

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

BOE TECHNOLOGY GROUP CO.,	)	CONTAINS CONFIDENTIAL EXCERPTS
LTD.,	)	
Petitioner,	)	
vs.	)	
OPTRONIC SCIENCES LLC,	)	
Patent Owner.	)	No. IPR2024-01130
	)	IPR2024-01133
	)	IPR2024-01134
	)	NONCONFIDENTIAL REDACTED VERSION

VIDEOTAPED DEPOSITION OF
RUSSEL JACOB BAKER, PH.D., VOLUME I
WITH CONFIDENTIAL EXCERPTS REDACTED
WEDNESDAY, APRIL 2, 2025, 7:59 A.M. PT/9:59 A.M. CT
VIA ZOOM VIDEOCONFERENCE

JOB NO.: 110989
STENOGRAPHICALLY REPORTED BY:
CHERYL HAAB SCOTT, RDR, CRR, CCRR
CA CSR No. 13600
WA CCR No. 3499
NV CCR No. 1003

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 PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOE TECHNOLOGY GROUP CO.,	)	
LTD.,	)	
	)	
Petitioner,	)	
	)	No. IPR2024-01130
vs.	)	IPR2024-01133
	)	IPR2024-01134
OPTRONIC SCIENCES LLC,	)	
	)	
Patent Owner.	)	
	)	
_____	)	

VIDEOTAPED DEPOSITION OF RUSSEL JACOB BAKER,
PH.D., VOLUME I, WITH CONFIDENTIAL EXCERPTS REDACTED,
taken via Zoom Videoconference, on Wednesday,
April 2, 2025, at 7:59 a.m. PT/9:59 a.m. CT, before
Cheryl Haab Scott, RDR, CRR, CCRR, Certified Shorthand
Reporter No. 13600 in and for the State of California,
Certified Court Reporter No. 3499 in and for the State
of Washington, and Certified Court Reporter No. 1003 in
and for the State of Nevada.

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

A P P E A R A N C E S
--oOo--

For the Petitioner:

DLA PIPER (US)
BY: ALAN A. LIMBACH, ESQ.
3203 Hanover Street, Suite 100
Palo Alto, California 94304
650.833.2433
alan.limbach@us.dlapiper.com

DLA PIPER (US)
BY: MICHAEL SAULNIER, ESQ.
303 Colorado Street, Suite 3000
Austin, Texas 78701
512.457.7234
michael.saulnier@us.dlapiper.com

For the Patent Owner:

RUSS AUGUST & KABAT
BY: PETER TONG, ESQ.
8080 North Central Expressway, Suite 1503
Dallas, Texas 75206
310.826.7474
ptong@raklaw.com

RUSS AUGUST & KABAT
BY: JEFFERSON E. CUMMINGS, ESQ.
12424 Wilshire Boulevard, 12th Floor
Los Angeles, California 90025
310.826.7474
jcummings@raklaw.com

Also Present:

DAN COLOTARIO, VIDEOGRAPHER

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
--o0o--

WITNESS: Russel Jacob Baker, Ph.D.

PAGE

Examination By Mr. Tong

7

1	INDEX TO EXHIBITS		
2	--000--		
3	EXHIBIT NO.		PAGE
4	Exhibit 1	"Declaration of Dr. R. Jacob Baker in Support of Petition for Inter Partes Review of U.S. Patent No. 9,263,509"	13
5			
6	Exhibit 2	United States Patent No. US 9,263,509 B2	14
7			
8	Exhibit 3	"Solid-State Lighting Research and Development Multi-Year Program Plan" dated April 2013	48
9			
10	Exhibit 4	"Solid-State Lighting R&D Plan" dated June 2016	50
11	Exhibit 5	United States Patent Application Publication No. US 2004/0079945 A1	111
12			
13	Exhibit 6	United States Patent Application Publication No. US 2012/0162053 A1	149
14	Exhibit 7	Weaver demonstrative	162
15	Exhibit 8	(Skipped)	N/A
16	Exhibit 9	Demonstrative	199
17	Exhibit 10	Demonstrative	209
18	Exhibit 11	Demonstrative	212
19	Exhibit 12	United States Patent Application Publication No. US 2011/0248309 A1	218
20			
21			
22	CONFIDENTIAL EXCERPTS REDACTED: PAGES 43-44		
23			
24			
25			

1 WEDNESDAY, APRIL 2, 2025

2 7:59 A.M. PT/9:59 A.M. CT

3 VIA ZOOM VIDEOCONFERENCE

4 --000--

5 THE VIDEOGRAPHER: We're on the record.

6 This is the beginning of media one in the deposition
7 of Dr. R. Jacob Baker in the matter of BOE
8 Technology Group Co., Ltd., versus Optronik Sciences
9 LLC, Case Number IPR2024-01130, 1133, 1134, held via
10 videoconference. This deposition is being taken on
11 behalf of the Petitioner on April 2, 2025. The time
12 is 9:59 a.m. The court reporter is Cheryl Scott. I
13 am Dan Colotario the videographer on behalf of First
14 Legal Depositions, located in Los Angeles,
15 California.

16 This deposition is being videotaped at all
17 times unless specified to go off the video record.

18 Would all present please identify
19 themselves, beginning with the noticing attorney.

20 MR. TONG: This is Peter Tong from Russ
21 August & Kabat, and with me is my colleague,
22 Jefferson Cummings.

23 MR. LIMBACH: Alan Limbach with DLA Piper
24 representing Petitioner, also joining today, it
25 doesn't look like quite yet, it is Mike Saulnier.

1 THE VIDEOGRAPHER: Thank you, Counsel.
2 Would the court reporter please swear in the
3 witness.

4 THE COURT REPORTER: Sure. One moment.
5 Good morning. My name is Cheryl Scott. I
6 am a California and Nevada Certified Shorthand
7 Reporter and the deposition officer for today's
8 proceeding. My Nevada license number is 1300 [sic].

9 --o0o--

10 Whereupon,

11 RUSSEL JACOB BAKER, PH.D.,
12 having been called as a witness,
13 was duly sworn by the court reporter
14 and testified as follows:

15 --o0o--

16 EXAMINATION

17 BY MR. TONG:

18 Q Thank you. Before we begin, I would just
19 like to note on the record that the parties have an
20 agreement that this will cover two of the three
21 patents that Dr. Baker has provided a declaration
22 in. We will attempt to get through two of them
23 today and, if necessary, that will continue
24 tomorrow.

25 Dr. Baker, so we know each other; right?

1 A Yes.

2 Q Okay. And you have sat through many
3 depositions before; right?

4 A Yes.

5 Q And you're generally familiar with the rules
6 of depositions; correct?

7 A Yes.

8 Q So you're aware this is a formal, legal
9 proceeding where you're obligated to answer
10 truthfully; correct?

11 A Yes.

12 Q We may take a break from time to time. You
13 can request the break if needed. Typically, every
14 hour. But we will not take a break during the
15 middle of a question.

16 Do you understand that?

17 A Yes.

18 Q If I ask a question and you do not
19 understand my question, will you please let me know?

20 A Yes.

21 Q Thank you. If you don't ask me to clarify
22 or rephrase my question, I will assume that you have
23 understood my question.

24 Is that fair?

25 A Yes.

1 Q Are you on any drugs, alcohol, or medication
2 that may affect your ability to testify truthfully
3 today?

4 A No.

5 Q Is there any other reason why you cannot
6 provide truthful testimony today?

7 A No, not that I can think of.

8 Q Okay. So since this is a remote deposition,
9 I'm going to ask you a few questions related to what
10 you have.

11 Is there anyone in the room with you right
12 now?

13 A No.

14 Q Do you have any documents or notes with you?

15 A No.

16 Q Before I begin questioning you about your
17 declarations, are there any corrections or
18 retractions that you wish to make as to any part of
19 your declarations?

20 A Not that I can think of.

21 Q Okay. So the petitioner in this IPR is BOE.
22 BOE engaged you as an expert in this -- in these IPR
23 petitions; correct?

24 A Yes.

25 Q When did BOE retain you?

1 A I would guess May 2024.

2 Q And what was the scope of work that you were
3 retained for?

4 A Writing declarations for IPRs and maybe
5 working on district court litigation. I don't quite
6 remember.

7 Q And so that would involve providing a
8 declaration for the '509 patent in this case, which
9 is patent 9263509?

10 A Yes.

11 Q And that would also involve providing a
12 declaration for the '733 patent in this case, which
13 is patent 9406733?

14 A I don't remember the exact numbers, but yes,
15 that sounds right.

16 Q Okay. And after you were retained, you
17 reviewed the '509 and '733 patents; correct?

18 A Yes.

19 Q And were you asked to provide an opinion on
20 the validity of the '509 and '733 patents?

21 A With respect to the inter partes review of
22 those two patents, yes.

23 Q After you were engaged, did you read the
24 '509 patent and '733 patent to understand their
25 disclosures?

1 A **I read those patents, yes.**

2 Q And you've also read the prior art that is
3 listed in your declarations for the '509 and '733
4 patents; correct?

5 A **Yes.**

6 Q Do you remember if you read the '509 and
7 '733 patents first or whether you first read the
8 prior art?

9 A **I read the patents first.**

10 Q Did you personally search for the prior art
11 that is being cited in your declarations?

12 A **Maybe to some degree, but generally, a**
13 **search firm is used for identifying prior art when I**
14 **review what they identified to see if I agree. But**
15 **I don't remember clearly if I personally identified**
16 **prior art or not.**

17 Q Did you conduct a prior art search and
18 personally find the Weaver reference?

19 A **I don't think so, but I don't recall.**

20 Q Do you remember if you personally conducted
21 a prior art search and found the Lee 053 reference?

22 A **I don't think so, but again, I don't recall.**

23 Q Did you personally conduct a prior art
24 search and find the Song reference?

25 A **I don't remember that reference right now,**

1 right off the top of my head.

2 Q Did you personally conduct a prior art
3 search and find the Lee 149 reference?

4 A Same answer. I don't think so, but I don't
5 recall.

6 Q Would you give the same answer regarding the
7 Bae, B-a-e, references; Gupta, G-u-p-t-a; and Han
8 references?

9 A Yes.

10 Q Did you read the IPR petition for the '509
11 patent?

12 A No.

13 Q Did you read the IPR petition for the '733
14 patent?

15 A No.

16 Q Did you read the institution decision
17 regarding the '509 patent?

18 A Yes.

19 Q Did you read the institution decision
20 regarding the '733 patent?

21 A Yes.

22 MR. TONG: All right. I'm going to
23 introduce the first exhibit. This is going to be
24 Exhibit 1 of this deposition. And I will represent
25 that this has been -- this was filed as Exhibit 1003

1 in IPR2024-01134 regarding the '733 patent. I have
2 uploaded this document into the chat box.

3 (Patent Owner's Exhibit 1 was marked.)

4 BY MR. TONG:

5 Q Dr. Baker, when you get a chance, could you
6 please download and open this exhibit.

7 MR. LIMBACH: Counsel, I'm going to object
8 to form.

9 MR. TONG: Yes. I will -- this is a
10 declaration regarding the '509 patent. I misspoke
11 when I said the '733 patent.

12 MR. LIMBACH: Thank you.

13 MR. TONG: IPR2024-01133, regarding patent
14 9263509. I had my numbers mixed up earlier. Thank
15 you for the correction.

16 **THE WITNESS: I have it open.**

17 BY MR. TONG:

18 Q And do you recognize this to be the
19 declaration that you filed regarding the '509
20 patent?

21 **A Yes.**

22 Q Did you review this declaration in
23 preparation for your deposition today?

24 **A Yes.**

25 Q About how many hours did you spend reviewing

1 this declaration in preparation for your deposition
2 today?

3 **A About eight.**

4 Q I'd like you to turn to paragraph 45 of this
5 document with me. Please let me know when you're
6 there.

7 **A I'm there.**

8 Q So here, you state: It is your opinion that
9 the relevant art of the '509 patent is in the field
10 of electronic and optical -- sorry optoelectronic
11 system design.

12 Do you see that?

13 **A Yes.**

14 Q Can you think of any other relevant
15 technology fields that a POSITA would need to have
16 knowledge about?

17 **A May I get a copy of the '509 patent?**

18 MR. TONG: Yes. I am putting into the chat
19 box what is being marked for this deposition as
20 Exhibit 2, which is Exhibit 1001 from the IPR
21 regarding the '509 patent.

22 (Patent Owner's Exhibit 2 was marked.)

23 **THE WITNESS: At a high level, I think**
24 **that's a good description.**

25 ///

1 BY MR. TONG:

2 Q Sorry. What is a good description?

3 A Paragraph 45.

4 Q In your opinion, would a POSITA need to have
5 experience with LEDs?

6 A I think that would be reasonable given
7 that's in the field of optoelectronic system design.

8 Q And in your opinion, would a POSITA need any
9 experience in organic LEDs?

10 MR. LIMBACH: Objection. Form.

11 THE WITNESS: I don't think so -- I would
12 need to think about it. I think the material system
13 that's used to implement the light emitting diode
14 isn't -- isn't -- I mean, all that important. I
15 mean, it could be useful, but the point is they
16 would need to have experience using optoelectronic
17 components in a system and organic and other types
18 of light-emitting or light-detecting devices would
19 fall within the field of optoelectronic system
20 design.

21 BY MR. TONG:

22 Q Given your previous answer that it would be
23 reasonable that a POSITA would need to have
24 experience with LEDs, what kind of experience would
25 a POSITA need to have with LEDs?

1 MR. LIMBACH: Objection. Form.

2 THE WITNESS: For example, designing
3 electronic circuits using LEDs as light sources.

4 BY MR. TONG:

5 Q Would it be necessary for the POSITA to have
6 experience actually designing the LED as opposed to
7 circuits that use LEDs?

8 MR. LIMBACH: Objection. Form.

9 THE WITNESS: I'm not exactly sure I
10 understand. When you say "designing LEDs," are you
11 talking about from a material system point of view,
12 where the material scientist is selecting the doping
13 concentrations of the LEDs and the thickness of the
14 layers and such?

15 BY MR. TONG:

16 Q Yes. Generally, from a semiconductor
17 fabrication or materials point of view, would a
18 POSITA need to have experience designing LEDs as
19 opposed to just using them in a circuit?

20 MR. LIMBACH: Objection. Form.

21 THE WITNESS: Well, again, if I understand
22 what you're asking, you're asking about process
23 development where the process steps are being
24 developed to implement a light-emitting diode, and I
25 don't think a POSITA would need that experience in

1 this patent. A POSITA would need the experience of
2 designing a system using a process that's already
3 been developed by somebody that focuses on, like I
4 said, the material systems and thicknesses and such.

5 BY MR. TONG:

6 Q How much experience would a POSITA need with
7 LEDs?

8 MR. LIMBACH: Objection. Form.

9 THE WITNESS: I don't understand the
10 question. It seems vague.

11 BY MR. TONG:

12 Q In terms of a number of years of experience,
13 how much experience would a POSITA need with LEDs?

14 MR. LIMBACH: Objection. Form.

15 THE WITNESS: I mean, there's an underlying
16 assumption in that question that really isn't
17 something that is based upon one of my opinions. I
18 give my definition of a POSITA in paragraph 46, and
19 it doesn't talk about specific time that one would
20 have using only LEDs.

21 BY MR. TONG:

22 Q Given your previous answer, quote, "I think
23 that would be reasonable given that in the field of
24 optoelectronic systems design," which was given in
25 response to my question, quote, "In your opinion,

1 what would a POSITA" -- sorry, quote, "In your
2 opinion, would a POSITA need to have experience with
3 LEDs?"

4 When you gave that answer, how much
5 experience were you referring to in terms of the
6 number of years?

7 MR. LIMBACH: Objection. Form.

8 THE WITNESS: So you're drilling down to
9 just experience using LEDs. And, again, my -- you
10 asked if it was reasonable if someone would have or
11 if someone should have experience with LEDs if they
12 are considered a POSITA in this matter, and I
13 answered yes.

14 But my definition of a POSITA is in
15 paragraph 46. If someone is using LEDs and design
16 on and off for years, do all those years count as
17 experience using LEDs or the few hours or weeks out
18 of the year count as experience using an LED?

19 My definition of a POSITA, again, is given
20 in paragraph 46. And to answer your question, you
21 needed one or more years of professional experience
22 in electronics and optoelectronic system design.

23 BY MR. TONG:

24 Q So are you retracting your previous answer
25 that specific experience in LEDs is necessary; and

1 are you going back to your answer in the declaration
2 that only experience in electronics and
3 optoelectronic system design is needed?

4 MR. LIMBACH: Objection. Form.

5 THE WITNESS: No, their experience with
6 optoelectronics and electronics would include LEDs,
7 so I don't see any inconsistency. I mean, it's like
8 saying I have experience in electronics but then I
9 also have experience in using transistors. I mean,
10 they're one and the same. Electronics is understood
11 to encompass transistors.

12 BY MR. TONG:

13 Q Let me see if I can clarify.

14 A Optoelectronic is used to encompass
15 light-emitting diodes, for example.

16 Q I understand. Thank you, Dr. Baker. Let me
17 see if I can clarify my question.

18 In your opinion, would a POSITA need
19 specific optoelectronic system design in the
20 subfield of LEDs?

21 MR. LIMBACH: Objection. Form.

22 THE WITNESS: I wouldn't call using LEDs a
23 subfield. I mean, it's part of optoelectronics.
24 It's like saying that I have electronics and I have
25 a subfield called transistors. It doesn't make any

1 sense.

2 BY MR. TONG:

3 Q Let me try a different question, then.

4 MR. LIMBACH: Before you begin, I'm going to
5 object to cutting the witness off. If he's in the
6 middle of an answer. I think it's best to let him
7 finish before you begin your next question.

8 MR. TONG: Thanks. I'm just trying to save
9 time given that we are trying to compress the
10 deposition of two patents into one day. The witness
11 objected to the question so I'm just going to ask a
12 new question.

13 BY MR. TONG:

14 Q In your opinion, would a person who has
15 experience in the field of electronic and
16 optoelectronic system design but no experience in
17 designing LEDs qualify as a POSITA?

18 MR. LIMBACH: Objection. Form.

19 THE WITNESS: So if you're talking about
20 designing LEDs from a material scientist point of
21 view where you're selecting, like, the distance
22 between metal layers or the thickness of organic
23 materials or the doping used at various layers,
24 that's not something that a POSITA in the '509
25 patent, that's not knowledge of POSITA in the '509

1 patent would need. They don't need to know those
2 specific material properties and interactions.

3 What they need to know is how to design the
4 system using optoelectronic components, like
5 specifically an LED.

6 BY MR. TONG:

7 Q Do you have any experience designing LEDs
8 from a material scientist point of view?

9 A Yes, to some degree. I wouldn't say that's
10 my main focus. I've been involved with displays and
11 design displays and the process technology of
12 selecting the steps in the process.

13 Q Could you point me to that experience in
14 your CV?

15 A Yes. When I worked at Micron Display, for
16 example.

17 Q Okay. Is that discussed in paragraph 11 of
18 your declaration -- let me change that -- paragraphs
19 11 through 12.

20 A Bottom of page 5, which is PDF page 12, I
21 have a statement that says I worked on the design of
22 displays at micron; and that was in the mid '90s
23 when cathode-ray tubes were still the dominant
24 display technology, and we were trying to determine
25 which type of display would be replacing cathode-ray

1 tubes; and I ended up spending most of my time on a
2 technology called field-emitting displays. The
3 organic light-emitting material systems at the time
4 weren't mature, and so I moved over into the design
5 of field-emitting displays.

6 Q I'm not familiar with field-emitting
7 displays. Could you give me and the board a
8 high-level explanation of what those are?

9 A Sure. Their goal in that time frame,
10 30 years ago now or a little over 30 years ago, was
11 to change from cathode-ray tubes, which have a --
12 can be long, into flat-panel displays; and in a
13 field-emitting display, the pixel has a -- similar
14 to most pixels, has a current -- transistor that
15 creates a current that drives a silicon-etched tip
16 that emits electrons until strike a phosphor at
17 the top of the display like a cathode-ray tube did
18 with an electron beam.

19 This work ended up being funded by the
20 Department of Defense for miniature displays --
21 funded in part. There was a commercial aspect we
22 were interested in for displays for pilots' helmets
23 so they could see the display in their helmet.

24 But to answer your question, it's a way of
25 emitting electrons from the pixel to strike a

1 phosphor that's printed on a piece of glass above
2 the pixel.

3 Q Were there any -- strike that.

4 Did Micron Display eventually replace any
5 public product that you were involved in working on?

6 A Not that I know of. We had prototypes we
7 supplied. The issue is we got all the way to
8 manufacturing, but it was a good example of getting
9 a technology 99.9 percent there; but we had in the
10 production an issue with dead pixels in the
11 display -- and the eye is very perceptive of picking
12 up dead pixels, and we could never solve that
13 production problem.

14 So I'm guessing '96, the LCD displays had
15 matured enough that they moved into the flat-panel
16 display market, in the miniature market. And so
17 ultimately, that technology was never successfully
18 commercialized.

19 Q Again, at a high level, would it be fair to
20 characterize a field emission display as, like, a
21 miniature version of like a CRT?

22 A To the extent the electrons strike a
23 phosphor, yes; but the operation is more like all of
24 the other flat-panel displays with rows and columns
25 for selecting and data with a row address decoder

1 and a column address decoder, and none of those
2 electronics are in cathode-ray tubes.

3 Q Did the field-emitting displays that you
4 worked on have LEDs in them?

5 MR. LIMBACH: Objection. Form.

6 THE WITNESS: No. We looked at that
7 technology. It was -- the material systems were not
8 getting the brightness and the colors that they
9 needed to get, and we ultimately went with the --
10 more of an evolutionary step of using the phosphors.

11 But to answer your question, no, they did
12 not have LEDs in those pixels.

13 BY MR. TONG:

14 Q To clarify that answer, when you said, "we
15 looked at that technology," are you referring to
16 looking at field-emitting displays or looking at
17 technology with LEDs?

18 A Other technologies with LEDs and LCDs. LEDs
19 were -- you know, at least discrete LEDs were very
20 mature. It was a very mature technology at the
21 time, and so it made sense to try to use the -- that
22 technology into an integrated circuit form; but like
23 I said, we ultimately chose the field-emitting
24 displays.

25 Q So you said that you were not getting the

1 brightness and the colors -- and the colors that we
2 wanted to get.

3 What was wrong with the brightness and the
4 colors of the LEDs?

5 A They weren't bright enough, and they didn't
6 have the color spectrum you need for a display. Red
7 LEDs were easy to get. Other colors integrated on
8 the chip together were more challenging.

9 Q Was there a particular reason the LEDs were
10 not bright enough?

11 A The material --

12 MR. LIMBACH: Objection. Form.

13 THE WITNESS: The material system hadn't
14 matured at that time; and all of this is from memory
15 because the investigation was in the 1994 time
16 frame, which was a long time ago.

17 BY MR. TONG:

18 Q Do you recall whether the LEDs just weren't
19 emitting enough light to be sufficiently bright, or
20 if the light, for other reasons such as absorption,
21 were not bright enough at the output?

22 A I don't remember details. All I know is
23 that we were able to get very bright field-emitting
24 displays with very low power, and that was the
25 direction we went.

1 Q You ever heard of a company called
2 Daktronics, D-a-k-t-r-o-n-i-c-s?

3 A Maybe. I don't remember. I've literally
4 heard of hundreds, if not a thousand, companies.
5 But I can't, sitting here right now, remember that
6 company.

7 Q Toward the top of paragraph -- page 6 of
8 your declaration, the first full sentence says:

9 "This work was at a time when cathode-ray
10 tubes, CRTs, were still" --

11 (Technological interruption.)

12 (Discussion off the record.)

13 (Recess.)

14 THE VIDEOGRAPHER: We're back on the record.
15 The time is 10:45 a.m.

16 BY MR. TONG:

17 Q All right. I'm going to re-ask the last
18 question.

19 Do you see at the top of page 6 of your
20 declaration? And I'm going by the page numbers at
21 the bottom middle of the page. It says:

22 "This work was at a time when cathode-ray
23 tubes were still the dominant type of display.

24 Flat-panel displays were being developed with the
25 hope of replacing CRTs in the consumer market. I

1 worked on flat-panel displays, which resulted in
2 five patents."

3 A I see that, and then the patents are listed.

4 Q The CRTs that are referenced here, could you
5 give a very high-level description of how those
6 work?

7 A There's a vacuum tube with an electron gun
8 at the back of it that's focused and swept across
9 the screen; and when the electrons -- the intensity,
10 also, of the electron beam is modulated; and then
11 the electrons hit the phosphor on the screen.
12 There's luminescence; and you get red, green, and
13 blue colors coming out, and those are the, you know,
14 first hundred years of -- maybe not that long,
15 75 years -- of TVs used CRTs.

16 Q And could you give a similarly high-level
17 explanation of how the flat-panel displays that were
18 being developed, worked at the time?

19 A They are organized on generally -- on some
20 sort of flat substrate. There's a row address
21 circuitry and a column address circuitry. The row
22 address selects a selector scan line in the row
23 direction to access one row at a time. When that
24 row is accessed, data is placed on the column lines
25 which are called "column lines" or "data lines."

1 And that data corresponds to an intensity of light
2 that would be emitted by the pixel. Pixel is short
3 for "picture element." And individual pixels form
4 the display.

5 Q What type of -- what type of lighting source
6 was used in flat-panel displays?

7 MR. LIMBACH: Objection. Form.

8 THE WITNESS: It depends on the technology.
9 In LCDs --

10 (Reporter clarification.)

11 THE WITNESS: LCDs, liquid crystal displays,
12 they would either use no light source or perhaps a
13 backlight. In LED displays, they would use
14 light-emitting diodes. In field-emitting displays,
15 they would use field emitters that would emit
16 electrons that strike the phosphors I discussed
17 earlier.

18 BY MR. TONG:

19 Q The liquid crystal display, LCD technology.
20 The backlight was usually a white light; is that
21 correct?

22 A If one is used, it could be a white light,
23 yes.

24 Q And LCDs would select colors by using
25 filters; is that correct?

1 A At a high level, yes.

2 Q You could toggle the crystals to either
3 block or let through certain colors of light. Is
4 that how LCD technology worked?

5 MR. LIMBACH: Objection. Form.

6 THE WITNESS: Well, just as -- I didn't
7 offer expert or -- opinions on the operation of
8 LCDs. But yes, you would use voltage or electric
9 fields to orient crystals to allow light to transmit
10 through or not.

11 BY MR. TONG:

12 Q For your work at Micron, did you evaluate
13 any LED displays as a potential replacement for the
14 technology at the time?

15 A We didn't evaluate displays. We evaluated
16 technologies that potentially could be used for
17 displays.

18 Q Did you evaluate LEDs as technology that
19 could replace CRT displays?

20 A We looked at materials and fabrication, yes.
21 But we didn't look at already existing LED displays.
22 I mean, as soon as people created discrete LEDs,
23 they made banner displays with advertising or
24 sayings that could be swept across the display; but
25 they weren't -- display, it would be used, for

1 example, displaying television.

2 But to answer your question, our focus was
3 on technology and manufacturability.

4 Q Did you evaluate the technology and
5 manufacturability of any LED technologies at Micron?

6 MR. LIMBACH: Objection. Form.

7 THE WITNESS: Yes. As I discussed in
8 paragraph 12 of my declaration, we looked at other
9 technologies as how they were evolving and the
10 competitors to the technology that we were working
11 on.

12 BY MR. TONG:

13 Q I'm sorry. Could you clarify that a little
14 bit more? Because I don't see where exactly in
15 paragraph 12 it specifically talks about evaluating
16 the technology and manufacturability of LEDs at
17 Micron.

18 A So the third sentence from the end of
19 paragraph 12 -- and I'll read it into the record or
20 start reading it into the record slowly:

21 "I was involved with the evaluation of
22 display technologies, including liquid crystal
23 displays (LCDs), light-emitting diodes, plasma
24 displays, and organic-light-emitting-diode (OLED)
25 displays, the display technologies that were looking

1 to displace the CRTs in that consumer market."

2 Q Thank you.

3 In what ways were you involved with
4 organic-light-emitting diodes, OLEDs?

5 A I don't recall. I don't even recall how
6 mature the technology was. That was 30-plus years
7 ago.

8 Q Do you remember the result of your
9 evaluation of -- strike that.

10 Did you evaluate OLEDs as a potential
11 technology for replacing CRTs as part of your work
12 at Micron?

13 A Yes, to the extent we evaluated the
14 fabrication technology. And again, the colors and
15 the brightness. It was a race to see who could get
16 the first manufacturable flat-panel displays of
17 phosphor -- using phosphors for red, green, and blue
18 light was very, very mature at that time. Using an
19 electron beam or electrons to strike the phosphors
20 to generate light was very, very mature at that
21 time. It wasn't mature using a silicon chip, which
22 is what we were doing.

23 But the other technologies had -- had issues
24 that needed to be overcome or problems that needed
25 to be solved; and we didn't work on those

1 technologies in making them mature because we were
2 focused on making a display that we could sell; and
3 the path to that goal was, we decided,
4 field-emitting displays.

5 Q Did you evaluate large-molecule or
6 small-molecule OLEDs technology at Micron?

7 MR. LIMBACH: Objection. Form.

8 THE WITNESS: I don't know, and I don't know
9 what that means because I'm not a material
10 scientist. I'm more of a designer.

11 BY MR. TONG:

12 Q Okay. Did you evaluate the economic
13 feasibility of OLEDs as a potential technology for
14 replacing CRTs?

15 A I didn't do any economic analysis other than
16 provide comments to the business people in the newly
17 formed company.

18 Q And as a result of your evaluation of OLEDs,
19 how did the color of OLEDs compare to other
20 technologies available at the time?

21 A I think I answered this a few times now.
22 The technology wasn't mature enough to quickly get
23 to a display that you could sell, but I don't
24 remember any specifics. I just remember we didn't
25 want to develop something in a vacuum; so we looked

1 at the other technologies that people said held
2 potential for implementing a display. But again,
3 it's been 30 years, so I don't remember any
4 specifics on that development.

5 Q Did you evaluate the response time of OLEDs
6 in comparison to other technology available at the
7 time?

8 A I'm not exactly sure what you mean by
9 "response time." I can think of several definitions
10 of that, but I don't recall.

11 Q Okay. If I were to say the response time is
12 how quickly a particular OLED turns on or off, would
13 that affect your answer?

14 A I don't recall. Even designing -- testing
15 the circuits for that technology, again, the
16 material system wasn't mature.

17 Q Did you evaluate the power requirements of
18 OLEDs in comparison to other technologies at the
19 time?

20 A I don't think so, but I don't remember.

21 Q Did you evaluate the heat generation of
22 OLEDs in comparison to other technologies at the
23 time?

24 A Maybe, but I don't remember.

25 Q Did you evaluate the brightness of OLEDs in

1 comparison to other technology at the time?

2 A Yes.

3 Q And what was the result of that evaluation?

4 A As I've testified a few times now, they --
5 that the colors we needed, didn't have the
6 brightness that you would need for a display. The
7 technology, again, as I've testified many times now,
8 was still being developed and wasn't mature to -- at
9 the point where you would quickly get to a product
10 to sell, a display.

11 Q Did you evaluate the mechanical durability
12 of OLEDs in comparison to other technologies at the
13 time?

14 MR. LIMBACH: Objection. Form.

15 THE WITNESS: Not that I recall. But maybe.

16 BY MR. TONG:

17 Q Do you recall evaluating the operational
18 temperature ranges of OLEDs in comparison to other
19 technologies at the time?

20 A Probably, but I don't recall. Again, it's
21 hard to put a lot of effort into something that
22 doesn't get bright enough or gets you the colors
23 that you need. In other words, the technology, as
24 I've repeatedly said, was still being developed in
25 the early to mid '90s and later.

1 Q Do you recall evaluating the lifetime
2 durability of OLED technology in comparison to other
3 technology at the time? For example, the number of
4 times it can switch on and off or the amount of
5 hours it can stay on?

6 A Maybe. I don't recall.

7 Q Do you recall evaluating the power
8 efficiency of OLED technology in comparison to other
9 technology at the time?

10 A Just to make sure that my answers are clear:
11 OLED technology was not developed to the point where
12 it could be a display at that time, so talking about
13 it as if it could be a display technology that was
14 used, maybe there's some aspect where you'd do,
15 like, the displays I mentioned earlier, which are
16 running banners of LEDs that advertise something.
17 But it couldn't -- it wasn't a display technology
18 where it could display NTSC video. So spending a
19 lot of time doing evaluation of something that still
20 needed development wasn't something that I recall
21 doing.

22 Now, if there was some aspect that they
23 asked me to look at, I would have looked at it; but,
24 again, this is 30 years ago, and I don't recall much
25 about that technology because that wasn't the one I

1 mainly worked on and that my patents were in.

2 Q What was the one that you mainly worked on?

3 MR. LIMBACH: Objection. Form.

4 THE WITNESS: Again, as I've repeatedly said
5 and as I said in my declaration, it was
6 field-emitting displays.

7 BY MR. TONG:

8 Q I think you suggested this earlier: But is
9 the reason that OLEDs were not developed to the
10 point where it could be a display at the time, was
11 that due to the lack of color and brightness?

12 A Yes. And then also you need to have
13 something that's manufacturable. So even if you
14 were able to do a one-off on some particular aspect,
15 it doesn't mean that that's a technology that can be
16 used for a manufacturable display.

17 I was involved with the product development,
18 designing the product. I wasn't involved with
19 telling or directing the material science point of
20 view. I was more involved with design.

21 Q Again, going back to the evaluation of OLED
22 technology in comparison to other technology at the
23 time, such as CRTs.

24 Do you recall evaluating the size of
25 manufacturable OLEDs in comparison to other

1 technology at the time?

2 A Well, that question, there's an underlying
3 assumption that OLED technology was a display
4 technology. And let me be clear: It wasn't -- it
5 wasn't a display technology in the '90s. It was
6 immature. They were working to make it a display
7 technology, so saying it was a display technology,
8 you'd have to qualify that with some sort of caveat
9 that oh, we're talking about single LEDs that you
10 would assemble in a pixilated display for displaying
11 ads or information at an airport or something like
12 that.

13 But, I mean, for displays for displaying
14 video, OLED technology wasn't even close to being
15 ready in that time frame. And so talking about it
16 like it was a display technology in the '90s, that's
17 just not -- not a correct assumption or position.

18 Q Thank you.

19 Did you ever work on LEDs or OLEDs in
20 displays?

21 A Yes.

22 Q What years was that?

23 A For example, at the end of paragraph 2012, I
24 worked on -- I did consulting for a company called
25 Cirque. They hired me to work on touch displays or

1 electronics for their touch displays in their
2 product line. So I designed -- or I provided
3 consulting to the designers of those displays.

4 Q Doing a quick search in your declaration,
5 could you please turn to what's numbered in the
6 very -- what's stamped in the very bottom right-hand
7 corner as page 113 of this document. It's also
8 labeled as page 2 of your CV. Let me know when
9 you're there.

10 A At the bottom of page 2?

11 Q Yes. Page 2 of your CV also stamped as
12 page 113 in the bottom right.

13 A Yes.

14 Q So toward the bottom half of this, it says:
15 "2013: Cirque, Inc."

16 It says:

17 "Consulting on the design of
18 analog-to-digital interfaces for capacitive touch
19 displays and pads."

20 Is that the same Cirque that you were
21 referring to in your previous answer?

22 A Yes.

23 Q And the capacitive touch displays and pads,
24 did those use capacitors to detect when people, I
25 guess, touched the touch screen?

1 A Yes. There was a variable capacitance added
2 to the pixels, and there was a circuit that was
3 either in the pixel that was very simple or external
4 that would determine the capacitance of the pixel.

5 Q As part of consulting on -- I'm sorry.
6 Strike that.

7 When it says "consulting on the design of
8 analog to digital interfaces," did that include
9 advising Cirque on which LEDs to use in those touch
10 displays and pads?

11 A No.

12 Q As part of this consulting work, did that
13 include semiconductor-level design of any LEDs for
14 use in these touch displays and pads?

15 A Included the layout of the pixel, like where
16 you would put metal layers; how you would organize
17 the LED, where you would put the additional
18 circuitry; how the pixel transistors would be
19 driven, those kind of things. The actual material
20 system used in the display, I didn't have any input
21 on.

22 Q Did you provide any input on how to
23 fabricate the LED?

24 A The layout of the pixel, yes.

25 Q What do you mean by the "layout of the

1 pixel"?

2 A So if you turn to figure 2 of the '509
3 patent, the material system determines the thickness
4 of the metal or the thin film transistor films or
5 the thickness of the organic material -- all that is
6 set or determined as is the -- the doping densities
7 and dopants used. And dopants is d-o-p-a-n-t-s.

8 My work was more on the position of the
9 elements. So, for example, where to place the LED;
10 where to put transistors that were driving the LED
11 or sensing, the capacitance of a structure within
12 the pixel.

13 So it was more the placement of the devices
14 and metal that you see in figure 2 rather than the
15 actual thicknesses used. Those were set by the
16 process, technologists that developed the process.

17 Q Did Cirque buy an LED for use in their
18 product from a third party, or did Cirque design
19 their own proprietary LEDs?

20 A The process technology that fabricates the
21 display from a substrate to deposition of thin films
22 to deposition of metal layers -- and what Cirque did
23 was the layout, which is the top view.

24 So, for example, figure 2 in the '509 is the
25 cross-sectional view. If you were to rotate it and

1 look at it from the top, that would be the layout
2 view.

3 Q I'm sorry. After your answer, I still don't
4 know if Cirque designed their own LED, or if they
5 just bought LEDs and integrated it into a product.

6 Could you rephrase your answer?

7 A The question doesn't make sense. The Cirque
8 doesn't buy LEDs or use LEDs that they bought or
9 make their own LEDs. Cirque fabricates the display
10 in a process technology that starts with a
11 substrate, and then it adds layers. And as part of
12 that process technology, there are layers that form
13 LEDs in them, but they don't buy the LEDs
14 themselves; they fabricate things in a process
15 technology.

16 Now, whether they did that technology or
17 that fabrication in their factory or they sent it to
18 China or some other place, I don't know. I was
19 involved with the design of the pixels and the
20 layout and the sizing.

21 Q How many months in 2013 did you work for
22 Cirque?

23 A I don't recall. If I had to guess, I would
24 say six. They contacted me because I had experience
25 in design of arrays, like displays and memory and

1 all that, and they had a specific problem; they want
2 it solved. And they knew I knew how to provide
3 guidance, and so it didn't take much effort for me
4 to tell them how to do what they wanted to do.

5 Q What was that problem with the array,
6 a-r-r-a-y?

7 MR. LIMBACH: I'm going to caution the
8 witness not to divulge trade secret information of
9 Cirque unless we're going to designate this
10 deposition transcript as confidential and sealed.

11 MR. TONG: I agree that this subsequent
12 questioning regarding Cirque can be designated
13 confidential.

14 MR. LIMBACH: The witness can proceed.

15 --oOo--

16 (***) THE FOLLOWING TESTIMONY HAS BEEN MARKED AS
17 CONFIDENTIAL AND BEGINS ON THE FOLLOWING PAGE. (***)

18 ///

19 ///

20 ///

21 ///

22 ///

23 ///

24 ///

25 ///

1	(** CONFIDENTIAL TESTIMONY BEGINS **)
2	--000--
3	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
4	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
6	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
7	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
8	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
9	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
10	XXXXXXXXXXXXXXXXXXXX
11	XXXXXXXXXXXX
12	X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
13	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
14	XXXXXXXXXXXX
15	X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
16	XXXXXXXXXXXXXXXXXXXX
17	X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
18	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
19	X XXXXXXXXXXXXXXXXXXXXXXX
20	X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
21	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
22	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
23	X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
24	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
25	XXXXXXX

1 X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
2 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
3 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
4 X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
6 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
7 XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
8 X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
9 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
10 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
11 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
12 X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
13 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
14 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
15 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
16 XXXXXXX

--000--

18 (*** END OF CONFIDENTIAL EXCERPT OF TESTIMONY.
19 REGULAR TESTIMONY WILL RESUME ON THE FOLLOWING PAGE ***)
20 ///
21 ///
22 ///
23 ///
24 ///
25 ///

2 - -000- -

4 Q Do you know what type of display technology
5 is generally used at those credit card readers for
6 displaying instructions to customers at grocery
7 stores?

9 Q Is there any other LED or OLED experience
10 that you have that you would like to highlight to
11 the board?

14 Q Sorry. My question wasn't whether or not
15 additional experience was needed.

16 In the event that the board believes that
17 additional LED experience is needed, do you have any
18 additional LED or OLED experience that you wish to
19 highlight to the board?

20 MR. LIMBACH: Objection. Form.

21 THE WITNESS: Yeah, that question was
22 compound. Let me answer it in two parts.

23 I have an extensively additional amount of
24 experience in designing optoelectronic systems. I
25 mean, for example, Monday of this week, I had a

1 student defend his thesis in silicon-germanium
2 development that I worked on with him in doing
3 optical detection from optical light sources, which
4 would include LEDs.

5 I worked on touch displays in the '80s with
6 a really simple infrared matrix that you would put
7 your finger onto a display and it would detect a
8 broken beam and detect where your finger was on the
9 display. I have a lot of experience in
10 optoelectronic systems.

11 As for the second part of the question, I
12 have no -- I don't have any other experience I want
13 to -- that I feel I need to tell the board.

14 BY MR. TONG:

15 Q Do you have any experience with design of
16 what you consider the material system part of LEDs
17 in the mid-2010 time frame?

18 MR. LIMBACH: Objection. Form.

19 THE WITNESS: I'm not a material scientist,
20 and I have not looked at the material systems that
21 are involved in that time frame, no.

22 BY MR. TONG:

23 Q So I've got a question about that thesis in
24 silicon-germanium development.

25 Was the silicon-germanium used for light

1 detection or light emission?

2 A Silicon-germanium and HisDetectors in the
3 thesis my student Abraham defended on Monday, was in
4 detection, of course. You need a light source to
5 detect light; so we have various light sources that
6 we use when characterizing the detectors in my lab.

7 Q So the LEDs in that setup were the light
8 emitters; correct?

9 A I mean, when you say "that setup," it's
10 really a mischaracterization of work. There's a
11 test setup that will do, like, various
12 characterizations of photo detectors with changing
13 wavelengths and intensity. So we have light sources
14 that we either buy or build for those applications.

15 There are physics experiments that utilize a
16 light source, which excites a scintillator that will
17 radiate light or radiation that we detect in actual
18 experiments, so it's all a very complicated system
19 design with the different aspects that you would
20 look at, depending on what you're trying to achieve,
21 whether it's sensitivity at particular wavelengths
22 or speed.

23 His particular work was related to
24 self-quenching, which is shutting off the detector
25 from very fast light pulses to see how quickly the

1 **light pulses could be detected and counted.**

2 Q Is there any LED experience from the time
3 frame of 2010 to 2020, other than Cirque, that you
4 would highlight to the board?

5 MR. LIMBACH: Objection. Form.

6 **THE WITNESS: I don't feel that it's**
7 **necessary that I need to highlight any additional**
8 **experience.**

9 MR. TONG: Thank you. I'm going to
10 introduce Exhibit 3. I am dropping Exhibit 3 into
11 the chat box.

12 (Patent Owner's Exhibit 3 was marked.)

13 BY MR. TONG:

14 Q Dr. Baker, would you please download this
15 and let me know when you have it opened.

16 **A I have Exhibit 3.**

17 Q So this -- in the very top left, says "U.S.
18 Department of Energy, Energy Efficiencies and
19 Renewable Energy." The title of this document is
20 "Solid State Lighting Research and Development,
21 Multiyear Program Plan," and the cover has the date
22 April 2013.

