13PM 25 as an intense signal as heavier elements such as

1 titanium or tungsten would.

2 And so I multiplied those for ease of
3 visual aid so they could be seen clearly relative to the
4 other elements that are present.

01:13PM

5 Q. Dr. Piner, what is your experience with analyzing
6 materials like this?

7 A. So I've used analysis approaches like this, EDS
8 electron dispersive spectroscopy, many times in my
9 research, as well as the EELS, electronic energy loss
10 spectroscopy.

01:14PM

11 These approaches, these chemical or elemental
12 analysis approaches are quite commonly used, especially
13 in the semiconductor industry for thin film analysis.

01:14PM

14 Q. Did you do anything with respect to your analysis of
15 Samsung's accused devices that's inconsistent with the
16 way that you generally approach this sort of analysis?

17 A. No. I followed the same approach that I always
18 follow in doing this, in conducting this analysis.

01:14PM

19 Q. And did you prepare line scans for the other nine
20 devices that you analyzed, that you purchased on the
21 open market from Samsung?

22 A. I did.

23 Q. And what were your conclusions as to those other
24 line scans?

01:14PM

25 A. So those line scans supported were substantially the

1 same as to what I was showing here before and support my
2 conclusions as to the presence of these two distinct
3 oxide layers in the interface region of the 14-nanometer
4 FinFET devices.

01:15PM

5 Q. Okay. Can you describe that opinion about the two
6 distinct oxide layers in relation to the slide you're
7 showing here?

01:15PM

8 A. Sure. So going back to the slide that I've shown
9 before. So, again, the silicon region at the bottom,
10 the titanium nitride region in the middle, the tungsten
11 at the top. And so in this contrast image in between,
12 whereas before I highlighted it as a green interface
13 layer, if you look in the contrast there, you can see a
14 lower band in that region, or just directly above the
15 silicon, that's a little bit brighter in contrast.

01:15PM

16 And then above that, or below the titanium
17 nitride, however you choose to view it, there is a
18 darker band of material; and the elemental analysis
19 aligned with what I'm seeing visually in these images.

01:15PM

20 Q. So you --

21 A. And so I'm highlighting that here for visual
22 reference, and so that bottommost band is the silicon
23 oxide in this interface layer, and the titanium silicon
24 oxide is above that.

01:16PM

25 Q. Okay. And can you please remind the jury how that

1 opinion relates to Claim 17c of the '395 Patent.

2 A. Sure. To pull all this together, finally, so all of
3 this discussion has been, as 17c indicates, around the
4 interface layer. And 17c requires -- "comprising," by
01:16PM 5 the way, is a term that just means "includes" or
6 "including." And so the interface layer needs to
7 include a layer of an oxide of titanium, which I
8 highlighted in the light blue here to correspond to what
9 I'm showing in the image as the titanium silicon oxide,
01:16PM 10 and a distinct layer of an oxide of the semiconductor,
11 which is the greenish layer, the green layer that I'm
12 showing in the image of silicon oxide.

13 Q. Dr. Piner, does your analysis of Samsung devices
14 that you are able to obtain on the open market, was that
01:17PM 15 the entirety of your analysis with regard to
16 Claim Limitation 17c?

17 A. No. I also reviewed many Samsung documents produced
18 in this case, as well as Samsung witness testimony.

19 Q. And what conclusion did you reach based on those
01:17PM 20 internal Samsung documents and witness testimony?

21 A. My conclusion from that review of their documents is
22 that there is a substantial agreement between what
23 Samsung has shown in this interfacial layer region to
24 what I have shown in my data -- or in my analysis of the
01:17PM 25 data I collected; there's agreement there.

1 Q. And what is the agreement, Dr. Piner?

2 A. Specifically, the agreement is that there are two
3 layers of oxide present, two distinct layers of oxide
4 present; one comprising of metal oxide, the other
5 comprising of semiconductor oxide in that interfacial
6 region above the source/drain and below the contact.

01:17PM

7 MR. RAYBURN: At this time, your Honor, I'd
8 like to ask permission to seal the courtroom.

9 THE COURT: All right. Do you intend to go
10 into confidential information?

01:18PM

11 MR. RAYBURN: Yes, your Honor.

12 THE COURT: Then based on that representation
13 from Counsel, I'll order the courtroom sealed at this
14 time. Those present not subject to the protective order
15 that's been entered in this case should exit the
16 courtroom and remain outside until it's reopened and
17 unsealed.

