

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD
4

5 HOME DEPOT U.S.A., INC.

6 Petitioner,

7 v.

8 LYNK LABS, INC.,

9 Patent Owner.

10
11 Inter Partes Review No.: PGR2022-00009

12 U.S. Patent No. 10,932,341
13

14
15 DEPOSITION OF ERIC C. BRETSCHNEIDER, PH.D.

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22 Reported by: Monique Vouthouris, CCR, RPR, CRR

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DEPOSITION OF ERIC C. BRETSCHNEIDER, PH.D.,
pursuant to notice, conducted virtually via Zoom
Videoconference, before Monique Vouthouris, CCR, RPR,
CRR, Notary Public in and for the States of New
Jersey and New York.

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A P P E A R A N C E S

ON BEHALF OF THE PETITIONER,

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C O N T E N T S

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E X H I B I T S

(No exhibits marked.)

1 P R O C E E D I N G S

2

3 ERIC C. BRETSCHNEIDER, PH.D.,
4 being first duly sworn or affirmed by the Notary,
5 testifies as follows:

6 EXAMINATION

7 BY MR. ERICKSON:

8 Q Good morning, Dr. Bretschneider.

9 A Good morning.

10 Q For the record, I'm Brian Erickson with the
11 law firm of DLA Piper, representing Petitioner Home
12 Depot, and with me is Chris Katsantonis, also with
13 DLA Piper.

14 Doctor, is there any reason you cannot give
15 your full and complete testimony today?

16 A No.

17 Q I understand you -- well, scratch that.

18 What applications do you have open on your
19 computer right now?

20 A The Zoom meeting software, a clean PDF copy
21 of my declaration, and there's an antivirus program
22 running in the background.

1 Q Okay. We ask that throughout this
2 deposition you do not open any other applications or
3 files unless we make that actually clear on the
4 record. Okay?

5 A Okay.

6 Q You referred to your declaration. Is that
7 Exhibit 2008 in this PGR?

8 A Yes.

9 Q Okay. All right. So when I refer to your
10 declaration today, we will be referring to Exhibit
11 2008 in this PGR. Okay?

12 A Okay.

13 Q Can you turn to paragraph 22 of your
14 declaration and let me know when you're there.

15 A Okay.

16 Q In paragraph 22 you state that you reviewed
17 the exhibits submitted to date in this IPR as well as
18 the petition, preliminary response and institution
19 decision. Do you see that?

20 A Yes.

21 Q Did you review anything else in conducting
22 your analysis in forming your opinions in this PGR?

1 A No.

2 Q There's a section titled Applicable Legal
3 Standards beginning at paragraph 23 and going through
4 paragraph 35, I believe. Do you see that section?

5 A Yes.

6 Q Were you instructed by counsel regarding
7 these applicable legal standards?

8 A Yes.

9 Q Did counsel provide you with any other
10 legal standards that are not described in paragraphs
11 23 through 35 as part of this PGR?

12 A No.

13 Q In forming your opinions in this PGR, did
14 you apply any legal standards other than the legal
15 standards listed in paragraphs 23 through 35?

16 A No.

17 Q Let's turn to paragraph 79 of your
18 declaration, please.

19 A Okay.

20 Q In paragraph 79 you discuss Exhibit 1018,
21 which is referred to as the '597 application;
22 correct?

1 A That's correct.

2 Q Do you have a copy of Exhibit 1018
3 available to you on your computer?

4 A I do, but it's -- it's not in the folder I
5 had for today.

6 Q That's fine. I've just dropped a copy of
7 it in the chat room. Let me know when you can access
8 that, please.

9 A Okay. Okay. I have that open.

10 Q Great. All right. So in paragraph 79 of
11 your declaration, you're referring to paragraphs 24
12 and 25 of the '597 application. Do you see that?

13 A Yes.

14 Q So in the '597 application, please turn to
15 paragraph 24, and let me know when you're there.

16 A Okay.

17 Q Paragraph 24 does not use the word
18 "switch"; correct?

19 A Correct.

20 Q Four lines down in paragraph 24, picking up
21 in the middle of the sentence, it states, "by
22 electrically connecting the two single voltage AC LED

1 circuits in parallel and a second forward voltage
2 drive level by electrically connecting the at least
3 two single voltage level AC LED circuits in series."