23 Do you see that on the cover?

24 **A Yes.**

25 Q Do you recognize this document?

1 A No.

2 Q Are you familiar with the -- not necessarily
3 specific to this year. But are you familiar with
4 these types of publications related to the U.S.
5 Department of Energy for any year at all?

6 A Maybe to some degree.

7 Q And what degree would that be?

8 A Well, I mean, there was a start-up company
9 here, like less than a mile from my house, in about
10 this time frame, about 2013, and I was asked to do
11 some pro bono consulting for the company. And they
12 were -- they had -- I don't know what -- it was
13 where -- before LED lighting really took off and
14 they were trying to start LED lighting; and they
15 asked me to come in and look at their technology.
16 And I might have reviewed this document or something
17 that they showed me at the time.

18 I don't list that particular work on my CV
19 or as experience because I wasn't paid for it. And
20 also because as I was going through and helping them
21 out, there were certain alarm bells that went off
22 that this is not a legitimate endeavor.

23 And so I may have seen this document; I may
24 be familiar with it back then. But that was a dozen
25 years ago.

1 Q What was that company's name?

2 A I don't recall. It was -- I want to say
3 something -- Bright Sol or something, S-o-l, but
4 it's, like I said, it was a long time ago; and the
5 owner actually ended up getting arrested for some
6 fraud reason or something. So again, I don't list
7 it on my CV.

8 MR. TONG: I'm going to drop in, as
9 Exhibit 4, a similar report dated June 2016. Please
10 download that and let me know when you have it open.

11 (Patent Owner's Exhibit 4 was marked.)

12 THE WITNESS: I have it.

13 BY MR. TONG:

14 Q So this document has the same U.S.
15 Department of Energy stamp at the top left, and it's
16 entitled "Solid State Lighting R&D Plan," dated
17 June 2016.

18 Do you see that on the cover, Dr. Baker?

19 A Yes.

20 Q Do you recognize this document?

21 A I don't recognize it. But again, same
22 answer as before. It doesn't mean I haven't seen
23 it.

24 Q Do you recall reading Solid State Lighting
25 Research and Development Plans related to the

1 Department of Energy for any other year besides
2 June 2016?

3 MR. LIMBACH: Objection. Form.

4 THE WITNESS: Well, I never testified that I
5 had read this document; and I don't recognize it or
6 any other R&D plan from the Department of Energy.
7 But again, that does not mean that I haven't
8 reviewed these documents at some time in the past.
9 I just don't recall reviewing them.

10 MR. TONG: Okay. All right. This would be
11 a good time for a break before I move on to the next
12 line of questioning. Are you okay with taking a
13 ten-minute break?

14 THE WITNESS: Yes.

15 MR. TONG: All right. Let's do that.

16 THE VIDEOGRAPHER: Okay. We're off the
17 record. The time is 11:34 a.m.

18 (Recess.)

19 THE VIDEOGRAPHER: We're back on the record.
20 The time is 11:47 a.m.

21 BY MR. TONG:

22 Q Dr. Baker, during the break, did you speak
23 at all with your counsel?

24 A No.

25 Q All right. So in your declaration, you

1 understand that the claims include the phrase
2 "auxiliary electrode"; correct? And if you need a
3 reference, you can turn to what's stamped in the
4 bottom right as page 6 if you want to pull up
5 Claim 1.

6 **A Yes. Auxiliary electrode is found in Claims**
7 **1 and 2, 5 and 6, 10 and 11, and Claim 13.**

8 Q What is your understanding of the plain and
9 ordinary meaning of "electrode"?

10 **A An electrode is a conductor.**

11 Q For example, a wire is typically considered
12 a conductor. Would you consider a wire to be an
13 electrode?

14 **A In general, yes.**

15 Q Are there any examples of nongeneral corner
16 cases where wires are not electrodes?

17 MR. LIMBACH: Objection. Form.

18 **THE WITNESS: I would need to think about it**
19 **or have some context.**

20 BY MR. TONG:

21 Q So do you understand that "electrode" is a
22 synonym for "conductor"?

23 **A I would think "electrode" has a plain and**
24 **ordinary meaning of, for example, a conductor --**
25 **give me just one second. I'll look at the '509**

1 patent.

2 For example, in column 2, line 20, patent
3 talks about the first electrode layer. So in that
4 context, electrode would be a conductor or a
5 conducting layer. In column 3, line 26 -- it says
6 the '509 patent specification says in column 3, line
7 26:

8 "An electrode in E1 of the capacitor" -- and
9 this is in relationship to figure 1. And in figure
10 1E1 is a wire which is a conductor. So I think -- I
11 don't know if I'd go so far to say they're synonyms;
12 but, I mean, in plain and ordinary meaning of
13 "electrode" would be a conductor.

14 Q I'm sorry. I have a follow-up question.

15 The second part of your answer referred to
16 column 3, line 26. I want to read that into the
17 record. Let me know if this is accurate.

18 "An electrode in E1 of the capacitor CS is
19 electrically connected with the drain D1 of the
20 active device, T1, and the gate G2 of the active
21 device, T2."

22 Did I get that right?

23 A Yes.

24 Q And part of your answer said that in
25 figure 1, E1 is a wire.

1 A **Sorry?**

2 Q Yeah. Sorry. I hadn't gotten to my
3 question yet. That was more thinking aloud.

4 My question for you, then, is figure 1 would
5 be considered a schematic-level diagram of the LED
6 device; correct?

7 A **Figure 1 is an equivalent circuit diagram of**
8 **a pixel structure of the invention disclosed in the**
9 **'509 patent.**

10 Q Thank you. Circuit-level diagram.

11 In terms of actually implementing this, is
12 it your opinion that E1 would in fact be made using
13 a wire?

14 MR. LIMBACH: Objection. Form.

15 **THE WITNESS: To be more precise, E1**
16 **represents the end of the electrode as disclosed in**
17 **column 3, line 26, or the end of the wire that forms**
18 **the capacitor before it's connected to anything.**
19 **And then the capacitor would be wired up.**

20 **And then in figure 1, the end of the**
21 **electrode, E1, is wired to the gate of T2 and to the**
22 **drain of T1.**

23 BY MR. TONG:

24 Q When you use the word "wire," are you
25 referring to, like, cable wiring, or are you

1 generally using the word "wire" more to mean any
2 type of conductor?

3 A Wire, meaning making a connection is the way
4 I was using the term "wired," to form the circuit
5 scene in figure 1.

6 Q It's not necessarily, like, a wire that I
7 could hold with my hand and solder with a solder
8 gun; right?

9 A In integrated circuit design, they call
10 wires things that provide interconnects to connect
11 components together. It's kind of different than if
12 you're, what -- you know, someone that's working on
13 their home might call a wire.

14 The wiring is the electrodes used to connect
15 together in a circuit. The conductors.

16 Q Okay. Thank you for that clarification.
17 So I still want to understand: In your
18 opinion, is there any difference between the word
19 "electrode" and "conductor"?

20 MR. LIMBACH: Objection. Form.

21 THE WITNESS: I'm looking through the uses
22 of electrode in the '509 patent before I answer.

23 I didn't, that I recall, form an opinion on
24 that in my declaration. But I think that electrode
25 being a conductor is consistent with its use in the

1 '509 patent.

2 BY MR. TONG:

3 Q So my question is whether or not these two
4 words are fully coextensive with each other. So I'm
5 going to break this into two parts.

6 My first question is, are electrodes --
7 strike that.

8 Are all electrodes conductors?

9 MR. LIMBACH: Objection. Form.

10 THE WITNESS: I would say yes. However, not
11 to be argumentative, but "conductor" means something
12 that conducts electricity easily; and if you look at
13 column 1, line 36, the specification of the '509
14 talks about high electrode resistance and series IR
15 drop. So that particular use of the term
16 "electrode" is talking about a conductor with a
17 relatively high resistance. So I think I feel
18 comfortable, although it wasn't an opinion I
19 provided in my declaration, saying that an electrode
20 is a conductor. There are shades of conductivity
21 where, if something is resistive, it's not a good
22 conductor, if I'm making any sense.

23 BY MR. TONG:

24 Q That makes sense.

25 The second part of my question is: Are all

1 conductors electrodes?

2 MR. LIMBACH: Objection. Form.

3 THE WITNESS: I need to think about this.
4 But if we're talking about a wire in isolation by
5 itself, maybe that's not considered an electrode;
6 but in the context of the '509 patent, all of the
7 electrodes that are discussed are conducting
8 materials used to connect the devices together to
9 form the pixel structure.

10 I mean, for example, in the column 3
11 reference, I talked about the capacitors and their
12 electrodes having an end that's used to connect a
13 capacitor to the gate of T2 and the drain of T1.

14 BY MR. TONG:

15 Q I would like to ask you about the exception
16 that you identified, which is wire in isolation by
17 itself.

18 Now, I would agree with you that a wire in
19 isolation by itself is a conductor, but it's not an
20 electrode.

21 So would you agree that an electrode needs
22 to be a conductor that is positioned to deliver
23 current to some type of load?

24 MR. LIMBACH: Objection. Form.

25 THE WITNESS: I don't think I would agree

1 with that, and I'll give you an example.

2 If the pixel structure isn't providing any
3 light, there's no current flowing in the LED and the
4 transistor that's driving the LED. So in that
5 situation, I wouldn't say that the connections of
6 the LED, the electrode, isn't a conductor just
7 simply because it doesn't have current flowing in
8 it.

9 BY MR. TONG:

10 Q Let me reemphasize that the question was
11 whether or not an electrode needs to be a conductor
12 that is positioned merely in the right position to
13 deliver current, not that it necessarily needs to be
14 actively delivering current.

15 MR. LIMBACH: Objection. Form.

16 BY MR. TONG:

17 Q I guess you need a question. So does that
18 change your previous answer at all?

19 MR. LIMBACH: Objection. Form.

20 THE WITNESS: In the '509 patent, the term
21 "electrode" is used to describe the conductors used
22 to connect the transistors and capacitor and the LED
23 together.

24 BY MR. TONG:

25 Q In your opinion, does the electrode refer to

1 the entirety of the connection or just parts of the
2 connections?

3 MR. LIMBACH: Objection. Form.

4 THE WITNESS: The auxiliary or the electrode
5 in the context of the '509, refers to the entirety
6 of the conductor connected to at least a portion of
7 the device. In column 3, line 26, they talk about
8 the end of the electrode, and so that would mean the
9 end of the conductor that's connected to the
10 capacitor CS in figure 1.

11 BY MR. TONG:

12 Q I'm sorry. That wasn't very clear to me.
13 At column 3, line 26, it says "an electrode in E1 of
14 the capacitor."

15 Could you turn to figure 1 for me and let me
16 know when you're there.

17 A I am there.

18 Q And do you see the part of the capacitor CS
19 that is labeled "E1"?

20 A Yes.

21 Q And do you see that there is a wire
22 beginning at E1 from the capacitor CS, and that wire
23 extends to both transistor T1 and transistor T2?

24 MR. LIMBACH: Objection. Form.

25 THE WITNESS: Would you mind repeating that?

1 **Because I'm not seeing what you're saying.**

2 BY MR. TONG:

3 Q Yeah. Using your previous definition of a
4 wire, which is a conductor, do you see that the
5 capacitor CS has a connection starting at E1 that is
6 a conductor, and that goes all the way to transistor
7 T1 on the left, and it also connects to transistor
8 T2 on the right?

9 MR. LIMBACH: Objection. Form.

10 THE WITNESS: Yeah, the end of the conductor
11 which they've labeled E1 in column 3 is connected to
12 the two transistors, T1 and T2, yes.

13 BY MR. TONG:

14 Q So my question to you is, does the electrode
15 refer simply to the end of the capacitor, just that
16 portion where the line extending from the letters E1
17 is touching; or do you consider the electrode to be
18 the entire conductor that extends from capacitor CS
19 to transistors T1 and T2?

20 A So if we look -- like, the specification
21 talked about, at the capacitor by itself, there's a
22 conductor connected to each side of the capacitor,
23 and the ends of those conductors are labeled E1 and
24 E2.

25 When we place that capacitor CS in the pixel

1 structure, we're going to connect the end of that
2 capacitor, the end of the electrode, the end of the
3 conductor, to the other components in the circuit
4 which also have electrodes that -- with an end of
5 the electrode to form a pixel structure.

6 Q So that's -- I still don't understand if you
7 directly answered my question. It seems like you
8 answered the question, how do you connect the
9 capacitor CS with respect to the other components of
10 the circuit.

11 My question is, under the plain and ordinary
12 meaning of "electrode," does E1, the electrode,
13 refer to just the conductor that is at the end of
14 the capacitor, or does it refer to the entire
15 conductive pathway between the capacitor CS and the
16 transistors T1 and T2?

17 A I think the specification is very clear, and
18 I thought my answer was too, but let me try to make
19 it simpler.

20 If we look at CS, there's an electrode on
21 each side of the capacitor, and the end of the
22 electrodes on each side of the capacitor are labeled
23 E1 and E2. Then I went on to say when you connect
24 the capacitor in the overall circuit, it's connected
25 to other electrodes, other conductors, to form the

1 pixel structure.

2 But in the context of just looking at the
3 capacitor CS, the end of the two electrodes on each
4 side of the capacitor are labeled E1 and E2.

5 Q So I think you've suggested this as your
6 answer. Would I be correct, then, to say that the
7 electrode E1 does not extend all the way to
8 transistor T1 because transistor T1 has its own
9 separate electrode?

10 A So I think your question is, if each
11 component has its own electrodes and end of
12 electrodes -- for example, the capacitor has the
13 ends labeled E1 and E2, if once we connect the
14 components together, if the interconnecting
15 conductors are also electrodes, and I think the
16 answer to that is yes.

17 But I keep focusing on the language in
18 plain -- in column 3 about what an electrode is with
19 relation to the capacitor and the electrode ends in
20 relation to the capacitor, and I think you keep
21 trying to tie, divorce from that discussion and go
22 into the pixel structure and try to talk about the
23 electrodes in the pixel structure. And to that end,
24 I would call the conductors, the wires that
25 interconnect in the pixel structure, "electrodes of

1 the pixel."

2 Q And to that end where you would call the
3 conductors, the wires that interconnect in the pixel
4 structure "electrodes of the pixel," you're
5 referring to the entire interconnection pathway;
6 right? As opposed to just a small section of the
7 interconnection pathway?

8 MR. LIMBACH: Objection. Form.

9 THE WITNESS: So if we look at figure 1, and
10 we focus on the power line PL, I would say that
11 conductor is an electrode of the pixel; however, if
12 we now go to the entire display and connect
13 everything together, the electric -- the pixels
14 are -- electrodes are connected together and
15 connected to an electrode to supply power to the
16 display, for example.

17 So I think the term that the patent is using
18 for "electrode," the way they're using it is as a
19 conductor; and I think that's pretty consistent in
20 the specification; however, my exact construction
21 for what I used in the claim term "auxiliary
22 electrode" is discussed in my declaration starting
23 on page 61. I'm simply trying to answer your
24 question of what an electrode is in the context of
25 the patent.

1 BY MR. TONG:

2 Q Let me ask you this:

3 Still looking at figure 1, do you see the
4 diode 130?

5 A Yes.

6 Q Would you consider the power line P0 to be
7 an electrode of the diode 130?

8 MR. LIMBACH: Objection. Form.

9 THE WITNESS: In figure 2, which is the
10 corresponding cross-sectional view of figure 1, I
11 would consider the material 136 to be the anode or
12 the top of the diode in the pixel. So I would
13 consider that an electrode; and like I said, when we
14 connect that together, all of the 136 anodes
15 together, then the -- we talk about the display
16 itself, there would be an electrode to connect or
17 conductor to connect power to the display.

18 But to answer your question, the anode of
19 the diode, the 136, is an electrode layer.

20 BY MR. TONG:

21 Q I'm sorry, but to me, that doesn't sound
22 like you've directly answered the question. So can
23 you provide a "yes" or "no" question [sic] to the
24 question:

25 Would you consider the power line PL to be

1 an electrode of the diode?

2 MR. LIMBACH: Objection. Form.

3 THE WITNESS: Yes. In figure 2, 136
4 corresponds to PL in figure 1, and 136 is an
5 electrode of the diode.

6 BY MR. TONG:

7 Q All right. And so based on that reading,
8 you believe your opinion is consistent with the
9 specification; correct?

10 A Yes. In column 4, line 40, it says:
11 "Therefore, the first electrode layer 132
12 and the second electrode layer 136 serve as an anode
13 and cathode, respectively."

14 When I look at figure 1, the anode is the
15 top of the diode in figure 1; and in figure 2, it's
16 material 136. And the specification clearly says
17 that those are electrodes.

18 Q Could you turn to column 3, line 35, for me.

19 A I'm there.

20 Q I'm going to read this, and I would like you
21 to follow along with me:

22 "Figure 2 depicts only a part of the
23 components such as the active device T2 and the
24 light-emitting device 130 of the pixel structure at
25 100. That is to say, for illustrative purpose, the

1 data line DL, the scan line SL, the active device
2 T1, the capacitor CS, the power line PL, and so on,
3 are omitted from figure 2."

4 Did I read that correctly?

5 A Yes.

6 Q Would your opinion change based on the
7 statement that the power line PL is omitted from
8 figure 2?

9 MR. LIMBACH: Objection. Form.

10 THE WITNESS: No. In figure 1, there still
11 shows the electrode connection 136 to the anode of
12 the diode. And what is important is there's no
13 physical correlation between a schematic and a
14 layout or cross-sectional view. And so trying to
15 point to a specific structure in a layout and claim
16 it has some physical relation to a schematic, it
17 doesn't -- it's not -- doesn't make sense. I think
18 what they're talking about in that excerpt is that
19 figure 2 is a simplified view of the basics of the
20 pixel structure.

21 For example, there isn't a capacitor shown
22 in the figure, in figure 2. In other words,
23 figure 2 is incomplete.

24 BY MR. TONG:

25 Q So is it your opinion that the power line PL

1 is a -- strike that.

2 How would you respond to the argument that
3 an electrode only refers to the end of a conductor
4 that is positioned to make contact with a load?

5 MR. LIMBACH: Objection. Form.

6 THE WITNESS: That has problems in a couple
7 of ways. First one is, if you only talk about the
8 end of being connected to a load, it seems to imply
9 or it says that you can't connect a load 1 inch from
10 the end and it still not function correctly, and
11 that doesn't make any sense.

12 The second comment I have is the patent
13 clearly makes a distinction between electrode and
14 electrode end, and so if electrode was only the end
15 of something, why would they discuss an electrode
16 end and label it E1.

17 And maybe lastly, the way the term
18 "electrode" is used in the patent, it's a conductor.
19 It's used for providing the wiring of a circuit.

20 And in arrays, for example, figure 2, when
21 you have an array structure which is regular, they
22 will stitch together adjacent layers or the
23 electrodes from, say, one LED to the next and
24 continue on up in the array or one select line in
25 the horizontal direction for several reasons.

1 One, for the select line, it allows you to
2 open up a row. In the case of the diode, if you
3 stitch the material 136, the electrode, all the way
4 up to the end, it lowers the resistance, supplying
5 power to the pixel. So if you were to add another
6 wire or two wires to supply power, you would be
7 reducing the resistance of the power line
8 considerably.

9 So to answer your question, I don't think it
10 would be reasonable to limit electrode to only the
11 ends of the conductor because that's clearly not
12 what's taught in the '509 patent.

13 BY MR. TONG:

14 Q Could you turn back to page 6 of your
15 declaration for me as numbered in the bottom
16 right-hand corner. This, again, is Claim 1.

17 A You said page 6 of my declaration?

18 Q Yeah, as stamped in the very bottom
19 right-hand corner, not stamped in the middle.

20 A Okay.

21 Q Do you see the chart of claims?

22 A Yes.

23 Q And you see that the word "auxiliary" is
24 also used in the claims; right?

25 A Yes.

1 Q In your opinion, what is the correct
2 construction of the word "auxiliary" as used in
3 these claims?

4 A Supplemental electrode, as I discussed in
5 paragraph 61.

6 Q And what do you mean by "supplemental"?

7 A An additional electrode. An additional
8 conductor.

9 Q In your opinion, does the correct
10 construction of auxiliary or supplemental require
11 any type of positional relationship between the
12 auxiliary electrode and whatever other electrode
13 that this is in addition to?

14 MR. LIMBACH: Objection. Form.

15 THE WITNESS: Would you mind re-asking that?

16 BY MR. TONG:

17 Q Yeah. Let me -- if we could turn back to
18 page 6 as numbered at the bottom right.

19 A Okay.

20 Q And you see Claim element 1E. It says:
21 "A first electrode layer electrically
22 connected with the first auxiliary electrode."

23 Do you see that?

24 A Yes.

25 Q So is it your understanding that the

1 construction of auxiliary electrode merely requires
2 that this auxiliary electrode be an electrode that
3 is in addition to the first electrode layer?

4 **A Yes.**

5 Q And in your opinion, does the construction
6 of the word "auxiliary" require any other type of
7 functional or structural relationship between the
8 auxiliary electrode and the first electrode layer?

9 MR. LIMBACH: Objection. Form.

10 **THE WITNESS: Other than connection?**

11 BY MR. TONG:

12 Q Other than connection.

13 A I think the plain meaning means it's just
14 connected, it's an auxiliary or second electrode;
15 but I did do, as I mentioned in paragraph 61, a
16 broader -- I'm sorry, a narrower construction where
17 the supplemental electrode -- the construction of
18 auxiliary electrode was supplemental electrode to
19 reduce the total resistance of the pixel structure.

20 So I did an analysis with the correct or
21 broader interpretation of auxiliary electrode that
22 it's just simply a supplemental electrode, and then
23 I did the narrower construction in my analysis as
24 well.

25 Q Thank you. And it's your opinion that the

1 broader construction is the correct one; right?

2 A Yes.

3 Q Okay. And if I refer to this as your
4 "broader construction" or the "correct
5 construction," you'll understand what that means?

6 A In context of auxiliary electrode, yes.

7 Q Okay. Would you think that it would be
8 accurate that the phrase "auxiliary electrode"
9 requires that the auxiliary electrode play a
10 noncritical role in the power delivery pathway?

11 MR. LIMBACH: Objection. Form.

12 THE WITNESS: I mean, I analyzed what was
13 claimed; and what was claimed had nothing to do with
14 the power delivery.

15 BY MR. TONG:

16 Q Do you have any understanding that the power
17 line would connect through the first electrode layer
18 to deliver power to the light-emitting device?

19 A I think what you said is correct; but if we
20 look, for example -- with relation to what you just
21 said, in column 6, line 4, I'm going to read into
22 the record:

23 "For example, the design of coordinating the
24 aforementioned electrode layer with the auxiliary
25 electrode is applicable to the top -- to the anode

1 of the top-emission organic electroluminescent
2 device so as to reduce the resistance of anode
3 through parallel connection."

4 But -- then it goes on to say:

5 "However, the invention is not limited
6 thereto. In other embodiments, the design of
7 coordinating the aforementioned electrode layer with
8 the auxiliary electrode is also applicable to other
9 suitable electrode layers or conductive layers."

10 In other words, we're not limited to a
11 parallel connection to reduce the resistance of the
12 anode -- to the anode or to the pixel.

13 Q How would you respond to the argument that
14 the correct construction of auxiliary means "not
15 primary"?

16 MR. LIMBACH: Objection. Form.

17 THE WITNESS: I don't know if I would have a
18 response because primary -- if we're talking about
19 the organic device by itself may mean it's -- for
20 example, the anode electrode 136. However, if we
21 talk about the entire pixel structure, it may be the
22 136 that goes and connects to the adjacent pixel
23 which runs to the top of the array for connection of
24 power. I don't have any response to that.

25 When we get a good breaking point, can we

1 take another break?

2 MR. TONG: Sure. Let's take a lunch break
3 after the line of questioning related to auxiliary
4 electrodes.

5 BY MR. TONG:

6 Q Can you turn to paragraph 62 of your
7 declaration for me. And just for reference, I don't
8 expect to go too much longer on this line.

9 A Okay. And I guess we can take a lunch break
10 this early. It's only 10:30 here.

11 Q Oh. Are you in California?

12 A Las Vegas.

13 Q Okay. Are you on Pacific Time?

14 A Yes.

15 Q Okay. I thought you were -- I was unaware
16 of that. All right. We can take a shorter break if
17 you need, but let me know when you're at
18 paragraph 62.

19 A I'm there.

20 Q The first sentence of this says:

21 "The claims do not explicitly state what the
22 auxiliary electrode is auxiliary to."

23 Do you see that first part of the sentence
24 in paragraph 62?

25 A That's the first part of the sentence, yes.

1 Q And if we turn back to page 6, where we're
2 looking at Claim element 1E, element 1E says:

3 "A first electrode layer electrically
4 connected with the first auxiliary electrode."

5 Do you see that?

6 A Yes.

7 Q In view of the claim, would you agree that
8 the first auxiliary electrode is auxiliary to the
9 first electrode layer and that you would need to
10 either revise or rescind that first part of your
11 sentence in paragraph 62?

12 MR. LIMBACH: Objection. Form.

13 THE WITNESS: I don't see any change needed.

14 MR. TONG: All right. We could take a short
15 break. Ten minutes, if that's all right with
16 everyone.

17 THE WITNESS: Yes.

18 THE VIDEOGRAPHER: Okay. We're off the
19 record. The time is 12:37 p.m.

20 (Recess.)

21 THE VIDEOGRAPHER: We're back on the record.
22 The time is 12:46 p.m.

23 BY MR. TONG:

24 Q Dr. Baker, during the break, did you at all
25 speak with your counsel?

1 A No.

2 Q Would you generally agree that anodes and
3 cathodes are examples of electrodes?

4 I'm sorry. I didn't catch that. Could you
5 repeat your answer?

6 A I didn't answer. The electrode is a
7 conductive connection to the anode and the cathode,
8 and sometimes they call those conductors anode and
9 the cathode electrodes. But in, for example, in a
10 PN junction, a diode, the anode is P-type material
11 and the cathode is N-type material; and the
12 electrodes or the utilization connecting them, they
13 sometimes loosely call the "anode and cathode."

14 Q So is it your opinion that an anode in a PN
15 junction diode is inside the diode?

16 MR. LIMBACH: Objection. Form.

17 THE WITNESS: Not exactly. Part of it's
18 inside the diode. Part of it is what the metal is
19 connected to. If it's a Schottky diode, then the
20 metal itself is a cathode and the semiconductor is
21 an anode.

22 BY MR. TONG:

23 Q So I don't know if I really understood the
24 answer to my question.

25 But after thinking through those examples,

1 would you agree that anodes and cathodes are
2 examples of electrodes?

3 A Generally speaking, yes. The -- for
4 example, the '509 patent says in column 4, line 40:
5 "Therefore, the first electrode layer 132
6 and the second electrode layer 136 serve as an anode
7 and a cathode respectively."

8 Q I'd like you to imagine an electronic device
9 with me where we have an anode on one side and a
10 cathode on the other and there's a conductive wire
11 running between them.

12 Does that make sense so far?

13 MR. LIMBACH: Objection. Form.

14 THE WITNESS: I understand what you're
15 saying. But, I mean, we can just point to various
16 places in a wire and call one point the anode, the
17 other point the anode and say there's a wire between
18 the two points we pointed to. But I understand what
19 you're saying.

20 BY MR. TONG:

21 Q If the wire were made of a different
22 material than the anode and the cathode, would you
23 agree that the wire would generally not be
24 considered an electrode?

25 MR. LIMBACH: Objection. Form.

1 **THE WITNESS:** I don't know. There's
2 problems with what you're saying because it's
3 divorcing the language of what anode and cathode
4 mean in electronics, and you're basically talking
5 about a wire and just calling one point an anode and
6 one point a cathode, and it doesn't make any sense
7 to me.

8 So I don't have an opinion on what you're
9 suggesting -- what you're suggesting.

10 BY MR. TONG:

11 Q Okay. I'd like you to turn with me to
12 paragraph 64 of your declaration.

13 So we're now moving on to the alternative
14 construction that you used in this declaration.

15 A Okay.

16 Q So in paragraph 64, do you see that this
17 contains the underlying words:

18 "So as to significantly reduce the total
19 resistance of the pixel structure"?

20 A Yes, I see that.

21 Q And in paragraph 65, you point out that this
22 language is not very precise.

23 Do you remember -- do you remember your
24 opinion in paragraph 65?

25 A Yes.

1 Q Okay. So partway through paragraph 65, it
2 says:

3 "A POSITA would have understood that adding
4 an electrode connected in parallel with the first
5 electrode would decrease the resistance of the
6 combined parallel circuit by allowing current to
7 flow in parallel through the first electrode and the
8 added electrode but would not reduce the resistance
9 of the electrode itself."

10 Do you see that?

11 A Yes.

12 Q And the next sentence says:

13 "Thus, a POSITA would have interpreted this
14 passenger in the specification as imprecisely
15 referring to the concept of reducing overall
16 resistance, not the impossibility of reducing the
17 resistance of the unaltered first electrode itself."

18 Do you see that?

19 A Yes.

20 Q When you use the phrase "Reducing overall
21 resistance," what part of the -- well, what part are
22 you talking about?

23 MR. LIMBACH: Objection. Form.

24 THE WITNESS: Reducing the resistance to the
25 pixel.

1 BY MR. TONG:

2 Q If you could turn with me back to the '509
3 patent.

4 A Okay.

5 Q And we turn to figure 1.

6 A Okay.

7 Q Is there a particular subpart within that
8 pixel for which the resistance is reduced?

9 MR. LIMBACH: Objection. Form.

10 THE WITNESS: So again, a schematic has no
11 direct bearing other than detailing how components
12 are connected together on the physical
13 implementation of the circuit.

14 So, for example, there could be two physical
15 paths to connect power to the pixel; and in the
16 schematic, you wouldn't show that. You would still
17 just show one line and label it "Power line." And
18 in the schematic, the lines or the wires have zero
19 resistance; but in the real implementation, the
20 conductors or electrodes have finite resistance.

21 So there's no -- if you have two or three
22 materials supplying power to the pixel, it would
23 still be represented as one wire in the schematic.

24 BY MR. TONG:

25 Q Let me see if I can get at this a different

1 way. Let's turn back to paragraph 65 of your
2 declaration.

3 **A I'm there.**

4 Q Again, when you use the words "Reducing
5 overall resistance," would that just be the
6 resistance of the combined parallel circuit that you
7 referred to in the previous sentence, or are you
8 referring to something else?

9 **A It refers to the parallel combination where**
10 **you're reducing the resistance connected to the**
11 **pixel.**

12 Q So just to be clear:

13 Again, when you use the words "Reducing
14 overall resistance," you're referring to just the
15 resistance of that one part where there is a
16 parallel connection as opposed to the resistance
17 across the entirety of the pixel?

18 **A It's reducing the resistance to a point**
19 **within the pixel.**

20 Q And if we turn back to figure 1 of the '509
21 patent. Let me know when you're there.

22 **A I'm there.**

23 Q Where would that combined parallel circuit
24 be represented in this circuit level schematic?

25 **A It's not. That's what I talked about**

1 earlier. There's no -- in the physical
2 implementation, there's no correlation to the
3 schematic. The schematic just shows how the
4 components are wired together. It would be like me
5 having a house building plan and drawing a wire
6 connection from the breaker box to a bathroom. That
7 has nothing to do with the path the wire takes in
8 going from the breaker box to the bathroom. That's
9 independent of the schematic. The schematic just
10 shows the connection.

11 Q Let's try this a different way.

12 Please turn to figure 2 of the patent.

13 A I'm there.

14 Q Where in this diagram would a POSITA measure
15 the reduced resistance to be between?

16 MR. LIMBACH: Objection. Form.

17 THE WITNESS: So 132 in figure 2 is the
18 anode of the LED. As you see in figure 1, the anode
19 of the LED is connected to power. If we look at
20 120, 120 is a first auxiliary electrode. And we see
21 120, is connected to 132 with the -- the via, which
22 is the divot in the insulating material 106.
23 It's -- it's the part that goes down in the valley
24 where the 132 falls down and touches the 120, which
25 is made at 122 and 124.

1 So because there's two -- there's two
2 materials in there that are connected together. If
3 we were to run the 120 and maybe the 132 all the way
4 to the end of the array connecting all the pixels
5 together, so into and out of the page, the fact that
6 there's two materials connected that go to the ends
7 in parallel would reduce the resistance to the
8 organic LED 130 seen by the anode, if I'm making any
9 sense. If I need to break that down, let me know.

10 BY MR. TONG:

11 Q I would like to clarify that by, again,
12 looking to figure 1.

13 So can you let me know when you have
14 figure 1 pulled up in front of you.

15 A I have it.

16 Q And do you see the LED in the top right,
17 labeled 130?

18 A Yes.

19 Q And do we have an understanding that the
20 electrode layer 106 [sic] and the auxiliary
21 electrode would implement the connection between the
22 LED 130 to the power line?

23 Would that be correct?

24 MR. LIMBACH: Objection. Form.

25 THE WITNESS: I think you said 106 and you

1 meant to say 132.

2 BY MR. TONG:

3 Q I am corrected.

4 So 132, the electrode 132 and the auxiliary
5 electrode 120.

6 Do you have an understanding that those are
7 kind of running in parallel toward that power line
8 shown in figure 1?

9 A Again, there's no -- the power line -- the
10 label is representative of connecting power to all
11 of the pixels in that -- in the array, in the
12 display.

13 If you take figure 2 and you imagine that
14 there's 512 of those in a column. So 512 rows. In
15 one example, the material 132, the anode material,
16 goes from the bottom of the display to the top of
17 the display and connects every single pixel
18 together; and at the very end, the power line is
19 connected to that material 132.

20 Similarly, 120 could go from the bottom of
21 the array to the top array and so 120 is connected
22 in one example, every single pixel, and then
23 connected to 132 to the power line at the top of the
24 array. And in that situation, you would have two
25 paths for the power to the pixels in that column to

1 reach the LED 130; and thus, it would do what I was
2 talking about, reducing the resistance to the pixel.

3 Q If I were to ask you where on figure 1 does
4 it represent the electrode 132 and 120, where would
5 that be?

6 A Again, there's not a correlation between the
7 schematic and the physical implementation, other
8 than the schematic shows how things are connected.
9 And so the example I gave earlier where you have a
10 wire running from a breaker box to a bathroom outlet
11 would be represented in a schematic; but the actual
12 path that it took or if it went through a junction
13 box or if there were multiple wires going and
14 connecting over there, that wouldn't be shown in the
15 schematic, just the connection between the breaker
16 box and the outlet would be shown; but the actual
17 path that the wire takes is not information you get
18 from the schematic.

19 It's the same thing applies here. The
20 organic LED 130, the anode that you see going up and
21 connecting to a wire PL, that doesn't have any
22 bearing other than saying that the anode's connected
23 to power when you go look at figure 2.

24 So, for example, if I were to run another
25 wire in parallel with 132 and 120, assuming they're

1 in parallel through array, it wouldn't change the
2 schematic.

3 Q I'm not -- my question is not intended to
4 suggest that figure 2 is a physical representation
5 of the single wire shown in figure 1. Let me see if
6 I can get at this a different way.

7 Would you agree that the diode 130 in
8 figure 1 is supposed to correspond to the diode 130
9 shown in figure 2?

10 A Yes.

11 Q And that is despite the fact that figure 2
12 is not a physical -- sorry. That is despite the
13 fact that figure 1 is not a physical representation
14 of figure 2; correct?

15 A Figure 1 is not a physical representation of
16 the layers or the structure of the process in
17 figure 2. Figure 1 is a representation of how
18 components are connected together.

19 Q Right. And do you see the wire in
20 figure 1 -- or the line in figure 1 that is drawn
21 extending upwards from the diode 130?

22 A Are you talking about the power line PL?

23 Q No, I'm talking about the line that is
24 extending upward from the inverted triangle that is
25 labeled "130."

1 A I see that line.

2 Q And you understand that to be that -- that
3 vertical line to be some sort of -- to represent a
4 conductive pathway of some sort?

5 A The line is a wire, yes.

6 Q Okay. And you understand that in figure 2,
7 that wire would be implemented with what is
8 physically drawn as the electrode 132 and the
9 auxiliary electrode 120; correct?

10 A Yes.

11 Q Okay. That is the correlation I was
12 describing earlier. And so it would be that part of
13 the pixel structure. We're talking about the
14 vertically extending wire that would have a reduced
15 resistance as a result of the presence of the
16 auxiliary electrode; correct?

17 A The resistance to the anode of 130 would be
18 reduced. The point is, the -- in figure 1, there is
19 no distinction between when you go to the physical
20 implementation between PL and the wire you just
21 described.

22 For example, in one implementation --

23 Q I'm sorry. I'm going to have to cut off
24 your answer as you've answered it.

25 MR. LIMBACH: I'm going to object to cutting

1 off the witness --

2 MR. TONG: That's fine. Your objection is
3 noted. I don't think it's relevant.

4 BY MR. TONG:

5 Q Does the auxiliary -- does the presence of
6 auxiliary electrode 120 reduce the resistance, for
7 example, of the connection between transistor T1 and
8 the data line DL?

9 MR. LIMBACH: Objection. Form.

10 THE WITNESS: I guess, finishing my previous
11 comment, it's not correct to try to make a
12 distinction in a schematic between the two wires
13 connected to the anode of 130 and the power line
14 because they're all the same thing. It's just how
15 they're implemented.

16 And the answer to your question that you
17 just asked is, does the connection of 120 and 132
18 that's connected to the anode of 130 have any
19 bearing on transistor T1? And the answer is no.

20 BY MR. TONG:

21 Q And similarly, the presence of the auxiliary
22 electrode would not affect the resistance of the
23 wire between T1 and T2; correct?

24 A It would not affect the wire connecting the
25 drain of T1 to the gate of T2. Correct.

1 Q And similarly, the presence of the auxiliary
2 electrode would not affect the resistance of the
3 connection between source S2 of transistor T2 and
4 ground; correct?

5 A When you say "auxiliary electrode," just to
6 make sure I understand, you're talking about 120?

7 Q Yes, I'm talking about 120.

8 A Between the source of T2 and ground, it
9 would not affect the resistance; however, it does
10 definitely affect the resistance in the circuit
11 between the source and ground because anything that
12 flows from the source of T2 to ground has to flow
13 through the power line connection of 132 and 120.

14 Q Sorry. Let me see if I can clarify that.
15 You said it definitely -- it does definitely
16 affect the resistance in the circuit between the
17 source and ground. Are you referring to the source
18 S2 and the ground?

19 A Any current that flows in transistor T2 from
20 the source S2 to ground has to come from the power
21 line through the diode. And so if we're looking
22 only at the resistance between the source of S2 and
23 ground, just measuring taking a meter and measuring
24 that resistance, then the auxiliary electrode
25 doesn't have any impact on that.

1 (Simultaneous colloquy.)

2 BY MR. TONG:

3 Q Okay. That was my question.

4 A It does have an impact on the current that
5 flows through transistor T2 from a source to ground
6 in the actual operation of the circuit because that
7 current has to come from the power line through the
8 auxiliary electrode and 132.

9 Q Thank you, Dr. Baker. My question was, in
10 fact, about resistance. I did not ask about
11 current. Please try and focus your questions a
12 little bit because we're trying to get through two
13 patents today. So try and focus your answers
14 because we're trying to get through two patents
15 today.

16 What is your understanding of -- let me ask
17 you this: What do you understand to be the benefits
18 of the invention claimed in the '509 patent?

19 A I discuss that in paragraph 48. The '509
20 patent is directed to a pixel structure for solving
21 the purported problem of poor overall luminous
22 uniformity that occurs in traditional
23 electroluminescent devices.

24 Q And is the problem of poor overall luminous
25 uniformity tied at all to the resistance between the

1 power line and the LED?

2 A I think what the patent talks about is in
3 one embodiment that you can reduce the resistance in
4 the power line to the LED; however, the patent is
5 clear that the embodiments aren't limited to that
6 particular benefit.

7 Q So would you agree that reduced resistance
8 between the power line and the LED is another
9 benefit of the technology in the '509 patent?

10 A It's discussed in the patent, for example,
11 the top of column 6 and bottom of column 5 talks
12 about reducing the resistance to the pixel structure
13 by about 40 percent, but then it makes clear in
14 column 6 that that's not a limitation of the
15 invention, it's not just for reducing the resistance
16 to the pixel structure.

17 Q The two benefits that we've talked about so
18 far, reduced resistance and overall luminous
19 uniformity, do you consider these to be two separate
20 and distinct benefits that can be achieved
21 independently?

22 A I think in some cases, the uniform
23 brightness is dependent on the resistance of the --
24 the power has to flow through to the pixel
25 structure. I haven't really thought about if

1 there's any other potential benefits or problems
2 with this.

3 Q Could you explain how the uniformity --
4 sorry.

5 Could you explain the case where the uniform
6 brightness depends on the resistance?

7 A The resistance to the pixel structure. So,
8 for example, if the resistance to the pixel
9 structure changes from the first row to the last row
10 of the power, so their voltage goes from -- for
11 example, from 4 to 4.9 to 4.8. So each pixel is
12 getting a slightly lower voltage supplied to it
13 because of the resisted drop on the line, then
14 writing in an image that's one color would result in
15 a shade, as you go from the top to the bottom,
16 showing that color is changing as one example.

17 Q And would -- would uniformity improve if you
18 were to lower the resistance to all of those pixels?

19 MR. LIMBACH: Objection. Form.

20 THE WITNESS: That's what's taught in the
21 patent. I think it's fair to say if you supply a
22 consistent power supply voltage to each pixel, that
23 the pixel will be more uniform. But again, the
24 auxiliary electrode isn't necessarily, as it
25 repeatedly says, connected in parallel to the

1 anode 132.

2 I mean, looking at figure 2, the auxiliary
3 electrode may be used to provide a mechanical
4 support through the organic device for fabrication
5 reasons or something like that. I don't know;
6 that's not an opinion I've formed. That's just the
7 patent is clear that the -- reducing the resistance
8 to the pixel is not limiting and not claimed.

9 BY MR. TONG:

10 Q Now, you're familiar with the principle,
11 generally, that if you have a voltage and you need
12 to connect that voltage to a load like an LED, the
13 voltage will drop as the resistance of the
14 interconnection between the voltage source and the
15 LED increases; correct?

16 A Supplying a power to a device, an LED,
17 through a resistive connection, will drop the
18 voltage that the LED sees, yes.

19 Q So in a display, if we have a voltage source
20 going back to the example that you said -- by the
21 way, let me start with a correction.

22 In your example, you said the voltage goes
23 from 4 to 4.9 to 4.8. Did you mean to say 5 to 4.9
24 to 4.8?

25 A Yes.

1 Q Okay. So if we have a power source that
2 attempts to provide 5 volts, and we were to
3 uniformly lower the resistance in the pathway
4 between the power line and the LED, an array of
5 them, by adding a supplemental electrode, how does
6 that help with the uniformity problem?

7 A As discussed in the bottom of column 5, top
8 of column 6, it reduces the resistance to the pixel,
9 thus allowing the voltage supply to each pixel on
10 the power line to be consistent or more consistent
11 between the pixels and the display; and if you
12 supply pixels with the same power supply voltage,
13 they will be more uniform in emitting light and
14 supplying pixels with varying power supply voltage.

15 Q So you'll have to help me out a bit. I
16 don't understand how reducing the resistance of this
17 parallel structure -- how does that make the power
18 supply voltage reach LEDs more uniformly?

19 A If I place a light socket directly next to
20 my breaker box and the length of wire that I run to
21 power that light socket is short, then the resisted
22 drop across that wire will be small -- smaller than
23 if I put a light socket a few hundred feet away from
24 the breaker box so that there's a voltage drop
25 across the wire, that few hundred feet, it's larger

1 than the one at 2 feet. And the result would be
2 that the lightbulb right next to the breaker box is
3 brighter than the lightbulb that's a few hundred
4 feet away.