01:18PM

18 And, Counsel, I'll trust both sides to scan the
19 courtroom and let me know if anybody has not left who
20 needs to.

01:18PM

21 [REDACTED]
22 [REDACTED]
23 [REDACTED]
24 [REDACTED] [REDACTED] [REDACTED]
25 [REDACTED] [REDACTED]

01:18PM

1 Q. [REDACTED]

2 [REDACTED] [REDACTED] [REDACTED]

3 [REDACTED]

4 [REDACTED]

02:15PM

5 THE COURT: Counsel, let me ask. Are we still
6 in an area where we're maintaining the seal to protect
7 confidential information?

8 MR. RAYBURN: No, your Honor. I think we can
9 lift the seal.

02:15PM

10 THE COURT: All right. Then I'll order the
11 courtroom unsealed and direct the court security officer
12 to invite the public to return.

13 (Proceedings now unsealed.)

02:15PM

14 THE COURT: All right. The courtroom is
15 unsealed. You may proceed.

16 Q. Dr. Piner, has any element of Claim 1 of the '167
17 Patent been construed?

02:16PM

18 A. Yes. So what I'm showing here again is how the
19 Court has construed Claim 1 of the '167 Patent. And so
20 the claim calls out the interface layer comprising a
21 metal oxide and an oxide of the semiconductor, and the
22 Court has construed that to mean the interface layer
23 comprising a layer of a metal oxide and a distinct layer
24 of an oxide of the semiconductor.

02:16PM

25 Q. And does your prior -- how does your prior testimony

1 apply to Claim Limitation 1a?

2 A. So 1a, we've seen these elements, and so I'm
3 highlighting here for completeness. And so you've
4 already seen an interface layer, which I'm showing in
02:16PM 5 green, corresponding to the green in the image, disposed
6 between a contact metal, so I'm highlighting that in
7 blue, corresponding to the titanium nitride; but that
8 also includes the tungsten above that; and the
9 semiconductor, the semiconductor comprising a source or
02:17PM 10 drain of a transistor, that is the silicon at the top of
11 that; that mushroom-shaped region is the source or
12 drain, and that is comprised of silicon, which is a
13 semiconductor, and so those elements are met.

14 Q. How does your prior analysis apply to Claim
02:17PM 15 Limitation 1c?

16 A. So if we skip 1b for a moment and go to 1c. So
17 here, the interface layer must also comprise or include
18 a metal oxide, and so I'm highlighting that in light
19 blue. We've seen that already. That's the titanium
02:17PM 20 silicon oxide that I've identified -- and an oxide of
21 the semiconductor; again, the semiconductor being
22 silicon, that is the silicon oxide, which is the light
23 green. And so those terms or those parts of the claim
24 elements are also met.

02:17PM 25 Q. And how did you conclude that titanium silicon oxide

1 is a metal oxide?

2 A. Right. So different ways. There's -- that's a term
3 that's employed by various groups. And so what I'm
4 showing here are a couple of reference patents that have
02:18PM 5 been published, and -- as well as my own experience. I
6 mean, this is not unknown. But in these, there's a
7 call-out specifically to titanium silicon oxide as a
8 metal oxide, just by way of specific examples.

9 Q. Does that complete your infringement opinion as to
02:18PM 10 Claim Limitations 1a and 1c of Claim 1 of the '167
11 Patent?

12 A. It does, yes. So Claim 1a and 1c I have shown. I
13 believe, in my opinion, that's been shown that Samsung
14 is infringing.

02:18PM 15 Q. May I check those off?

16 A. Yes.

17 Q. What is the next claim limitation that you analyzed
18 with regard to Claim 1 of the '167 Patent?

19 A. Okay. So going back to Number 1b, so there it --
02:18PM 20 that claim element requires that the interface layer be
21 configured to provide a specific contact resistivity
22 between the contact metal and the semiconductor of less
23 than 1 ohm micron squared.

24 MR. RAYBURN: Your Honor, I greatly apologize.

02:19PM 25 The next slide, I believe, has Samsung confidential

1 information, unless Samsung's willing to waive an
2 objection to that slide.

3 MR. CORDELL: I would love to help, your Honor,
4 but I don't know what they are going to talk about.

02:19PM

5 THE COURT: Then to avoid any risk, I'll order
6 the courtroom sealed and direct those present, not
7 subject to the protective order, to exit the courtroom
8 and remain outside until it's unsealed.

02:19PM

9 And, counsel, when we've covered what needs to
10 be protected due to sealing, let me know, then I'll
11 unseal the courtroom.

12 [REDACTED]
13 [REDACTED]
14 [REDACTED]

02:19PM

15 [REDACTED]
16 [REDACTED]
17 [REDACTED]

18 [REDACTED]
19 [REDACTED]

02:19PM

20 [REDACTED]
21 [REDACTED]

22 [REDACTED]
23 [REDACTED]

02:20PM

24 [REDACTED]
25 [REDACTED]