5 Q And how does reducing resistance play into
6 uniform brightness in that example?

7 A Less voltage drop across the short wire than
8 there is the long wire. And I note schematically,
9 the circuits would be identical; but the schematic
10 has nothing to do with the physical implementation,
11 other than to detail how the components are
12 connected together.

13 Q So help me out one more time. If I were to
14 reduce the resistance between the power outlet and
15 the lightbulb connected by the short wire, how does
16 that improve the uniformity of brightness? Wouldn't
17 that just make it even brighter?

18 A It would. But to reduce or make things
19 uniform, you have to have at least two things. In
20 your example, you talked about one thing. So if you
21 want to make the brightness of the two lightbulbs
22 the same, you need to supply them with the same
23 voltage.

24 Q So what resistance would you reduce in the
25 lightbulb example to achieve uniform brightness?

1 A You could reduce the resistance of the wire,
2 for the long run, the 200-foot run, and try to match
3 it to the resistance of the wire for the 2-foot run.

4 Q All right. Can we turn back to your
5 declaration and turn to paragraph 48.

6 A I'm there.

7 Q And you see figure 1 is shown here?

8 A I notated figure 1 from the '509 patent as
9 shown in paragraph 48 of my declaration, yes.

10 Q Did you personally annotate the colors in
11 figure 1?

12 A I don't think so, but I don't recall.

13 Q And if we go down to the next paragraph,
14 paragraph 49, do you see an annotated version of
15 figure 2?

16 A Yes.

17 Q Do you remember personally annotating the
18 colors onto figure 2?

19 A I do not remember doing that.

20 Q And if we see -- do you see the auxiliary
21 electrode 120 that is annotated in red in figure 2?

22 A I seem to think it's annotated in brown.
23 But I see the auxiliary electrode 120, yes.

24 Q Okay. Well, it appears red on my screen, so
25 if I refer to the "red auxiliary electrode," can you

1 understand that to refer to the brown auxiliary
2 electrode that appears on your screen?

3 A Yes.

4 Q All right. If that auxiliary electrode were
5 not present, is it your opinion that the pixel would
6 still function, albeit with perhaps increased
7 resistance and less uniform brightness?

8 MR. LIMBACH: Objection. Form.

9 THE WITNESS: I don't recall analyzing that
10 situation or that it's claimed; but just sitting
11 here right now, I think it would function fine. As
12 I testified earlier, the line 132 would go out of
13 the page and into the page to interconnect the
14 adjacent pixels in the column. There would be no
15 reason not to have that line extend from pixel to
16 pixel. The patterning would be easier and then the
17 power connection would be on the top and bottom --
18 top and/or bottom of the display.

19 BY MR. TONG:

20 Q If we go down to the next paragraph,
21 paragraph 50, do you see annotated figure 3 that
22 extends onto the next page?

23 A Yes.

24 Q And do you remember personally coloring the
25 colors on the figure 3?

1 A I don't remember doing that, no.

2 Q And do you see the auxiliary electrode -- I
3 think it's 220. It appears red to me, but it might
4 appear brown to you?

5 A I see 220, yes.

6 Q And similar question: Is it your
7 understanding that the pixel structure would still
8 be functional if the auxiliary electrode 220 were
9 not present?

10 MR. LIMBACH: Objection. Form.

11 THE WITNESS: Again, I don't recall
12 analyzing that simply because it wasn't claimed.
13 But I think in a practical circuit, it's the same
14 answer. The material 132 would extend to the pixels
15 above and below this pixel to route the power to the
16 anodes of the pixel. There's no reason not to have
17 that material connect to the adjacent pixel. It
18 makes the patterning easier and reduces the
19 resistance of the anode wire.

20 So -- but I don't recall that being
21 disclosed; it's just what is common practice in
22 doing a display, is to -- the common layers, just
23 connect to the adjacent pixels.

24 BY MR. TONG:

25 Q Right. And if we think about this, the LED

1 could still receive a voltage or power through the
2 first electrode 132 -- correct? -- even if the
3 auxiliary electrode 220 were not present?

4 **A Yes. It's just a connection on the top and**
5 **bottom of the array.**

6 Q And if we could turn to the next paragraph,
7 which is paragraph 51.

8 Do you see annotated figure 5?

9 **A Yes.**

10 Q And do you remember personally coloring this
11 figure with annotated colors?

12 **A I do not remember annotating this figure,**
13 **no.**

14 Q And again, similar question: Would this
15 pixel remain functional because the LED 130 would be
16 able to receive power through the electrode 132,
17 even if the auxiliary electrodes 130 -- sorry --
18 even if the auxiliary electrodes 120 and 460 were
19 not present?

20 MR. LIMBACH: Objection. Form.

21 **THE WITNESS: Again, that's not claimed and**
22 **that's not something I analyzed; but it is**
23 **reasonable that the materials that are common that**
24 **don't have any video information on, like, the power**
25 **supplying grounds are routed to the adjacent pixels**

1 to the top and bottom of the array to make a
2 patterning easier, to lower the resistance going to
3 the pixels.

4 So I think that it would operate fine; but
5 that's not claimed in any of the -- of the
6 structure. Adjacent connection between pixels isn't
7 claimed -- isn't something I analyzed.

8 BY MR. TONG:

9 Q Thank you, Dr. Baker. Again, I would ask
10 that you focus your answers on the questions that I
11 asked. My question did not include a component
12 asking about whether or not this was in the claims.

13 If we could turn to paragraph 22 of your
14 declaration, please.

15 A I'm there.

16 Q So on page 11, this contains Grounds 1
17 through 10 of the opinions in your declaration.

18 Do you see that table?

19 A Yes.

20 Q And your opinion in Ground 1 is that Weaver
21 anticipates the claims listed for Ground 1 under
22 Section 102; correct?

23 A Yes. Weaver anticipates Claims 1 through 5,
24 9, and 12 through -- 12 through 13.

25 Q And your Ground 1 relied on what you

1 considered to be the correct construction of
2 auxiliary electrode; is that correct?

3 MR. LIMBACH: Objection. Form.

4 THE WITNESS: Yes, I talk about that in
5 paragraph 77 of my declaration.

6 BY MR. TONG:

7 Q And, again, on page 11, you list Ground 6,
8 which relates to Claims 1 through 5, 9, and 12 to
9 13, asserting Weaver in view of Gupta or Han under
10 Section 103.

11 Is the reason that you provided this
12 alternative ground of invalidity under 103 because
13 you wanted to address a contingent construction of
14 the term "auxiliary electrode"?

15 A I was asked to use the narrower
16 construction, that auxiliary electrode was a
17 supplemental electrode to reduce the total
18 resistance of the pixel structure. I don't -- what
19 you said sounds like a legal term about claim terms.
20 I was simply asked to use a narrower construction.

21 Q And would you agree that if the board agrees
22 that the narrower construction is correct, that your
23 opinion in Ground 1 would not be invalidating under
24 35 USC 102?

25 MR. LIMBACH: Objection. Form.

1 THE WITNESS: I don't know if I agree with
2 that. I think when I was writing this up, the thing
3 is that Weaver, like, to '509, didn't talk about the
4 adjacent connections of the structure and if the
5 auxiliary electrodes were connected together. So I
6 don't know if I would agree with that.

7 Simply, I didn't -- I didn't put that
8 opinion in my declaration simply because how the
9 adjacent structures were connected in the '509 or
10 Weaver isn't disclosed. But I mean -- so I can't
11 agree with that because Weaver teaches exactly
12 what's in the '509 patent.

13 BY MR. TONG:

14 Q Let's break apart your answer.

15 You said: "I didn't put that opinion in my
16 declaration." So I want to clarify what "that
17 opinion" refers to.

18 Is it the case that you did not include any
19 opinion about whether or not Weaver anticipates the
20 claims alone under the narrower construction into
21 your declaration?

22 MR. LIMBACH: Objection. Form.

23 THE WITNESS: That is correct. I didn't put
24 that opinion in there, as I explained. Neither the
25 '509 or Weaver talk about the adjacent connections

1 of pixels.

2 BY MR. TONG:

3 Q All right. My next question is: If the
4 board agrees that -- agrees with what you call the
5 "broader or correct construction of auxiliary
6 electrode" is correct, did you offer any opinion in
7 Ground 6 that relies on the broader or connect -- or
8 correct construction?

9 MR. LIMBACH: Objection. Form.

10 THE WITNESS: I don't think so. I think, as
11 I mentioned in paragraph 213 for Ground 6, I applied
12 the construction of auxiliary electrode that is a
13 supplemental electrode to reduce the total
14 resistance of the pixel structure.

15 BY MR. TONG:

16 Q All right. Would now be a good time for us
17 to take a lunch break?

18 A Yes.

19 Q All right. Let's do that. Does -- let's go
20 off the record, and then we can talk about how long.

21 THE VIDEOGRAPHER: Okay. We're off the
22 record. The time is 1:44 p.m.

23 --o0o--

24 (LUNCHEON RECESS.)

25 --o0o--

1 THE VIDEOGRAPHER: We're back on the record.

2 The time is 2:31 p.m.

3 BY MR. TONG:

4 Q Dr. Baker, during the break, did you speak
5 at all with your counsel?

6 A No.

7 Q Okay. Could we turn to paragraph 3 -- 83 of
8 the '509 declaration.

9 A I'm there, which is page 33 or PDF 40.

10 Q Do you see that paragraph 83 has certain
11 colors for the gate 408, the A-SI layer, the source,
12 and the drain?

13 A Yes.

14 Q Did you pick those colors?

15 A I don't think so, but I don't recall.

16 Q Now, I was wondering if you had intended to
17 color corresponding parts in the figures that follow
18 in paragraph 84.

19 Was that your intent?

20 A I think so. I note I did color -- use those
21 colors in following images.

22 Q If we turn to paragraph 85, do you see that
23 spans pages 34 to 35 as numbered in the bottom
24 middle of the page?

25 A Yes.

1 Q And looking at figures 1 and 2, do you see
2 where that is at the top of page 35?

3 A Yes.

4 Q And on the left figure 1, that's supposed to
5 be figure 1 from the challenged '509 patent; right?

6 A Yes.

7 Q And figure 2 on the right, that's supposed
8 to be figure 2 from Weaver; right?

9 A Well, they both are from the patents.
10 Figure 2 on the right is from Weaver, and figure 1
11 on the left is from the '509. They're just both
12 annotated.

13 Q And do you see how in figure 1 on the left,
14 there is a line marked with "PL" for power line?

15 A Yes.

16 Q And on the right in figure 2, there is the
17 marking "VDD" toward the top right?

18 A Yes.

19 Q Do you understand that those are supposed to
20 correspond to each other?

21 MR. LIMBACH: Objection. Form.

22 THE WITNESS: Well, they both supply power
23 to the pixels; but this Claim element 1B, which is
24 listed in paragraph 83, does not claim anything to
25 do with the VDD or the power line voltage.

1 So to answer your question, yes, those two
2 correspond to each other; but I didn't annotate them
3 in this image on the top of page 35 because it's not
4 relevant to the claim analysis.

5 BY MR. TONG:

6 Q I'd like to move to the next page, page 36.
7 Toward the bottom, there's paragraph 89.

8 Do you see that?

9 A Yes.

10 Q And in paragraph 89, the first sentence
11 begins:

12 "Weaver discloses, quote, a first auxiliary
13 electrode bus line 430, electrically insulated from
14 the active device, transistor 14 [sic]."

15 Do you see that?

16 MR. LIMBACH: Objection. Form.

17 THE WITNESS: Did you say 410?

18 BY MR. TONG:

19 Q Yes. Transistor 410.

20 A Yes, I see that.

21 Q Did I read that correctly?

22 A I think. I heard and it might have been an
23 issue with my internet, I thought I heard transistor
24 "14."

25 Q Yeah, I did say "410."

1 And towards bus line 430, do you see that
2 that's colored?

3 **A I see it colored in paragraph 91, yes.**

4 Q Do you see it colored in paragraph 89 as
5 well?

6 **A Yes.**

7 Q Did you pick that color?

8 **A I don't think so, but I don't recall.**

9 Q And just so we're on the same page, what
10 color does that appear to you as?

11 **A We can call it red.**

12 Q All right. Let's go with red.

13 Do you have any recollection of picking the
14 red color to color those words?

15 **A No, not that I recall.**

16 Q Okay. And do you have any memory of picking
17 the brown color to color that word?

18 MR. LIMBACH: Objection. Form.

19 **THE WITNESS: I don't have any recollection**
20 **to picking the colors to color the words.**

21 BY MR. TONG:

22 Q Okay. And we see similar coloring used in
23 paragraph 91 for the red bus line 430.

24 Do you see that?

25 **A Yes. Since we're on Weaver, can you post**

1 Weaver in the chat?

2 Q I'm not moving to the disclosure of Weaver
3 yet. I'm just asking about the stuff in your
4 declaration at this point. I'll get it up there
5 once we need it.

6 Do you see figure 4, annotated figure 4 in
7 paragraph 91?

8 A Yes.

9 Q Did you personally annotate those colors to
10 figure 4?

11 A I don't believe so, but I don't recall.

12 Q I'd like you to think for a moment. If you
13 did annotate those colors, what software program
14 would you have used?

15 A PowerPoint.

16 Q Does that jog your memory at all as to
17 whether or not you in fact used PowerPoint to
18 annotate colors onto figure 4?

**19 A No. I use PowerPoint to annotate figures
20 all the time when I'm writing reports and
21 declarations, and I don't recall this specific
22 instance of whipping this out -- figure 4 out of
23 Weaver and annotating it in a PowerPoint.**

24 Q Toward the bottom right of figure 4, do you
25 see that red bus line 430?

1 A The line right below figure 4? Yes.

2 Q And is it your understanding that the bus
3 line 430 in Weaver in red right there, that it would
4 connect to the VDD that we had looked at previously
5 in paragraph 85, figure 2?

6 A I don't recall there being disclosure of
7 that. Again, I don't recall in the Weaver or the
8 '509 that there was discussion of connection between
9 adjacent cells in a column.

10 But again, I'm going to ask, can you post
11 Weaver?

12 Q I can post Weaver; but before I do, I'd like
13 some clarification on your question. I did not ask
14 whether Weaver was connected to adjacent cells or
15 whether or not it was connected to a column.

16 My question was whether or not it was your
17 understanding that bus line 430 in Weaver colored in
18 red would connect to the VDD that we had previously
19 looked at in paragraph 5, figure 2?

20 A I think I did answer that. Let me try
21 again.

22 In the '509 and Weaver, they don't talk
23 about the connections between adjacent cells so if
24 the 430 was connected to 430 in an adjacent cell in
25 a column. It's just like the '509. They don't

1 discuss that connection. So if the -- if that line
2 was actually connected to VDD -- and it may be -- I
3 think that would be a reasonable conclusion that it
4 is connected to 430, but I don't recall that being
5 taught in Weaver.

6 Q Okay. I'd like you to turn down to
7 paragraph 93 of the declaration.

8 A Okay. So apparently you're not going to let
9 me look at Weaver -- I mean, I have it here. But if
10 it ends up being that my answers are -- if I need
11 it, I'll get it. But for now, I won't.

12 I'm on paragraph 93.

13 Q Okay. Do you see that paragraph 93 also
14 mentions the same bus line, 430?

15 A Yes.

16 Q And if we scroll to the top of page 39, do
17 you see figure 6 from Weaver?

18 A Yes.

19 Q Is it your understanding that what is
20 colored in red in figure 6 shown here corresponds to
21 the same bus line structure that we had looked at
22 previously up above in paragraph 91 when we were
23 looking at figure 4?

24 A 430 should be the same. I don't
25 recall if -- I think figure 6 was the array. So in

1 that case, it does show the connection of adjacent
2 cells to 430 and Weaver.

3 Q Sorry. Can you clarify that last part? You
4 said you think figure 6 was the array. So in that
5 case, it does show the connection of adjacent cells
6 to 430 and Weaver.

7 Where is the adjacent cell shown in
8 figure 6?

9 A I need Weaver to see what the description of
10 figure 6 is. From memory, I remember figure 6 is
11 the top view of the display. So the pixels would be
12 grouped together in the bottom of the open area in
13 figure 6 and then the readout electronics would be
14 in the top portion of the area in figure 6.

15 And so my comment was that this is showing
16 that the 430 is connected between adjacent cells.
17 So again, I'm going by memory in all of -- memory is
18 faulty; and if I would look at Weaver and see how it
19 describes figure 6 -- because, I mean, it may be
20 that they're describing that as one pixel and I'm
21 not remembering correctly; and in that case, my
22 previous testimony about the connection, I'd need to
23 think about.

24 Q Okay. Before we look at Weaver, again, a
25 part of your previous answer was, "I think figure 6

1 was the array."

2 Can you identify a part of figure 6 that you
3 think shows the array?

4 A I did. The bottom open area on figure 6 is
5 the pixels and then above the pixels is the readout,
6 electronics and video processing.

7 (Simultaneous colloquy.)

8 THE WITNESS: But I don't recall.

9 BY MR. TONG:

10 Q I'm going to mark as figure 5 and introduce
11 Weaver -- sorry, not figure 5. Exhibit 5.

12 (Patent Owner's Exhibit 5 was marked.)

13 MR. TONG: I've dropped it in the chat.

14 Please let me know when you have it open. This was
15 pulled from IPR2024-0133, Exhibit 1004.

16 BY MR. TONG:

17 Q Let me know when you have Weaver open.

18 A I have it open.

19 Q Okay. If you could look at paragraph 10 of
20 Weaver.

21 A Okay.

22 Q Does that refresh your memory of whether or
23 not figure 6 showed an array or just one single
24 pixel?

25 A It's apparently showing only one pixel. So

1 what I said was the pixels are in the bottom. That
2 was wrong because it was from memory.

3 Q Let me go back to my question and give you
4 another chance to answer it.

5 Turning back to paragraph 93 of your
6 declaration. Again, do you see bus line 430 colored
7 in red?

8 A Yes.

9 Q And we have an understanding that that is
10 the same bus line 430 that is colored in red that is
11 in paragraph 91 of your report; right?

12 A Yes.

13 Q And 90 -- paragraph 91, figure 4, that shows
14 a two-dimensional cross-sectional view.

15 Is it your understanding that 430 would be
16 extending either into the page or out of the page?

17 A Yes.

18 Q Okay. And at this point, do you have an
19 understanding that the bus line 430 would be
20 electrically connected to the VDD that we had seen
21 previously in figure 2 that is in paragraph 85 of
22 your report?

23 A It will -- since it's connected to the anode
24 of the light-emitting diode, it will be ultimately
25 connected to VDD, yes.

1 Q Okay. And if the bus line 430 were not
2 present -- okay? I just mean it's removed
3 completely. It's replaced by an insulator. Do you
4 have an opinion on whether or not Weaver's pixel
5 would still operate?

6 MR. LIMBACH: Objection. Form.

7 THE WITNESS: The anode material 406 --
8 maybe we should look at the annotated figure 4 in
9 paragraph 96 of my declaration.

10 BY MR. TONG:

11 Q Uh-huh.

12 A Will be connected to VDD. And if that
13 pixel, if it's -- like I testified earlier, if that
14 material 406 is touching an adjacent pixels, then
15 the VDD could be connected at the top of the display
16 or the array or the bottom of the array and power
17 would still be provided to the pixels.

18 If 430 is also connected at the top and the
19 bottom of the pixels so that the 430s and adjacent
20 pixels are touching, then you can also have a power
21 connection at the top and bottom of the array to the
22 anode of the LED.

23 So to answer your question, yes, it could
24 work; but Weaver and the '509 patent don't discuss
25 if adjacent -- if adjacent pixels or anodes are

1 touching each other.

2 But a person of ordinary skill in the art
3 generally would design it that way so that the
4 anodes touch between adjacent pixels because that
5 voltage is constant and not moving. And so as I
6 mentioned earlier, you don't have to pattern the
7 layer. It lowers the resistance. So it could work.
8 Can I say definitively that it would and that's the
9 way they did the designs in the '509 and Weaver?
10 No, I can't say that because it's not -- the layout
11 of adjacent pixels isn't clearly disclosed.

12 Q Could you identify any part of Weaver for
13 the board where it explicitly says that Weaver's 406
14 is connected to receive power from VDD?

15 A I don't think that's up for argument. You
16 can look at the schematic, figure 2, and see that
17 the anode of the diode 202 is connected to VDD. I
18 don't think anybody's going to argue with that.

19 Q My question was not whether it was -- sorry.
20 Strike that.

21 Is it your understanding, then, that in
22 figure 2, the anode of the diode is connected to
23 VDD? Or is it your understanding that in figure 2,
24 the bus line -- strike that.

25 Looking at figure 2, the -- as to the

1 connection between VDD and the diode, is it your
2 understanding that that represents 406 or 430 or a
3 series connection between 406 and 430?

4 MR. LIMBACH: Objection. Form.

5 THE WITNESS: Again, you can't look at a
6 schematic and draw conclusions about a physical
7 route or material. And I gave the example of the
8 schematic showing a connection between a breaker box
9 and an outlet in a house. That doesn't tell you the
10 route the wire takes between the breaker box and the
11 outlet, and it's the same thing here. All you can
12 tell in figure 2 is that the anode of the pixel is
13 connected to VDD.

14 So you know looking at figure 4 that the
15 materials 406, 428, the via, and the bus 430 are all
16 also connected to VDD.

17 BY MR. TONG:

18 Q And so -- and because you can't look at a
19 schematic and draw conclusions about a physical
20 route or material, that means that there's no
21 explicit disclosure of whether the connection in
22 figure 2 refers to 406 or 430; correct?

23 A Materials corresponding to the
24 cross-sectional view are not detailed in the
25 schematic. The only takeaway from the schematic is

1 the anode of the LED is connected to VDD.

2 Q Let's move down to paragraph 97 in your
3 declaration. 97 and 98.

4 A I'm there.

5 Q All right. Do you see in paragraph 98 that
6 three different colors are used?

7 A Yes.

8 Q On my end, it's showing light green for
9 anode 406; red for bus line 430; and it looks like a
10 yellow or gold for via 428.

11 Is that what you see on your end?

12 A Yes. Except the via 428 on my end is brown.

13 Q Okay. Let's go with brown.

14 And in paragraph 98, do you see annotated
15 figure 4?

16 A Yes.

17 Q And those annotated colors match the text
18 coloring above; right?

19 A Yes.

20 Q Did you personally annotate figure 4 by
21 coloring it?

22 A I don't think so, but I don't recall.

23 Q If we look at paragraph 97, at the very end,
24 it says:

25 "The first auxiliary electrode (bus line

1 430)."

2 Do you see that?

3 A Yes.

4 Q So in forming your opinion, were you
5 limiting the interpretation of the first auxiliary
6 electrode to the bus line 430?

7 A I don't know if I would say it's limiting.
8 I mean, it's -- what's taught in Weaver is the same
9 that's taught in the '509. There's the electrode
10 layer of -- directly touching the organic material
11 that's electrically connected to an electrode --

12 Q Let me stop you there. That was a bad
13 question. Let me ask a new question.

14 Looking at paragraph 97 again, you see that
15 you've interpreted the first electrode layer to be
16 the green anode 406.

17 Do you agree with that?

18 A Yes. In Weaver, the first electrode layer
19 is anode 406.

20 Q And the first auxiliary electrode is mapped
21 to the red bus line 430?

22 A Yes.

23 Q Okay. And that quote in paragraph 97,
24 that's intended to quote the claim language except
25 for what you've added in the parentheses; right?

1 A Yes.

2 Q And was it your intent that the via 428 in
3 brown is something that causes the electrical
4 connection that is referred to in paragraph 97?

5 A Yes. If you have two wires and you want to
6 connect the wires together, you might use a wire
7 nut. And so the via would be the path connecting
8 bus line 430 to anode 406.

9 Q And the via would be conductive; right?

10 A Yes.

11 Q So why would the via not be interpreted as
12 an electrode?

13 MR. LIMBACH: Objection. Form.

14 THE WITNESS: I think someone might
15 interpret the via as electrode and say that the 430
16 connects to the electrode at the bottom of the
17 electrode via 428. What's being taught in Weaver,
18 if you look at the '509 patent -- for example, maybe
19 we'll just look at figure 2, the material, when it
20 goes down in the hole, the via is making a
21 connection to the auxiliary electrode 120. It's the
22 same thing.

23 BY MR. TONG:

24 Q In -- as far as forming your opinion, are
25 you relying on via 428 to be either of the

1 electrodes recited in Claim 1E?

2 A It provides the electrical connection, no.
3 What's seen in figure 4 is a newer -- I mean, they
4 fill up the holes. And what's seen in figure 2 of
5 the '509 is older where the metal just kind of falls
6 in the hole, but they don't fill it up. It's the
7 same thing.

8 Q Are you familiar with the equation for
9 resistance where R is equal to p times L , divided by
10 A , where p is resistivity per unit length; L is a
11 length; and A is a cross-sectional area?

12 A No, that's not the right equation. It's p
13 times L divided by T or thickness, which is a
14 length. If you divide it by area, the units don't
15 work out. The units of resistivity are ohm
16 centimeters.

17 Q And for the --

18 A Let me think about that for a second because
19 in semiconductors, we use sheet resistance. So I
20 may be confusing sheet resistance with what you're
21 saying because sheet resistance is ohms per square.
22 Okay. I think what you're saying is okay.

23 MR. TONG: And for the court reporter, "row"
24 is italicized lowercase p . It's a Greek letter.
25 ///

1 BY MR. TONG:

2 Q Let's assume a POSITA would be motivated to
3 decrease the resistance of Weaver's bus line 430.

4 Are you with me so far?

5 A Yes.

6 Q Would it be possible for the POSITA to
7 increase the thickness or the cross-sectional area
8 of the bus line 430?

9 A You can't. The POSITA wouldn't be able to
10 modify the process because patents aren't about
11 process development and the fabrication steps so you
12 couldn't adjust thickness of a metal. These are
13 about the layout where you select where things are
14 located and the size of the things from the top or
15 layout view.

16 So a POSITA wouldn't have the -- wouldn't be
17 able to mess with the process when designing the
18 pixel. That would already be in place.

19 Q What type of material would a bus line like
20 bus line 430 typically be fabricated out of?

21 A Typical material would be -- depending on
22 the time frame -- but aluminum. But it could be
23 copper.

24 Q Would you use indium tin oxide?

25 A You could use whatever is available to route

1 the signals. It depends on the process.

2 Q That didn't directly answer my question.

3 Assuming indium tin oxide was available,
4 would a POSITA select that material for a bus line
5 430?

6 MR. LIMBACH: Objection. Form.

7 THE WITNESS: Maybe. There's just design
8 choices on where that material is located in the
9 stack. Its resistivity. If it's used for other
10 things that would preclude its use for routing a
11 signal in that area.

12 BY MR. TONG:

13 Q How does the resistivity of indium tin oxide
14 compare to aluminum?

15 A From memory, I think it's higher.

16 Q And how does the resistivity of ITO compare
17 to copper?

18 A Again, from memory, I think it's higher.

19 Q Do you have a sense of how much higher by
20 estimates of orders of magnitude?

21 A If I had to guess, maybe, yes. But it's
22 really -- those questions are quite subjective.
23 Because if you're running things for millimeters,
24 then using a higher resistivity is considerably less
25 important than if you're running things, you know,

1 feet or inches or longer distances. It just depends
2 on the application.

3 Q Let me try again. So my question was not
4 whether or not the resistivity is important in
5 certain applications.

6 But my question is, as an expert, do you
7 have an estimate of the -- of how much higher the
8 resistance of ITO is in terms of orders of
9 magnitude?

10 MR. LIMBACH: Objection. Form.

11 THE WITNESS: If I had to guess, I'd say a
12 couple of orders of magnitude, but I don't know. I
13 don't remember.

14 BY MR. TONG:

15 Q Can you think of any other considerations
16 that a POSITA might have in deciding whether to use
17 aluminum copper or ITO?

18 A Availability. What they're already being
19 used for. Are they going to fit in the size that
20 you need them to fit in.

21 Q Do you know how -- what is the physical
22 process for depositing a strip of a bus line 430
23 that we see in figure 6?

24 MR. LIMBACH: Objection. Form.

25 THE WITNESS: All kinds of different ways of

1 depositing things. I mean, it could be vapor
2 deposition. It could be sputtered on. I wasn't
3 asked to render opinions on the process. I was
4 asked to render opinions on the -- what's taught in
5 the '509 patent with regard to the pixel structure.

6 BY MR. TONG:

7 Q And if a POSITA were using a deposition
8 process, could that POSITA not just run the
9 deposition process for a longer period of time in
10 order to increase the thickness?

11 A Maybe. Again, when you get to designing the
12 layout and position of the photo diode and the
13 light-emitting diode and the transistors, the
14 process is set; and a POSITA would not be able to
15 change thickness of layers in the direction
16 perpendicular to the wafer or the substrate. They'd
17 only have control over the XY direction or the
18 layout view, looking down on the substrate.

19 Q Right. So keeping in mind our resistivity
20 equation, one way you can reduce the resistance
21 under that equation is to increase the thickness.

22 If a POSITA wanted to increase a bus line
23 430, would they be able to just increase the width?

24 A That would be the only option they have
25 because they can't control the thickness because the

1 process is set. This patent is about the, you know,
2 layout, structure of the design of the pixel, like
3 how to route the metal layers and position the --
4 the organic-light-emitting diode in a certain way.
5 It's not about changing the process technology.

6 Q I would like to jump down to paragraph 130
7 of your declaration. This is in a different ground
8 where you had analyzed Weaver in view of Lee 053.
9 Please let me when you're at paragraph 130.

10 A I'm there.

11 Q And do you see that as part of paragraph
12 130, you have proposed a modified figure 4?

13 A Yes.

14 Q Did you personally create this picture?

15 A I don't think so, but I don't recall.

16 Q So as part of this modification, we see on
17 the bottom right that bus line 430 is in an elevated
18 position compared to where it previously was;
19 correct?

20 A Yes.

21 Q And both bus line 430, as well as elements
22 407 and 405, those are all colored the same shade of
23 red; right?

24 A Yes. They're from the same process step.

25 Q Okay. And because you're proposing that

1 they be from the same process step, that would mean
2 that they would all be made of the same material;
3 correct?

4 **A The metal on 407, 405, and 430 would be the**
5 **same metal, yes.**

6 **Q And they would all be made to the same**
7 **thickness; correct?**

8 **A Not exactly.**

9 **Q Could you explain, then, why we can adjust**
10 **the thickness of metals made with the same process?**

11 **A We're not adjusting the thickness or the**
12 **process steps. It's just when you deposit metal**
13 **down over landscape with the topography, the**
14 **thickness of the metal is going to change when you**
15 **go over structures that are rising above the**
16 **substrate, whereas if you're not going over a**
17 **structure, you're going over a flat area, the**
18 **thickness of the metal doesn't change.**

19 **So, for example, if you look at the bus line**
20 **430 in the modified figure 4, it's constant**
21 **thickness. However, if you go look at the contacts**
22 **407 and 405, you're going to be able to see they**
23 **have different thicknesses because they're going**
24 **over a structure, and so it's going to have areas**
25 **where it thins out or gets thicker.**

1 Q Is it possible to deposit certain metal
2 features as part of a process step and then later
3 remove some metal from a select portion of those
4 features?

5 A I don't know exactly what you're talking
6 about; but when you pattern metal, you generally
7 will deposit the metal over the whole substrate and
8 then remove metal in the places where you don't want
9 it.

10 Q Is etching a technique for removing metal?
11 (Reporter clarification.)

12 THE WITNESS: Yes. It generally, in
13 processing -- when you etch something, you
14 completely remove it.

15 BY MR. TONG:

16 Q Are there any processes that would allow you
17 to reduce the thickness of select metal features?

18 A I don't know. I don't know what we're
19 talking about. I mean, if maybe they were grinding
20 or doing an etching for a fixed period of time and
21 guessing at the thickness that you're trying to get
22 at. But again, I don't know exactly what we're
23 talking about.

24 Q I was actually thinking of both grinding and
25 etching for certain periods of time. Would those

1 be -- at the time the patent was filed, were those
2 known techniques for reducing the thickness of
3 metals?

4 A I think so.

5 Q And if those were known techniques, would
6 they have been available for adjusting the thickness
7 of bus line 430?

8 A This isn't an opinion I've rendered. But, I
9 mean, just looking at the topography of figure 4,
10 it's not a planar process. Meaning between adjacent
11 process steps, the wafer's not flattened out, and so
12 you can't grind down or use grinding or use what's
13 called "chemical mechanical polishing," CMP, because
14 the transistor electrodes, the source and drain --
15 for example, 407 and 405 -- extend up, stick up. So
16 if you grind them down, you're actually -- remove
17 the transistor. And so I don't think polishing or
18 grinding would be a possibility in a nonplanar
19 topology, like seen in figure 4.

20 The problem with -- and again, these aren't
21 opinions that I've rendered in my declaration. I'm
22 just speaking generally without any context. The
23 problem with etching is -- and trying to control
24 thicknesses with etching is you either have to guess
25 or go very, very slow so that you can be precise in

1 how long you etch; but they're generally not ever
2 done in semiconductor processing where you etch just
3 a little bit of metal.

4 Etching in semiconductors is almost
5 exclusively for removing entire areas. And there's
6 what's called an "etch stop layer" below the area
7 that you're trying to remove.

8 But again, I don't have any idea exactly
9 what we're talking about; so I'm sure there's some
10 instance where what I'm saying isn't entirely
11 correct.

12 Q Sure. It sounds like you have formulated
13 your previous opinion looking at modified figure 4
14 in paragraph 130 of your report. Let me direct you
15 back up to paragraph 93.

16 A Just to be clear, when I say "modified
17 figure 4," not modifying the process. I'm modifying
18 the layout using existing layout layers to change
19 the layout or the structure of the pixel. And which
20 layer -- what are we talking about?

21 Q We are looking at paragraph 93.

22 A Okay.

23 Q Here, do you see paragraph -- I'm sorry,
24 figure 6 where you have the bus line 430 colored in
25 red?

1 A Yes.

2 Q As we sit here right now, do you see any
3 topological features here that would preclude
4 grinding or etching?

5 A This is a process question, and this
6 patent's not even remotely about changing the
7 process steps or the -- for the various material
8 properties, the materials used. It's about the
9 design and structure of a pixel. So I don't know.
10 I'm not -- I don't know exactly what process this is
11 claiming -- none that I know of. It's just talking
12 about a way to structure a pixel to lay it out.

13 Q My question was not directed to what the
14 '509 patent covers. And my question was not
15 directed to whether or not the '509 patent was about
16 changing process steps.

17 My question was, can you identify anything
18 in figure 6 of Weaver as we sit here right now, any
19 topological feature that would preclude the use of
20 etching or grinding?

21 A Yes. The corresponding cross-sectional
22 views of figure 6. For example, figure 4 of Weaver
23 show you couldn't do grinding. It's not a
24 planarized process. It wouldn't make any sense to
25 try to grind something that's got a topography.

1 Q And what in figure 4 do you think is the
2 corresponding feature that precludes grinding?

3 A Anything not flat. For example, the
4 transistor.

5 Q By "the transistor," are you referring to
6 414?

7 A Yes. And the contacts. For example, the
8 407 and the 405 which are the metallization for the
9 source and drain.

10 Q And is it your understanding that 414, 407,
11 and 405 would all be fabricated before the bus line
12 430 is fabricated?

13 A Sorry. Would you repeat those numbers
14 again?

15 Q Yeah. Is it your understanding that 414,
16 407 and 415 [sic] would be fabricated before the bus
17 line 430 is fabricated?

18 MR. LIMBACH: Objection. Form.

19 THE WITNESS: No. The bus line 430 is the
20 same metal as the source and drain in 407 and 405.

21 BY MR. TONG:

22 Q And is it your opinion that those need to be
23 fabricated in the same step?

24 MR. LIMBACH: Objection. Form.

25 THE WITNESS: It wasn't an opinion that I

1 rendered. But just sitting here, yes.

2 BY MR. TONG:

3 Q Would it be possible to first fabricate the
4 bus line 430 before fabricating the metal in the
5 source and drain 407 and 415?

6 A Not if they're made of the same metal and
7 done during the same process step. And also, when
8 you're making consumer devices, it's all about cost.
9 I mean, all those hypotheticals, they don't --
10 aren't really relevant to my opinions about the
11 validity of the '509.

12 I don't think you would fabricate 430 at a
13 different time than 407 or 405; but that doesn't
14 mean you couldn't if the process integration
15 engineer decided to add extra steps and decided to
16 put a different layer of metal on at a different
17 time. All these are design choices.

18 Q I'm sorry. Your question was a little bit
19 confusing. Would you agree that if a process
20 engineer wanted to, that they could first fabricate
21 the bus line 430 and then in a later step, fabricate
22 407 and 415?

23 MR. LIMBACH: Objection. Form.

24 THE WITNESS: Did you mean 405?

25 ///

1 BY MR. TONG:

2 Q Yes, I mean 405.

3 A I mean, I guess so. I don't know why they
4 would do that; but they can add different steps into
5 the process and fabricate metal at different
6 times -- pattern metal at different times.

7 Q And isn't it true that many semiconductor
8 devices have multiple layers of metal?

9 A That's not -- I mean, that's like saying,
10 couldn't I build a one-story house and build the
11 east part at a different time than the west part.
12 Now you're asking, can I build a house with multiple
13 stories. Right up, floor one, floor two, floor
14 three. So multiple layers of metal correspond to
15 multiple layers or floors in a house.

16 Fabricating the first floor at different
17 times, you could do it. It's just -- for
18 efficiency, why would you do that? You pour the
19 foundation for both. You would frame both. You
20 would build both at the same time. It's the same
21 thing in semiconductors.

22 And when we get a good breaking time, I
23 could use another break.

24 Q Sure. Let me finish up with some of these
25 questions about the bus line 430, and then we'll

1 take a short break.

2 Did you consider the possibility of first
3 fabricating bus line 403 [sic] to be as thick as
4 needed to adjust its resistivity or resistance
5 before fabricating other structures?

6 A A designer that's laying out the pixels --
7 the fabrication steps are already set in place. You
8 don't have any control over the thicknesses of the
9 metals or the layers used or the characteristics of
10 the transistor that you used. They're already set
11 in place when you go to design something.

12 Q So that wasn't quite my question.

13 My question was whether or not you
14 considered that as a possibility when formulating
15 your opinion?

16 A It isn't a possibility. It's like me going
17 to buy a house and sitting there and looking at the
18 house and going, huh, I think I can change the
19 height of that floor to 12 feet from 10 feet. And
20 it can't be done without tearing it down and
21 building it over. It's just not something you can
22 do.

23 Q All right.

24 A You can't adjust the thickness of a metal
25 when you're doing layout. That's already set.

1 MR. TONG: Okay. This would be a good time.
2 Let's take a short five-minute break as you
3 requested.

4 THE VIDEOGRAPHER: Okay. We're off the
5 record. The time is 3:31 p.m.

6 (Recess.)

7 THE VIDEOGRAPHER: We're back on the record.
8 The time is 3:40 p.m.

9 BY MR. TONG:

10 Q All right. Dr. Baker, during the break, did
11 you speak with your counsel?

12 A No.

13 Q I want to go back to our discussion of why a
14 POSITA would or would not adjust the height of bus
15 line 403. And it sounds like one of the -- it
16 sounds like one of the issues you have with this
17 proposal is that you don't -- you're arguing that a
18 POSITA would not want to adjust the process and add
19 extra steps; is that correct?

20 A I think you meant to say 430 and you said
21 403.

22 Q I did mean 430. I'm sorry.

23 A It's not that -- to answer your question,
24 it's not that they wouldn't want to adjust the
25 thickness of the metal. It's just once the process

1 is set, you can't change it. The only thing you can
2 do is change the circuitry and the layout.

3 Q What do you mean by "once the process is
4 set"?

5 A So in fabricating a display or a chip or --
6 fabricating things with a substrate, they develop
7 the process steps which you follow, or the recipe,
8 the factory that builds the item follows to
9 fabricate something. And so they do development to
10 ensure that, for example, different layers are
11 thermally compatible. When you go to deposit one
12 layer, it doesn't melt another and things along
13 those lines.

14 And so once they've developed the process,
15 they have design rules and requirements that go
16 along with the process that someone would use to
17 fabricate something in the process.

18 So once you've done that, they hand it off
19 and then the display designer or chip designer will
20 organize the layout of the pixel, the type of video
21 decoding, and all that stuff without messing with
22 the process so you don't mess with the process
23 because then that can have an impact on your design.

24 Q And in formulating your opinions, did you --
25 did you assume that the POSITA was locked into the

1 particular set of process steps described by Weaver?

2 A I wouldn't say "locked in" because neither
3 reference teaches a specific process. They teach a
4 structure of how to lay out a pixel so that there's
5 no exact process that either teaches that you would
6 have to use.

7 I mean, there's some underlying assumptions
8 that it would have an organic LED in it and would
9 have metal and there'd be polysilicon for
10 transistors and such. But it's not -- the patents
11 are about the structure of the pixel, not about the
12 processing.

13 Q So would a POSITA, at the time of the
14 invention, having Weaver in their hand, would they
15 have been able to adjust the process as they thought
16 most beneficial?

17 MR. LIMBACH: Objection. Form.

18 THE WITNESS: I mean, this is outside the
19 scope of my declaration; but when you develop a
20 process for something like a display, you're trying
21 to optimize that fabrication to make the display.
22 But I mean, that's -- saying that you have Weaver in
23 your hand and try to optimize process isn't
24 understanding how the design process works. It's --
25 you don't adjust two things at once and hope for a

1 good outcome. You get one optimized and then you
2 move on to the other one. You adjust one thing at
3 the time so that when a POSITA would go to implement
4 the '509/Weaver inventions, they would already have
5 the process that they're going to be using in step
6 and set.

7 And then, for example, they teach using an
8 alternative or the auxiliary electrode for a
9 connection to the anode; well, they would know,
10 okay, I'm going to do that with the process I have.

11 BY MR. TONG:

12 Q Dr. Baker, you said a lot of words; but your
13 answer wasn't very clear, and I don't think it
14 directly answered my question.

15 So could you please tell the board: Would a
16 POSITA who had Weaver's technology at the time of
17 the invention, would this POSITA have or not have
18 the freedom to modify the process?

19 A I did answer your question. It's just the
20 question doesn't make a lot of sense because it has
21 an underlying -- underlying assumption that the
22 POSITA would be able to modify the process and --

23 Q Okay. Let me ask you about that underlying
24 assumption first.

25 At the time of the invention, would a POSITA

1 who had the Weaver reference have the ability to
2 modify the process?

3 MR. LIMBACH: Objection. Form.

4 THE WITNESS: I don't know. It doesn't talk
5 about modifying the process because that's not the
6 way design works. Whether it was developed and
7 maybe they could in that situation as I testified
8 earlier, the patents don't talk about the process
9 steps or the processing. They're -- that's not
10 relevant.

11 BY MR. TONG:

12 Q Okay. So it sounds like your answer is that
13 you don't know, and it's not relevant.

14 Do you have any other --

15 MR. LIMBACH: Objection. Form.

16 BY MR. TONG:

17 Q Do you have any other clarifications?

18 MR. LIMBACH: Objection to form.

19 THE WITNESS: I mean, I've repeatedly said
20 what you're asking isn't taught or discussed in the
21 patents about the POSITA changing the process. For
22 example, let me give some concrete examples.

23 I look at figure 4, Weaver, or I look at
24 figure 2 of the '509 and I say, I'm going to change
25 the process because I'm a POSITA. In figure 2 of

1 the '509, I'm going to take the height of the via
2 that is opened in the dielectric 106 and I'm going
3 to make that taller. That's not even relevant.
4 It's not discussed. It's not -- it's not --
5 especially in the claims, it's not a claimed feature
6 of the '509 patent.

7 So when I say I don't know, maybe when
8 they're doing development, they do have some input;
9 but that's not what the '509 patent is about. It's
10 not about being able to look at the process and
11 change the process. It's about spacing out
12 transistor T2 from the auxiliary electrode 120 or --
13 or changing the area of the light-emitting diode,
14 things that you can control from the top or layout
15 view.

16 BY MR. TONG:

17 Q So just to clarify, then. The POSITA
18 would -- a POSITA starting with Weaver would make
19 modifications looking at the claims of the '509
20 patents; correct?

21 MR. LIMBACH: Objection. Form.

22 THE WITNESS: POSITA is someone who designs
23 optoelectronic systems. They take components. They
24 put them together like an organic, OLED, or a thin
25 film transistor and they make it, for example, a

1 display. A POSITA is not a person that is changing
2 the process or changing the thickness of an organic
3 layer of a light-emitting diode. They're designing
4 an optoelectronic system of pixel structure.

5 When I did my analysis, I was asked to look
6 at the claims of the '509 and then go through the
7 steps, plan construction, and then compare what's
8 claimed to the prior art. I wasn't asked to take a
9 POSITA and have them look at Weaver and try to
10 modify it. I was asked to ask, well, is this '509
11 patent already known in the art. Is it valid or
12 invalid. And that's what I did.

13 BY MR. TONG:

14 Q So earlier you said -- and I'm reading off
15 the realtime here -- this is regarding -- I'm going
16 to make it taller.

17 You said:

18 "That's not even relevant. It's not
19 discussed. It's not especially in the claims. It's
20 not a claimed feature of the '509 patent."

21 But as we had looked -- we have looked at
22 the resistivity equation earlier and saw that
23 resistance is dependent on the cross-sectional area
24 of a material. So would a POSITA have been
25 motivated to decrease the resistance of this bus?

1 MR. LIMBACH: Objection. Form.

2 THE WITNESS: A POSITA wouldn't -- that's
3 not within the scope of what a POSITA is. You're
4 talking once again about changing the process
5 technology by making something, for example,
6 thicker. That's not a POSITA, especially in regard
7 to the '509 patent. That has nothing to do with a
8 POSITA.

9 POSITA is going to be somebody that makes an
10 optoelectronic system using components that are
11 already available. They're not going to be
12 designing the components themselves or changing, as
13 I've repeatedly testified, the thickness of an
14 organic layer in making an organic LED. They're
15 going to be designing optoelectronic systems and
16 pixel structures. That's what a POSITA is.

17 So you're asking me questions that are
18 outside the scope of the definition of any
19 reasonable definition of what a POSITA is.

20 BY MR. TONG:

21 Q My question was actually not directed to
22 what a POSITA is.

23 My question was, would a POSITA have been
24 motivated to decrease the resistance of this bus?

25 MR. LIMBACH: Objection. Form.

1 **THE WITNESS:** Your question is absolutely
2 directed on what a POSITA is because you're
3 asking --

4 MR. TONG: Objection. Nonresponsive. Move
5 to strike this answer and the previous answer.
6 BY MR. TONG:

7 Q All right. Let me -- let's turn back to
8 figure -- sorry, paragraph 130 of your declaration.
9 Please let me know when you're at paragraph
10 130.

11 A I'm there.

12 Q All right. So in my next series of
13 questions, I'm going to ask you to walk me through
14 the process for fabricating this.

15 Let's assume that we have the thick
16 substrate layer at the bottom, 404. And I'm asking
17 you this in view of the modifications.

18 So what would be the first step to making
19 this proposed device after we have our substrate
20 404?

21 A Realizing that we are not modifying the
22 process technology, but what we are doing is laying
23 out a pixel structure which is what the '509 patent
24 is about.

25 And the first step that you would do is to

1 **deposit polysilicon 408.**

2 Q Okay. And what would be the step after
3 that?

4 A **Deposit a gate material such as an**
5 **insulating layer around the polysilicon, and that is**
6 **highlighted in purple.**

7 Q Are you referring to both elements that are
8 highlighted in purple on the left and right side?

9 A **Yes.**

10 Q So in the previous step, you said the first
11 step was to deposit polysilicon 408.

12 Would the first step also include depositing
13 the additional electrode layer that you had
14 proposed?

15 A **It's the same material. The orange is**
16 **deposited first.**

17 Q Okay. I just wanted to clarify whether you
18 were proposing to deposit only what is labeled with
19 numeral 408 or whether you were simultane- --
20 proposing to simultaneously deposit what is marked
21 with the words "additional electrode layer."

22 A **Orange is deposited all at the same time and**
23 **patterned all at the same time.**

24 Q And then the second step would be to pattern
25 and deposit what's in purple.

1 What would be the next step after that?

2 MR. LIMBACH: Objection. Form.

3 THE WITNESS: Next relevant step is
4 depositing the red which is the metal in the
5 modified figure 4, I've labeled that 407, 405, and
6 bus line 430.

7 BY MR. TONG:

8 Q Would there be any intermediate steps
9 between depositing the purple layer and depositing
10 the red layer?

11 MR. LIMBACH: Objection. Form.

12 THE WITNESS: Yes.

13 BY MR. TONG:

14 Q Could you describe those intermediate steps?

15 A Thin films of silicon would be deposited for
16 making the source and drain of the transistor.

17 Q Why do we need the purple insulation layer
18 on the right side?

19 A It's an artifact of the fabrication process.
20 You don't need it because bus line 430 and
21 additional electrode layer are going to be shorted
22 together. But when you deposit polysilicon or the
23 gate material, whatever gate material they use,
24 there needs to be an oxide around the polysilicon to
25 create the transistor structure.

1 Q Why is that?

2 A Because it's a transistor metal oxide
3 semiconductor. So the gate material, the oxide to
4 semiconductor to create a field effect. It's how
5 you make a transistor.

6 Q Is there a transistor on the right side of
7 modified figure 4?

8 A No.

9 Q Could you please turn to paragraph 128 of
10 your declaration.

11 A I'm there.

12 Q Looking at the last sentence, is it still
13 your opinion that, quote:

14 "A POSITA would have been motivated to
15 implement the solution of Lee 053 in the Weaver
16 device to lower the resistance between anode 406 and
17 the voltage source VDD."

18 A Yes.

19 Q And why would a POSITA want to lower that
20 wiring resistance?

21 A It's discussed in the first sentence in
22 paragraph 128, and we discussed it at length earlier
23 in the deposition.

24 Q Can we turn to paragraph 122 of your report.
25 Let me know when you're there.

1 A **I'm there.**

2 Q All right. Do you see the words "dummy
3 wiring 120" in this paragraph?

4 A **Yes.**

5 Q It's showing up on my screen as either brown
6 or orange. What color does it appear to you?

7 A **Brown.**

8 Q And do you see that the same brown dummy
9 wiring 120 is also mentioned in paragraph 124 and
10 125?

11 A **Yes.**

12 Q What is dummy wiring?

13 A **May I have a copy of Lee 053?**

14 Q I will get one to you in a minute. But for
15 right now, could you answer just based on your
16 expertise in the field?

17 A **I can answer based upon my memory, which is
18 faulty, if that's what you would like.**

19 Q Yes. Let's hear the best of your knowledge
20 as you sit here right now.

21 A **I don't know if remembering what the dummy
22 wiring in Lee is, the best of my knowledge, but I
23 think the dummy wiring in Lee is local wiring in the
24 pixel itself that locally reduces the resistance.**

25 Q Have you heard the phrase "dummy wiring"

1 used in the art outside of Lee 053?

2 **A Probably. But I can't recall a specific**
3 **instance.**

4 Q Do you have an understanding of what dummy
5 wiring is in the general field, but, you know,
6 again, not necessarily related to Lee 053? I would
7 ask that you not do any searching right now.

8 MR. LIMBACH: Objection. Form.

9 **THE WITNESS: I don't understand that**
10 **comment.**

11 **Are you under the impression I have**
12 **something open that I shouldn't?**

13 BY MR. TONG:

14 Q I just -- on the video, it looked like you
15 shifted your arms toward a keyboard.

16 **A I'm looking at my declaration. You don't**
17 **want me to search within my declaration?**

18 Q That specific question does not require you
19 to search your declaration.

20 Again, this is -- do you have a general
21 understanding of what dummy wiring means in the
22 field?

23 MR. LIMBACH: Objection. Form.

24 **THE WITNESS: I'm going to search my**
25 **declaration if I think it's to help me with my**

1 answer. Unless the goal is to not have a correct
2 and honest answer, but I already answered what I
3 feel dummy wiring may mean; but I don't know the
4 context or I don't remember what it was in Lee 053.

5 What I remember is that the -- there's a
6 local wiring interconnect; and it's called "dummy"
7 because it doesn't actually go anywhere. It just
8 stays locally. That's what I remember.

9 BY MR. TONG:

10 Q And is that memory consistent with your
11 general understanding of what "dummy wiring" means
12 in this technology field?

13 A There's an underlying assumption in this --
14 that question that "dummy wiring" actually means
15 something, which you haven't established. And I
16 don't know if I've ever even heard that term before.
17 I said I think I have, and I've told you what I
18 think it means; but I haven't looked at Lee 053 to
19 see if there's some other disclosure in that -- in
20 Lee 053 that redefines what I would think dummy
21 wiring is.

22 Q All right. So I'm going to ask the question
23 again, but this time, feel free to search your
24 declaration. I did not see any type of
25 understanding of what dummy wiring was explained in

1 the declaration.

2 So with the ability to search your
3 declaration, do you have a refreshed understanding
4 of what "dummy wiring" means?

5 **A I never -- didn't have the ability to search**
6 **my declaration, so I'm getting confused. My same**
7 **answers apply.**

8 MR. TONG: Okay. I'm going to introduce,
9 as Exhibit 6, a copy of Lee 053.

10 (Patent Owner's Exhibit 6 was marked.)

11 BY MR. TONG:

12 Q It has been uploaded into the chat box.

13 Dr. Baker, can you please let me know when
14 you have a copy of Lee 053 open.

15 **A I have it open.**

16 Q After doing whatever search you need to do,
17 can you let me know if you have any different
18 understanding of what "dummy wiring" means?

19 **A Looks like what I was thinking is what it**
20 **is.**

21 Q Okay. If we turn to paragraph 124 of your
22 declaration.

23 **A I'm there.**

24 Q All right. Do you see an annotated version
25 of figure 7 here?

1 A Yes.

2 Q Did you personally color this annotated
3 version of figure 7?

4 A I don't think so, but I don't clearly
5 recall.

6 Q The part of figure 7 that is colored in red,
7 do you see that?

8 A Yes.

9 Q Is it your opinion that the part of Lee 053
10 colored in red in figure 7 is functionally
11 equivalent to the bus line 430 of the Weaver?

12 MR. LIMBACH: Objection. Form.

13 THE WITNESS: Not exactly. I mean, it's
14 functionally equivalent in that it's used in part to
15 provide power to the pixel.

16 BY MR. TONG:

17 Q But why is it not exactly equivalent?

18 A I'm not suggesting to remove 430 of Weaver,
19 if that's what you're asking.

20 Q That's not what I was asking.

21 You had stated as an answer, "Not exactly,"
22 to my question of whether the red part of Lee 053
23 was functionally equivalent to the bus line 430 of
24 Weaver.

25 So my question is, why is it not exactly

1 functionally equivalent?

2 A I mean, it's functionally equivalent in so
3 much as it's used in part to provide power to the
4 pixel; but the combination, the additional electrode
5 layer from Lee 053, the 120, would be connected to
6 the bus line 430.

7 Q Sorry. I didn't catch that last part of
8 your answer after the word "but."

9 Could you repeat it?

10 A 120, the dummy wiring is connected to the
11 430 -- would be connected to the 430 of Weaver.

12 Q And Weaver doesn't have any dummy wiring;
13 correct?

14 A Weaver doesn't have wiring that it teaches
15 is locally used, only within the pixel to route or
16 lower resistance, no.

17 Q What layer is the red layer 135 resting on
18 in Lee 053 figure 7?

19 A In figure 7? Sorry. Could you repeat the
20 question?

21 Q Yeah. In figure 7, the part that's marked
22 in red, what layer is it sitting on?

23 A Insulator.

24 Q And that's insulator 115B?

25 A Yes.

1 Q And if that were described as a passivation
2 layer, would that be a type of -- would a
3 passivation layer be an insulator?

4 A Yes.

5 Q I'd like to turn back to the proposed
6 modification that is shown in paragraph 130. Please
7 let me know when you're there.

8 A I'm there.

9 Q Can you think of any etching or dissolving
10 steps that would be problematic if this modification
11 were made?

12 MR. LIMBACH: Objection. Form.

13 THE WITNESS: It's the same process that
14 Weaver teaches. It's just using Lee 053 to add a
15 material, the additional electrode layer that is
16 localized. So, I mean, there's no changes to the
17 process so there wouldn't be any process issues. So
18 modification is not to the process. The
19 modification is to the layout.

20 BY MR. TONG:

21 Q If we -- I would like you to keep this
22 proposed modification in mind as I ask you this next
23 set of questions.

24 Could you pull up Weaver, which is
25 Exhibit 5.

1 A **Okay.**

2 Q And can we turn together to figure 5.

3 A **I'm there.**

4 Q How would figure 5 of Weaver need to be
5 modified to be consistent with your proposal, if at
6 all?

7 MR. LIMBACH: Objection. Form.

8 **THE WITNESS:** So figure 5 is showing some of
9 the process steps of the cross-section view. And
10 for example, figure 4 of the processing. And I
11 don't think it would need to be modified other
12 than there would need to be a space below the
13 connection 430 which there's a little bit more
14 detail in figure 6. But I think through a figure 5
15 point of view, you wouldn't need any changes there
16 for Weaver in view of Lee 053.

17 BY MR. TONG:

18 Q Now, if you would turn to Weaver 6 of Weaver
19 for me.

20 A **Yup. I'm there.**

21 Q How would this figure be modified, if at
22 all, in order to implement the proposed
23 modifications that we were looking at?

24 A **You would draw a box on the gate material**
25 **layer underneath -- or you'd draw a box over 430,**

1 basically look the same. You just add the label of
2 the gate material coincident with the box of 430.

3 Q When you say "gate material layer," are you
4 referring to a metal or a gate insulator?

5 A Whatever is used to make the gate 408 in
6 Weaver.

7 Q And there would be insulation between that
8 gate metal and the bus line 430; correct?

9 A Yes. It would be as seen in the modified
10 figure 4 and paragraph 130 of my declaration.

11 MR. TONG: All right. Can we take a short,
12 five-minute break.

13 THE WITNESS: Yes.

14 MR. TONG: All right. Thank you.

15 THE VIDEOGRAPHER: Okay. We're off the
16 record. The time is 4:25 p.m.

17 (Recess.)

18 THE VIDEOGRAPHER: We're back on the record.
19 The time is 4:32 p.m.

20 BY MR. TONG:

21 Q Dr. Baker, during the break, did you speak
22 with anyone?

23 A Yes. My wife.

24 Q No attorneys?

25 A No. Nobody.

1 Q All right. I'm going to share my screen for
2 a moment.

3 Can you see me sharing a PowerPoint slide?

4 A Yes.

5 Q I wish I were with you in person, Dr. Baker,
6 so I could ask you to do this; but seeing as how
7 we're remote, I'll ask you to bear with me.

8 What I have here is figure 6 from Weaver,
9 and I've made my best attempt to do what you had
10 constructed in your previous answer, which was to
11 draw this purple box around what was the red bus
12 line and this would correspond to the insulator that
13 you had proposed.

14 Do you have any comments about the accuracy
15 of the outline of this insulator?

16 A Well, when you're doing layout, you don't
17 draw insulating materials; you only draw the metal
18 and films and things that form the circuit elements,
19 not the insulating layers that isolate the circuit
20 elements.

21 So what you would want to do is you would
22 want to change the purple to orange and then it
23 would correspond to the gate material in modified
24 figure 4.

25 Q Okay. In modified figure 4, you have the

1 additional electrode layer -- it looks to be
2 slightly smaller and underneath the bus line 430.

3 Is that what you're proposing?

4 **A You could make it the same size, slightly**
5 **smaller, bigger; it doesn't matter.**

6 Q I'm going to duplicate this slide. I will
7 select this purple box -- sorry. I'm going to
8 change this purple box to orange; and, in fact, I'm
9 going to redo this.

10 Is this roughly what you envision with the
11 orange being underneath the layer 428?

12 **A Yeah, underneath the bus line 430 and, yeah,**
13 **connected to 428 -- well, in my mind, what you've**
14 **drawn corresponds to the cross-sectional view in**
15 **figure 4 that's been modified. Weaver modified in**
16 **view of Lee 053.**

17 MR. LIMBACH: Counsel, just for the record,
18 and this may not be possible; but when you move
19 boxes around and so forth, to the extent you can
20 describe it into the record, it might be easier for
21 board to follow because you're talking about does
22 this and does that; and they're not going to able to
23 see this once you move that box again.

24 MR. TONG: Yeah, I will -- once we get this
25 finalized, I will get this admitted as an exhibit,

1 and we'll reconfirm everything.

2 MR. LIMBACH: Just be careful if you refer
3 to something in this and then you end up changing it
4 because you want to make a different point, then
5 that's lost.

6 MR. TONG: Understood. Thank you. But I do
7 plan to get it admitted once we have a final version
8 to talk about.

9 MR. LIMBACH: Do the best you can. I
10 appreciate it.

11 BY MR. TONG:

12 Q Yeah. Okay.

13 So Dr. Baker, I'm again going back to my
14 slide that had the purple box. If someone did want
15 to outline the boundaries of where that additional
16 insulation layer would be deposited, would this be
17 an accurate view of the boundaries that you are
18 envisioning?

19 THE WITNESS: I think we lost the court
20 reporter.

21 THE COURT REPORTER: No, I'm here.

22 THE WITNESS: Oh, okay. I don't see you in
23 the windows. All right.

24 The purple -- sorry, would you repeat the
25 question?

1 BY MR. TONG:

2 Q Yeah. So if someone wanted to outline the
3 boundaries of that additional insulation layer that
4 you had proposed in your modification in purple,
5 does this figure show -- does this accurately show
6 the boundaries of where that additional insulation
7 layer would be?

8 A One more time, when you do layout, you don't
9 draw boxes for insulation layers; you only draw
10 boxes for the layers that make components like the
11 wires, the transistors and that touch. The initial
12 insulator layer in figure 4 is simply to acknowledge
13 that when you pull metal over the gate electrode,
14 there is an insulating layer there, but you don't
15 draw that.

16 Q Okay. So my question had kind of built in
17 the assumption that someone did want to draw the
18 outline of that additional insulation layer. So
19 with that assumption, is this purple boundary
20 accurate?

21 A I think it looks good.

22 Q I will note that compared to the figure you
23 see in the top half, I had to move the bus line just
24 slightly to the right in order to make room for
25 this.

1 Would -- as far as what you had envisioned,
2 did you envision squeezing in the insulation layer
3 to what had already existed, or do we need to make a
4 slight modification to make some room?

5 MR. LIMBACH: Objection. Form.

6 **THE WITNESS:** It doesn't change the layout
7 of the pixel. The insulation layer is there.
8 You're drawing the layer as if it has some impact on
9 the final fabricated design. There's a couple of --
10 a couple of things there. The insulation layer is a
11 gate oxide so it's super thin so it's not going
12 to -- I mean, it's -- when you do the process steps,
13 it's not going to impact of the layout size so it's
14 not really correct to draw the purple box and say
15 the layout size is increasing because that wouldn't
16 happen.

17 BY MR. TONG:

18 Q Okay. I'm going to remove this figure,
19 then, that we're looking at, and we will get
20 something that is more accurate before it is
21 admitted as an exhibit.

22 A Okay.

23 Q So if I were to just move the purple box
24 here, this is the original unmodified version of
25 figure 6.

1 Would this be a more accurate position for
2 the boundaries of the insulation layer?

3 A Oh, okay. I think I understand the issue.

4 There is no boundaries of an insulation
5 layer. They merge together, though. It's like
6 the -- for example, the glass silicon dioxide is
7 considered one layer. The only reason you draw it
8 separately is when it's contained underneath or
9 above the gate material because it's shielded by
10 the -- it forms the gate oxide; but for the
11 cross-sectional views, it doesn't -- I mean, it's --
12 you're talking a thousand-to-one difference in the
13 thickness of the gate oxide and the insulators
14 between the layer.

15 So, for example, the thickness like 409, I
16 think that was an insulator. I think that's a
17 thousand times thicker than the thickness of the
18 gate oxide. It just doesn't come into play in --
19 in, like the layout, if I'm making any sense.

20 Q You make sense; but again, that wasn't my
21 question. My question was, where are the
22 boundaries, not whether or not it was thickness. It
23 was not about whether it would come into play; and
24 it was not, you know, about any of these other
25 points that you reached.

1 So, again, the question is, does this purple
2 box represent the boundaries of your proposed
3 additional insulation layer marked in purple if
4 someone did want to delineate those boundaries?

5 **A There are no boundaries. You can't tell.**
6 **When you heat the material up, it melts and forms**
7 **together; and the only place where you notice the**
8 **thickness of the gate oxide is adjacent to the gate.**

9 Q Okay. So as we have right here, I think
10 this is the version that I'm going to use and
11 introduce as an exhibit.

12 Are we in agreement that this is not an
13 accurate boundary because the -- because of what you
14 said in your previous answer?

15 **A I think the point is that when you put the**
16 **gate material down on top of it, there'll be a thin**
17 **oxide. That's the point. There's several other**
18 **practical issues here; but, I mean, if you want to**
19 **just show there would be additional oxide there, I'm**
20 **fine with what you have drawn there.**

21 Q What are the other practical issues?

22 **A You can't put metal directly on -- over a**
23 **gate material. So if you look at -- I'm sorry. You**
24 **can't connect directly over a gate material. So if**
25 **you look at the transistor, for example, made on the**

1 left with the 414, you notice there's some silicone
2 above the gate oxide and the gate material. In
3 other words, you're not putting metal directly on
4 the additional electrode like you do on the right.

5 And the other thing is you can't make a
6 connection directly over the gate material like is
7 shown on the right because what ends up happening is
8 that connection, the 428, pokes through these really
9 thin layers and shorts out the metal to the
10 additional electrode.

11 This is all in the weeds. It's not relevant
12 to the -- I mean, other than the fact that you're
13 adding an additional electrode to lower the
14 resistance of the bus line. It's just trying to
15 clear on what happens when you put down the
16 additional electrode.

17 Q So I'm going to save this PowerPoint as a
18 PDF and introduce it as an exhibit.

19 MR. LIMBACH: Is that Exhibit 7?

20 MR. TONG: It will be Exhibit 7. Let me
21 save it real fast.

22 (Patent Owner's Exhibit 7 was marked.)

23 BY MR. TONG:

24 Q I am now introducing what will be marked as
25 Exhibit 7, Weaver demonstrative.

1 A You want me to get that?

2 Q Yes, please do. Open it up.

3 A All right. I have it.

4 Q Can you confirm that the first page of
5 Exhibit 7 is a correct reproduction of the purple
6 boundary that we had settled on during our previous
7 discussion?

8 A Yes. That's the correct representation of
9 the annotation of the purple.

10 Q And can you turn to the second page. And
11 confirm that this is a correct reproduction of
12 the -- I guess -- the original additional electrode
13 layer that corresponds to your proposed
14 modification?

15 A Yes. With what I testified earlier,
16 especially about the thickness of the gate oxide. I
17 mean, it's common that when it's that thin, it
18 doesn't -- other than for a gate oxide for the gate
19 material, basically is negligible in every other
20 application.

21 Q Can you turn with me back to Exhibit 5,
22 Weaver, and look at figure 7 with me.

23 A Okay.

24 Q If your proposed modifications were to be
25 made, would figure 7 of Weaver look any different?

1 **A I don't think so.**

2 Q And if a POSITA were to make your proposed
3 modifications to Weaver, in your opinion, would that
4 affect yield at all?

5 **A I guess it would make it better because**
6 **you'd have a better connection, but I don't know.**

7 Q Could we turn to paragraph 134 of your
8 report.

9 **A I'm there.**

10 Q The last sentence in this paragraph -- the
11 last two sentences, can you follow along with me as
12 I read them:

13 "The first gate electrode, 121A, and the
14 dummy wiring (120) are both formed on layer 115A, ID
15 figure 7. Therefore, Lee 053 discloses or at least
16 renders obvious that the dummy wiring 120 and the
17 first gate electrode 121A of the TFT active device
18 belong to the same layer."

19 Did I get that right?

20 **A I think you read it correctly, yes.**

21 Q When you use the word "layer" in these
22 sentences, what is your understanding of what a
23 layer means in this context?

24 **A A material that's deposited and patterned on**
25 **the substrate at the same time and then if you have**

1 other layers, there might be an insulator above one
2 layer and then you pattern the next layer, maybe
3 like the same floor of a house.

4 Q And generally -- strike that.

5 If two different features are part of the
6 same layer, that would mean that they would be made
7 of the same material; correct?

8 A Yes.

9 Q So a conductor and an insulator would be
10 considered different layers; right?

11 A Yes. If you -- again, you don't pattern
12 insulators. Even when you put that thin oxide down
13 over the gates of the transistor, you don't pattern
14 it. When you put vias down on metal connections,
15 they just poke right through the really thin
16 insulating material. That's why you've got to cover
17 them with a thin film transistor --

18 Q Sorry. Let me cut you off there in the
19 interest of time. My question was not directed to
20 whether or not insulators are patterned which you
21 seem to be talking about.

22 A It was related to that because you're asking
23 about layers. And again, a layer in semiconductors
24 is something you pattern and insulators aren't
25 patterned.

1 Q So if there is a protective layer on top of
2 a metal layer, would you consider those to be two
3 different layers?

4 A I don't know what you mean by "protective
5 layer." I'd need to know the particular context of
6 what you're talking about, but --

7 Q Let me give you a context so --

8 A -- if it's the same material, then generally
9 I would call them different layers. I would call an
10 insulator and a metal different layers; but again,
11 you don't pattern insulators, at least not that I
12 know of.

13 Q Again, my questions did not use the word
14 "pattern." So by "protective layer," I mean a layer
15 on top of a metal that is there to protect the
16 metal.

17 Okay. So would you consider a protective
18 layer and the metal layer underneath to be two
19 different layers?

20 A They're two different materials. Again,
21 when you say "layer" -- I know you don't want me to
22 use "pattern." But when you talk about layers in
23 semiconductors or processing, that's something you
24 pattern. You could use and say I put a layer of
25 glass over it and I would understand that. But if

1 they're different materials, they're different
2 layers, if you would like.

3 Q Again, if -- a layer of glass was just put
4 over as a planarization layer to planarize the whole
5 thing without any particular pattern on it, it would
6 still be understood that that glass layer would be a
7 different layer from, say, like a metal underneath
8 the glass; correct?

9 A Yes.

10 Q And would a gate insulator usually be
11 considered to be a different layer than the
12 semiconductor layer underneath?

13 A If they're different materials, I would say
14 without requiring patterning, they're different
15 layers.

16 Q And -- sorry, I guess that question was a
17 little vague.

18 Would a gate insulator be considered a
19 different layer than the semiconductor of the gate?

20 A In the context of different materials, yes.

21 Q And would the metal used for a bus layer
22 like a 430 that we had looked at, would that
23 generally be considered a different layer than an
24 insulating layer?

25 A Again, if the materials are different,

1 they're, in general, different layers.

2 Q I'd like to turn back to paragraph 134.

3 You wrote that:

4 "The first gate electrode 121A and the dummy
5 wiring 120 are both formed on layer 115A."

6 Could you take a look at that and look at
7 figure 7 right above.

8 A Give me just one sec. I think that might be
9 a typo. Well, it's not really a typo. It's --
10 maybe it would have been clearer to say "on top of
11 layer 115A". But yes, it's correct the way it is on
12 layer 115A.

13 Q And by the words "on layer 115A," you meant
14 that these were directly stacked on top of 115A;
15 correct?

16 A They're formed on top of layer 115A, yes.

17 Q Are you suggesting that there is any other
18 layer between layer 115A and either the gate
19 electrode 121 or the wiring 120?

20 A No.

21 Q I just want to clarify whether by "formed on
22 layer 115A," you mean like merely somewhere above,
23 directly or indirectly or whether, by the phrase
24 "formed on layer 115A," you mean like directly on
25 top of?

1 A On this context, figure 7, that embodiment
2 shows that 121A and 120 are formed on top, touching
3 115A.

4 Q A similar question for paragraph 138.
5 Can you turn to paragraph 138 with me.

6 A I'm there.

7 Q Second-from-the-last sentence, it says:
8 "Specifically both the additional electrode
9 layer and the gate 408 are formed on substrate 404."
10 Do you see that?

11 A I see those words, yes.

12 Q Again, when you use the phrase, "Formed on
13 substrate 404," did you intend for that to mean
14 indirectly above?

15 A Weaver, in that context, the gate material
16 is touching the -- the substrate, 404 on the bottom
17 or towards the substrate direction.

18 Q Okay. Could you point me to any example in
19 this declaration where you use the phrase, "formed
20 on" to mean indirectly above, not necessarily
21 touching?

22 A This sounds like a claim construction kind
23 of question, where you would need to look at the
24 specification and see what it taught to see if it
25 teaches, that something that's formed on is above

1 and not touching. But, I mean, I could do a search
2 and look to see if the "formed on" is used to mean
3 above or below relative to substrate at the bottom.

4 Q My question is not whether or not it's above
5 or below relative to a substrate; but I would like
6 you to do a search and tell me if you use the phrase
7 "formed on" to mean formed indirectly above or
8 whether all the instances that you use meant formed
9 directly on and touching?

10 A For example, on page 65 which is PDF
11 page 72, second sentence, or second line, auxiliary
12 electrode portion SE1, are both formed on one of the
13 insulation layers.

14 Q Which insulation layer are you referring to
15 there?

16 A If you'd look at SE1, which is in the right
17 side of the annotated image of figure 5 of Song, if
18 I remember correctly, there, it just says that SE1
19 is formed on one of the insulation layers which
20 would be one of those three layers.

21 Q But SE1 is formed directly on one of those
22 three layers; correct?

23 A It is. However, it's formed on the other
24 two as well, and that's not directly on.

25 Q Okay. To be clear, though: This sentence

1 does not say that SE1 is formed on the other two
2 insulation layers; right?

3 A It just says one of the insulation layers,
4 yeah.

5 Q And it doesn't say all three -- it's formed
6 on all three insulation layers. That's not what you
7 wrote, isn't it?

8 A Correct.

9 Q Are there any other examples that you can
10 think of where you think "formed on" means
11 indirectly above?

12 A Do you mind repeating that last question?

13 Q Yeah. Can you think of any other examples
14 in your declaration where you use the phrase "formed
15 on" to mean "indirectly above"?

16 A Okay. Well, we changed subjects suddenly
17 because we were talking about "formed on" being
18 touching, a material that something is formed on;
19 and I was thinking, well, if there's intervening
20 layers that you were looking for examples of where
21 the -- what was being formed wasn't touching.

22 And now you've added the -- the term -- if I
23 remember correctly, directly above.

24 And if I look at, for example, the '509
25 patent --

1 Q I'm asking about your declaration.

2 A Yeah, it's in my declaration.

3 Q Okay.

4 A Yeah. The claim element that starts out:

5 "A light-emitting device deposited above the
6 first auxiliary electrode."

7 Let me pull a specific example in my
8 declaration so we can stick with that. Why don't we
9 look at, for example, paragraph 49 of my
10 declaration, and look at the last sentence:

11 "And we neglect the potential problems with
12 just simply flipping the image left or right or
13 upside down as to what above means, but we assume
14 that the substrate is on the bottom and the top of
15 the image would be towards the 138 and 108A, 130."

16 If you look at the light-emitting layer,
17 134, of the light-emitting device, 130, which has
18 the electrode layers 136 and the 132, that second
19 electrode layer is kind of to the side a little bit
20 of the --

21 (Simultaneous colloquy.)

22 THE WITNESS: Of the light-emitting diode.
23 So that's not directly above.

24 BY MR. TONG:

25 Q Where -- that's not directly answering my

1 question.

2 My question was about your specification
3 uses of the phrase "formed on." Those specific
4 words.

5 A I know. Then you changed the question and
6 added directly above. And so --

7 (Simultaneous colloquy.)

8 BY MR. TONG:

9 Q No. I'm going to read --

10 A I asked you twice, actually, and you
11 repeated it --

12 Q I'm going to read from the transcript, the
13 realtime.

14 The question was:

15 "Can you think of any other examples in your
16 declaration where you use the phrase, 'formed on' to
17 mean indirectly above?"

18 That was the question at 15:05:45 in the
19 realtime transcript.

20 A And as I talked about, we went from talking
21 about "formed on" and being -- touching the layer
22 that the device was on to "indirectly" -- if you
23 prefer the exact words you used -- above.

24 And I was given you an example in paragraph
25 49 of a light-emitting device, 130, not being

1 entirely over or directly over the --

2 (Simultaneous colloquy.)

3 MR. TONG: Can you -- before we go there,
4 Dr. Baker --

5 THE WITNESS: Stop interrupting me. I'm
6 trying to answer your questions, and you're
7 constantly cutting me off.

8 MR. TONG: No. I'm objecting. I'm
9 objecting because --

10 THE WITNESS: You can do that after I
11 finish.

12 BY MR. TONG:

13 Q Okay. Where are the words "formed on" in
14 paragraph 49?

15 A Who said they were there in paragraph 49?

16 Q Okay. Then we don't need to discuss
17 paragraph 49 because my question is about the words
18 "formed on."

19 MR. LIMBACH: Counsel, I'm going to object
20 to this line of questioning. You have a question
21 that has the word "indirectly above" in your
22 question. And that's the language he's talking
23 about.

24 If you want to rephrase the question to --
25 to focus more on "formed on," there's better ways to

1 do it.

2 BY MR. TONG:

3 Q Dr. Baker, my question is specifically about
4 your explicit use of the word "formed on." Those
5 two words.

6 Can you point me to a paragraph in your
7 declaration where you explicitly use the phrase
8 "formed on" in a context where it is not used to
9 describe something that is directly touching
10 whatever it is formed on?

11 A Let's go to paragraph 187, which is on PDF
12 page 88 or report page 81.

13 Q Are you referring to the phrase "The
14 electrode pattern 45 is formed on the first
15 electrode"?

16 A Referring to:

17 "The metal layers formed on the dielectric
18 substrate 101 to form the second electrode 70."

19 So the second subsequent metal layer is
20 formed on the dielectric substrate 101 to form the
21 second electrode 70; and if I look at 70, I see it's
22 quite a ways above the substrate 101. So in that
23 particular context, it's not touching.

24 Q Thank you. This was the example I was
25 looking for.

1 Do you think that this is -- this generally
2 uses the phrase "formed on" in the plain and
3 ordinary meaning?

4 A I don't think -- when you say that, it's --
5 there's, like, an assumption that a patent applicant
6 can't be their own lexicographer. But putting that
7 aside, I think "formed on" could be directly or
8 indirectly above something. I'd need a specific
9 example and some context because here is an example
10 of "formed on" means that it's supported by the
11 substrate, but it's not directly touching.

12 Q What type of context would guide your
13 analysis?

14 MR. LIMBACH: Objection. Form.

15 THE WITNESS: If you point me to the term as
16 it's used in a claim, that would guide my analysis.

17 BY MR. TONG:

18 Q If a claim recited that one layer was formed
19 on another?

20 MR. LIMBACH: Objection. Form.

21 THE WITNESS: To interpret claims, you have
22 to look at the specification. I'm asking in what
23 we're talking about, if there's an example in a
24 claim, I'll try to briefly look at the specification
25 and see if I can construe what the exact meaning of

1 that term would be in the terms of that claim.

2 BY MR. TONG:

3 Q I am not providing this in any particular
4 patent. I'm asking you to -- without a particular
5 patent and relying on your general expertise and
6 knowledge of how this phrase is used in the relevant
7 field, if someone said that one layer is formed on
8 another layer, would that suggest to you that the
9 two layers are directly touching?

10 MR. LIMBACH: Objection. Form.

11 THE WITNESS: It could. They could be
12 directly touching; but I think as we just saw, that
13 doesn't require that the -- that something being
14 formed on something else is directly touching. I
15 mean, I could give all kinds of construction
16 examples, like flooring, for example.

17 BY MR. TONG:

18 Q Considering how you use the phrase "formed
19 on" in your declaration, what do you think would be
20 the most common case? Would it require directly
21 touching, or would it not require directly touching?

22 MR. LIMBACH: Objection. Form.

23 THE WITNESS: I don't think it would require
24 either one; but to answer your question, I've
25 used -- most of my examples were directly touching.

1 BY MR. TONG:

2 Q I'd like to turn to paragraph 128 of your
3 declaration. And if we could turn to the last
4 sentence, let me know when you're there.

5 A I'm there.

6 Q Okay. Could you please follow along with
7 me:

8 "A POSITA would have been motivated to
9 implement the solution of Lee 053 and the Weaver
10 device to lower the resistance between anode 406 and
11 the voltage source VDD and/or allow for reduced --
12 sorry, reduced wiring widths that enables scaling
13 down the size of the circuit."

14 Do you see that?

15 A Yes.

16 Q How would the proposed modification allow
17 for reduced wiring widths?

18 A Stack something in a direction perpendicular
19 to the width, you don't need as wide a width of the
20 wire or the electrode to have the same resistance.

21 Q But if you stacked it and then you shrunk
22 the width, would you have -- strike that.

23 If you stack conductors in parallel, the
24 resistance would be decreased -- correct? --
25 compared to just a single conductor?

1 A If you don't reduce the widths, yes.

2 Q And if you do reduce the widths after
3 stacking the conductors in parallel, then the degree
4 of resistance reduction would depend on both the
5 width reduction as well as how many you're stacking
6 in parallel.

7 Is that fair?

8 A Yes.

9 MR. TONG: I'm going to move on to the Song
10 reference; but before we do, do you need a break?

11 THE WITNESS: Yes.

12 MR. TONG: All right. Five minutes good, or
13 do you want ten?

14 THE WITNESS: How about let's meet back at
15 3:30 or 5:30 your time.

16 MR. TONG: Okay.

17 THE VIDEOGRAPHER: Okay. We're off the
18 record. The time is 5:22 p.m.

19 (Recess.)

20 THE VIDEOGRAPHER: We're back on the record.
21 The time is 5:31 p.m.

22 BY MR. TONG:

23 Q Dr. Baker, during the break, did you talk to
24 anyone besides your wife?

25 A No.

1 Q Okay. Could you turn to paragraph 150 in
2 the declaration for me which is under Ground 3, in
3 view of Weaver and Song.

4 A I'm there.

5 Q Okay. And you see in paragraph 150,
6 spilling into the next page, you have an annotated
7 version of Song figure 5?

8 A Yes.

9 Q And this figure 5 appears to be annotated
10 with different shades of green.

11 Did you personally color this figure?

12 A I don't think so, but I don't remember
13 clearly.

14 Q And do we share the understanding that in
15 figure 5, toward the bottom right, that "AE" stands
16 for auxiliary electrode?

17 A Yes.

18 Q And this auxiliary electrode has sub
19 portions including SE1, SE2, and SE3; correct?

20 A Yes.

21 Q Would you consider SE1, SE2 and SE3 to be
22 different layers?

23 A They may be the same material, but they're
24 different places in the process, so yes.

25 Q If we could turn to paragraph 148.

1 A **Okay.**

2 Q This, again, recites the claim language with
3 what appears to be parentheses that you intend to
4 illustrate which features map to particular claim
5 elements; is that right?

6 A **Yes.**

7 Q And for the claim element, the first
8 auxiliary electrode comprises: A bottom electrode
9 layer. My question is about this bottom electrode
10 layer.

11 Is it your position that a modified version
12 of Weaver's bus line teaches the bottom electrode
13 layer as claimed?

14 MR. LIMBACH: Objection. Form.

15 **THE WITNESS: In Ground 3, bottom electrode**
16 **layer is Weaver's bus line 430, modified to comprise**
17 **Song's bottom electrode layer of first auxiliary**
18 **portion SE1.**

19 BY MR. TONG:

20 Q So could you clarify: What exactly is the
21 bottom electrode layer of first auxiliary electrode
22 portion SE1?

23 A **It's metal.**

24 Q And if we can turn back to figure 5 in
25 paragraph 150.

1 A **Okay.**

2 Q Do you see SE1 is kind of this structure
3 that -- it's generally from left to right, but
4 there's a portion in the middle that kind of bumps
5 up a little bit.

6 A **SE1 is not flat, yes.**

7 Q So what part of that are you referring to in
8 paragraph 148 when you refer to "the bottom
9 electrode layer of first auxiliary electrode portion
10 SE1"?

11 A **That metal layer.**

12 Q The entire SE1 structure, or are you
13 referring to just, like, the bottom portion of that
14 SE1 structure?

15 A **I'm referring to the layer of metal that's
16 used to make the SE1.**

17 Q And the auxiliary electrode that is taught
18 here in Song in figure 5, that's quite different in
19 shape to what we saw earlier in Lee 053, figure 7;
20 correct?

21 MR. LIMBACH: Objection. Form.

22 THE WITNESS: The shape has to do with the
23 layout or the top view and what you put under it or
24 above it. If you didn't have a structure below or
25 above SE1, it would just be flat.

1 BY MR. TONG:

2 Q Could you turn to paragraph 151 for me.

3 A I'm there.

4 Q Do you see a color annotated version of
5 figure 5?

6 A Yes.

7 Q What color does the SE1 structure appear as
8 on your screen?

9 A Red.

10 Q Did you personally color this figure?

11 A I don't think so, but I don't recall.

12 Q And to be clear: Do you see, I guess, what
13 looks to be an electrode layer right below SE1 that
14 is colored in what appears to me as orange?

15 A Yes.

16 Q So when you're talking about the bottom
17 electrode layer of the first auxiliary electrode
18 portion, SE1, you're referring to the part that is
19 colored in red that we had just looked at; right?

20 A The metal is colored red, yes.

21 Q And is it -- is it your argument that a
22 POSITA who has seen both Weaver and Song would
23 ultimately modify Weaver to produce the system that
24 you show in paragraph 158?

25 A Did you mean to say 157?

1 Q 157. Sorry. Right above 158.

2 A Yeah, it's adding the additional layer to
3 the bus line 430 to provide an additional electrode.

4 Q And is this the same modified figure 4 that
5 we had seen earlier from your analysis of the Weaver
6 and Lee 053 combination?

7 A Yes.

8 Q Are there any differences that a POSITA
9 would implement if they had Lee instead of Song or
10 Song instead of Lee?

11 MR. LIMBACH: Objection. Form.

12 THE WITNESS: I don't think so. I think the
13 whole point is to add the additional electrode as
14 taught in Lee 053 or Song, to make a connection to
15 the bus line in 430 so that the resistance
16 connecting to the pixel is dropped.

17 BY MR. TONG:

18 Q If a POSITA had the Song and Weaver
19 references, why would a POSITA not try and copy the
20 electrode shape of SE1 into the final combination?

21 A That electrode shape is only that shape
22 because it's connecting to the gate material that's
23 highlighted in orange in paragraph 151. If, again,
24 you don't have that gate connection, then the SE1
25 would be flat, like I drew in the modified figure 4

1 of Weaver. So you only get a topography if you add
2 additional things like a connection to a transistor
3 gate to the circuit so that it would be like
4 figure 5, where the metal SE1 has to go down and
5 make a connection to the gate material.

6 Q We didn't finish our previous line of
7 questioning about how to actually make this modified
8 version of Weaver figure 4.

9 Let's assume that our POSITA has finished
10 making the substrate; they've finished making the
11 408 layer; and the insulation layer on top of that;
12 and the layer of metal that is the bus line 430.
13 Okay?

14 So we're now at a step where we do not yet
15 have layer 409 and we do not yet have the vias or
16 anything above that. How does the POSITA proceed in
17 fabricating the next part?

18 A Well, to make the vias, you've got to have
19 the 409 first, and then you punch holes in the 409.
20 So assuming we're talking about the 409's been
21 deposited, it's an insulator; then after you have
22 that and the vias, you would put down your organic
23 material at stack that would form the
24 organic-light-emitting diode; and then you would put
25 another insulator on top of the organic material,

1 adjacent to the organic material, and then you would
2 probably do an etch so that you expose the organic
3 material. And then you would deposit the
4 cathode/electrode which goes over to the transistor,
5 414, to make a connection with 420 and the cathode
6 of the organic LED.

7 Q I need to ask you some more details about
8 some of these intermediate steps.

9 So going back to the step where we have just
10 deposited the red layer of metal, is there any step
11 needed to open up the -- I guess the hole that is
12 between 407 and 405?

13 A No. Those -- the 407 and 405 are metal that
14 are patterned. So when you drop down or you put the
15 insulating layer 409 in, it fills up that hole.
16 It's glass. Depending on the type of oxidation you
17 were doing, it would fill up the opening.

18 Q And what is your understanding of what
19 numeral 416 is pointing to? I can tell you that
20 paragraph 24 of Weaver refers to silicon layer 416.

21 A Oh, that's the source and drain of the
22 transistor.

23 Q Visually in figure 4, is that the layer that
24 is immediately above the purple? Or is it the white
25 feature that has, like, a left portion and a right

1 portion very close to but not touching the purple
2 insulator 412?

3 A It's a thin film, silicon film that changes.
4 There's -- in the weeds, but the first layer --
5 they're both silicon films. The lower layer that
6 extends all the way across is a lightly doped
7 semiconductor so that when you apply a potential to
8 the gate, you can enhance it and get conduction
9 between the source and the drain. On top of the
10 lightly doped semiconductor is a thinner layer --
11 I'm sorry, is another layer which is a heavily doped
12 semiconductor that allows the metal 407 and 405 to
13 make an ohmic contact.

14 But for intents and purposes, 416 is just a
15 silicon -- is just a stack of silicon films used to
16 make the transistor.

17 Q And those are deposited in the shape that we
18 see. There's no etching or drilling needed to
19 expose the gap in the middle; correct?

20 MR. LIMBACH: Objection. Form.

21 THE WITNESS: No, those layers are
22 patterned. They're patterned to -- the lower layer
23 is patterned so that it doesn't extend out, and the
24 higher layer is patterned to provide isolation
25 between the 407 and the 405 so they aren't shorted

1 together.

2 BY MR. TONG:

3 Q So after we have our red layers 407 and 430
4 deposited, the next step was to deposit 409; is that
5 correct?

6 A Yeah. And again, I'm going to just
7 reiterate what I said earlier. I draw that
8 additional insulating layer in purple, but it's
9 really thin; and you can't put metal on top of the
10 bus line 430 on top of the gate material without --
11 through a thin oxide without them shorting together.

12 And so I draw -- they're spaced apart, but
13 in reality, and this is true of MOSFETs too, when
14 and you put the thin oxide over the MOSFET and you
15 go to make the source and drain connections, even
16 though there's a thin oxide over the silicon away
17 from the gates, those contacts short out and it goes
18 directly through the semiconductor. That's why you
19 see the -- the via -- just extending all the way
20 down.

21 Q Why would it be -- strike that.

22 Would it be unacceptable for the bus line
23 430 to have a direct short connection with the
24 additional electrode layer that you labeled and
25 marked in yellow?

1 A No, they are shorted. They're shorted
2 without even the 428 there. That's what I was
3 saying.

4 Q Okay.

5 A The thin oxide is so thin that when you put
6 the material down, it just pokes through. It's
7 sharp, and it pokes through and makes a -- shorts
8 the bus line to the additional electrode layer.

9 Q Understood. Thank you for clarifying.
10 Once we have layer 409 deposited, what was
11 the next step?

12 A You pattern the holes to make the vias, the
13 420 and the 428.

14 Q And would that be just one processing step?

15 A It's not -- none of this is really one step;
16 but, I mean, the overall structure would be one
17 module, they call it.

18 Q Sorry. That was a bad question.

19 Would via 420 and via 428 be formed as part
20 of the same -- a single via-making step?

21 A Yes.

22 Q Okay. And earlier, we had one of your
23 assumptions was that the POSITA would not want to
24 either modify the order of steps or add processing
25 steps; is that correct?

1 A More exactly, they can't. They're taking
2 components and building systems. The components
3 they're using, like the transistors and the organic
4 light-emitting device, are already designed and
5 available for them to use.

6 Q All right. I'd like to turn your attention
7 to Lee 149. Paragraph 180.

8 A Okay.

9 Q So here it begins:

10 "It would have been obvious to a POSITA to
11 combine the teachings of Weaver and Lee 149, to add
12 a second auxiliary electrode to the side of the OLED
13 400 of Weaver."

14 Do you see that?

15 A Yes.

16 Q And if we scroll up above to paragraph 177.

17 A Okay.

18 Q You have figure 1 of Lee 149 shown here and
19 annotated with color.

20 Do you see that?

21 A Yes.

22 Q And did you personally color this drawing?

23 A I don't think so, but I don't remember.

24 Q Can you identify a first auxiliary electrode
25 and a second auxiliary electrode in figure 1 shown

1 here?

2 MR. LIMBACH: Objection. Form.

3 THE WITNESS: May I get a copy of Lee 149?

4 BY MR. TONG:

5 Q I'd like you to answer first without
6 reference to Lee 149, and then I'll give you a
7 chance to look at Lee 149.

8 A My memory, I think it was the electrodes,
9 the 41, it was composed of different layers to
10 provide a lower resistance. Give me a second.
11 That's what I remember from memory. Let me look at
12 my declaration.

13 So what I'm pointing to in the declaration
14 is 45. So it's another layer off to the side of the
15 electrode stack 41, and so it's there to lower the
16 resistance. So the 41 is made of stacking
17 materials, but then there's this added 45, which
18 would be an auxiliary electrode, to lower the
19 resistance or the connection of the stack of 41.
20 And I think those are ITOs in that pixel.

21 Q So I think you partially answered my
22 question, which was whether you could identify a
23 first auxiliary electrode and a second auxiliary
24 electrode in figure 1. It sounds like you pointed
25 to 45 as one of the auxiliary electrodes.

1 And can you identify another auxiliary
2 electrode in figure 1?

3 MR. LIMBACH: Objection. Form.

4 THE WITNESS: So I think I covered that in
5 paragraph 175. The second auxiliary electrode is
6 Weaver modified with Lee 149's electrode pattern 45,
7 and the second auxiliary electrode is electrically
8 connected with the first electrode layer, which is
9 Weaver's anode 406 of the light-emitting device,
10 which is 400 of Weaver.

11 BY MR. TONG:

12 Q I'm sorry. That's -- it's not clear. My
13 question was directed solely to figure 1 of Lee 149.
14 Not the result of Weaver modified with Lee 149.

15 So again, in just figure 1 of Lee 149.
16 That's what we're limited to here. Can you identify
17 another auxiliary electrode other than 45?

18 A The electrodes in Lee -- looking at the
19 figure, or the top and bottoms of the organic device
20 which I believe from memory are 72, and the bottom
21 is the stack 70 and 60. And the organic material,
22 again, from memory, was 71 -- I'm sorry,
23 electroluminescent material was 60, and the second
24 electrode was 70.

25 Q So just, again, to be clear, my question was

1 not about a second electrode. It was whether or not
2 there was a second auxiliary electrode in figure 1.

3 A I thought I answered that. It was electrode
4 pattern 45.

5 Q Then is there something in figure 1 that you
6 think is a first auxiliary electrode in figure 1?

7 A Of Lee 149 alone?

8 Q Of Lee 149, figure 1, alone.

9 A I don't think so.

10 Q So it's your position that a POSITA would
11 modify Weaver after reading the disclosure of Lee
12 149; correct?

13 A Yes. Similar to Song and -- what's the
14 other one -- 053. Yes. Just to provide an
15 additional connection to lower the resistance going
16 to the pixel.

17 Q And in Ground 4, for this claim, unlike
18 previous -- you know, unlike your previous analysis,
19 you don't actually have a figure showing the final
20 resulting combination, do you?

21 A I don't believe I do, but give me a second.
22 No, I don't.

23 Q Would the final resulting combination look
24 the same as the modified figure 4 above in paragraph
25 170?

1 MR. LIMBACH: Objection. Form.

2 BY MR. TONG:

3 Q That's a good objection. So let me
4 rephrase.

5 Would the final resulting combination of the
6 modification of Weaver in view of Lee 149, would
7 that look like the modified figure 4 that is shown
8 in paragraph 170 of your report?

9 MR. LIMBACH: Objection. Form.

10 THE WITNESS: No, because the second
11 auxiliary electrode would be to the side. And in
12 the modified figure 4, the additional electrode
13 layer is not to the side.

14 BY MR. TONG:

15 Q Okay. When you said that the second
16 auxiliary electrode would be to the side, the side
17 of what?

18 A Organic light-emitting device as seen in
19 figure 1, 45 is to the left of the organic
20 luminescent layer 60.

21 Q Okay. I'm going to share my screen.

22 Can you see figure 1 of Lee 149 from your
23 declaration?

24 A Yes.

25 Q Okay. And this is the electrode 45 here

1 that we're talking about; right?

2 A Yes. 45 is annotated with red.

3 Q Okay. So I'm trying to figure out what the
4 final resulting device would look like.

5 Would this modified figure 4 be a good place
6 to start with such that we can add another little
7 electrode somewhere?

8 A Yes.

9 Q I'm going to make this bigger. And let's
10 keep proportions. I'm going to use a little red
11 square for our second auxiliary electrode.

12 Can you help describe for me where you want
13 this to go off to the side of?

14 A For example, just go to the top right, right
15 below 4122.

16 Q Right there?

17 A I'd move it a little away from the side.

18 Q Toward the right or toward the left?

19 A Toward the right.

20 Q Like that?

21 A Yes.

22 Q Is the size of the second auxiliary
23 electrode appropriate?

24 A I'd make it a little bit wider, but, I mean,
25 it's not -- the size isn't claimed.

1 Q Is this more appropriate?

2 A Sure.

3 Q Are there any other connections that need to
4 be -- that are obviously needed to make this work?

5 A You would need another via, like 428, going
6 down to -- going down; and then you could simply
7 increase the width of bus line 430, and then you'd
8 be done.

9 Did we lose Alan? I think we lost him.

10 MR. TONG: I see Alan. His mouth is moving.

11 THE WITNESS: Oh, I don't see him. Okay.

12 MR. LIMBACH: Sometimes the people are off
13 to the side, and you don't see them. You have to
14 hover to see the arrow.

15 THE WITNESS: Oh, I see. Oh, I see. Okay.
16 All right.

17 It doesn't need to be that elaborate. You
18 can simply have the bus line 430 extend over to the
19 right to the additional via, and that would be good
20 enough.

21 BY MR. TONG:

22 Q Like this?

23 A Yeah. But again, you don't need to -- I
24 mean, it'd be nice to have the additional electrode
25 layer because then you'd have even less resistance.

1 But yeah, like that.

2 Q So to the extent that any other
3 modifications you think are necessary and obvious,
4 let me know now; otherwise, I will PDF this and get
5 it committed as an exhibit.

6 A Well, just one sec.

7 I mean, Claim 11 teaches using the material
8 422. So you don't have an additional layer. So
9 it'd probably be better to cover both Claims 10 and
10 11 with the modification, and you can easily do that
11 by getting rid of the red box and just -- or moving
12 the red box to where it's on the same layer as 422
13 and then just extending it down to the -- yeah, kind
14 of.

15 Q Am I doing that right? I want to get this
16 accurate. So tell me what to do just visually.

17 A It needs the -- the red box -- it needs to
18 be, like, 420 and 422 on the left. See how the 422
19 is thinner and the 420 is -- is -- you can just
20 delete all the stuff you drew on the right and then
21 just copy the 405, the 420, and the 422, and move it
22 over. Yeah. No, we're all the way down.

23 Q So I'm going to flip this. I think that's
24 what you intend. So it looks something like this?

25 A No, just copied on the left, the 422, 420,

1 and the 405, those layers, then just move them over.
 2 The Claim 11 requires that the second auxiliary
 3 electrode use the same second electrode layer of the
 4 light-emitting device.

5 Q Can you see a portion of my screen
 6 highlighted?

7 A Yup.

8 Q That's the structure that we're copying to
 9 the right side? So we're going to delete what I
 10 have on the right side; right?

11 A Yup.

12 Q I'm going to put this there. I'll flip it
 13 so it would look something like this.

14 A Sure. The red would go down and make a
 15 connection -- yeah, good enough.

16 Q Are you talking about a connection, like
 17 that?

18 A Yeah. I mean, it would actually go down and
 19 over like it does in 405 and 407. But good enough.

20 Q So this would be kind of rotated, like this?

21 A I mean, you can just copy from the
 22 transistor, the 414 snippet and copy it. Yeah, it's
 23 good enough.

24 Q Okay. Am I good to PDF this at this point,
 25 or are you envisioning other obvious modifications?

1 A Nope. The second auxiliary electrode would
2 then be the red that we added on the right side of
3 the annotated image or the image you just made.

4 Yup. Yup. Good.

5 MR. LIMBACH: My only objection to this line
6 of questioning is this is a figure created by
7 counsel at the direction of Dr. Baker. But
8 Dr. Baker did not have a chance to generate the
9 document -- the figure himself or spend time outside
10 the pressures of a deposition to verify its
11 accuracy.

12 THE WITNESS: And what I'm trying to do is
13 represent the opinion that's stated in Ground 4, I
14 think it was; and I think I have, but I'm not
15 entirely sure.

16 MR. TONG: Well, I've uploaded as Exhibit 9
17 another demonstrative exhibit. Dr. Baker, could you
18 open this up and let me know when you have it open.

19 (Patent Owner's Exhibit 9 was marked.)

20 (Discussion off the record.)

21 BY MR. TONG:

22 Q Oh. Let me also introduce -- we skipped
23 Exhibit 8, so that was omitted.

24 A Okay. I have exhibit -- let me look at the
25 claim language again. Make sure that that second

1 auxiliary electrode doesn't have to connect to the
2 anode.

3 So what you drew there, the cathode material
4 422, the second electrode layer, which is Weaver's
5 cathode 422, is connecting to a via; and the via and
6 the material is connected to our second auxiliary
7 electrode, and that is to the side of the organic --
8 or the light-emitting device OLED 400 of Weaver.

9 Q Oh, sorry, my microphone was off.

10 Does Exhibit 9 accurately represent what you
11 envisioned the resulting combination would be if a
12 POSITA started with Weaver and modified it in view
13 of the teachings of Weaver 149?

14 MR. LIMBACH: Same objection.

15 THE WITNESS: To the extent I did this
16 during the depo, yes.

17 BY MR. TONG:

18 Q Are there any other modifications that you
19 think would be obvious to make that are not
20 reflected in this Exhibit 9?

21 MR. LIMBACH: Same objection.

22 THE WITNESS: I think Exhibit 9 is a quick
23 attempt at capturing my opinions about Claims 10 and
24 11 in Ground 4.

25 ///

1 BY MR. TONG:

2 Q Sorry. My question was not whether or not
3 the attempt was quick, nor was my question about
4 whether it related to Claims 9 and 10.

5 My question was, does this accurately
6 represent what you envision to be the resulting
7 combination that a POSITA would make if the POSITA
8 started with Weaver and modified it in view of
9 Weaver 149?

10 MR. LIMBACH: Same objection.

11 THE WITNESS: I think you meant to say Lee
12 149, and I meant to say Claims 10 and 11.

13 Again, I think this accurately represents my
14 opinions on my Ground 4 analysis of Claims 10 and
15 11. You know, if I had more time, I'd perhaps look
16 and see if I think it's more accurate. I think
17 maybe the red box could follow the contour, but I
18 think it's fine.

19 MR. TONG: All right. How long have we been
20 going since the last break?

21 THE VIDEOGRAPHER: Not quite an hour, but
22 close.

23 MR. TONG: Okay. Dr. Baker, I'm about to
24 start with a next line of questioning. Do you want
25 to take a break now, or do you want to power through

1 the Bae combination?

2 **THE WITNESS: I would like to take a break.**

3 MR. TONG: All right. Let's take a
4 five-minute break.

5 THE VIDEOGRAPHER: Okay. We're off the
6 record. The time is 6:22 p.m.

7 (Recess.)

8 THE VIDEOGRAPHER: We're back on the record.
9 The time is 6:34 p.m.

10 BY MR. TONG:

11 Q All right. Did you talk to anyone during
12 the break, Dr. Baker?

13 A Just my wife.

14 Q How's she doing? Is she doing well?

15 A She's doing well. It's cold here in Vegas
16 today. It's -- I think the high was like 59. So
17 it's not warming up.

18 Q All right. Well, let's move on to Ground 5,
19 Weaver and Bae. That's B-a-e for the reporter.

20 So looking through paragraphs 193 through
21 212 of your declaration here. I do not see a
22 drawing that shows the final modified system that
23 you're envisioning. I'm going to ask that we do the
24 exercise again of creating a -- what you envision to
25 be a figure that shows how a POSITA would modify

1 Weaver in view of Bae.

2 To do that, which figure from Weaver do you
3 want to start with? Do you want to start with the
4 same modified figure 4 that we had looked at
5 earlier?

6 **A Sure. And then figure 4 of Bae on paragraph**
7 **196.**

8 MR. LIMBACH: I have the same objection to
9 doing these demonstratives on the fly without having
10 the witness have the time outside of the deposition
11 to confirm their accuracy.

12 MR. TONG: Your objection is noted.

13 BY MR. TONG:

14 Q I'm going to share my screen. This is the
15 modified figure 4. Can you confirm this is what you
16 would use as the starting point?

17 **A Yes.**

18 Q Okay. And then you wanted to pull in
19 figure 4 of Bae, this thing?

20 **A Give me just a second.**

21 **I mean, in both this ground and the ground**
22 **we just talk about, Claim 1 doesn't require --**
23 **unless I'm remembering incorrectly, I think it**
24 **doesn't require that second auxiliary electrode that**
25 **we added there at the bottom. I think it's just**

1 Weaver. But we don't need -- we don't need the --
2 for example, the Lee 053. I mean, we can leave it
3 in, but I think we can do it with just Lee and Bae.

4 But going back to paragraph 190. 196,
5 annotated Bae is there; but the point is I don't
6 think we need the -- I think Weaver alone is what we
7 need. Weaver and Bae.

8 Q Okay. So I'm going to pull in a part of
9 Weaver to start with.

10 A Yeah, figure 4.

11 You're not sharing your screen. So...

12 Q Yeah, I'm aware that -- I've turned screen
13 sharing off for a moment just as I pull up -- find
14 and pull a good figure 4.

15 So I am pulling this version of figure 4 as
16 annotated in paragraph 96 of your declaration. I'm
17 going to post it in here and start sharing my screen
18 again.

19 Is this the right Weaver figure 4 that we're
20 using as our original starting point?

21 A Yes.

22 Q All right. And how would a POSITA then
23 modify this? Just tell me what to draw.

24 A So go to paragraph 196 of my report.

25 Q I'm going to 196. I see that.

1 A And there's an annotated figure 4 from Bae.

2 Q Okay.

3 A Snip that. Or I guess we'll modify it.

4 Q Sure.

5 A So what we want to do is take 139.

6 Q Okay.

7 A Which is the -- what we'll use as the second
8 auxiliary electrode. Then we want to put it to the
9 side of the -- just go to the side of the
10 electroluminescent device. Go to the top right.

11 Q Here?

12 A Yeah, sure. Move it down a little.

13 Q Yeah.

14 A Yeah, so the 139 is on the same layer as the
15 422.

16 Q 139 is on the same layer as 422. Here? Or
17 do I move it up a little higher, one layer higher?

18 A For Claim 11, I think it requires that
19 the -- let me read Claim 11. Second auxiliary
20 electrode, just 139, is on the second electrode
21 layer, Weaver's cathode 22. So we want the 139, the
22 red, to be on the same level as the 422.

23 The green, you want that to be at the side,
24 which it is -- it is. And we want that -- the
25 material that's below it, green hatched area, the

1 132, we want that to be connected to the -- to the
2 430. I don't know how we're going to show that.
3 Maybe take the 430 and the via copy and move them
4 over.

5 Q Okay. So take the via and 430?

6 A Yup. And just move them over. Copy and
7 move it over and make a connection to 120 -- to
8 what's below 120 -- 139.

9 Q So copy it, move it over here?

10 A Yup. And then the layer would extend over
11 and short out. The 40 would extend and short the
12 two 430s together.

13 Q That, I understand. Let me --

14 A I made a mistake because they're shorting
15 out the LEDs, so I'm doing something wrong here.
16 Hold on, let me look at the claim language. This is
17 the problem with doing stuff in the deposition. I
18 think I did the same thing in the other one where I
19 shorted out both sides of the LED. So that's wrong.

20 Exhibit 9 -- let me read them, read the
21 claim again.

22 So 422 needs to be connected to the both
23 layer, the anode, which is 406. So just slide it
24 now. And I think we need to do that on Exhibit 9 as
25 well.

1 Q Slide it down here?

2 A Yup. The blue is the electroluminescent
3 layer. And then move the via up and then short the
4 430s together and then I think we're good.

5 Q Like this?

6 A Yup. I think we need to do that on
7 Exhibit 9, too, because I think the way I drew it,
8 it's the exact same error, and both sides were
9 shorted out.

10 Q Okay. Is this light green -- does this
11 light green thing need to extend left or right, up
12 or down, to connect to anything?

13 A It could extend over to the -- it doesn't
14 necessarily have to, but it would be nice if it
15 extended over to 406 so that the -- it was connected
16 to the anode.

17 Q So 406, here?

18 A Yup.

19 Q I'm just going to shade this end with, like,
20 a -- sort of a medium green. Like that?

21 A Yup.

22 Q Okay. We realize that the -- we can agree
23 that the thicknesses of some of these layers are not
24 necessarily representative. But these
25 thicknesses -- I'm not going to make an issue out of

1 them, and I don't think the thickness of any layer
2 is recited in the claim.

3 Am I good to PDF this and get you to confirm
4 that the PDF accurately reflects the modification?

5 **A Sure.**

6 MR. TONG: Let's do that.

7 MR. LIMBACH: Same objection.

8 MR. TONG: And I will just respond on the
9 record to that objection:

10 We think the objection has no merit. This
11 line of questioning is directed to what obvious
12 modifications are. Neither I nor the board are
13 interested in thoroughly analyzed, thoroughly
14 thought-out drawings of what a POSITA would want.
15 The issue here is what is obvious.

16 **THE WITNESS: I think it's obvious I'm going**
17 **to make a mistake on the drawings because I've**
18 **already testified that Exhibit 9 is wrong because I**
19 **shorted out both sides of the diode. So I question**
20 **the accuracy of using these to make decisions.**

21 MR. TONG: All right. Both of your
22 objections are noted on the record. So we'll let
23 the board take it from here.

24 I am uploading to the chat box what is
25 marked as Exhibit 10, demonstrative.

1 (Patent Owner's Exhibit 10 was marked.)

2 BY MR. TONG:

3 Q Dr. Baker, could you open this up and let me
4 know when you have it open.

5 A I have it open.

6 Q Okay. And can you confirm this is what you
7 envision a POSITA -- sorry, housekeeping is here,
8 one second.

9 (Discussion off the record.)

10 BY MR. TONG:

11 Q Let me restart that.

12 Can you confirm that this shows what you
13 envision a POSITA would do to modify Weaver in view
14 of the Bae reference?

15 A On the fly, during the deposition, yes.

16 BY MR. TONG:

17 Q Can you pull up Exhibit 9 again.

18 A Okay.

19 Q All right. Can you describe for me what
20 change you would make to Exhibit 9 in order to
21 correct it?

22 A I think, just looking at this, both sides of
23 the diode are shorted together. And so, I mean,
24 again, on the fly, I would move the 422 down or the
25 connection down so that instead of connecting on the

1 right to the -- to the cathode, connecting on the
2 right to the anode -- obviously, you see what I drew
3 was that the 422 and the 406 -- where both sides of
4 the diode are shorted together through what I added
5 there.

6 MR. TONG: Okay. Thanks. I need a quick
7 five-minute break to try and get this put together
8 again.

9 THE VIDEOGRAPHER: Did you want to go off
10 the record, Counsel?

11 MR. TONG: Let's go off the record, yes,
12 please.

13 THE VIDEOGRAPHER: Okay. We're off the
14 record. The time is 6:50 p.m.

15 (Recess.)

16 THE VIDEOGRAPHER: We're back on the record.
17 The time is 6:54 p.m.

18 BY MR. TONG:

19 Q Thank you.

20 Dr. Baker, I've attempted to do what you had
21 described. I have here on my PowerPoint the
22 modified Weaver figure 4, and that was taken from
23 paragraph 135 of your declaration. And on the right
24 side, I have this extra via. I shifted it down
25 slightly.

1 Is this what you were envisioning?

2 MR. LIMBACH: Same objection.

3 THE WITNESS: The way it is right now, the
4 via on the right's connecting directly to the
5 organic material and the light-emitting device so
6 the 422, that whole structure needs to come down so
7 it's on the same plane as the green so it can
8 connect over to the green.

9 BY MR. TONG:

10 Q Sorry. What needs to come down?

11 A The added annotation on the right. Yeah,
12 just go to the top -- yeah, shrink that down like
13 that, right there. Yeah. And then that would go
14 over and connect to -- you would run the green all
15 the way over to connect to the -- to the added via
16 and layer. Yeah, like that. Yeah.

17 Q Like that?

18 A Yeah.

19 Q Okay. And do you have any other changes
20 that you can think of before I PDF it and introduce
21 it as Exhibit 11?

22 A No.

23 MR. LIMBACH: Same objection.

24 MR. TONG: Thanks. I think we can agree
25 that you have a standing objection to the entire

1 line of drawing questions. You don't need to raise
2 them. I'll just stipulate that you've made them.

3 **THE WITNESS:** And I'll also say I don't feel
4 comfortable rendering new opinions or creating
5 drawings during a deposition because I've already
6 demonstrated that I can be inaccurate and wrong.

7 BY MR. TONG:

8 Q Is it your position, Dr. Baker, that
9 creating these types of drawings require further
10 analysis and investigation?

11 A I don't think I would say they require
12 further analysis and investigation. I would simply
13 say that drawing things, pictures that are
14 representing written opinions, need to be done
15 slowly and carefully with consideration.

16 MR. TONG: So I've uploaded into the chat
17 Exhibit 11, which is another demonstrative.

18 (Patent Owner's Exhibit 11 was marked.)

19 BY MR. TONG:

20 Q Can you let me know when you have that open.

21 A I have it open.

22 Q Does this accurately represent the
23 modification that you envision a POSITA would make
24 to Weaver in view of Lee 149?

25 A At the present moment, yes.

1 Q Okay. Thank you.

2 Let's move on, then, to Gupta.

3 Can you please turn to paragraph 220 of your
4 declaration.

5 A I'm there.

6 Q So you see the words "resistor 238" in this
7 paragraph in purple?

8 A Yes.

9 Q What material -- and I'm asking in terms of
10 chemical material like silicon or indium tin oxide
11 or whatever material. What material do you envision
12 that this resistor would be made of?

13 MR. LIMBACH: Objection. Form.

14 THE WITNESS: I assume you don't want me to
15 rely on Gupta, but rather you want me to rely on my
16 memory?

17 BY MR. TONG:

18 Q Yeah. Let's get it from your memory first.

19 A I would guess either a metal or an ITO.

20 Q And examples of metals that we had talked
21 about earlier include aluminum and copper; correct?

22 A Yes. That's what we talked about earlier in
23 processing. I'm not sure -- most common is
24 aluminum.

25 Q Generally, would a POSITA consider aluminum

1 to be a resistor in this context?

2 A Metals --

3 MR. LIMBACH: Objection. Form.

4 THE WITNESS: Metals have a resistance and
5 so you can consider them resistors if you care about
6 the resistance. You generally do when you're
7 designing arrays that are connecting elements
8 together with conductive paths.

9 BY MR. TONG:

10 Q When you are -- if a POSITA was designing
11 arrays and connecting elements together with
12 conductive paths, would the POSITA refer to those
13 paths as resistors?

14 A Maybe. If there was like a via and they
15 would add another via to lower the resistance in a
16 signal path, they might talk about the via
17 resistance to say that we had another exact via in
18 parallel, we have the resistance.

19 Q So we had also talked about indium tin oxide
20 or ITO as a suitable conductor. And I agree with
21 you; and, in fact, I can confirm to you your
22 previous thinking that ITO does, in fact, have a
23 higher resistance than aluminum or copper.

24 In what cases would a POSITA select to use
25 ITO over aluminum or copper?

1 A When you need the light to shine through the
2 material.

3 Q And why is that?

4 A ITO is used commonly in displays because
5 the -- it can be transparent to light.

6 Q So if you could look at, still, paragraph
7 220 with me. In the first sentence, second line, it
8 says:

9 "Where the anode 230, having an anode sheet
10 resistance 234B."

11 Do you see that?

12 A Yes.

13 Q Can you tell me what is "sheet resistance"?

14 A That's what I mentioned earlier where the --
15 you know, you do fabrication, you don't have control
16 over the thickness. So they take the resistivity ρ
17 and divide by the thickness of the material, and
18 that's called "sheet resistance" because all you
19 have control over is the length and the width
20 looking down on the material.

21 That's why when you gave me the resistivity
22 or resistance equation based on resistivity, the one
23 that everybody uses is the one I mentioned. It's
24 resistivity divided by thickness times L over W ,
25 where the resistivity over the thickness is called

1 the "sheet resistance."

2 Q What are the units of sheet resistance?

3 A It's just ohms. But most of the time,
4 people say "ohms per square" to let people know that
5 it's a resistance of a film or material.

6 Q Let's turn to paragraph 227.

7 A I'm there.

8 Q If you zoom in to the figure 3 that is shown
9 in figure -- in paragraph 227, do you see that there
10 is what appears to be a -- to me, at least, a red
11 and a green highlighted section between the diode
12 and VDD?

13 A Yes.

14 Q And was it your intent that the red and the
15 green highlighting represent a bus line and an
16 anode?

17 A Yes.

18 Q And it's your opinion that this bus line and
19 the anode can be connected in parallel between the
20 diode 302 and the bus line to VDD?

21 A Yes.

22 Q And if we scroll down to the next page, we
23 see our good friend, figure 4 of Weaver.

24 Do you see that?

25 A Yes.

1 Q And so are you envisioning that what's shown
2 in green and red would effectively run parallel
3 together, for example, into the page, until they
4 connected to VDD?

5 A Yes.

6 Q Okay. Since I can't draw in 3D and
7 PowerPoint, I won't make you admit that as a
8 demonstrative exhibit.

9 MR. LIMBACH: Saves me another objection.

10 BY MR. TONG:

11 Q And aside from the green and red -- well,
12 let me ask you this: We see here in this slice of
13 figure 4 that the green and red are connected by way
14 of via 428. Agreed?

15 A Yes.

16 Q Now, at the other end of this parallel path,
17 how would they, I guess -- what would the end
18 structure look like where they connect to VDD?

19 MR. LIMBACH: Objection. Form.

20 **THE WITNESS: You could connect to the green**
21 **only. You could connect to the red only. You could**
22 **draw more vias down since you're outside of the**
23 **array, you don't have space constraints, and connect**
24 **the green and red together and then connect to them.**
25 **///**

1 BY MR. TONG:

2 Q So to clarify: Are you saying that the VDD
3 power line could connect to green only, as an
4 example?

5 A Yes.

6 Q And again, to clarify your previous answer
7 since you said you could connect to red only, were
8 you intending to say that just the red bus line 430
9 could connect to VDD at the end?

10 A Yes. It's a design choice of which one of
11 them you connect to, if not both.

12 Q And the other option was there could be a
13 via at the end connecting the red and the green and
14 then either the red or green could connect to VDD.

15 Is that the other option?

16 A Yes.

17 Q Okay. Thanks for clarifying.

18 I think we're moving on to the last section,
19 which is Han. So I'm going to introduce as -- what
20 are we on, 12? I'm going to introduce as
21 Exhibit 12, the Han reference that was filed.

22 (Patent Owner's Exhibit 12 was marked.)

23 BY MR. TONG:

24 Q Please download this, open it up, and let me
25 know when you have it open.

1 A **I have it open.**

2 Q And if you could follow along in the
3 abstract with me. The first sentence of the
4 abstract on the cover begins:

5 "Provided are an organic-light-emitting
6 diode (OLED) flat panel light-sourced apparatus and
7 a method of manufacturing the same."

8 Do you see that?

9 A **Yes.**

10 Q What is a flat panel light source?

11 A **An example is it could be a backlight for an
12 LCD display.**

13 Can you give me a definition of a flat panel
14 light source?

15 MR. LIMBACH: Objection. Form.

16 **THE WITNESS: A light source for use with
17 flat panels.**

18 BY MR. TONG:

19 Q Is that -- are there any differences between
20 flat panel light sources and pixels?

21 A **Flat panel light source could be made of
22 pixels. Flat panel light source could be used as a
23 light to light a room.**

24 Q Are flat panel light sources used in LED
25 monitors?

1 A It could be used as a flexible display
2 device, yes. That's disclosed in paragraph 5.

3 Q Sorry. My question was not about flexible
4 display devices.

5 My question was, whether flat panel light
6 sources are used in LED monitors?

7 MR. LIMBACH: Objection. Form.

8 THE WITNESS: I'll read paragraph 5. Maybe
9 that will make sense, then, why I answered why I
10 did.

11 "An organic-light-emitting diode (OLED) flat
12 panel light source technique may be applied in
13 various fields including an energy-saving,
14 eco-friendly illumination system, a flexible display
15 device" -- and let me pause there.

16 So a flexible display device that's
17 implemented with LEDs, I think, or organic LEDs,
18 would be an LED display. I think that paragraph 5
19 says yes, that an organic-light-emitting diode flat
20 panel light source could be a display or used with
21 an LED display or be a display itself.

22 BY MR. TONG:

23 Q Have you ever used as a consumer or designed
24 as an engineer, a flat panel light source?

25 A I use a flat panel light source, yes.

1 Q As a consumer?

2 A Yes. I may have designed a flat panel light
3 source for some test-measuring experiment in my
4 university work, but I can't recall doing that right
5 off the top of my head.

6 Q As an end-user, what flat panel light source
7 did you use?

8 A I have several. I use flat panel light
9 sources when I work on cars or do home repairs. For
10 example, I have a RYOBI or RYOBI portable flat panel
11 light source, and then I have a bigger one that --
12 on a stand that I use if I'm working at night.

13 Q About how big are they?

14 A The small one is -- the flat panel light
15 source is about 4 inches by 15 inches. And the big
16 one has a center flat panel portion that's probably
17 6 inches circular, and then it's got, like, an
18 adjustable flower shape that you can adjust other
19 flat panel light sources to give you the direction
20 and intensity of light that you want.

21 Q What are branched electrodes?

22 MR. LIMBACH: Objection. Form.

23 THE WITNESS: Can you give me some context?
24 Because, I mean, I can guess what that means; but if
25 it's not in terms of a patent, then I don't know if

1 it would be relevant, the guess.

2 BY MR. TONG:

3 Q I have some follow-up questions regarding
4 Han's use of branched electrodes; but before I ask
5 those, I don't think Han actually uses the phrase
6 "branched electrodes."

7 So I'm asking, just as someone of ordinary
8 skill in the art, do you have an understanding of
9 what branched electrodes are?

10 A I'd say it's where you take two or more
11 conductors and you tie them to some source like a
12 power source and you use the conductors as branches
13 to supply power to a load or different paths to
14 supply power to a load. That would be my guess.

15 Q And applying that understanding, can you
16 tell if Han's subsidiary electrodes are branched
17 electrodes?

18 A Looking at figure 3, for example -- 350.
19 That's figure 4. It looks like the definition I
20 gave is correct. Looks like a branch of a conductor
21 to provide a signal to the display or to the flat
22 panel OLED light.

23 Q Do you know what "spreading resistance" is?

24 MR. LIMBACH: Objection. Form.

25 THE WITNESS: I don't see "spreading

1 resistance" mentioned in Han, so I don't know
2 exactly what you're talking about.

3 BY MR. TONG:

4 Q Okay. Well, in that case, I will not ask
5 you follow-up spreading resistance questions.

6 Turning to paragraph 222 in your
7 declaration. It looks like in figure 7A, you've
8 colored in what appears to me as purple, two branch
9 electrodes, 750 and 770.

10 Do you see that?

11 MR. LIMBACH: Objection. Form.

12 **THE WITNESS: I see 750 and 770 are first**
13 **and third subsidiary electrodes, yes.**

14 BY MR. TONG:

15 Q Is it your understanding that those are
16 acting as branched electrodes in this context?

17 A **I think so. The conductor's branching out**
18 **and providing power to the array, yes.**

19 Q And are you relying on the presence of 750
20 and 770 in this context as a motivation or teaching
21 to modify Weaver?

22 A **I'm relying on Han and Gupta in this ground**
23 **to teach that if you use a parallel connection or an**
24 **additional wire to power something in an array, that**
25 **you're going to reduce the resistance of the -- that**

1 the pixel and the array sees when it's supplied
2 power.

3 Q Is there any teaching in Han or Gupta that
4 would suggest that reducing the resistance in an LED
5 is beneficial?

6 A I --

7 Q One second. Hold on.

8 I apologize for the interruption. Please
9 continue.

10 A I talk about the IR drop on page -- in
11 paragraph 222. And let me see if I can quote
12 directly from Han.

13 Looking at paragraph 9 of Exhibit 12, which
14 is Han, and just reading a portion. We can read
15 more if it's relevant. And paragraph 9, fourth
16 line:

17 "In this case, IR drop may occur due to
18 resistance, components of the anode and the cathode,
19 meaning the resistance of the power supplied to the
20 OLED may cause a voltage drop. So what -- the
21 voltage that the OLED sees is not what is supplied
22 to the panel."

23 Q What is "IR drop"?

24 A It's current resistance. It's Ohm's law
25 that when you put a current through a conductor, an

1 electrode, it has a resistance. The voltage from
2 one side to the other decreases; and ideally when
3 you're powering an array, you -- the powers by
4 voltages as we discussed earlier today, constant
5 when it gets to each pixel, that's the goal.

6 Q Are there any -- so this was Han's teaching.
7 Is there any teaching in Gupta that you rely
8 on to suggest that it would be beneficial to reduce
9 the resistance in an LED?

10 MR. LIMBACH: Objection. Form.

11 THE WITNESS: You keep saying "reducing the
12 resistance in an LED." We're not reducing the
13 resistance in an LED. We're reducing the resistance
14 going to the LED and going to the pixel. We're
15 reducing the resistance of the interconnect or the
16 wires or the electrodes that are supplying power to
17 the pixel, to the LED.

18 BY MR. TONG:

19 Q I stand corrected.

20 Is there some portion of Gupta that you're
21 relying on for that teaching, or are you just
22 relying on Han?

23 A I talk about that in paragraph 219, about
24 why Gupta wants to reduce the sheet resistance.
25 But, I mean, just as a matter of commenting on a

1 POSITA, a POSITA would understand that voltage drop
2 across wires supplying power is undesirable. That's
3 the bottom line.

4 Q So in this last ground, are you proposing to
5 modify Weaver in view of both the teachings of Gupta
6 and Han, or are you proposing that a POSITA would
7 have modified Weaver if the POSITA had just one of
8 Weaver or Han?

9 A You're talking Ground 6?

10 Q Yes, Ground 6.

11 A I was just using Gupta and Han to illustrate
12 something a POSITA would already know; and that is
13 that you want to supply the same voltage to all of
14 the pixels in a display. You don't want a voltage
15 drop through wires powering the pixels in a display.

16 And I quoted and used examples from Gupta
17 and Weaver so -- just to provide evidence. But,
18 again, a POSITA would understand that voltage drop
19 across the wires is undesirable.

20 Q So I didn't fully understand your question.

21 How many of the Gupta and Han references
22 would a POSITA need to read after reading Weaver in
23 order to make a modification to Weaver that you
24 propose in Ground 6?

25 MR. LIMBACH: Objection. Form.

1 THE WITNESS: Again, Gupta and Han are
2 talking about the desirability of reducing the
3 resistance that is in line with supplying power to a
4 pixel. They give examples.

5 For example, Gupta talks about reducing
6 resistance with the parallel combinations of paths
7 238 and 234B and annotated figure 2C of paragraph
8 221. And in that ground, I was simply providing
9 evidence. So that if I say a person of ordinary
10 skill in the art would understand that a voltage
11 drop across wires is undesirable when supplying
12 power to the pixels in a display, that there was
13 additional support -- to support that it was
14 undesirable as discussed in the Gupta and Han
15 references.

16 In other words, don't take my word for it.
17 These other references talk about the problem as
18 well.

19 BY MR. TONG:

20 Q So the answer to me is still not completely
21 clear as to whether a POSITA would need to read one,
22 two, or none of the Gupta and Han references after
23 Weaver.

24 The best I can understand is that you're
25 saying that a POSITA would make a modification to

1 Weaver after reading Weaver as you proposed and that
2 the POSITA would not even need to rely on Gupta or
3 Han because the POSITA would have some sort of
4 understanding from just being a POSITA that voltage
5 drops on wires are bad.

6 Is that correct?

7 MR. LIMBACH: Objection. Form.

8 THE WITNESS: Well, breaking it down, my
9 first ground was that Weaver alone disclosed Claims
10 1 through 5. And then the other grounds are simply
11 trying to reduce the resistance of the wires
12 supplying power to the pixels; and in Ground 6, I
13 pointed to Gupta and Han as examples discussing that
14 further.

15 So maybe I'll try to answer your question
16 with only regard to Ground 6.

17 A person would look to Gupta or Han for
18 guidance on how to modify Weaver to figure out how
19 to reduce the resistance of the wires powering or
20 supplying power to the pixels in the Weaver display.

21 MR. TONG: All right. That concludes the
22 line of questioning that I have on the '509 patent.

23 Alan, unless you want to do any type of
24 redirect today, you can save that tomorrow for when
25 we cover the next one.

1 MR. LIMBACH: So is the plan tomorrow we'll
2 start with the '733?

3 MR. TONG: Yes. Start the '733 and then
4 proceed to the other one.

5 MR. LIMBACH: So at the end of the '733,
6 I'll have a chance to do redirect on both '509 and
7 '733; is that correct?

8 MR. TONG: If that's how you want to do it,
9 yeah.

10 MR. LIMBACH: Yeah. I think that would be
11 most efficient. Save time.

12 MR. TONG: Okay.

13 THE VIDEOGRAPHER: Okay. Madam Court
14 Reporter, do you want to get orders on the record?

15 MR. TONG: One week for us, please, and we
16 would like a rough draft.

17 THE COURT REPORTER: Sure.
18 Do you need a rough draft, Mr. Limbach?

19 MR. LIMBACH: Yes, please.

20 THE VIDEOGRAPHER: And video orders for
21 either of you?

22 MR. TONG: Not at this time. Maybe later.

23 THE VIDEOGRAPHER: Okay.

24 MR. LIMBACH: Same here. Not at this time,
25 maybe later.

1 THE VIDEOGRAPHER: Very good. Thank you.

2 This concludes the deposition for today,

3 we're off the record. The time is 7:40 p.m.

4 (Time noted: 5:40 p.m. PT/7:40 p.m. CT)

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

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

DECLARATION UNDER PENALTY OF PERJURY

I, Russel Jacob Baker, Ph.D., do hereby certify under penalty of perjury that I have read the foregoing transcript of my deposition taken on Wednesday, April 2, 2025; that I have made such corrections as appear noted herein; that my testimony as contained herein, as corrected, is true and correct.

DATED this _____ day of _____ ,
2025, at _____ , _____ .
City State

Russel Jacob Baker, Ph.D.

1	ERRATA SHEET		
2	Printed Name _____		Date _____
3	Signature _____		
4	Page/Line	Correction	Reason
5	_____	_____	_____
6	_____	_____	_____
7	_____	_____	_____
8	_____	_____	_____
9	_____	_____	_____
10	_____	_____	_____
11	_____	_____	_____
12	_____	_____	_____
13	_____	_____	_____
14	_____	_____	_____
15	_____	_____	_____
16	_____	_____	_____
17	_____	_____	_____
18	_____	_____	_____
19	_____	_____	_____
20	_____	_____	_____
21	_____	_____	_____
22	_____	_____	_____
23	_____	_____	_____
24	_____	_____	_____
25	_____	_____	_____

1 CERTIFICATE OF CERTIFIED SHORTHAND REPORTER

2 The undersigned Certified Shorthand Reporter and
3 Deposition Notary Public of the States of California,
4 Washington and Nevada does hereby certify:

5 That the foregoing deposition was taken before me
6 remotely at the time therein set forth, at which time the
7 witness was duly sworn by me;

8 That the testimony of the witness and all
9 objections made at the time of the deposition were
10 recorded stenographically by me and were thereafter
11 transcribed, said transcript being a true and correct copy
12 of the proceedings thereof.

13 I further certify that I am neither counsel for
14 nor related to any party to said action, nor in any way
15 interested in the outcome thereof.

16 Further, that if the foregoing pertains to the
17 original transcript of a deposition in a federal case,
18 before completion of the proceedings, review of the
19 transcript was not requested/offered on the record.

20 In witness whereof, I have subscribed my name,
21 this date: April 8, 2025

22 
23

24 Cheryl Haab Scott, RDR, CRR, CCRR
25 CSR No. 13600/WA CSR No. 3499/NV CCR No. 1003

Exhibits	(	79:5 80:20 81:18 82:12, 14 83:8 84:3 85:5,8,13,15, 17,20 86:18 95:7,8,11 99:16,20,21, 23,25 100:8, 23 104:1,4,5, 10,13 190:18, 25 191:24 192:2,13,15 193:2,5,6,8 194:19,22 203:22 228:10	108A 172:15 10:30 73:10 10:45 26:15 11 21:17,19 52:7 99:16 100:7 197:7,10 198:2 200:24 201:12,15 205:18,19 211:21 212:17,18 113 38:7,12 1133 6:9 1134 6:9 115A 164:14 168:5, 11,12,13,14, 16,18,22,24 169:3 115B 151:24 11:34 51:17 11:47 51:20 12 21:19,20 30:8,15,19 99:24 100:8 133:19 218:20,21,22 224:13	120 81:20,21,24 82:3 83:5,20, 21 84:4,25 86:9 87:6,17 88:6,7,13 95:21,23 98:18 118:21 139:12 146:3, 9 151:5,10 164:16 168:5, 19 169:2 206:7,8 121 168:19 121A 164:13,17 168:4 169:2 122 81:25 145:24 124 81:25 146:9 149:21 125 146:10 128 145:9,22 178:2 12:37 74:19 12:46 74:22 13 52:7 99:24 100:9 130 64:4,7 65:24 82:8,17,22 84:1,20 85:7,
Exhibit 1 5:3 12:24 13:3	(120) 164:14			
Exhibit 2 5:6 14:20,22	-			
Exhibit 3 5:7 48:10,12, 16	--ooo-- 6:4 7:9,15 42:15 43:2 44:17 45:2 102:23,25			
Exhibit 4 5:9 50:9,11	0			
Exhibit 5 5:11 111:11, 12 152:25 163:21	053 11:21 124:8 145:15 146:13 147:1, 6 148:4,18,20 149:9,14 150:9,22 151:5,18 152:14 153:16 156:16 164:15 178:9 182:19 184:6, 14 193:14 204:2	10 52:7 99:17 111:19 133:19 197:9 200:23 201:4, 12,14 208:25 209:1		
Exhibit 6 5:12 149:9,10		100 65:25		
Exhibit 7 5:14 162:19, 20,22,25 163:5		1001 14:20		
Exhibit 9 5:16 199:16, 19 200:10,20, 22 206:20,24 207:7 208:18 209:17,20		1003 12:25		
Exhibit 10 5:17 208:25 209:1	1	1004 111:15		
Exhibit 11 5:18 211:21 212:17,18	1 12:24 13:3 52:5,7 53:9, 25 54:4,7,20 55:5 56:13 59:10,15 63:9 64:3,10 65:4, 14,15 66:10 67:9 68:16	101 175:18,20,22		
Exhibit 12 5:19 218:21, 22 224:13		102 99:22 100:24		
		103 100:10,12		
		106 81:22 82:20, 25 139:2		

8,21,25 86:17 87:13,18 98:15,17 124:6,9,12 128:14 142:8, 10 152:6 154:10 172:15,17 173:25 1300 7:8 132 65:11 76:5 81:17,21,24 82:3 83:1,4, 15,19,23 84:4,25 86:8 87:17 88:13 89:8 92:1 96:12 97:14 98:2,16 172:18 206:1 134 164:7 168:2 172:17 135 151:17 210:23 136 64:11,14,19 65:3,4,12,16 66:11 68:3 72:20,22 76:6 172:18 138 169:4,5 172:15 139 205:5,14,16, 20,21 206:8	14 105:14,24 148 180:25 182:8 149 12:3 190:7, 11,18 191:3, 6,7 192:13, 14,15 193:7, 8,12 194:6,22 200:13 201:9, 12 212:24 149's 192:6 15 221:15 150 180:1,5 181:25 151 183:2 184:23 157 183:25 184:1 158 183:24 184:1 15:05:45 173:18 170 193:25 194:8 175 192:5 177 190:16 180 190:7 187 175:11	190 204:4 193 202:20 196 203:7 204:4, 24,25 1994 25:15 1:44 102:22 1B 104:23 1E 69:20 74:2 119:1 1E1 53:10 2 2 6:1,11 14:20, 22 38:8,10,11 40:2,14,24 52:7 53:2 64:9 65:3,15, 22 66:3,8,19, 22,23 67:20 81:12,17 83:13 84:23 85:4,9,11,14, 17 86:6 92:2 94:1 95:15, 18,21 104:1, 7,8,10,16 108:5,19 112:21 114:16,22,23, 25 115:12,22	118:19 119:4 138:24,25 2-foot 95:3 20 53:2 200-foot 95:2 2010 48:3 2012 37:23 2013 38:15 41:21 48:22 49:10 2016 50:9,17 51:2 202 114:17 2020 48:3 2024 10:1 2025 6:1,11 212 202:21 213 102:11 219 225:23 22 99:13 205:21 220 97:3,5,8 98:3 213:3 215:7	221 227:8 222 223:6 224:11 227 216:6,9 230 215:9 234B 215:10 227:7 238 213:6 227:7 24 186:20 26 53:5,7,16 54:17 59:7,13 2:31 103:2 2C 227:7 3 3 48:10,12,16 53:5,6,16 54:17 57:10 59:7,13 60:11 62:18 65:18 96:21,25 103:7 180:2 181:15 216:8 222:18 30 22:10 33:3 35:24 30-plus 31:6
---	---	--	---	---

302 216:20	19 128:13,17 129:22 130:1 138:23 144:5 145:7 153:10 154:10	405 124:22 125:4, 22 127:15 130:8,11,20 131:13,24 132:2 144:5 186:12,13 187:12,25 197:21 198:1, 19	191:9,15,16, 19	23 107:25 108:3,17,24 109:4,14,24 110:2,6,16 112:6,10,15, 19 113:1,18 115:2,3,15,22 116:9 117:1, 6,21 118:8,15 120:3,8,20 121:5 122:22 123:23 124:17,21 125:4,20 127:7 128:24 130:12,17,19 131:4,12,21 132:25 134:20,22 144:6,20 150:11,18,23 151:6,11 153:13,25 154:2,8 156:2,12 167:22 181:16 184:3, 15 185:12 188:3,10,23 196:7,18 206:2,3,5 218:8
33 103:9	155:24,25 156:15 158:12 184:4, 25 185:8 186:23 193:17,24 194:7,12 195:5 199:13 200:24	406 113:7,14 114:13 115:2, 3,15,22 116:9 117:16,19 118:8 145:16 178:10 192:9 206:23 207:15,17 210:3	410 105:17,19,25	127:7 128:24 130:12,17,19 131:4,12,21 132:25 134:20,22 144:6,20 150:11,18,23 151:6,11 153:13,25 154:2,8 156:2,12 167:22 181:16 184:3, 15 185:12 188:3,10,23 196:7,18 206:2,3,5 218:8
34 103:23	201:14 203:4, 6,15,19 204:10,14,15, 19 205:1 210:22 216:23 217:13 221:15 222:19	407 124:22 125:4, 22 127:15 130:8,10,16, 20 131:5,13, 22 144:5 186:12,13 187:12,25 188:3 198:19	412 187:2	151:6,11 153:13,25 154:2,8 156:2,12 167:22 181:16 184:3, 15 185:12 188:3,10,23 196:7,18 206:2,3,5 218:8
35 65:18 100:24 103:23 104:2 105:3	4.8 91:11 92:23, 24	408 103:11 143:1, 11,19 154:5 169:9 185:11	4122 195:15	430s 113:19 206:12 207:4
350 222:18	4.9 91:11 92:23	409 160:15 185:15,19 186:15 188:4 189:10	414 130:6,10,15 162:1 186:5 198:22	45 14:4 15:3 175:14 191:14,17,25 192:6,17 193:4 194:19, 25 195:2
36 56:13 105:6	40 65:10 76:4 90:13 103:9 206:11	409's 185:20	415 130:16 131:5, 22	
39 109:16	400 190:13 192:10 200:8	41	416 186:19,20 187:14	
3:30 179:15	403 133:3 134:15, 21		420 186:5 189:13, 19 197:18,19, 21,25	
3:31 134:5	404 142:16,20 169:9,13,16		422 197:8,12,18, 21,25 200:4,5 205:15,16,22 206:22 209:24 210:3 211:6	
3:40 134:8			428 115:15 116:10,12 118:2,17,25 156:11,13 162:8 189:2, 13,19 196:5 217:14	
3D 217:6			430 105:13 106:1,	
4				
4 50:9,11 65:10 71:21 76:4 91:11 92:23 107:6,10,18, 22,24 108:1 109:23 112:13 113:8 115:14 116:15,20 119:3 124:12 125:20 127:9,				

46 17:18 18:15, 20	20:24,25 40:2,24 52:25 53:6 54:9 55:22 56:1,13	6	6:50 210:14	7:59 6:2
460 98:18	57:6 58:20 59:5 68:12 76:4 79:2	6 26:7,19 52:4, 7 68:14,17 69:18 71:21 74:1 90:11,14 93:8 100:7 102:7,11 109:17,20,25 110:4,8,10, 13,14,19,25 111:2,4,23 122:23 128:24 129:18,22 149:9,10 153:14,18 155:8 159:25 221:17 226:9, 10,24 228:12, 16	6:54 210:17	7A 223:7
48 89:19 95:5,9	80:20 89:18, 19 90:9 95:8 101:3,9,12,25 103:8 104:5, 11 108:8,22, 25 113:24 114:9 117:9 118:18 119:5 123:5 129:14, 15 131:11 138:24 139:1, 6,9,19 140:6, 10,20 141:7 142:23 171:24 228:22 229:6	7	7	8
49 95:14 172:9 173:25 174:14,15,17		7 149:25 150:3, 6,10 151:18, 19,21 162:19, 20,22,25 163:5,22,25 164:15 168:7 169:1 182:19		8 199:23
4:25 154:16				80s 46:5
4:32 154:19				81 175:12
5				83 103:7,10 104:24
5 21:20 52:7 90:11 92:23 93:2,7 98:8 99:23 100:8 108:19 111:10,11,12 152:25 153:2, 4,8,14 163:21 170:17 180:7, 9,15 181:24 182:18 183:5 185:4 202:18 220:2,8,18 228:10	509/weaver 137:4			84 103:18
	51 98:7	60 192:21,23 194:20		85 103:22 108:5 112:21
	512 83:14	61 63:23 69:5 70:15	70 175:18,21 192:21,24	88 175:12
	59 202:16	62 73:6,18,24 74:11	71 192:22	89 105:7,10 106:4
	5:22 179:18	64 77:12,16	72 170:11 192:20	9
	5:30 179:15	65 77:21,24 78:1 80:1 170:10	733 10:12,17,20, 24 11:3,7 12:13,20 13:1,11 229:2,3,5,7	9 99:24 100:8 199:16,19 200:10,20,22 201:4 206:20, 24 207:7 208:18 209:17,20 224:13,15
50 96:21	5:31 179:21	6:22 202:6	75 27:15	
509 10:8,17,20,24 11:3,6 12:10, 17 13:10,19 14:9,17,21	5:40 230:4	6:34 202:9	750 223:9,12,19	
			77 100:5	
			770 223:9,12,20	
			7:40 230:3	90

112:13	51:17,20	158:12	157:15 158:3,	admitted
90s	ability	acting	6,18 161:3,19	156:25 157:7
21:22 34:25	9:2 138:1	223:16	162:4,10,13,	159:21
37:5,16	149:2,5	active	16 163:12	ads
91	Abraham	53:20 65:23	169:8 184:2,	37:11
106:3,23	47:3	66:1 105:14	3,13 185:2	advertise
107:7 109:22	absolutely	164:17	188:8,24	35:16
112:11,13	142:1	actively	189:8 193:15	advertising
9263509	absorption	58:14	194:12	29:23
10:9 13:14	25:20	actual	196:19,24	advising
93	abstract	39:19 40:15	197:8 223:24	39:9
109:7,12,13	219:3,4	47:17 84:11,	227:13	AE
112:5 128:15,	access	16 89:6	address	180:15
21	27:23	add	23:25 24:1	affect
9406733	accessed	68:5 131:15	27:20,21,22	9:2 33:13
10:13	27:24	132:4 134:18	100:13	87:22,24
96	accuracy	152:14 154:1	adds	88:2,9,10,16
23:14 113:9	155:14	184:13 185:1	41:11	164:4
204:16	199:11	189:24	adjacent	aforemention
97	203:11	190:11 195:6	67:22 72:22	ed
116:2,3,23	208:20	214:15	96:14 97:17,	71:24 72:7
117:14,23	accurate	added	23 98:25 99:6	agree
118:4	53:17 71:8	39:1 78:8	101:4,9,25	11:14 42:11
98	157:17	117:25	108:9,14,23,	57:18,21,25
116:3,5,14	158:20	171:22 173:6	24 110:1,5,7,	74:7 75:2
99.9	159:20 160:1	191:17 199:2	16 113:14,19,	76:1,23 85:7
23:9	161:13	203:25 210:4	25 114:4,11	90:7 100:21
9:59	197:16	211:11,15	127:10 161:8	101:1,6,11
6:12	201:16	adding	186:1	117:17
	accurately	78:3 93:5	adjust	131:19
A	158:5 200:10	162:13 184:2	120:12 125:9	207:22
a-r-r-a-y	201:5,13	addition	133:4,24	211:24
42:6	208:4 212:22	69:13 70:3	134:14,18,24	214:20
A-SI	achieve	additional	136:15,25	Agreed
103:11	47:20 94:25	39:17 45:12,	137:2 221:18	217:14
a.m.	achieved	15,17,18,23	adjustable	agreement
6:2,12 26:15	90:20	48:7 69:7	221:18	7:20 161:12
	acknowledge	143:13,21	adjusting	agrees
		144:21 151:4	125:11 127:6	100:21 102:4
		152:15 156:1	admit	
			217:7	

airport 37:11	analyzed 71:12 98:22 99:7 124:8 208:13	82:8 83:15 84:20 86:17 87:13,18 92:1 97:19 112:23 113:7,22 114:17,22 115:12 116:1, 9 117:16,19 118:8 137:9 145:16 178:10 192:9 200:2 206:23 207:16 210:2 215:9 216:16, 19 224:18	95:24 96:2 97:3 180:9 181:3 183:14 216:10 223:8	argument 67:2 72:13 114:15 183:21
Alan 6:23 196:9,10 228:23	analyzing 96:9 97:12		applicable 71:25 72:8	argumentativ e 56:11
alarm 49:21	and/or 96:18 178:11		applicant 176:5	arms 147:15
albeit 96:6	Angeles 6:14		application 122:2 163:20	array 42:5 67:21,24 72:23 82:4 83:11,21,24 85:1 93:4 98:5 99:1 109:25 110:4 111:1,3,23 113:16,21 217:23 223:18,24 224:1 225:3
alcohol 9:1	annotate 95:10 105:2 107:9,13,18, 19 116:20		applications 47:14 122:5	
allowing 78:6 93:9		anode's 84:22	applied 102:11 220:12	
aloud 54:3	annotated 95:14,21,22 96:21 98:8,11 104:12 107:6 113:8 116:14, 17 149:24 150:2 170:17 180:6,9 183:4 190:19 195:2 199:3 204:5, 16 205:1 227:7	anodes 64:14 75:2 76:1 97:16 113:25 114:4	applies 84:19	
alternative 77:13 100:12 137:8		answering 172:25	apply 149:7 187:7	
aluminum 120:22 121:14 122:17 213:21,24,25 214:23,25		answers 35:10 89:13 99:10 109:10 149:7	applying 222:15	arrays 41:25 67:20 214:7,11
amount 35:4 45:23	annotating 95:17 98:12 107:23	anticipates 99:21,23 101:19	April 6:1,11 48:22	arrested 50:5
analog 39:8	annotation 163:9 211:11	anybody's 114:18	area 110:12,14 111:4 119:11, 14 120:7 121:11 125:17 128:6 139:13 140:23 205:25	arrow 196:14
analog-to- digital 38:18	anode 64:11,18 65:12,14 66:11 71:25 72:2,12,20 75:7,8,10,13, 14,21 76:6,9, 16,17,22 77:3,5 81:18	apologize 224:8	areas 125:24 128:5	art 11:2,8,10,13, 16,17,21,23 12:2 14:9 114:2 140:8, 11 147:1 222:8 227:10
analysis 32:15 70:20, 23 105:4 140:5 176:13, 16 184:5 193:18 201:14 212:10,12		apparatus 219:6	argue 114:18	artifact 144:19
		apparently 109:8 111:25	arguing 134:17	aspect 22:21 35:14, 22 36:14
		appears		

aspects 47:19	auxiliary 52:2,6 59:4 63:21 68:23 69:2,10,12,22 70:1,2,6,8,14, 18,21 71:6,8, 9,24 72:8,14 73:3,22 74:4, 8 81:20 82:20 83:4 86:9,16 87:5,6,21 88:1,5,24 89:8 91:24 92:2 95:20, 23,25 96:1,4 97:2,8 98:3, 17,18 100:2, 14,16 101:5 102:5,12 105:12 116:25 117:5, 20 118:21 137:8 139:12 170:11 172:6 180:16,18 181:8,17,21 182:9,17 183:17 190:12,24,25 191:18,23,25 192:1,5,7,17 193:2,6 194:11,16 195:11,22 198:2 199:1 200:1,6 203:24 205:8, 19	B B-A-E 12:7 202:19 back 19:1 26:14 27:8 36:21 49:24 51:19 68:14 69:17 74:1,21 79:2 80:1,20 92:20 95:4 103:1 112:3,5 128:15 134:7, 13 142:7 152:5 154:18 157:13 163:21 168:2 179:14,20 181:24 186:9 202:8 204:4 210:16 backlight 28:13,20 219:11 bad 117:12 189:18 228:5 Bae 12:7 202:1,19 203:1,6,19 204:3,5,7 205:1 209:14 Baker 6:7 7:11,21, 25 13:5 19:16 48:14 50:18 51:22 74:24 89:9 99:9 103:4 134:10 137:12	149:13 154:21 155:5 157:13 174:4 175:3 179:23 199:7,8,17 201:23 202:12 209:3 210:20 212:8 banner 29:23 banners 35:16 based 17:17 65:7 66:6 146:15, 17 215:22 basically 77:4 154:1 163:19 basics 66:19 bathroom 81:6,8 84:10 beam 22:18 27:10 31:19 46:8 bear 155:7 bearing 79:11 84:22 87:19 begin 7:18 9:16 20:4,7 beginning 6:6,19 59:22 begins 42:17 43:1 105:11 190:9	219:4 behalf 6:11,13 believes 45:16 bells 49:21 belong 164:18 beneficial 136:16 224:5 225:8 benefit 90:6,9 benefits 89:17 90:17, 20 91:1 big 221:13,15 bigger 156:5 195:9 221:11 bit 30:14 89:12 93:15 128:3 131:18 153:13 172:19 182:5 195:24 block 29:3 blue 27:13 31:17 207:2 board 22:7 45:11, 16,19 46:13 48:4 100:21
-------------------------	--	---	---	--

102:4 114:13 137:15 156:21 208:12,23	boundary 158:19 161:13 163:6	201:20,25 202:2,4,12 210:7	12,20 building 81:5 133:21 190:2	188:10,22 189:8 196:7, 18 216:15,18, 20 218:8
BOE 6:7 9:21,22, 25	box 13:2 14:19 48:11 81:6,8 84:10,13,16 93:20,24 94:2 115:8,10 149:12 153:24,25 154:2 155:11 156:7,8,23 157:14 159:14,23 161:2 197:11, 12,17 201:17 208:24	breaker 81:6,8 84:10, 15 93:20,24 94:2 115:8,10	builds 135:8	business 32:16
bono 49:11		breaking 72:25 132:22 228:8	built 158:16	buy 40:17 41:8,13 47:14 133:17
bottom 21:20 26:21 38:6,10,12,14 52:4 68:15,18 69:18 83:16, 20 90:11 91:15 93:7 96:17,18 98:5 99:1 103:23 105:7 107:24 110:12 111:4 112:1 113:16, 19,21 118:16 124:17 142:16 169:16 170:3 172:14 180:15 181:8, 9,12,15,17,21 182:8,13 183:16 192:20 203:25 226:3	boxes 156:19 158:9, 10	briefly 176:24	bumps 182:4	
	branch 222:20 223:8	bright 25:5,10,19, 21,23 34:22 50:3	bus 105:13 106:1, 23 107:25 108:2,17 109:14,21 112:6,10,19 113:1 114:24 115:15 116:9, 25 117:6,21 118:8 120:3, 8,19,20 121:4 122:22 123:22 124:17,21 125:19 127:7 128:24 130:11,16,19 131:4,21 132:25 133:3 134:14 140:25 141:24 144:6, 20 150:11,23 151:6 154:8 155:11 156:2, 12 158:23 162:14 167:21 181:12,16 184:3,15 185:12	C
	branched 221:21 222:4, 6,9,16 223:16	brighter 94:3,17		cable 54:25
	branches 222:12	brightness 24:8 25:1,3 31:15 33:25 34:6 36:11 90:23 91:6 94:6,16,21,25 96:7		California 6:15 7:6 73:11
	branching 223:17	broader 70:16,21 71:1,4 102:5, 7		call 19:22 55:9,13 62:24 63:2 75:8,13 76:16 102:4 106:11 166:9 189:17
bottoms 192:19	break 8:12,13,14 51:11,13,22 56:5 73:1,2,9, 16 74:15,24 82:9 101:14 102:17 103:4 132:23 133:1 134:2,10 154:12,21 179:10,23	broken 46:8		called 7:12 19:25 22:2 26:1 27:25 37:24 127:13 128:6 148:6 215:18, 25
bought 41:5,8		brown 95:22 96:1 97:4 106:17 116:12,13 118:3 146:5, 7,8		calling 77:5
boundaries 157:15,17 158:3,6 160:2,4,22 161:2,4,5		build 47:14 132:10,		capacitance 39:1,4 40:11
				capacitive 38:18,23
				capacitor 53:8,18 54:18,19 57:13 58:22

59:10,14,18, 22 60:5,15, 18,21,22,25 61:2,9,14,15, 21,22,24 62:3,4,12,19, 20 66:2,21	224:18 cathode-ray 21:23,25 22:11,17 24:2 26:9,22 cathode/ electrode 186:4 cathodes 75:3 76:1 caution 42:7 caveat 37:8 cell 108:24 110:7 cells 108:9,14,23 110:2,5,16 center 221:16 centimeters 119:16 Certified 7:6 challenged 104:5 challenging 25:8 chance 13:5 112:4 191:7 199:8 229:6 change 21:18 22:11 58:18 66:6 74:13 85:1 123:15	125:14,18 128:18 133:18 135:1, 2 138:24 139:11 155:22 156:8 159:6 209:20 changed 171:16 173:5 changing 47:12 91:16 124:5 129:6, 16 138:21 139:13 140:1, 2 141:4,12 157:3 characteristic s 133:9 characterizati ons 47:12 characterize 23:20 characterizin g 47:6 chart 68:21 chat 13:2 14:18 48:11 107:1 111:13 149:12 208:24 212:16 chemical 127:13 213:10	Cheryl 6:12 7:5 China 41:18 chip 25:8 31:21 135:5,19 choice 218:10 choices 121:8 131:17 chose 24:23 circuit 16:19 24:22 39:2 54:7 55:4,9,15 61:3,10,24 67:19 78:6 79:13 80:6, 23,24 88:10, 16 89:6 97:13 155:18,19 178:13 185:3 Circuit-level 54:10 circuitry 27:21 39:18 135:2 circuits 16:3,7 33:15 94:9 circular 221:17 Cirque 37:25 38:15, 20 39:9 40:17,18,22 41:4,7,9,22	42:9,12 48:3 cited 11:11 claim 52:5,7 63:21 66:15 68:16 69:20 74:2,7 100:19 104:23,24 105:4 117:24 119:1 169:22 172:4 176:16, 18,24 177:1 181:2,4,7 193:17 197:7 198:2 199:25 203:22 205:18,19 206:16,21 208:2 claimed 71:13 89:18 92:8 96:10 97:12 98:21 99:5,7 139:5 140:8,20 181:13 195:25 claiming 129:11 claims 52:1,6 68:21, 24 69:3 73:21 99:12,21,23 100:8 101:20 139:5,19 140:6,19 176:21 197:9 200:23 201:4, 12,14 228:9 clarification
--	--	---	--	--

28:10 55:16 108:13 126:11 clarifications 138:17 clarify 8:21 19:13,17 24:14 30:13 82:11 88:14 101:16 110:3 139:17 143:17 168:21 181:20 218:2, 6 clarifying 189:9 218:17 clear 35:10 37:4 59:12 61:17 80:12 90:5,13 92:7 128:16 137:13 162:15 170:25 183:12 192:12,25 227:21 clearer 168:10 close 37:14 187:1 201:22 CMP 127:13 coextensive 56:4 coincident 154:2	cold 202:15 colleague 6:21 colloquy 89:1 111:7 172:21 173:7 174:2 color 25:6 32:19 36:11 91:14, 16 103:17,20 106:7,10,14, 17,20 146:6 150:2 180:11 183:4,7,10 190:19,22 colored 106:2,3,4 108:17 109:20 112:6, 10 124:22 128:24 150:6, 10 183:14,19, 20 223:8 coloring 96:24 98:10 106:22 116:18,21 colors 24:8 25:1,4,7 27:13 28:24 29:3 31:14 34:5,22 95:10,18 96:25 98:11 103:11,14,21 106:20 107:9, 13,18 116:6, 17	Colotario 6:13 column 24:1 27:21, 24,25 53:2,5, 6,16 54:17 56:13 57:10 59:7,13 60:11 62:18 65:10, 18 71:21 76:4 83:14,25 90:11,14 93:7,8 96:14 108:9,15,25 columns 23:24 combination 80:9 151:4 184:6,20 193:20,23 194:5 200:11 201:7 202:1 combinations 227:6 combine 190:11 combined 78:6 80:6,23 comfortable 56:18 212:4 comment 67:12 87:11 110:15 147:10 commenting 225:25 comments 32:16 155:14 commercial	22:21 commercializ ed 23:18 committed 197:5 common 97:21,22 98:23 163:17 177:20 213:23 commonly 215:4 companies 26:4 company 26:1,6 32:17 37:24 49:8,11 company's 50:1 compare 32:19 121:14, 16 140:7 compared 124:18 158:22 178:25 comparison 33:6,18,22 34:1,12,18 35:2,8 36:22, 25 compatible 135:11 competitors 30:10 completely 113:3 126:14	227:20 complicated 47:18 component 62:11 99:11 components 15:17 21:4 55:11 61:3,9 62:14 65:23 79:11 81:4 85:18 94:11 139:23 141:10,12 158:10 190:2 224:18 composed 191:9 compound 45:22 compress 20:9 comprise 181:16 comprises 181:8 concentration s 16:13 concept 78:15 concludes 228:21 230:2 conclusion 109:3 conclusions 115:6,19 concrete 138:22
---	---	--	--	--

conduct 11:17,23 12:2	222:11,12	80:10 81:19, 21 82:2,6	115:1,3,8,21 118:4,21	constant 114:5 125:20 225:4
conducted 11:20	conducts 56:12	83:19,21,23 84:8,22 85:18	119:2 137:9 153:13 162:6,	constantly 174:7
conducting 53:5 57:7	confidential 42:10,13,17 43:1 44:18	87:13,18 91:25 94:12, 15 101:5,9	8 164:6 184:14,24 185:2,5 186:5	constraints 217:23
conduction 187:8	confirm 163:4,11 203:11,15	108:14,15,24 109:2,4 110:16	188:23 191:19 193:15	constructed 155:10
conductive 61:15 72:9 75:7 76:10 86:4 118:9 214:8,12	208:3 209:6, 12 214:21	112:20,23,25 113:12,15,18 114:14,17,22	198:15,16 206:7 209:25 223:23	construction 63:20 69:2,10 70:1,5,16,17, 23 71:1,4,5 72:14 77:14 100:1,13,16, 20,22 101:20 102:5,8,12 140:7 169:22 177:15
conductivity 56:20	confused 149:6	115:13,16 116:1 117:11	connections 58:5 59:2 101:4,25 108:23 165:14 188:15 196:3	construe 176:25
conductor 52:10,12,22, 24 53:4,10,13 55:2,19,25 56:11,16,20, 22 57:19,22 58:6,11 59:6, 9 60:4,6,10, 18,22 61:3,13 63:11,19 64:17 67:3,18 68:11 69:8 165:9 178:25 214:20 222:20 224:25	confusing 119:20 131:19	151:5,10,11 156:13 192:8 200:6 206:1, 22 207:15 216:19 217:4, 13	connects 60:7 72:22 83:17 118:16	consulting 37:24 38:3,17 39:5,7,12 49:11
conductor's 223:17	connect 55:10,14 57:8,12 58:22 61:1,8,23 62:13 63:12 64:14,16,17 67:9 71:17 79:15 92:12 97:17,23 102:7 108:4, 18 118:6 161:24 200:1 207:12 211:8, 14,15 217:18, 20,21,23,24 218:3,7,9,11, 14	connecting 75:12 82:4 83:10 84:14, 21 87:24 118:7 184:16, 22 200:5 209:25 210:1 211:4 214:7, 11 218:13	considerably 68:8 121:24 consideration 212:15 consideration s 122:15	consumer 26:25 31:1 131:8 220:23 221:1
conductors 55:15 56:8 57:1 58:21 60:23 61:25 62:15,24 63:3 75:8 79:20 178:23 179:3	connected 53:19 54:18 59:6,9 60:11, 22 61:24 63:14,15 67:8 69:22 70:14 74:4 75:19 78:4 79:12	connection 55:3 59:1 60:5 66:11 70:10,12 72:3,11,23 75:7 80:16 81:6,10 82:21 84:15 87:7,17 88:3,13 92:17 96:17 98:4 99:6 108:8 109:1 110:1, 5,22 113:21	considered 18:12 52:11 54:5 57:5 76:24 100:1 133:14 160:7 165:10 167:11,18,23 consistent 55:25 63:19 65:8 91:22 93:10 148:10 153:5	contact 67:4 187:13 contacted 41:24 contacts 125:21 130:7 188:17 contained 160:8

context 52:19 53:4 57:6 59:5 62:2 63:24 71:6 127:22 148:4 164:23 166:5,7 167:20 169:1, 15 175:8,23 176:9,12 214:1 221:23 223:16,20	206:3,6,9 copying 198:8 corner 38:7 52:15 68:16,19 correct 8:6,10 9:23 10:17 11:4 28:21,25 37:17 47:8 52:2 54:6 62:6 65:9 69:1,9 70:20 71:1,4,19 72:14 82:23 85:14 86:9,16 87:11,23,25 88:4 92:15 98:2 99:22 100:1,2,22 101:23 102:5, 6,8 115:22 124:19 125:3, 7 128:11 134:19 139:20 148:1 151:13 154:8 159:14 163:5, 8,11 165:7 167:8 168:11, 15 170:22 171:8 178:24 180:19 182:20 187:19 188:5 189:25 193:12 209:21 213:21 222:20 228:6 229:7	corrected 83:3 225:19 correction 13:15 92:21 corrections 9:17 correctly 66:4 67:10 105:21 110:21 164:20 170:18 171:23 correlation 66:13 81:2 84:6 86:11 correspond 85:8 104:20 105:2 132:14 155:12,23 corresponds 28:1 65:4 109:20 156:14 163:13 cost 131:8 counsel 7:1 13:7 51:23 74:25 103:5 134:11 156:17 174:19 199:7 210:10 count 18:16,18 counted 48:1 couple	67:6 122:12 159:9,10 court 6:12 7:2,4,13 10:5 119:23 157:19,21 229:13,17 cover 7:20 48:21,23 50:18 165:16 197:9 219:4 228:25 covered 192:4 covers 129:14 create 124:14 144:25 145:4 created 29:22 199:6 creates 22:15 creating 202:24 212:4, 9 credit 45:5 cross-section 153:9 cross-sectional 40:25 64:10 66:14 112:14 115:24 119:11 120:7 129:21 140:23 156:14	160:11 CRT 23:21 29:19 CRTS 26:10,25 27:4,15 31:1, 11 32:14 36:23 crystal 28:11,19 30:22 crystals 29:2,9 CS 53:18 59:10, 18,22 60:5, 18,25 61:9, 15,20 62:3 66:2 CT 6:2 230:4 Cummings 6:22 current 22:14,15 57:23 58:3,7, 13,14 78:6 88:19 89:4,7, 11 224:24,25 customers 45:6 cut 86:23 165:18 cutting 20:5 86:25 174:7 CV 21:14 38:8,11 49:18 50:7
--	--	---	--	---

D	21:18 26:8,20	141:24	demonstrativ	deposited
	30:8 36:5		e	143:16,22
D-A-K-T-R-O-	38:4 51:25	decreased	162:25	144:15
N-I-C-S	55:24 56:19	178:24	199:17	157:16
26:2	63:22 68:15,	decreases	208:25	164:24
	17 73:7	225:2	212:17 217:8	185:21
d-o-p-a-n-t-s	77:12,14 80:2	defend	demonstrativ	186:10
40:7	95:5,9 99:14,	46:1	es	187:17 188:4
D1	17 100:5	defended	203:9	189:10
53:19	101:8,16,21	47:3	densities	depositing
Daktronics	103:8 107:4	Defense	40:6	122:22 123:1
26:2	109:7 112:6	22:20	Department	143:12 144:4,
Dan	113:9 116:3	definition	22:20 48:18	9
6:13	124:7 127:21	17:18 18:14,	49:5 50:15	deposition
data	145:10	19 60:3	51:1,6	6:6,10,16 7:7
23:25 27:24,	147:16,17,19,	141:18,19	depend	9:8 12:24
25 28:1 66:1	25 148:24	219:13	179:4	13:23 14:1,19
87:8	149:1,3,6,22	222:19	dependent	20:10 40:21,
date	154:10	definitions	90:23 140:23	22 42:10
48:21	169:19	33:9	depending	123:2,7,9
dated	171:14 172:1,	definitively	47:20 120:21	145:23
50:9,16	2,8,10 173:16	114:8	186:16	199:10
day	175:7 177:19	degree	depends	203:10
20:10	178:3 180:2	11:12 21:9	28:8 91:6	206:17
dead	191:12,13	49:6,7 179:3	121:1 122:1	209:15 212:5
23:10,12	194:23	delete	depicts	230:2
decided	202:21	197:20 198:9	65:22	depositions
32:3 131:15	204:16	delineate	depo	6:14 8:3,6
deciding	210:23 213:4	161:4	200:16	describe
122:16	223:7	deliver	deposed	58:21 144:14
decision	declarations	57:22 58:13	172:5	156:20 175:9
12:16,19	9:17,19 10:4	71:18	deposit	195:12
decisions	11:3,11	delivering	125:12 126:1,	209:19
208:20	107:21	58:14	7 135:11	describes
declaration	decoder	delivery	143:1,4,11,	110:19
7:21 10:8,12	23:25 24:1	71:10,14	18,20,25	describing
13:10,19,22	decoding	demonstrated	144:22 186:3	86:12 110:20
14:1 19:1	135:21	212:6	188:4	description
	decrease			14:24 15:2
	78:5 120:3			27:5 110:9
	140:25			

design 14:11 15:7,20 17:24 18:15, 22 19:3,19 20:16 21:3, 11,21 22:4 36:20 38:17 39:7,13 40:18 41:19,25 46:15 47:19 55:9 71:23 72:6 114:3 121:7 124:2 129:9 131:17 133:11 135:15,23 136:24 138:6 159:9 218:10	designs 114:9 139:22 desirability 227:2 detail 94:11 153:14 detailed 115:24 detailing 79:11 details 25:22 186:7 detect 38:24 46:7,8 47:5,17 detected 48:1 detection 46:3 47:1,4 detector 47:24 detectors 47:6,12 determine 21:24 39:4 determined 40:6 determines 40:3 develop 32:25 135:6 136:19 developed 16:24 17:3 26:24 27:18 34:8,24 35:11 36:9 40:16	135:14 138:6 development 16:23 33:4 35:20 36:17 46:2,24 48:20 50:25 120:11 135:9 139:8 device 53:20,21 54:6 59:7 65:23,24 66:1 71:18 72:2,19 76:8 92:4,16 105:14 142:19 145:16 164:17 172:5, 17 173:22,25 178:10 190:4 192:9,19 194:18 195:4 198:4 200:8 205:10 211:5 220:2,15,16 devices 15:18 40:13 57:8 89:23 131:8 132:8 220:4 diagram 54:5,7,10 81:14 dielectric 139:2 175:17, 20 difference 55:18 160:12 differences 184:8 219:19 digital	39:8 diode 15:13 16:24 64:4,7,12,19 65:1,5,15 66:12 68:2 75:10,15,18, 19 85:7,8,21 88:21 112:24 114:17,22 115:1 123:12, 13 124:4 139:13 140:3 172:22 185:24 208:19 209:23 210:4 216:11,20 219:6 220:11, 19 diodes 19:15 28:14 30:23 31:4 dioxide 160:6 direct 79:11 128:14 188:23 directed 89:20 129:13, 15 141:21 142:2 165:19 192:13 208:11 directing 36:19 direction 25:25 27:23 67:25 123:15, 17 169:17 178:18 199:7	221:19 directly 61:7 64:22 93:19 117:10 121:2 137:14 161:22,24 162:3,6 168:14,23,24 170:9,21,24 171:23 172:23,25 173:6 174:1 175:9 176:7, 11 177:9,12, 14,20,21,25 188:18 211:4 224:12 disclosed 54:8,16 97:21 101:10 114:11 220:2 228:9 discloses 105:12 164:15 disclosure 107:2 108:6 115:21 148:19 193:11 disclosures 10:25 discrete 24:19 29:22 discuss 67:15 89:19 109:1 113:24 174:16 discussed 21:17 28:16
--	--	--	---	--

30:7 57:7 63:22 69:4 90:10 93:7 138:20 139:4 140:19 145:21,22 225:4 227:14	16,18,20,21 222:21 226:14,15 227:12 228:20	divide 119:14 215:17	dozen 49:24	driven 39:19
discussing 228:13	displaying 30:1 37:10,13 45:6	divided 119:9,13 215:24	draft 229:16,18	drives 22:15
discussion 26:12 62:21 108:8 134:13 163:7 199:20 209:9	displays 21:10,11,22 22:2,5,7,12, 20,22 23:14, 24 24:3,16,24 25:24 26:24 27:1,17 28:6, 11,13,14 29:13,15,17, 19,21,23 30:23,24,25 31:16 32:4 35:15 36:6 37:13,20,25 38:1,3,19,23 39:10,14 41:25 46:5 215:4	divorce 62:21	drain 53:19 54:22 57:13 87:25 103:12 127:14 130:9, 20 131:5 144:16 186:21 187:9 188:15	driving 40:10 58:4
displace 31:1		divorcing 77:3		drop 50:8 56:15 91:13 92:13, 17 93:22,24 94:7 186:14 224:10,17,20, 23 226:1,15, 18 227:11
display 21:15,24,25 22:13,17,23 23:4,11,16,20 25:6 26:23 28:4,19 29:24,25 30:22,25 32:2,23 33:2 34:6,10 35:12,13,17, 18 36:10,16 37:3,5,6,7,10, 16 39:20 40:21 41:9 45:4 46:7,9 63:12,16 64:15,17 83:12,16,17 92:19 93:11 96:18 97:22 110:11 113:15 135:5, 19 136:20,21 140:1 219:12 220:1,4,14,		divot 81:22	draw 115:6,19 153:24,25 155:11,17 158:9,15,17 159:14 160:7 188:7,12 204:23 217:6, 22	dropped 111:13 184:16
		divulge 42:8		dropping 48:10
		DL 66:1 87:8		drops 228:5
		DLA 6:23		drugs 9:1
		document 13:2 14:5 38:7 48:19,25 49:16,23 50:14,20 51:5 199:9	drawing 81:5 159:8 190:22 202:22 212:1, 13	due 36:11 224:17
	dissolving 152:9	documents 9:14 51:8	drawings 208:14,17 212:5,9	duly 7:13
	distance 20:21	dominant 21:23 26:23		dummy 146:2,8,12, 21,23,25 147:4,21 148:3,6,11, 14,20,25 149:4,18 151:10,12 164:14,16 168:4
	distances 122:1	dopants 40:7	drawn 85:20 86:8 156:14 161:20	
	distinct 90:20	doped 187:6,10,11		
	distinction 67:13 86:19 87:12	doping 16:12 20:23 40:6	drew 184:25 197:20 200:3 207:7 210:2	
	district 10:5	download 13:6 48:14 50:10 218:24	drilling 18:8 187:18	duplicate 156:6

durability 34:11 35:2	25:7	58:6,11,21,25	163:12	223:9,13,16
	eco-friendly 220:14	59:4,8,13	164:13,17	225:16
E	economic 32:12,15	60:14,17	168:4,19	electroluminescent 72:1 89:23 192:23 205:10 207:2
E1 53:8,18,25 54:12,15,21 59:13,19,22 60:5,11,16,23 61:12,23 62:4,7,13 67:16	effect 145:4	61:2,5,12,20 62:7,9,18,19 63:11,15,18, 22,24 64:7, 13,16,19 65:1,5,11,12 66:11 67:3, 13,14,15,18 68:3,10 69:4, 7,12,21,22 70:1,2,3,8,14, 17,18,21,22 71:6,8,9,17, 24,25 72:7,8, 9,20 73:22 74:3,4,8,9 75:6 76:5,6, 24 78:4,5,7,8, 9,17 81:20 82:20,21 83:4,5 84:4 86:8,9,16 87:6,22 88:2, 5,24 89:8 91:24 92:3 93:5 95:21, 23,25 96:2,4 97:2,8 98:2,3, 16 100:2,14, 16,17 102:6, 12,13 105:13 116:25 117:6, 9,11,15,18,20 118:12,15,16, 17,21 137:8 139:12 143:13,21 144:21 151:4 152:15 156:1 158:13 162:4, 10,13,16	169:8 170:12 172:6,18,19 175:14,15,18, 21 178:20 180:16,18 181:8,9,12, 15,17,21 182:9,17 183:13,17 184:3,13,20, 21 188:24 189:8 190:12, 24,25 191:15, 18,23,24 192:2,5,6,7,8, 17,24 193:1, 2,3,6 194:11, 12,16,25 195:7,11,23 196:24 198:3 199:1 200:1, 4,7 203:24 205:8,20 225:1	electron 22:18 27:7,10 31:19 electronic 14:10 16:3 20:15 76:8 electronics 18:22 19:2,6, 8,10,24 24:2 38:1 77:4 110:13 111:6 electrons 22:16,25 23:22 27:9,11 28:16 31:19 element 28:3 69:20 74:2 104:23 172:4 181:7 elements 40:9 124:21 143:7 155:18, 20 181:5 214:7,11 elevated 124:17 embodiment 90:3 169:1 embodiments 72:6 90:5 emission 23:20 47:1
E2 60:24 61:23 62:4,13	effectively 217:2			
earlier 13:14 28:17 35:15 36:8 81:1 84:9 86:12 96:12 113:13 114:6 138:8 140:14, 22 145:22 163:15 182:19 184:5 188:7 189:22 203:5 213:21, 22 215:14 225:4	Efficiencies 48:18			
	efficiency 35:8 132:18			
	efficient 229:11			
	effort 34:21 42:3			
	elaborate 196:17			
	electric 29:8 63:13			
	electrical 118:3 119:2			
	electrically 53:19 69:21 74:3 105:13 112:20 117:11 192:7		electrodes 52:16 55:14 56:6,8 57:1,7, 12 61:4,22,25 62:3,11,12, 15,23,25 63:4,14 65:17 67:23 73:4 75:3,9,12 76:2 79:20 98:17,18 101:5 119:1 127:14 191:8, 25 192:18 221:21 222:4, 6,9,16,17	
early 34:25 73:10	electricity 56:12			
easier 96:16 97:18 99:2 156:20	electrode 52:2,6,9,10, 13,21,23 53:3,4,8,13, 18 54:16,21 55:19,22,24 56:14,16,19 57:5,20,21			
easily 56:12 197:10				
east 132:11				
easy				

emit 28:15	19 68:11 82:6 109:10 162:7	equal 119:9	evaluation 30:21 31:9 32:18 34:3 35:19 36:21	exercise 202:24
emits 22:16	Energy 48:18,19 49:5 50:15 51:1,6	equation 119:8,12 123:20,21 140:22 215:22	event 45:16	exhibit 12:23,24,25 13:3,6 14:20, 22 48:10,12, 16 50:9,11 111:11,12,15 149:9,10 152:25 156:25 159:21 161:11 162:18,19,20, 22,25 163:5, 21 197:5 199:16,17,19, 23,24 200:10, 20,22 206:20, 24 207:7 208:18,25 209:1,17,20 211:21 212:17,18 217:8 218:21, 22 224:13
emitted 28:2	energy- saving 220:13	equivalent 54:7 150:11, 14,17,23 151:1,2	eventually 23:4	existed 159:3
emitters 28:15 47:8	engaged 9:22 10:23	error 207:8	evidence 226:17 227:9	existing 29:21 128:18
emitting 15:13 22:25 25:19 93:13	engineer 131:15,20 220:24	established 148:15	evolutionary 24:10	expect 73:8
enables 178:12	enhance 187:8	estimate 122:7	evolving 30:9	experience 15:5,9,16,24 16:6,18,25 17:1,6,12,13 18:2,5,9,11, 17,18,21,25 19:2,5,8,9 20:15,16 21:7,13 41:24
encompass 19:11,14	ensure 135:10	estimates 121:20	exact 10:14 63:20 136:5 173:23 176:25 207:8 214:17	
end 30:18 37:23 44:18 54:16, 17,20 57:12 59:8,9 60:10, 15 61:1,2,4, 13,21 62:3, 11,23 63:2 67:3,8,10,14, 16 68:4 82:4 83:18 116:8, 11,12,23 157:3 207:19 217:16,17 218:9,13 229:5	entire 60:18 61:14 63:5,12 72:21 128:5 182:12 211:25	etch 126:13 128:1, 2,6 186:2	EXAMINATIO N 7:16	
end-user 221:6	entirety 59:1,5 80:17	etching 126:10,20,25 127:23,24 128:4 129:4, 20 152:9 187:18	examples 52:15 75:3,25 76:2 138:22 171:9,13,20 173:15 177:16,25 213:20 226:16 227:4 228:13	
endeavor 49:22	entitled 50:16	evaluate 29:12,15,18 30:4 31:10 32:5,12 33:5, 17,21,25 34:11	exception 57:15	
ended 22:1,19 50:5	envision 156:10 159:2 201:6 202:24 209:7,13 212:23 213:11	evaluated 29:15 31:13	excerpt 44:18 66:18	
ends 60:23 62:13,	envisioned 159:1 200:11	evaluating 30:15 34:17 35:1,7 36:24	excites 47:16	
	envisioning 157:18 198:25 202:23 211:1 217:1		exclusively 128:5	

45:9,12,13, 15,17,18,24 46:9,12,15 48:2,8 49:19	24 86:14 112:16 188:19 197:13	185:17	features 126:2,4,17 129:3 165:5 181:4	5,8,9,11,13, 14,15,17,20 86:6,18 92:2 95:7,8,11,15, 18,21 96:21, 25 98:8,11,12 104:4,5,7,8, 10,13,16 107:6,10,18, 22,24 108:1, 5,19 109:17, 20,23,25 110:4,8,10, 13,14,19,25 111:2,4,10, 11,23 112:13, 21 113:8 114:16,22,23, 25 115:12,14, 22 116:15,20 118:19 119:3, 4 122:23 124:12 125:20 127:9, 19 128:13,17, 24 129:18,22 130:1 138:23, 24,25 142:8 144:5 145:7 149:25 150:3, 6,10 151:18, 19,21 153:2, 4,8,10,14,21 154:10 155:8, 24,25 156:15 158:5,12,22 159:18,25 163:22,25 164:15 168:7 169:1 170:17 180:7,9,11,15 181:24 182:18,19 183:5,10
experiment 221:3	extends 59:23 60:18 96:22 187:6	fabrication 16:17 29:20 31:14 41:17 92:4 120:11 133:7 136:21 144:19 215:15	feel 46:13 48:6 56:17 148:3, 23 212:3	
experiments 47:15,18	extensively 45:23	fact 54:12 82:5 85:11,13 89:10 107:17 156:8 162:12 214:21,22	feet 93:23,25 94:1,4 122:1 133:19	
expert 9:22 29:7 122:6	extent 23:22 31:13 156:19 197:2 200:15	factory 41:17 135:8	field 14:9 15:7,19 17:23 20:15 23:20 28:15 145:4 146:16 147:5,22 148:12 177:7	
expertise 146:16 177:5	external 39:3	fair 8:24 23:19 91:21 179:7	field-emitting 22:2,5,6,13 24:3,16,23 25:23 28:14 32:4 36:6	
explain 91:3,5 125:9	extra 131:15 134:19 210:24	fall 15:19	fields 14:15 29:9 220:13	
explained 101:24 148:25	eye 23:11	falls 81:24 119:5	figure 40:2,14,24 53:9,25 54:4, 7,20 55:5 59:10,15 63:9 64:3,9,10 65:3,4,14,15, 22 66:3,8,10, 19,22,23 67:20 79:5 80:20 81:12, 17,18 82:12, 14 83:8,13 84:3,23 85:4,	
explanation 22:8 27:17	F	familiar 8:5 22:6 49:2, 3,24 92:10 119:8		
explicit 115:21 175:4	fabricate 39:23 41:14 131:3,12,20, 21 132:5 135:9,17	fast 47:25 162:21		
explicitly 73:21 114:13 175:7	fabricated 120:20 130:11,12,16, 17,23 159:9	faulty 110:18 146:18		
expose 186:2 187:19	fabricates 40:20 41:9	feasibility 32:13		
extend 62:7 96:15 97:14 127:15 187:23 196:18 206:10,11 207:11,13	fabricating 131:4 132:16 133:3,5 135:5,6 142:14	feature 129:19 130:2 139:5 140:20 186:25		
extended 207:15				
extending 60:16 85:21,				

184:4,25 185:4,8 186:23 190:18,25 191:24 192:2, 13,15,19 193:2,5,6,8, 19,24 194:7, 12,19,22 195:3,5 199:6,9 202:25 203:2, 4,6,15,19 204:10,14,15, 19 205:1 210:22 216:8, 9,23 217:13 222:18,19 223:7 227:7 228:18 figures 103:17 104:1 107:19 filed 12:25 13:19 127:1 218:21 fill 119:4,6 186:17 fills 186:15 film 40:4 139:25 165:17 187:3 216:5 films 40:4,21 144:15 155:18 187:5, 15	filters 28:25 final 157:7 159:9 184:20 193:19,23 194:5 195:4 202:22 finalized 156:25 find 11:18,24 12:3 204:13 fine 87:2 96:11 99:4 161:20 201:18 finger 46:7,8 finish 20:7 132:24 174:11 185:6 finished 185:9,10 finishing 87:10 finite 79:20 firm 11:13 fit 122:19,20 five-minute 134:2 154:12 202:4 210:7 fixed 126:20	flat 27:20 125:17 130:3 182:6, 25 184:25 219:6,10,13, 17,20,21,22, 24 220:5,11, 19,24,25 221:2,6,8,10, 14,16,19 222:21 flat-panel 22:12 23:15, 24 26:24 27:1,17 28:6 31:16 flattened 127:11 flexible 220:1,3,14,16 flip 197:23 198:12 flipping 172:12 floor 132:13,16 133:19 165:3 flooring 177:16 floors 132:15 flow 78:7 88:12 90:24 flower 221:18 flowing 58:3,7	flows 88:12,19 89:5 fly 203:9 209:15, 24 focus 21:10 30:2 63:10 89:11, 13 99:10 174:25 focused 27:8 32:2 focuses 17:3 focusing 62:17 follow 65:21 103:17 135:7 156:21 164:11 178:6 201:17 219:2 follow-up 53:14 222:3 223:5 form 13:8 15:10 16:1,8,20 17:8,14 18:7 19:4,21 20:18 24:5,22 25:12 28:3,7 29:5 30:6 32:7 34:14 36:3 41:12 45:20 46:18 48:5 51:3 52:17 54:14 55:4, 20,23 56:9 57:2,9,24 58:15,19	59:3,24 60:9 61:5,25 63:8 64:8 65:2 66:9 67:5 69:14 70:9 71:11 72:16 74:12 75:16 76:13,25 78:23 79:9 81:16 82:24 87:9 91:19 96:8 97:10 98:20 100:3, 25 101:22 102:9 104:21 105:16 106:18 113:6 115:4 118:13 121:6 122:10, 24 130:18,24 131:23 136:17 138:3, 15,18 139:21 141:1,25 144:2,11 147:8,23 150:12 152:12 153:7 155:18 159:5 175:18,20 176:14,20 177:10,22 181:14 182:21 184:11 185:23 187:20 191:2 192:3 194:1,9 213:13 214:3 217:19 219:15 220:7 221:22 222:24 223:11
--	---	---	---	--

225:10 226:25 228:7 formal 8:8 formed 32:17 92:6 164:14 168:5, 16,21,24 169:2,9,12, 19,25 170:2, 7,8,12,19,21, 23 171:1,5, 10,14,17,18, 21 173:3,16, 21 174:13,18, 25 175:4,8, 10,14,17,20 176:2,7,10,18 177:7,14,18 189:19 forming 117:4 118:24 forms 54:17 160:10 161:6 formulated 128:12 formulating 133:14 135:24 found 11:21 52:6 foundation 132:19 fourth 224:15 frame 22:9 25:16 37:15 46:17,	21 48:3 49:10 120:22 132:19 fraud 50:6 free 148:23 freedom 137:18 friend 216:23 front 82:14 full 26:8 fully 56:4 226:20 function 67:10 96:6,11 functional 70:7 97:8 98:15 functionally 150:10,14,23 151:1,2 funded 22:19,21 G G-U-P-T-A 12:7 G2 53:20 gap 187:19 gate	53:20 54:21 57:13 87:25 103:11 143:4 144:23 145:3 153:24 154:2, 3,4,5,8 155:23 158:13 159:11 160:9, 10,13,18 161:8,16,23, 24 162:2,6 163:16,18 164:13,17 167:10,18,19 168:4,18 169:9,15 184:22,24 185:3,5 187:8 188:10 gates 165:13 188:17 gave 18:4 84:9 115:7 215:21 222:20 general 52:14 147:5, 20 148:11 168:1 177:5 generally 8:5 11:12 16:16 27:19 45:5 55:1 75:2 76:3,23 92:11 114:3 126:6,12 127:22 128:1 165:4 166:8 167:23 176:1 182:3 213:25	214:6 generate 31:20 199:8 generation 33:21 give 12:6 17:18 22:7 27:5,16 52:25 58:1 112:3 138:22 166:7 168:8 177:15 191:6, 10 193:21 203:20 219:13 221:19,23 227:4 glass 23:1 160:6 166:25 167:3, 6,8 186:16 goal 22:9 32:3 148:1 225:5 gold 116:10 good 7:5 14:24 15:2 23:8 51:11 56:21 72:25 102:16 132:22 134:1 137:1 158:21 179:12 194:3 195:5 196:19 198:15,19,23, 24 199:4 204:14 207:4 208:3 216:23 230:1	Greek 119:24 green 27:12 31:17 116:8 117:16 180:10 205:23,25 207:10,11,20 211:7,8,14 216:11,15 217:2,11,13, 20,24 218:3, 13,14 grind 127:12,16 129:25 grinding 126:19,24 127:12,18 129:4,20,23 130:2 grocery 45:6 ground 88:4,8,11,12, 17,18,20,23 89:5 99:20, 21,25 100:7, 12,23 102:7, 11 124:7 180:2 181:15 193:17 199:13 200:24 201:14 202:18 203:21 223:22 226:4, 9,10,24 227:8 228:9,12,16 grounds
--	---	--	--	---

98:25 99:16 228:10	H	heavily 187:11	hit 27:11	25 94:3
Group 6:8	half 38:14 158:23	height 133:19 134:14 139:1	hold 55:7 206:16 224:7	hundreds 26:4
grouped 110:12	Han 12:7 100:9 218:19,21 222:5 223:1, 22 224:3,12, 14 225:22 226:6,8,11,21 227:1,14,22 228:3,13,17	held 6:9 33:1	hole 118:20 119:6 186:11,15	hypotheticals 131:9
guess 10:1 38:25 41:23 58:17 73:9 87:10 121:21 122:11 127:24 132:3 163:12 164:5 167:16 183:12 186:11 205:3 213:19 217:17 221:24 222:1, 14	Han's 222:4,16 225:6	helmet 22:23	holes 119:4 185:19 189:12	I
guessing 23:14 126:21	hand 55:7 135:18 136:14,23	helmets 22:22	home 55:13 221:9	ID 164:14
guidance 42:3 228:18	happen 159:16	helping 49:20	honest 148:2	idea 128:8
guide 176:12,16	happening 162:7	high 14:23 23:19 29:1 56:14,17 202:16	hope 26:25 136:25	ideally 225:2
gun 27:7 55:8	hard 34:21	high-level 22:8 27:5,16	horizontal 67:25	identical 94:9
Gupta 12:7 100:9 213:2,15 223:22 224:3 225:7,20,24 226:5,11,16, 21 227:1,5, 14,22 228:2, 13,17	hatched 205:25	higher 121:15,18,19, 24 122:7 187:24 205:17 214:23	hour 8:14 201:21	identified 11:14,15 57:16
	head 12:1 221:5	highlight 45:10,19 48:4,7	hours 13:25 18:17 35:5	identify 6:18 111:2 114:12 129:17 190:24 191:22 192:1, 16
	hear 146:19	highlighted 143:6,8 184:23 198:6 216:11	house 49:9 81:5 115:9 132:10, 12,15 133:17, 18 165:3	identifying 11:13
	heard 26:1,4 105:22,23 146:25 148:16	highlighting 216:15	housekeepin g 209:7	illumination 220:14
	heat 33:21 161:6	hired 37:25	hover 196:14	illustrate 181:4 226:11
		Hisdetectors 47:2	How's 202:14	illustrative 65:25
			hundred 27:14 93:23,	image 91:14 105:3 170:17 172:12,15

199:3 images 103:21 imagine 76:8 83:13 immature 37:6 immediately 186:24 impact 88:25 89:4 135:23 159:8, 13 implement 15:13 16:24 82:21 137:3 145:15 153:22 178:9 184:9 implementati on 79:13,19 81:2 84:7 86:20,22 94:10 implemented 86:7 87:15 220:17 implementing 33:2 54:11 imply 67:8 important 15:14 66:12 121:25 122:4 impossibility 78:16 imprecisely 78:14	impression 147:11 improve 91:17 94:16 inaccurate 212:6 inch 67:9 inches 122:1 221:15, 17 include 19:6 39:8,13 46:4 52:1 99:11 101:18 143:12 213:21 Included 39:15 including 30:22 180:19 220:13 incomplete 66:23 inconsistency 19:7 incorrectly 203:23 increase 120:7 123:10, 21,22,23 196:7 increased 96:6 increases 92:15 increasing 159:15	independent 81:9 independentl y 90:21 indirectly 168:23 169:14,20 170:7 171:11, 15 173:17,22 174:21 176:8 indium 120:24 121:3, 13 213:10 214:19 individual 28:3 information 37:11 42:8 84:17 98:24 infrared 46:6 initial 158:11 input 39:20,22 139:8 inside 75:15,18 instance 107:22 128:10 147:3 instances 170:8 institution 12:16,19 instructions 45:6	insulated 105:13 insulating 81:22 143:5 155:17,19 158:14 165:16 167:24 186:15 188:8 insulation 144:17 154:7 157:16 158:3, 6,9,18 159:2, 7,10 160:2,4 161:3 170:13, 14,19 171:2, 3,6 185:11 insulator 113:3 151:23, 24 152:3 154:4 155:12, 15 158:12 160:16 165:1, 9 166:10 167:10,18 185:21,25 187:2 insulators 160:13 165:12,20,24 166:11 integrated 24:22 25:7 41:5 55:9 integration 131:14 intend 169:13 181:3 197:24 intended	85:3 103:16 117:24 intending 218:8 intensity 27:9 28:1 47:13 221:20 intent 103:19 118:2 216:14 intents 187:14 inter 10:21 interactions 21:2 interconnect 62:25 63:3 96:13 148:6 225:15 interconnecti ng 62:14 interconnecti on 63:5,7 92:14 interconnects 55:10 interest 165:19 interested 22:22 208:13 interfaces 38:18 39:8 intermediate 144:8,14 186:8
---	---	--	---	---

internet 105:23	137:4	issue 23:7,10	K	188:24
interpret 118:15 176:21	inverted 85:24	105:23 160:3 207:25 208:15	Kabat 6:21	lack 36:11
interpretation 70:21 117:5	investigation 25:15 212:10, 12	issues 31:23 134:16 152:17 161:18,21	keeping 123:19	landscape 125:13
interpreted 78:13 117:15 118:11	involve 10:7,11	italicized 119:24	keyboard 147:15	language 62:17 77:3,22 117:24 174:22 181:2 199:25 206:16
interrupting 174:5	involved 21:10 23:5 30:21 31:3 36:17,18,20 41:19 46:21	item 135:8	kind 15:24 39:19 55:11 83:7 119:5 158:16 169:22 172:19 182:2, 4 197:13 198:20	large- molecule 32:5
interruption 26:11 224:8	IPR 9:21,22 12:10,13 14:20	ITO 121:16 122:8, 17 213:19 214:20,22,25 215:4	kinds 122:25 177:15	larger 93:25
intervening 171:19	IPR2024- 01130 6:9	ITOS 191:20	knew 42:2	Las 73:12
introduce 12:23 48:10 111:10 149:8 161:11 162:18 199:22 211:20 218:19,20	IPR2024- 01133 13:13	J	knowledge 14:16 20:25 146:19,22 177:6	lastly 67:17
introducing 162:24	IPR2024- 01134 13:1	Jacob 6:7 7:11	L	law 224:24
invalid 140:12	IPR2024-0133 111:15	Jefferson 6:22	lab 47:6	lay 129:12 136:4
invalidating 100:23	IPRS 10:4	jog 107:16	label 67:16 79:17 83:10 154:1	layer 53:3,5 64:19 65:11,12 69:21 70:3,8 71:17,24 72:7 74:3,9 76:5,6 82:20 103:11 114:7 117:10, 15,18 128:6, 20 131:16 135:12 140:3 141:14 142:16 143:5, 13,21 144:9, 10,17,21
invalidity 100:12	IR 56:14 224:10, 17,23	jump 124:6	labeled 38:8 59:19 60:11,23 61:22 62:4,13 82:17 85:25 143:18 144:5	
invention 54:8 72:5 89:18 90:15 136:14 137:17,25	isolate 155:19	junction 75:10,15 84:12		
inventions	isolation 57:4,16,19 187:24	June 50:9,17 51:2		

151:5,17,22 152:2,3,15 153:25 154:3 156:1,11 157:16 158:3, 7,12,14,18 159:2,7,8,10 160:2,5,7,14 161:3 163:13 164:14,18,21, 23 165:2,6,23 166:1,2,5,14, 18,21,24 167:3,4,6,7, 11,12,19,21, 23,24 168:5, 11,12,13,16, 18,22,24 169:9 170:14 172:16,19 173:21 175:19 176:18 177:7, 8 181:9,10, 13,16,17,21 182:9,11,15 183:13,17 184:2 185:11, 12,15 186:10, 15,20,23 187:4,5,10, 11,22,24 188:8,24 189:8,10 191:14 192:8 194:13,20 196:25 197:8, 12 198:3 200:4 205:14, 16,17,21 206:10,23 207:3 208:1 211:16	layers 16:14 20:22, 23 39:16 40:22 41:11, 12 67:22 72:9 85:16 97:22 123:15 124:3 128:18 132:8, 14,15 133:9 135:10 155:19 158:9, 10 162:9 165:1,10,23 166:3,9,10, 19,22 167:2, 15 168:1 170:13,19,20, 22 171:2,3,6, 20 172:18 175:17 177:9 180:22 187:21 188:3 191:9 198:1 207:23 laying 133:6 142:22 layout 39:15,24,25 40:23 41:1,20 66:14,15 114:10 120:13,15 123:12,18 124:2 128:18, 19 133:25 135:2,20 139:14 152:19 155:16 158:8 159:6,13,15 160:19 182:23	LCD 23:14 28:19 29:4 219:12 LCDS 24:18 28:9, 11,24 29:8 30:23 leave 204:2 LED 16:6 18:18 21:5 28:13 29:13,21 30:5 39:17,23 40:9,10,17 41:4 45:9,17, 18 48:2 49:13,14 54:5 58:3,4,6,22 67:23 81:18, 19 82:8,16,22 84:1,20 90:1, 4,8 92:12,15, 16,18 93:4 97:25 98:15 113:22 116:1 136:8 141:14 186:6 206:19 219:24 220:6, 18,21 224:4 225:9,12,13, 14,17 LEDs 15:5,9,24,25 16:3,7,10,13, 18 17:7,13,20 18:3,9,11,15, 17,25 19:6, 20,22 20:17, 20 21:7 24:4, 12,17,18,19 25:4,7,9,18	29:18,22 30:16 35:16 37:9,19 39:9, 13 40:19 41:5,8,9,13 46:4,16 47:7 93:18 206:15 220:17 Lee 11:21 12:3 124:8 145:15 146:13,22,23 147:1,6 148:4,18,20 149:9,14 150:9,22 151:5,18 152:14 153:16 156:16 164:15 178:9 182:19 184:6, 9,10,14 190:7,11,18 191:3,6,7 192:6,13,14, 15,18 193:7, 8,11 194:6,22 201:11 204:2, 3 212:24 left 48:17 50:15 60:7 104:4, 11,13 143:8 162:1 172:12 182:3 186:25 194:19 195:18 197:18,25 207:11 legal 6:14 8:8	100:19 legitimate 49:22 length 93:20 119:10, 11,14 145:22 215:19 letter 119:24 letters 60:16 level 14:23 23:19 29:1 80:24 205:22 lexicographer 176:6 license 7:8 lifetime 35:1 light 15:13 16:3 25:19,20 28:1,12,20,22 29:3,9 31:18, 20 46:3,25 47:1,4,5,7,13, 16,17,25 48:1 58:3 93:13, 19,21,23 116:8 207:10, 11 215:1,5 219:10,14,16, 20,21,22,23, 24 220:5,12, 20,24,25 221:2,6,8,11, 14,19,20 222:22
---	---	--	--	---

light- detecting 15:18	55:20 56:9 57:2,24 58:15,19	201:10 203:8 208:7 211:2, 23 213:13 214:3 217:9, 19 219:15 220:7 221:22 222:24 223:11 225:10 226:25 228:7 229:1,5,10, 18,19,24	load 57:23 67:4,8, 9 92:12 222:13,14	6:14
light-emitting 15:18 16:24 19:15 22:3 28:14 30:23 65:24 71:18 112:24 123:13 139:13 140:3 172:5,16,17, 22 173:25 190:4 192:9 194:18 198:4 200:8 211:5	59:3,24 60:9 63:8 64:8 65:2 66:9 67:5 69:14 70:9 71:11 72:16 74:12 75:16 76:13, 25 78:23 79:9 81:16 82:24 86:25 87:9 91:19 96:8 97:10 98:20 100:3,25 101:22 102:9 104:21 105:16 106:18 113:6 115:4 118:13 121:6 122:10, 24 130:18,24 131:23 136:17 138:3, 15,18 139:21 141:1,25 144:2,11 147:8,23 150:12 152:12 153:7 156:17 157:2, 9 159:5 162:19 174:19 176:14,20 177:10,22 181:14 182:21 184:11 187:20 191:2 192:3 194:1,9 196:12 199:5 200:14,21	limit 68:10 limitation 90:14 limited 72:5,10 90:5 192:16 limiting 92:8 117:5,7 lines 27:24,25 79:18 135:13 liquid 28:11,19 30:22 list 49:18 50:6 100:7 listed 11:3 27:3 99:21 104:24 literally 26:3 litigation 10:5 LLC 6:9	local 146:23 148:6 localized 152:16 locally 146:24 148:8 151:15 located 6:14 120:14 121:8 locked 135:25 136:2 long 22:12 25:16 27:14 50:4 94:8 95:2 102:20 128:1 201:19 longer 73:8 122:1 123:9 looked 24:6,15 29:20 30:8 32:25 35:23 46:20 108:4,19 109:21 140:21 147:14 148:18 167:22 183:19 203:4 loosely 75:13 Los	lose 196:9 lost 157:5,19 196:9 lot 34:21 35:19 46:9 137:12, 20 low 25:24 lower 91:12,18 93:3 99:2 145:16, 19 151:16 162:13 178:10 187:5, 22 191:10,15, 18 193:15 214:15 lowercase 119:24 lowers 68:4 114:7 luminescence 27:12 luminescent 194:20 luminous 89:21,24 90:18 lunch 73:2,9 102:17 LUNCHEON 102:24

M	184:14 185:5, 7,18 186:5 187:13,16 188:15 189:12 195:9, 24 196:4 198:14 199:25 200:19 201:7 206:7 207:25 208:17,20 209:20 212:23 217:7 220:9 226:23 227:25	mapped 117:20 mark 111:10 marked 13:3 14:19,22 42:16 48:12 50:11 104:14 111:12 143:20 149:10 151:21 161:3 162:22,24 188:25 199:19 208:25 209:1 212:18 218:22	117:10 118:19 120:19,21 121:4,8 125:2 129:7 140:24 143:4,15 144:23 145:3 152:15 153:24 154:2, 3 155:23 160:9 161:6, 16,23,24 162:2,6 163:19 164:24 165:7, 16 166:8 169:15 171:18 180:23 184:22 185:5, 23,25 186:1,3 188:10 189:6 192:21,23 197:7 200:3,6 205:25 211:5 213:9,10,11 215:2,17,20 216:5	156:5 225:25 mature 22:4 24:20 31:6,18,20,21 32:1,22 33:16 34:8 matured 23:15 25:14 meaning 52:9,24 53:12 55:3 61:12 70:13 127:10 176:3,25 224:19 means 32:9 56:11 70:13 71:5 72:14 115:20 147:21 148:11,14,18 149:4,18 164:23 171:10 172:13 176:10 221:24 meant 83:1 134:20 168:13 170:8 201:11,12 measure 81:14 measuring 88:23 mechanical 34:11 92:3 127:13 media 6:6
Madam 229:13				
made 24:21 29:23 54:12 76:21 81:25 125:2, 6,10 131:6 152:11 155:9 161:25 163:25 165:6 191:16 199:3 206:14 212:2 213:12 219:21	makes 56:24 67:13 90:13 97:18 141:9 189:7			
magnitude 121:20 122:9, 12	making 32:1,2 55:3 56:22 82:8 118:20 131:8 141:5,14 142:18 144:16 160:19 185:10	market 23:16 26:25 31:1		
main 21:10		marking 104:17		
make 9:18 19:25 35:10 37:6 41:7,9 61:18 66:17 67:4,11 76:12 77:6 87:11 88:6 93:17 94:17, 18,21 99:1 129:24 136:21 137:20 139:3, 18,25 140:16 145:5 154:5 156:4 157:4 158:10,24 159:3,4 160:20 162:5 164:2,5 182:16	manufacturability 30:3,5,16 manufacturable 31:16 36:13, 16,25 manufacturing 23:8 219:7	match 95:2 116:17 material 15:12 16:11, 12 17:4 20:20 21:2,8 22:3 24:7 25:11,13 32:9 33:16 36:19 39:19 40:3,5 46:16, 19,20 64:11 65:16 68:3 75:10,11 76:22 81:22 83:15,19 97:14,17 113:7,14 115:7,20	materials 16:17 20:23 29:20 57:8 79:22 82:2,6 98:23 115:15, 23 129:8 155:17 166:20 167:1, 13,20,25 191:17 matrix 46:6 matter 6:7 18:12	

medication 9:1	40:4,14,22 75:18,20	200:9	mixed 13:14	189:24 193:11
medium 207:20	119:5 120:12 124:3 125:4, 5,12,14,18	mid 21:22 34:25	modification 124:16 152:6, 10,18,19,22	202:25 204:23 205:3 209:13
meet 179:14	126:1,3,6,7,8, 10,17 128:3	mid-2010 46:17	158:4 159:4 163:14	223:21 226:5 228:18
melt 135:12	130:20 131:4, 6,16 132:5,6, 8,14 133:24	middle 8:15 20:6 26:21 68:19 103:24 182:4 187:19	178:16 194:6 197:10 208:4 212:23 226:23 227:25	modifying 128:17 138:5 142:21
melts 161:6	134:25 136:9 144:4 145:2 154:4,8	Mike 6:25	modifications 139:19 142:17 153:23	modulated 27:10
memory 25:14 41:25 106:16 107:16 110:10,17 111:22 112:2 121:15,18 146:17 148:10 191:8, 11 192:20,22 213:16,18	155:17 158:13 161:22 162:3, 9 165:14 166:2,10,15, 16,18 167:7, 21 175:17,19 181:23 182:11,15 183:20 185:4, 12 186:10,13 187:12 188:9 213:19	mile 49:9	163:24 164:3 197:3 198:25 200:18 208:12	module 189:17
mentioned 35:15 70:15 102:11 114:6 146:9 215:14, 23 223:1	metallization 130:8	millimeters 121:23	modified 124:12 125:20 128:13,16 144:5 145:7 153:5,11,21 154:9 155:23, 25 156:15 181:11,16 184:4,25 185:7 192:6, 14 193:24 194:7,12 195:5 200:12 201:8 202:22 203:4,15 210:22 226:7	moment 7:4 107:12 155:2 204:13 212:25
mentions 109:14	metals 125:10 127:3 133:9 213:20 214:2,4	mind 59:25 69:15 123:19 152:22 156:13 171:12	miniature 22:20 23:16, 21	Monday 45:25 47:3
merge 160:5	meter 88:23	minute 146:14	minute 146:14	monitors 219:25 220:6
merit 208:10	method 219:7	minutes 74:15 179:12	mischaracteri zation 47:10	months 41:21
mess 120:17 135:22	micron 21:15,22 23:4 29:12 30:5,17 31:12 32:6	misspoke 13:10	modify 120:10 137:18,22 138:2 140:10 183:23	morning 7:5
messing 135:21	microphone	mistake 206:14 208:17		MOSFET 188:14
metal 20:22 39:16				MOSFETS 188:13
				motivated 120:2 140:25 141:24 145:14 178:8
				motivation 223:20
				mouth 196:10

move 51:11 105:6 116:2 137:2 142:4 156:18, 23 158:23 159:23 179:9 195:17 197:21 198:1 202:18 205:12,17 206:3,6,7,9 207:3 209:24 213:2	8:13 18:21 19:3 24:9 31:24 34:5 35:20 45:13, 15,17 74:13 133:4 186:11 187:18 196:4	103:20 158:22	objection 15:10 16:1,8, 20 17:8,14 18:7 19:4,21 20:18 24:5 25:12 28:7 29:5 30:6 32:7 34:14 36:3 45:20 46:18 48:5 51:3 52:17 54:14 55:20 56:9 57:2,24 58:15,19 59:3,24 60:9 63:8 64:8 65:2 66:9 67:5 69:14 70:9 71:11 72:16 74:12 75:16 76:13, 25 78:23 79:9 81:16 82:24 87:2,9 91:19 96:8 97:10 98:20 100:3, 25 101:22 102:9 104:21 105:16 106:18 113:6 115:4 118:13 121:6 122:10, 24 130:18,24 131:23 136:17 138:3, 15,18 139:21 141:1,25 142:4 144:2, 11 147:8,23 150:12 152:12 153:7 159:5 176:14, 20 177:10,22 181:14	182:21 184:11 187:20 191:2 192:3 194:1, 3,9 199:5 200:14,21 201:10 203:8, 12 208:7,9,10 211:2,23,25 213:13 214:3 217:9,19 219:15 220:7 221:22 222:24 223:11 225:10 226:25 228:7
moved 22:4 23:15	neglect 172:11	noted 87:3 203:12 208:22 230:4		
moving 77:13 107:2 114:5 196:10 197:11 218:18	negligible 163:19	notes 9:14		
multiple 84:13 132:8, 12,14,15	Nevada 7:6,8	notice 161:7 162:1		
Multiyear 48:21	newer 119:3	noticing 6:19		
N	newly 32:16	NTSC 35:18		
N-TYPE 75:11	nice 196:24 207:14	number 6:9 7:8 17:12 18:6 35:3		
narrower 70:16,23 100:15,20,22 101:20	night 221:12	numbered 38:5 68:15 69:18 103:23		objections 208:22
necessarily 49:2 55:6 58:13 91:24 147:6 169:20 207:14,24	NONCONFID ENTIAL 45:1	numbers 10:14 13:14 26:20 130:13		obligated 8:9
needed	noncritical 71:10	numeral 143:19 186:19		obvious 164:16 190:10 197:3 198:25 200:19 208:11,15,16
	nongeneral 52:15	nut 118:7		occur 224:17
	nonplanar 127:18	O		occurs 89:22
	Nonresponsiv e 142:4	object 13:7 20:5 86:25 174:19		offer 29:7 102:6
	notated 95:8	objected 20:11		officer 7:7
	note 7:19 94:8	objecting 174:8,9		ohm 119:15
				Ohm's 224:24

ohmic 187:13	opened 48:15 139:2	14	209:20 226:23	original 159:24 163:12 204:20
ohms 119:21 216:3, 4	opening 186:17	opposed 16:6,19 63:6 80:16	orders 121:20 122:8, 12 229:14,20	outcome 137:1
older 119:5	operate 99:4 113:5	optical 14:10 46:3	ordinary 52:9,24 53:12 61:11 114:2 176:3 222:7 227:9	outlet 84:10,16 94:14 115:9, 11
OLED 30:24 33:12 35:2,8,11 36:21 37:3,14 45:9,18 139:24 190:12 200:8 219:6 220:11 222:22 224:20,21	operation 23:23 29:7 89:6	optimize 136:21,23		
	operational 34:17	optimized 137:1		
	opinion 10:19 14:8 15:4,8 17:25 18:2 19:18 20:14 54:12 55:18,23 56:18 58:25 65:8 66:6,25 69:1,9 70:5, 25 75:14 77:8,24 92:6 96:5 99:20 100:23 101:8, 15,17,19,24 102:6 113:4 117:4 118:24 127:8 128:13 130:22,25 133:15 145:13 150:9 164:3 199:13 216:18	option 123:24 218:12,15	organic 15:9,17 20:22 22:3 40:5 72:1,19 82:8 84:20 92:4 117:10 136:8 139:24 140:2 141:14 185:22,25 186:1,2,6 190:3 192:19, 21 194:18,19 200:7 211:5 220:17	outline 155:15 157:15 158:2, 18
OLEDs 31:4,10 32:6, 13,18,19 33:5,18,22,25 34:12,18 36:9,25 37:19		optoelectroni c 14:10 15:7, 16,19 17:24 18:22 19:3, 14,19 20:16 21:4 45:24 46:10 139:23 140:4 141:10, 15		output 25:21
omitted 66:3,7 199:23		optoelectroni cs 19:6,23	organic-light- emitting 31:4 124:4 185:24 219:5 220:11,19	overcome 31:24
one-off 36:14		Optronic 6:8		owner 50:5
one-story 132:10		orange 143:15,22 146:6 155:22 156:8,11 183:14 184:23	organic-light- emitting- diode 30:24	Owner's 13:3 14:22 48:12 50:11 111:12 149:10 162:22 199:19 209:1 212:18 218:22
open 13:6,16 50:10 68:2 110:12 111:4,14,17, 18 147:12 149:14,15 163:2 186:11 199:18 209:3, 4,5 212:20,21 218:24,25 219:1	opinions 17:17 29:7 99:17 123:3,4 127:21 131:10 135:24 200:23 201:14 212:4,	order 123:10 153:22 158:24 189:24	organize 39:16 135:20	oxidation 186:16
			organized 27:19	oxide 120:24 121:3, 13 144:24 145:2,3 159:11 160:10,13,18 161:8,17,19 162:2 163:16, 18 165:12
			orient 29:9	

188:11,14,16 189:5 213:10 214:19	30:8,15,19 37:23 69:5 70:15 73:6, 18,24 74:11 77:12,16,21, 24 78:1 80:1 89:19 95:5,9, 13,14 96:20, 21 98:6,7 99:13 100:5 102:11 103:7, 10,18,22 104:24 105:7, 10 106:3,4,23 107:7 108:5, 19 109:7,12, 13,22 111:19 112:5,11,13, 21 113:9 116:2,5,14,23 117:14,23 118:4 124:6, 9,11 128:14, 15,21,23 142:8,9 145:9,22,24 146:3,9 149:21 152:6 154:10 164:7, 10 168:2 169:4,5 172:9 173:24 174:14,15,17 175:6,11 178:2 180:1, 5,25 181:25 182:8 183:2, 24 184:23 186:20 190:7, 16 192:5 193:24 194:8 203:6 204:4, 16,24 210:23 213:3,7 215:6	216:6,9 220:2,8,18 223:6 224:11, 13,15 225:23 227:7 paragraphs 21:18 202:20 parallel 72:3,11 78:4, 6,7 80:6,9,16, 23 82:7 83:7 84:25 85:1 91:25 93:17 178:23 179:3, 6 214:18 216:19 217:2, 16 223:23 227:6 parentheses 117:25 181:3 part 9:18 19:23 22:21 31:11 39:5,12 41:11 46:11,16 53:15,24 56:25 59:18 65:22 73:23, 25 74:10 75:17,18 78:21 80:15 81:23 86:12 110:3,25 111:2 114:12 124:11,16 126:2 132:11 150:6,9,14,22 151:3,7,21 165:5 182:7 183:18 185:17 189:19 204:8	partes 10:21 partially 191:21 parties 7:19 parts 45:22 56:5 59:1 103:17 partway 78:1 party 40:18 passenger 78:14 passivation 152:1,3 past 51:8 patent 10:8,9,12,13, 24 12:11,14, 17,20 13:1,3, 10,11,13,20 14:9,17,21,22 17:1 20:25 21:1 40:3 48:12 50:11 53:1,2,6 54:9 55:22 56:1 57:6 58:20 63:17,25 67:12,18 68:12 76:4 79:3 80:21 81:12 89:18, 20 90:2,4,9, 10 91:21 92:7 95:8 101:12 104:5 111:12	113:24 118:18 123:5 124:1 127:1 129:14,15 139:6,9 140:11,20 141:7 142:23 149:10 162:22 171:25 176:5 177:4,5 199:19 209:1 212:18 218:22 221:25 228:22 patent's 129:6 patents 7:21 10:17, 20,22 11:1,4, 7,9 20:10 27:2,3 36:1 89:13,14 104:9 120:10 136:10 138:8, 21 139:20 path 32:3 81:7 84:12,17 118:7 214:16 217:16 paths 79:15 83:25 214:8,12,13 222:13 227:6 pathway 61:15 63:5,7 71:10 86:4 93:3 pattern
P				
P-TYPE 75:10				
p.m. 74:19,22 102:22 103:2 134:5,8 154:16,19 179:18,21 202:6,9 210:14,17 230:3,4				
Pacific 73:13				
pads 38:19,23 39:10,14				
pages 103:23				
paid 49:19				
panel 219:6,10,13, 20,21,22,24 220:5,12,20, 24,25 221:2, 6,8,10,14,16, 19 222:22 224:22				
panels 219:17				
paragraph 14:4 15:3 17:18 18:15, 20 21:17 26:7				

114:6 126:6 132:6 143:24 165:2,11,13, 24 166:11,14, 22,24 167:5 175:14 189:12 192:6 193:4 patterned 143:23 164:24 165:20,25 186:14 187:22,23,24 patterning 96:16 97:18 99:2 167:14 pause 220:15 PDF 21:20 103:9 162:18 170:10 175:11 197:4 198:24 208:3, 4 211:20 people 29:22 32:16 33:1 38:24 196:12 216:4 percent 23:9 90:13 perceptive 23:11 period 123:9 126:20 periods 126:25 perpendicular	123:16 178:18 person 20:14 114:2 140:1 155:5 227:9 228:17 personally 11:10,15,18, 20,23 12:2 95:10,17 96:24 98:10 107:9 116:20 124:14 150:2 180:11 183:10 190:22 Peter 6:20 petition 12:10,13 petitioner 6:11,24 9:21 petitions 9:23 PH.D. 7:11 phosphor 22:16 23:1,23 27:11 31:17 phosphors 24:10 28:16 31:17,19 photo 47:12 123:12 phrase 52:1 71:8 78:20 146:25 168:23 169:12,19	170:6 171:14 173:3,16 175:7,13 176:2 177:6, 18 222:5 physical 66:13,16 79:12,14 81:1 84:7 85:4,12, 13,15 86:19 94:10 115:6, 19 122:21 physically 86:8 physics 47:15 pick 103:14 106:7 picking 23:11 106:13, 16,20 picture 28:3 124:14 pictures 212:13 piece 23:1 pilots' 22:22 Piper 6:23 pixel 22:13,25 23:2 28:2 39:3,4, 15,18,24 40:1,12 54:8 57:9 58:2 60:25 61:5 62:1,22,23,25	63:1,3,4,11 64:12 65:24 66:20 68:5 70:19 72:12, 21,22 77:19 78:25 79:8, 15,22 80:11, 17,19 83:17, 22 84:2 86:13 89:20 90:12, 16,24 91:7,8, 11,22,23 92:8 93:8,9 96:5, 15,16 97:7, 15,16,17 98:15 100:18 102:14 110:20 111:24,25 113:4,13 115:12 120:18 123:5 124:2 128:19 129:9,12 135:20 136:4, 11 140:4 141:16 142:23 146:24 150:15 151:4, 15 159:7 184:16 191:20 193:16 224:1 225:5,14,17 227:4 pixels 22:14 23:10, 12 24:12 28:3 39:2 41:19 63:13 82:4 83:11,25 91:18 93:11,	12,14 96:14 97:14,23 98:25 99:3,6 102:1 104:23 110:11 111:5 112:1 113:14, 17,19,20,25 114:4,11 133:6 219:20, 22 226:14,15 227:12 228:12,20 pixilated 37:10 PL 63:10 64:25 65:4 66:2,7, 25 84:21 85:22 86:20 104:14 place 40:9 41:18 60:25 93:19 120:18 133:7, 11 161:7 195:5 placement 40:13 places 76:16 126:8 180:24 plain 52:8,23 53:12 61:11 62:18 70:13 176:2 plan 48:21 50:16 51:6 81:5 140:7 157:7 229:1
---	--	--	---	---

planar 127:10	20	18,25 17:1,6, 13,18 18:1,2, 12,14,19	positional 69:11	98:1,16,24 104:14,22,25 113:16,20 114:14 150:15 151:3 201:25 218:3 222:12,13,14 223:18,24 224:2,19 225:16 226:2 227:3,12 228:12,20
planarization 167:4	pointed 76:18 191:24 228:13	19:18 20:17, 24,25 78:3,13 81:14 120:2, 6,9,16 121:4 122:16 123:7, 8,14,22 134:14,18 135:25 136:13 137:3, 16,17,22,25 138:21,25 139:17,18,22 140:1,9,24 141:2,3,6,8,9, 16,19,22,23 142:2 145:14, 19 164:2 178:8 183:22 184:8,18,19 185:9,16 189:23 190:10 193:10 200:12 201:7 202:25 204:22 208:14 209:7, 13 212:23 213:25 214:10,12,24 226:1,6,7,12, 18,22 227:21, 25 228:2,3,4	positioned 57:22 58:12 67:4	
planarize 167:4	pointing 186:19 191:13		possibility 127:18 133:2, 14,16	
planarized 129:24	points 76:18 160:25		post 106:25 108:10,12 204:17	
plane 211:7	poke 165:15		potential 29:13 31:10 32:13 33:2 91:1 172:11 187:7	powering 225:3 226:15 228:19
Plans 50:25	pokes 162:8 189:6,7		potentially 29:16	Powerpoint 107:15,17,19, 23 155:3 162:17 210:21 217:7
plasma 30:23	polishing 127:13,17		pour 132:18	powers 225:3
play 71:9 94:5 160:18,23	polysilicon 136:9 143:1, 5,11 144:22, 24		power 25:24 33:17 35:7 63:10,15 64:6,17,25 66:2,7,25 68:5,6,7 71:10,14,16, 18 72:24 79:15,17,22 81:19 82:22 83:7,9,10,18, 23,25 84:23 85:22 87:13 88:13,20 89:7 90:1,4,8,24 91:10,22 92:16 93:1,4, 10,12,14,17, 21 94:14 96:17 97:15	
PN 75:10,14	poor 89:21,24			
PO 64:6	portable 221:10			
point 15:15 16:11, 17 20:20 21:8,13 34:9 35:11 36:10, 19 66:15 72:25 76:15, 16,17 77:5,6, 21 80:18 86:18 107:4 112:18 153:15 157:4 161:15,17 169:18 175:6 176:15 184:13 198:24 203:16 204:5,	portion 59:6 60:16 110:14 126:3 170:12 181:18,22 182:4,9,13 183:18 186:25 187:1 198:5 221:16 224:14 225:20	position 37:17 40:8 58:12 123:12 124:3,18 160:1 181:11 193:10 212:8		
	portions 180:19			
	POSITA 14:15 15:4,8, 23,25 16:5,			

presence 86:15 87:5,21 88:1 223:19	49:11	11 140:2	22 153:22	PT/9:59 6:2
present 6:18 96:5 97:9 98:3,19 113:2 212:25	problem 23:13 42:1,5 89:21,24 93:6 127:20,23 206:17 227:17	141:4 142:14, 22 144:19 152:13,17,18 153:9 159:12 180:24	155:13 158:4 161:2 163:13, 24 164:2 178:16 228:1	public 23:5
pressures 199:10	problematic 152:10	processes 126:16	proposing 124:25 143:18,20 156:3 226:4,6	publications 49:4
pretty 63:19	problems 31:24 67:6 77:2 91:1 172:11	processing 111:6 126:13 128:2 136:12 138:9 153:10 166:23 189:14,24 213:23	proprietary 40:19	pull 52:4 152:24 158:13 172:7 203:18 204:8, 13,14 209:17
previous 15:22 17:22 18:24 38:21 58:18 60:3 80:7 87:10 110:22,25 128:13 142:5 143:10 155:10 161:14 163:6 185:6 193:18 214:22 218:6	proceed 42:14 185:16 229:4	produce 183:23	protect 166:15	pulled 82:14 111:15
previously 108:4,18 109:22 112:21 124:18	proceeding 7:8 8:9	product 23:5 34:9 36:17,18 38:2 40:18 41:5	protective 166:1,4,14,17	pulling 204:15
primary 72:15,18	process 16:22,23 17:2 21:11,12 40:16,20 41:10,12,14 85:16 120:10, 11,17 121:1 122:22 123:3, 8,9,14 124:1, 5,24 125:1, 10,12 126:2 127:10,11 128:17 129:5, 7,10,16,24 131:7,14,19 132:5 134:18, 25 135:3,7, 14,16,17,22 136:1,3,5,15, 20,23,24 137:5,10,18, 22 138:2,5,8, 21,25 139:10,	production 23:10,13	prototypes 23:6	pulses 47:25 48:1
principle 92:10		professional 18:21	provide 9:6 10:19 32:16 39:22 42:2 55:10 64:23 92:3 93:2 150:15 151:3 184:3 187:24 191:10 193:14 222:21 226:17	punch 185:19
printed 23:1		program 48:21 107:13	provided 7:21 38:2 56:19 100:11 113:17 219:5	purple 143:6,8,25 144:9,17 155:11,22 156:7,8 157:14,24 158:4,19 159:14,23 161:1,3 163:5,9 186:24 187:1 188:8 213:7 223:8
prior 11:2,8,10,13, 16,17,21,23 12:2 140:8		properties 21:2 129:8	providing 10:7,11 58:2 67:19 177:3 223:18 227:8	purported 89:21
pro		proportions 195:10	PT/7:40 230:4	purpose 65:25
		proposal 134:17 153:5		purposes 187:14
		propose 226:24		
		proposed 124:12 142:19 143:14 152:5,		

put 34:21 39:16, 17 40:10 46:6 93:23 101:7, 15,23 131:16 139:24 161:15,22 162:15 165:12,14 166:24 167:3 182:23 185:22,24 186:14 188:9, 14 189:5 198:12 205:8 210:7 224:25	87:16 89:3,9 97:6 98:14 99:11 102:3 105:1 108:13, 16 112:3 113:23 114:19 117:13 121:2 122:3,6 129:5,13,14, 17 131:18 133:12,13 134:23 137:14,19,20 141:21,23 142:1 147:18 148:14,22 150:22,25 151:20 157:25 158:16 160:21 161:1 165:19 167:16 169:4, 23 170:4 171:12 173:1, 2,5,14,18 174:17,20,22, 24 175:3 177:24 181:9 189:18 191:22 192:13,25 201:2,3,5 208:19 220:3, 5 226:20 228:15	228:22 questions 9:9 89:11 99:10 121:22 132:25 141:17 142:13 152:23 166:13 174:6 212:1 222:3 223:5 quick 38:4 200:22 201:3 210:6 quickly 32:22 33:12 34:9 47:25 quote 17:22,25 18:1 105:12 117:23,24 145:13 224:11 quoted 226:16	34:18 re-ask 26:17 re-asking 69:15 reach 84:1 93:18 reached 160:25 read 10:23 11:1,2, 6,7,9 12:10, 13,16,19 30:19 51:5 53:16 65:20 66:4 71:21 105:21 164:12,20 173:9,12 205:19 206:20 220:8 224:14 226:22 227:21 readers 45:5 reading 30:20 50:24 65:7 140:14 193:11 224:14 226:22 228:1 readout 110:13 111:5 ready 37:15 real 79:19 162:21 reality	188:13 realize 207:22 Realizing 142:21 realtime 140:15 173:13,19 reason 9:5 25:9 36:9 50:6 96:15 97:16 100:11 160:7 reasonable 15:6,23 17:23 18:10 68:10 98:23 109:3 141:19 reasons 25:20 67:25 92:5 recall 11:19,22 12:5 25:18 31:5 33:10,14 34:15,17,20 35:1,6,7,20, 24 36:24 41:23 50:2,24 51:9 55:23 95:12 96:9 97:11,20 103:15 106:8, 15 107:11,21 108:6,7 109:4,25 111:8 116:22 124:15 147:2 150:5 183:11 221:4
Q				
qualify 20:17 37:8				
question 8:15,18,19, 22,23 17:10, 16,25 18:20 19:17 20:3,7, 11,12 22:24 24:11 26:18 30:2 37:2 41:7 45:14,21 46:11,23 53:14 54:3,4 56:3,6,25 58:10,17 60:14 61:7,8, 11 62:10 63:24 64:18, 22,23,24 68:9 75:24 85:3	questioning 9:16 42:12 51:12 73:3 174:20 185:7 199:6 201:24 208:11			
		R		
		R&d 50:16 51:6 race 31:15 radiate 47:17 radiation 47:17 raise 212:1 ranges		

receive 98:1,16 114:14	red 25:6 27:12 31:17 95:21, 24,25 97:3 106:11,12,14, 23 107:25 108:3,18 109:20 112:7, 10 116:9 117:21 124:23 128:25 144:4, 10 150:6,10, 22 151:17,22 155:11 183:9, 19,20 186:10 188:3 195:2, 10 197:11,12, 17 198:14 199:2 201:17 205:22 216:10,14 217:2,11,13, 21,24 218:7, 8,13,14	225:8,24 228:11,19	references 12:7,8 184:19 226:21 227:15,17,22	49:4 50:25 73:3 147:6 165:22 201:4
Recess 26:13 51:18 74:20 102:24 134:6 154:17 179:19 202:7 210:15		reduced 79:8 81:15 86:14,18 90:7,18 178:11,12,17	referred 53:15 80:7 118:4	relates 100:8
recipe 135:7		reduces 93:8 97:18 146:24	referring 18:5 24:15 38:21 54:25 63:5 78:15 80:8,14 88:17 130:5 143:7 154:4 170:14 175:13,16 182:7,13,15 183:18	relation 62:19,20 66:16 71:20
recited 119:1 176:18 208:2		reducing 68:7 78:15, 16,20,24 80:4,10,13,18 84:2 90:12,15 92:7 93:16 94:5 127:2 224:4 225:11, 12,13,15 227:2,5	refers 59:5 67:3 80:9 101:17 115:22 186:20	relationship 53:9 69:11 70:7
recites 181:2		reduction 179:4,5		relative 170:3,5
recognize 13:18 48:25 50:20,21 51:5	redefines 148:20	reemphasize 58:10	reflected 200:20	relevant 14:9,14 87:3 105:4 131:10 138:10,13 139:3 140:18 144:3 162:11 177:6 222:1 224:15
recollection 106:13,19	redirect 228:24 229:6	refer 58:25 60:15 61:13,14 71:3 95:25 96:1 157:2 182:8 214:12	reflects 208:4	relied 99:25
reconfirm 157:1	redo 156:9	reference 11:18,21,24, 25 12:3 52:3 57:11 73:7 136:3 138:1 179:10 191:6 209:14 218:21	refresh 111:22	relies 102:7
record 6:5,17 7:19 26:12,14 30:19,20 51:17,19 53:17 71:22 74:19,21 102:20,22 103:1 134:5,7 154:16,18 156:17,20 179:18,20 199:20 202:6, 8 208:9,22 209:9 210:10, 11,14,16 229:14 230:3	reduce 70:19 72:2,11 77:18 78:8 82:7 87:6 90:3 94:14, 18,24 95:1 100:17 102:13 123:20 126:17 179:1, 2 223:25	referenced 27:4	refreshed 149:3	rely 213:15 225:7 228:2
			regard 123:5 141:6 228:16	relying 118:25 177:5 223:19,22 225:21,22
			regular 44:19 67:21	remain 98:15
			reiterate 188:7	remember 10:6,14 11:6, 15,20,25 25:22 26:3,5 31:8 32:24
			related 9:9 47:23	

33:3,20,24 77:23 95:17, 19 96:24 97:1 98:10,12 110:10 122:13 148:4, 5,8 170:18 171:23 180:12 190:23 191:11	repairs 221:9 repeat 75:5 130:13 151:9,19 157:24 repeated 173:11 repeatedly 34:24 36:4 91:25 138:19 141:13 repeating 59:25 171:12 rephrase 8:22 41:6 174:24 194:4 replace 23:4 29:19 replaced 113:3 replacement 29:13 replacing 21:25 26:25 31:11 32:14 report 50:9 112:11, 22 128:14 145:24 164:8 175:12 194:8 204:24 reporter 6:12 7:2,4,7, 13 28:10 119:23 126:11 157:20,21 202:19	229:14,17 reports 107:20 represent 12:24 84:4 86:3 161:2 199:13 200:10 201:6 212:22 216:15 representatio n 85:4,13,15,17 163:8 representativ e 83:10 207:24 represented 79:23 80:24 84:11 representing 6:24 212:14 represents 54:16 115:2 201:13 reproduction 163:5,11 request 8:13 requested 134:3 require 69:10 70:6 147:18 177:13,20,21, 23 203:22,24 212:9,11 requirements 33:17 135:15	requires 70:1 71:9 198:2 205:18 requiring 167:14 rescind 74:10 Research 48:20 50:25 resistance 56:14,17 68:4,7 70:19 72:2,11 77:19 78:5,8,16,17, 21,24 79:8, 19,20 80:5,6, 10,14,15,16, 18 81:15 82:7 84:2 86:15,17 87:6,22 88:2, 9,10,16,22,24 89:10,25 90:3,7,12,15, 18,23 91:6,7, 8,18 92:7,13 93:3,8,16 94:5,14,24 95:1,3 96:7 97:19 99:2 100:18 102:14 114:7 119:9,19,20, 21 120:3 122:8 123:20 133:4 140:23, 25 141:24 145:16,20 146:24 151:16 162:14 178:10,20,24 179:4 184:15	191:10,16,19 193:15 196:25 214:4, 6,15,17,18,23 215:10,13,18, 22 216:1,2,5 222:23 223:1, 5,25 224:4, 18,19,24 225:1,9,12, 13,15,24 227:3,6 228:11,19 resisted 91:13 93:21 resistive 56:21 92:17 resistivity 119:10,15 121:9,13,16, 24 122:4 123:19 133:4 140:22 215:16,21,22, 24,25 resistor 213:6,12 214:1 resistors 214:5,13 respect 10:21 61:9 respond 67:2 72:13 208:8 response 17:25 33:5,9, 11 72:18,24 restart 209:11
--	---	---	---	--

resting 151:17	right's 211:4	82:3 84:24 93:20 95:2,3 123:8 211:14 217:2	scan 27:22 66:1	183:8 194:21 198:5 203:14 204:11,12,17
result 31:8 32:18 34:3 86:15 91:14 94:1 192:14	right-hand 38:6 68:16,19	running 35:16 76:11 83:7 84:10 121:23,25	scene 55:5	scroll 109:16 190:16 216:22
resulted 27:1	rising 125:15	runs 72:23	schematic 66:13,16 79:10,16,18, 23 80:24 81:3,9 84:7,8, 11,15,18 85:2 87:12 94:9 114:16 115:6, 8,19,25	SE1 170:12,16,18, 21 171:1 180:19,21 181:18,22 182:2,6,10, 12,14,16,25 183:7,13,18 184:20,24 185:4
resulting 193:20,23 194:5 195:4 200:11 201:6	role 71:10	Russ 6:20	schematic-level 54:5	SE2 180:19,21
RESUME 44:19	room 9:11 158:24 159:4 219:23	RUSSEL 7:11	schematically 94:8	SE3 180:19,21
RESUMES 45:1	rotated 198:20	RYOBI 221:10	Schottky 75:19	sealed 42:10
retain 9:25	rotate 40:25	S	science 36:19	search 11:10,13,17, 21,24 12:3 38:4 147:17, 19,24 148:23 149:2,5,16 170:1,6
retained 10:3,16	rough 229:16,18	S-O-L 50:3	Sciences 6:8	searching 147:7
retracting 18:24	roughly 156:10	S2 88:3,18,20,22	scientist 16:12 20:20 21:8 32:10 46:19	sec 168:8 197:6
retractions 9:18	route 97:15 115:7, 10,20 120:25 124:3 151:15	sat 8:2	scintillator 47:16	Second-from-the-last 169:7
review 10:21 11:14 13:22	routed 98:25	Saulnier 6:25	scope 10:2 136:19 141:3,18	secret 42:8
reviewed 10:17 49:16 51:8	routing 121:10	save 20:8 162:17, 21 228:24 229:11	Scott 6:12 7:5	
reviewing 13:25 51:9	row 23:25 27:20, 21,22,23,24 68:2 91:9 119:23	Saves 217:9	screen 27:9,11 38:25 95:24 96:2 146:5 155:1	
revise 74:10	rows 23:24 83:14	sayings 29:24		
rid 197:11	rules 8:5 135:15	scaling 178:12		
	run			

section 63:6 99:22 100:10 216:11 218:18	119:19 128:4 132:21 165:23 166:23	set 40:6,15 123:14 124:1 133:7,10,25 135:1,4 136:1 137:6 152:23	shine 215:1	84:14,16 85:5,9 95:7,9 109:20 110:7 152:6 162:7 190:18,25 194:7 216:8 217:1
sees 92:18 224:1, 21	sense 20:1 24:21 41:7 56:22,24 66:17 67:11 76:12 77:6 82:9 121:19 129:24 137:20 160:19,20 220:9	settled 163:6	154:11 188:17,23 206:11 207:3	shows 66:11 81:3,10 84:8 111:3 112:13 169:2 202:22,25 209:12
select 28:24 67:24 68:1 120:13 121:4 126:3, 17 156:7 214:24	sensing 40:11	setup 47:7,9,11	shorted 144:21 187:25 189:1 206:19 207:9 208:19 209:23 210:4	shrink 211:12
selecting 16:12 20:21 21:12 23:25	sensitivity 47:21	shade 91:15 124:22 207:19	shorter 73:16	shrunk 178:21
selector 27:22	sentence 26:8 30:18 73:20,23,25 74:11 78:12 80:7 105:10 145:12,21 164:10 169:7 170:11,25 172:10 178:4 215:7 219:3	shades 56:20 180:10	Shorthand 7:6	shutting 47:24
selects 27:22	sentences 164:11,22	share 155:1 180:14 194:21 203:14	shorting 188:11 206:14	sic 7:8 64:23 82:20 130:16 133:3
self- quenching 47:24	separate 62:9 90:19	sharing 155:3 204:11, 13,17	shorts 162:9 189:7	sic] 105:14
sell 32:2,23 34:10	separately 160:8	sharp 189:7	show 79:16,17 110:1,5 129:23 158:5 161:19 183:24 206:2	side 60:22 61:21, 22 62:4 76:9 143:8 144:18 145:6 170:17 172:19 190:12 191:14 194:11,13,16 195:13,17 196:13 198:9, 10 199:2 200:7 205:9, 23 210:24 225:2
semiconduct or 16:16 75:20 128:2 132:7 145:3,4 167:12,19 187:7,10,12 188:18	series 56:14 115:3 142:12	sheet 119:19,20,21 215:9,13,18 216:1,2 225:24	showed 49:17 111:23	
semiconduct or-level 39:13	serve 65:12 76:6	shielded 160:9	showing 91:16 110:15 111:25 115:8 116:8 146:5 153:8 193:19	
semiconduct ors		shifted 147:15 210:24	shown 66:21 83:8	

sides 206:19 207:8 208:19 209:22 210:3	simplified 66:19 simply 58:7 60:15 63:23 70:22 97:12 100:20 101:7,8 158:12 172:12 196:6, 18 212:12 227:8 228:10 simultane- 143:19 simultaneous 89:1 111:7 172:21 173:7 174:2 simultaneous ly 143:20 single 37:9 83:17,22 85:5 111:23 178:25 189:20 sit 129:2,18 146:20 sitting 26:5 96:10 131:1 133:17 151:22 situation 58:5 83:24 96:10 138:7 size 36:24 120:14 122:19 156:4 159:13,15 178:13	195:22,25 sizing 41:20 skill 114:2 222:8 227:10 skipped 199:22 SL 66:1 slice 217:12 slide 155:3 156:6 157:14 206:23 207:1 slight 159:4 slightly 91:12 156:2,4 158:24 210:25 slow 127:25 slowly 30:20 212:15 small 63:6 93:22 221:14 small- molecule 32:6 smaller 93:22 156:2,5 Snip 205:3 snippet	198:22 socket 93:19,21,23 software 107:13 Sol 50:3 solder 55:7 solely 192:13 Solid 48:20 50:16, 24 solution 145:15 178:9 solve 23:12 solved 31:25 42:2 solving 89:20 Song 11:24 170:17 179:9 180:3,7 182:18 183:22 184:9, 10,14,18 193:13 Song's 181:17 sort 27:20 37:8 86:3,4 207:20 228:3 sound 64:21	sounds 10:15 100:19 128:12 134:15,16 138:12 169:22 191:24 source 28:5,12 47:4, 16 88:3,8,11, 12,17,20,22 89:5 92:14,19 93:1 103:11 127:14 130:9, 20 131:5 144:16 145:17 178:11 186:21 187:9 188:15 219:10,14,16, 21,22 220:12, 20,24,25 221:3,6,11,15 222:11,12 sources 16:3 46:3 47:5,13 219:20,24 220:6 221:9, 19 space 153:12 217:23 spaced 188:12 spacing 139:11 spans 103:23
--	--	---	---	---

speak 51:22 74:25 103:4 134:11 154:21	sputtered 123:2	started 200:12 201:8	132:4 133:7 134:19 135:7 136:1 138:9 140:7 144:8, 14 152:10 153:9 159:12 186:8 189:24, 25	65:24 66:15, 20 67:21 70:19 72:21 77:19 85:16 86:13 89:20 90:12,16,25 91:7,9 93:17 97:7 99:6 100:18 101:4 102:14 109:21 123:5 124:2 125:17, 24 128:19 129:9,12 136:4,11 140:4 142:23 144:25 182:2, 12,14,24 183:7 189:16 198:8 211:6 217:18
speaking 76:3 127:22	square 119:21 195:11 216:4	starting 60:5 63:22 139:18 203:16 204:20	stick 127:15 172:8	
specific 17:19 18:25 19:19 21:2 42:1 49:3 66:15 107:21 136:3 147:2, 18 172:7 173:3 176:8	squeezing 159:2	starts 41:10 172:4	stipulate 212:2	
specifically 21:5 30:15 169:8 175:3	stack 121:9 178:18, 23 185:23 187:15 191:15,19 192:21	state 14:8 48:20 50:16,24 73:21	stitch 67:22 68:3	
specification 53:6 56:13 60:20 61:17 63:20 65:9,16 78:14 169:24 173:2 176:22, 24	stacked 168:14 178:21	stated 150:21 199:13	stop 117:12 128:6 174:5	
specifics 32:24 33:4	stacking 179:3,5 191:16	statement 21:21 66:7	stores 45:7	structures 101:9 125:15 133:5 141:16
spectrum 25:6	stamp 50:15	stay 35:5	stories 132:13	student 46:1 47:3
speed 47:22	stamped 38:6,11 52:3 68:18,19	stays 148:8	strike 22:16,25 23:3,22 28:16 31:9,19 39:6 56:7 67:1 114:20,24 142:5 165:4 178:22 188:21	stuff 107:3 135:21 197:20 206:17
spend 13:25 199:9	stand 221:12 225:19	step 24:10 124:24 125:1 126:2 130:23 131:7, 21 137:5 142:18,25 143:2,10,11, 12,24 144:1,3 185:14 186:9, 10 188:4 189:11,14,15, 20	strip 122:22	subfield 19:20,23,25
spending 22:1 35:18	standing 211:25	stands 180:15	structural 70:7	subjective 121:22
spilling 180:6	start 30:20 49:14 92:21 195:6 201:24 203:3 204:9,17 229:2,3	steps 16:23 21:12 120:11 125:12 127:11 129:7, 16 131:15	structure 40:11 54:8 57:9 58:2 61:1,5 62:1, 22,23,25 63:4	subjects 171:16
spreading 222:23,25 223:5	start-up 49:8		subpart 79:7	subsequent 42:11 175:19

subsidiary 222:16 223:13	supplied 23:7 91:12 224:1,19,21	18:22 19:3,19 20:16 21:4 25:13 33:16 39:20 40:3 46:16 47:18 140:4 141:10 183:23 202:22 220:14	taking 51:12 88:23 190:1	176:23 183:16 185:20 195:1 198:16 223:2 226:9 227:2
substrate 27:20 40:21 41:11 123:16, 18 125:16 126:7 135:6 142:16,19 164:25 169:9, 13,16,17 170:3,5 172:14 175:18,20,22 176:11 185:10	supply 63:15 68:6 91:21,22 93:9,12,14,18 94:22 104:22 222:13,14 226:13	systems 17:4,24 22:3 24:7 45:24 46:10,20 139:23 141:15 190:2	talk 17:19 59:7 62:22 64:15 67:7 72:21 100:4 101:3, 25 102:20 108:22 138:4, 8 157:8 166:22 179:23 202:11 203:22 214:16 224:10 225:23 227:17	talks 30:15 53:3 56:14 90:2,11 227:5
successfully 23:17	support 92:4 227:13	T		taller 139:3 140:16
suddenly 171:16	supported 176:10	T1 53:20 54:22 57:13 59:23 60:7,12,19 61:16 62:8 66:2 87:7,19, 23,25	talked 57:11 60:21 80:25 90:17 94:20 173:20 213:20,22 214:19	taught 68:12 91:20 109:5 117:8,9 118:17 123:4 138:20 169:24 182:17 184:14
sufficiently 25:19	supposed 85:8 104:4,7, 19	T2 53:21 54:21 57:13 59:23 60:8,12,19 61:16 65:23 87:23,25 88:3,8,12,19 89:5 139:12		teach 136:3 137:7 223:23
suggest 85:4 177:8 224:4 225:8	swear 7:2		talking 16:11 20:19 35:12 37:9,15 56:16 57:4 66:18 72:18 77:4 78:22 84:2 85:22,23 86:13 88:6,7 126:5,19,23 128:9,20 129:11 141:4 156:21 160:12 165:21 166:6 171:17 173:20 174:22	teaches 101:11 136:3, 5 151:14 152:14 169:25 181:12 197:7
suggested 36:8 62:5	swept 27:8 29:24	table 99:18		teaching 223:20 224:3 225:6,7,21
suggesting 77:9 150:18 168:17	switch 35:4	takeaway 115:25		teachings 190:11 200:13 226:5
suitable 72:9 214:20	sworn 7:13	takes 81:7 84:17 115:10		tearing 133:20
super 159:11	synonym 52:22			technique 126:10 220:12
supplemental 69:4,6,10 70:17,18,22 93:5 100:17 102:13	synonyms 53:11			
	system 14:11 15:7, 12,17,19 16:11 17:2			

techniques 127:2,5	ten 74:15 179:13	TFT 164:17	thin 40:4,21 139:24 144:15 159:11 161:16 162:9 163:17 165:12,15,17 187:3 188:9, 11,14,16 189:5	thins 125:25
technological 26:11	ten-minute 51:13	there'd 136:9		thought 61:18 73:15 90:25 105:23 136:15 193:3
technologies 24:18 29:16 30:5,9,22,25 31:23 32:1,20 33:1,18,22 34:12,19	term 55:4 56:15 58:20 63:17, 21 67:17 100:14,19 148:16 171:22 176:15 177:1	there'll 161:16		thought-out 208:14
technologists 40:16		thereto 72:6		thousand 26:4 160:17
technology 6:8 14:15 21:11,24 22:2 23:9,17 24:7, 15,17,20,22 28:8,19 29:4, 14,18 30:3,4, 10,16 31:6, 11,14 32:6, 13,22 33:6,15 34:1,7,23 35:2,3,8,9,11, 13,17,25 36:15,22 37:1,3,4,5,7, 14,16 40:20 41:10,12,15, 16 45:4 49:15 90:9 124:5 137:16 141:5 142:22 148:12	terms 17:12 18:5 54:11 100:19 122:8 177:1 213:9 221:25	thermally 135:11	thing 84:19 87:14 94:20 101:2 115:11 118:22 119:7 132:21 135:1 137:2 162:5 167:5 203:19 206:18 207:11	thousand-to-one 160:12
television 30:1	test 47:11	thesis 46:1,23 47:3	things 39:19 41:14 45:13 55:10 84:8 94:18,19 120:13,14 121:10,23,25 123:1 135:6, 12 136:25 139:14 155:18 159:10 185:2 212:13	tie 62:21 222:11
telling 36:19	test-measuring 221:3	thick 133:3 142:15		tied 89:25
temperature 34:18	testified 7:14 34:4,7 51:4 96:12 113:13 138:7 141:13 163:15 208:18	thicker 125:25 141:6 160:17	thickness 16:13 20:22 40:3,5 119:13 120:7,12 123:10,15,21, 25 125:7,10, 11,14,18,21 126:17,21 127:2,6 133:24 134:25 140:2 141:13 160:13,15,17, 22 161:8 163:16 208:1 215:16,17,24, 25	time 6:11 8:12 17:19 20:9 22:1,3,9 24:21 25:14, 15,16 26:9, 15,22 27:18, 23 29:14 31:18,21 32:20 33:5,7, 9,11,19,23 34:1,13,19 35:3,9,12,19 36:10,23 37:1,15 46:17,21 48:2 49:10,17 50:4 51:8,11,17,20 73:13 74:19, 22 94:13 102:16,22 103:2 107:20 120:22 123:9 126:20,25
	testify 9:2	thicknesses 17:4 40:15 125:23 127:24 133:8 207:23,25	thinner 187:10 197:19	
	testimony 9:6 42:16 43:1 44:18,19 45:1 110:22			
	testing 33:14			
	text 116:17			

127:1 131:13, 17 132:11,20, 22 134:1,5,8 136:13 137:3, 16,25 143:22, 23 148:23 154:16,19 158:8 164:25 165:19 179:15,18,21 199:9 201:15 202:6,9 203:10 210:14,17 216:3 229:11, 22,24 230:3,4	told 148:17 tomorrow 7:24 228:24 229:1 Tong 6:20 7:17 12:22 13:4,9, 13,17 14:18 15:1,21 16:4, 15 17:5,11,21 18:23 19:12 20:2,8,13 21:6 24:13 25:17 26:16 28:18 29:11 30:12 32:11 34:16 36:7 42:11 45:3 46:14,22 48:9,13 50:8, 13 51:10,15, 21 52:20 54:23 56:2,23 57:14 58:9, 16,24 59:11 60:2,13 64:1, 20 65:6 66:24 68:13 69:16 70:11 71:15 73:2,5 74:14, 23 75:22 76:20 77:10 79:1,24 82:10 83:2 87:2,4, 20 89:2 92:9 96:19 97:24 99:8 100:6 101:13 102:2, 15 103:3 105:5,18 106:21 111:9, 13,16 113:10	115:17 118:23 119:23 120:1 121:12 122:14 123:6 126:15 130:21 131:2 132:1 134:1,9 137:11 138:11,16 139:16 140:13 141:20 142:4, 6 144:7,13 147:13 148:9 149:8,11 150:16 152:20 153:17 154:11,14,20 156:24 157:6, 11 158:1 159:17 162:20,23 172:24 173:8 174:3,8,12 175:2 176:17 177:2,17 178:1 179:9, 12,16,22 181:19 183:1 184:17 188:2 191:4 192:11 194:2,14 196:10,21 199:16,21 200:17 201:1, 19,23 202:3, 10 203:12,13 208:6,8,21 209:2,10,16 210:6,11,18 211:9,24 212:7,16,19	213:17 214:9 217:10 218:1, 23 219:18 220:22 222:2 223:3,14 225:18 227:19 228:21 229:3, 8,12,15,22 top 12:1 22:17 26:7,19 40:23 41:1 48:17 50:15 64:12 65:15 71:25 72:23 82:16 83:16,21,23 90:11 91:15 93:7 96:17,18 98:4 99:1 104:2,17 105:3 109:16 110:11,14 113:15,18,21 120:14 139:14 158:23 161:16 166:1, 15 168:10,14, 16,25 169:2 172:14 182:23 185:11,25 187:9 188:9, 10 192:19 195:14 205:10 211:12 221:5 top-emission 72:1 topography 125:13 127:9	129:25 185:1 topological 129:3,19 topology 127:19 total 70:19 77:18 100:17 102:13 touch 37:25 38:1, 18,23,25 39:9,14 46:5 114:4 158:11 touched 38:25 touches 81:24 touching 60:17 113:14, 20 114:1 117:10 169:2, 16,21 170:1,9 171:18,21 173:21 175:9, 23 176:11 177:9,12,14, 21,25 187:1 trade 42:8 traditional 89:22 transcript 42:10 173:12, 19 transistor 22:14 40:4 58:4 59:23 60:6,7 62:8
times 6:17 32:21 34:4,7 35:4 119:9,13 132:6,17 160:17 215:24 tin 120:24 121:3, 13 213:10 214:19 tip 22:15 title 48:19 today 6:24 7:23 9:3, 6 13:23 14:2 89:13,15 202:16 225:4 228:24 230:2 today's 7:7 toggle 29:2				

87:7,19 88:3, 19 89:5 105:14,19,23 127:14,17 130:4,5 133:10 139:12,25 144:16,25 145:2,5,6 161:25 165:13,17 185:2 186:4, 22 187:16 198:22 transistors 19:9,11,25 39:18 40:10 58:22 60:12, 19 61:16 123:13 136:10 158:11 190:3 transmit 29:9 transparent 215:5 triangle 85:24 true 132:7 188:13 truthful 9:6 truthfully 8:10 9:2 tube 22:17 27:7 tubes 21:23 22:1,11 24:2 26:10,23	turn 14:4 38:5 40:2 52:3 59:15 65:18 68:14 69:17 73:6 74:1 77:11 79:2,5 80:1,20 81:12 95:4,5 98:6 99:13 103:7, 22 109:6 142:7 145:9, 24 149:21 152:5 153:2, 18 163:10,21 164:7 168:2 169:5 178:2,3 180:1,25 181:24 183:2 190:6 213:3 216:6 turned 204:12 Turning 112:5 223:6 turns 33:12 TVS 27:15 two- dimensional 112:14 type 21:25 26:23 28:5 45:4 55:2 57:23 69:11 70:6 120:19 135:20 148:24 152:2 176:12	186:16 228:23 types 15:17 49:4 212:9 Typical 120:21 typically 8:13 52:11 120:20 typo 168:9 U U.S. 48:17 49:4 50:14 Uh-huh 113:11 ultimately 23:17 24:9,23 112:24 183:23 unacceptable 188:22 unaltered 78:17 unaware 73:15 underlying 17:15 37:2 77:17 136:7 137:21,23 148:13 underneath 153:25 156:2, 11,12 160:8 166:18 167:7,	12 understand 8:16,19 10:24 16:10,21 17:9 19:16 52:1,21 55:17 61:6 71:5 76:14,18 86:2,6 88:6 89:17 93:16 96:1 104:19 147:9 160:3 166:25 206:13 226:1, 18,20 227:10, 24 understandin g 52:8 69:25 71:16 82:19 83:6 89:16 97:7 108:2,17 109:19 112:9, 15,19 114:21, 23 115:2 130:10,15 136:24 147:4, 21 148:11,25 149:3,18 164:22 180:14 186:18 222:8, 15 223:15 228:4 understood 8:23 19:10 75:23 78:3 157:6 167:6 189:9 undesirable 226:2,19 227:11,14	uniform 90:22 91:5,23 93:13 94:6, 19,25 96:7 uniformity 89:22,25 90:19 91:3,17 93:6 94:16 uniformly 93:3,18 unit 119:10 units 119:14,15 216:2 university 221:4 unlike 193:17,18 unmodified 159:24 uploaded 13:2 149:12 199:16 212:16 uploading 208:24 upside 172:13 upward 85:24 upwards 85:21 USC 100:24 utilization 75:12
---	---	---	---	--

utilize 47:15	149:24 150:3 157:7 159:24 161:10 180:7 181:11 183:4 185:8 204:15	15,16 156:14, 16 157:17 180:3 182:23 194:6 200:12 201:8 203:1 209:13 212:24 226:5	wanted 25:2 42:4 100:13 123:22 131:20 143:17 158:2 203:18	156:15 162:25 163:22,25 164:3 169:15 178:9 180:3 183:22,23 184:5,18 185:1,8 186:20 190:11,13 192:6,10,14 193:11 194:6 200:8,12,13 201:8,9 202:19 203:1, 2 204:1,6,7,9, 19 209:13 210:22 212:24 216:23 223:21 226:5, 7,8,17,22,23 227:23 228:1, 9,18,20
v				
vacuum 27:7 32:25	versus 6:8	views 129:22 160:11	warming 202:17	
vague 17:10 167:17	vertical 86:3	visually 186:23 197:16	wavelengths 47:13,21	
valid 140:11	vertically 86:14		ways 31:3 67:7 122:25 174:25 175:22	
validity 10:20 131:11	via-making 189:20	voltage 29:8 91:10, 12,22 92:11, 12,13,14,18, 19,22 93:9, 12,14,18,24 94:7,23 98:1 104:25 114:5 145:17 178:11 224:20,21 225:1 226:1, 13,14,18 227:10 228:4	Weaver 11:18 99:20, 23 100:9 101:3,10,11, 19,25 104:8, 10 105:12 106:25 107:1, 2,23 108:3,7, 11,12,14,17, 22 109:5,9,17 110:2,6,9,18, 24 111:11,17, 20 113:24 114:9,12 117:8,18 118:17 124:8 129:18,22 136:1,14,22 138:1,23 139:18 140:9 145:15 150:11,18,24 151:11,12,14 152:14,24 153:4,16,18 154:6 155:8	
valley 81:23	vias 165:14 185:15,18,22 189:12 217:22			
vapor 123:1	video 6:17 35:18 37:14 98:24 111:6 135:20 147:14 229:20			
variable 39:1	videoconfere nce 6:3,10	voltages 225:4		Weaver's 113:4 114:13 120:3 137:16 181:12,16 192:9 200:4 205:21
varying 93:14	view 16:11,17 20:21 21:8 36:20 40:23, 25 41:2 64:10 66:14,19 74:7 100:9 110:11 112:14 115:24 120:15 123:18 124:8 139:15 142:17 153:9,	volts 93:2		WEDNESDAY 6:1
VDD 104:17,25 108:4,18 109:2 112:20, 25 113:12,15 114:14,17,23 115:1,13,16 116:1 145:17 178:11 216:12,20 217:4,18 218:2,9,14		w		weeds 162:11 187:4
Vegas 73:12 202:15		wafer 123:16		week 45:25 229:15
verify 199:10		wafer's 127:11		weeks 18:17
version 23:21 95:14		walk 142:13		west 132:11

whipping 107:22	95:1,3 97:19 115:10 118:6 178:20 223:24	34:23 56:4 66:22 72:10 77:17 80:4,13 106:14,20 137:12 143:21 146:2 162:3 168:13 169:11 173:4, 23 174:13,17 175:5 213:6 227:16	208:18 212:6 wrote 168:3 171:7 X XXXXXXXXXX 44:16 XXXXXXXXXX 43:25 XXXXXXXXXXXXXX XX 43:11,14 XXXXXXXXXXXXXX XXXXXX 43:10 XXXXXXXXXXXXXX XXXXXX 43:16 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXX 43:19 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XX 44:7 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX X 43:22 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX 43:23 44:1,8	XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX X 43:3,21 44:3 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XX 43:15,17 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXX 43:20 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXX 43:12 44:12 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXX 44:4 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXX 43:18 XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXXXXXXX
white 28:20,22 186:24	wired 54:19,21 55:4 81:4			
wide 178:19	wires 52:16 55:10 62:24 63:3 68:6 79:18 84:13 87:12 118:5,6 158:11 225:16 226:2, 15,19 227:11 228:5,11,19	work 10:2 22:19 26:9,22 27:6 29:12 31:11, 25 37:19,25 39:12 40:8 41:21 47:10, 23 49:18 113:24 114:7 119:15 196:4 221:4,9		
wider 195:24		worked 21:15,21 24:4 27:1,18 29:4 36:1,2 37:24 46:2,5		
width 123:23 178:19,22 179:5 196:7 215:19	wiring 54:25 55:14 67:19 145:20 146:3,9,12, 22,23,25 147:5,21 148:3,6,11, 14,21,25 149:4,18 151:10,12,14 164:14,16 168:5,19 178:12,17	working 10:5 23:5 30:10 37:6 55:12 221:12		
widths 178:12,17 179:1,2	windows 157:23	works 136:24 138:6		
wife 154:23 179:24 202:13	wire 52:11,12 53:10,25 54:13,17,24 55:1,3,6,13 57:4,16,18 59:21,22 60:4 68:6 76:10, 16,17,21,23 77:5 79:23 81:5,7 84:10, 17,21,25 85:5,19 86:5, 7,14,20 87:23,24 93:20,22,25 94:7,8,15	writing 10:4 91:14 101:2 107:20		
	wondering 103:16	written 212:14		
	word 54:24 55:1,18 68:23 69:2 70:6 106:17 151:8 164:21 166:13 174:21 175:4 227:16	wrong 25:3 112:2 206:15,19		
	words			

43:8		
XXXXXXXXXXXX	Y	
XXXXXXXXXXXX		
XXXXXXXXXXXX	year	
XXXXXXXXXXXX	18:18 49:3,5	
XXXXXXXXXXXX	51:1	
XXXXXXXXXXXX	years	
43:13 44:11,	17:12 18:6,	
13	16,21 22:10	
XXXXXXXXXXXX	27:14,15 31:6	
XXXXXXXXXXXX	33:3 35:24	
XXXXXXXXXXXX	37:22 49:25	
XXXXXXXXXXXX	yellow	
43:4 44:2	116:10	
XXXXXXXXXXXX	188:25	
XXXXXXXXXXXX	yield	
XXXXXXXXXXXX	164:4	
XXXXXXXXXXXX	Yup	
XXXXXXXXXXXX	153:20 198:7,	
X	11 199:4	
43:6,24 44:5	206:6,10	
XXXXXXXXXXXX	207:2,6,18,21	
XXXXXXXXXXXX		
XXXXXXXXXXXX	Z	
XXXXXXXXXXXX		
XXXXXXXXXXXX	zoom	
XX	6:3 216:8	
43:7,9 44:9,		
10		
XXXXXXXXXXXX		
XXXXXXXXXXXX		
XXXXXXXXXXXX		
XXXXXXXXXXXX		
XXXXXXXXXXXX		
XXX		
43:5 44:6,14,		
15		
XY		
123:17		