4 Do you see that?

5 MR. McBRIDE: I'm sorry, counsel, where are
6 you in the document?

7 MR. ERICKSON: Beginning four lines down in
8 paragraph 24.

9 MR. McBRIDE: And this is in Exhibit 1018?

10 MR. ERICKSON: Correct.

11 A Yes, I see that.

12 Q All right. So the embodiment discussed in
13 paragraph 24 of the '597 application includes two
14 single voltage AC LED circuits that can be
15 electrically connected in either parallel or in
16 series; correct?

17 A That's the description here.

18 Q Okay. If the two single voltage AC LED
19 circuits are connected in parallel, then the AC LED
20 device would be driven with a first forward voltage;
21 correct?

22 A The power to the circuits would be a first

1 forward voltage.

2 Q So in paragraph 24, in the first line it
3 states, "According to another aspect of the
4 invention, each multi-voltage AC LED device would be
5 able to be driven by at least two different AC
6 forward voltages," and the sentence continues.

7 Do you see that?

8 A In paragraph 24?

9 Q Correct.

10 MR. McBRIDE: I'm sorry, counsel, I'm
11 having trouble following along here. What page of
12 Exhibit 1018 are you on?

13 MR. ERICKSON: I'm at paragraph 24.

14 MR. McBRIDE: What page of the PDF is that?
15 Because I don't see that specific language there.

16 THE WITNESS: I don't either. Paragraph 24
17 is a single sentence.

18 MR. ERICKSON: Okay.

19 MR. McBRIDE: I'm sorry for interrupting.
20 I just want to make sure we're all looking at the
21 same thing.

22 MR. ERICKSON: Okay. I appreciate the

1 clarification. Apparently I'm using a slightly
2 different publication of the same application, so let
3 me reset here.

4 MR. McBRIDE: Okay. I think I'll object to
5 the line of questioning so far to the extent you're
6 reading from something that's slightly different than
7 what we have.

8 MR. ERICKSON: Yeah.

9 MR. McBRIDE: I don't know, Brian, if you
10 want to back up and just try the whole thing again.
11 I didn't actually see the language you quoted from
12 from the first set of questions either, in the
13 paragraphs I'm looking at anyway.

14 MR. ERICKSON: Right. The paragraph
15 numbers are off by one.

16 Let's go off the record for a second.

17 (Recess 9:19 a.m. - 9:21 a.m.)

18 BY MR. ERICKSON:

19 Q All right. So, Dr. Bretschneider, as we
20 discussed off the record, the preceding line of
21 questioning about Exhibit 1018 is probably unclear
22 because I was referring to a different version of the

1 '597 application. So we can start over to clarify
2 the record here.

3 So we're referring to figure -- I'm sorry,
4 referring to Exhibit 1018 you cite to paragraph 24,
5 which is a single sentence that reads, "According to
6 another aspect of the invention, at least two single
7 voltage series LED circuits, each of which have at
8 least two serially connected LEDs, are formed on a
9 single chip or on a substrate providing a
10 multi-voltage AC or DR operable LED device." Is that
11 correct?

12 A Yes, that's correct.

13 Q Okay. And paragraph 24 of Exhibit 1018
14 does not use the word "switch"; correct?

15 A Correct.

16 Q And paragraph 24 refers to two single
17 voltage series LED circuits; correct?

18 A It refers to two single voltage series LED
19 circuits, yes.

20 Q And the paragraph 24 refers to a
21 multi-voltage AC or DC operable LED device; correct?

22 A Correct.

1 Q So paragraph 24 does not explicitly
2 describe multi-voltage LED circuits; correct?

3 A It -- not explicitly. It's implicit.

4 Q Paragraph 24 does not describe a single LED
5 device that comprises multiple multi-voltage LED
6 circuits; correct?

7 MR. McBRIDE: Objection; form.

8 A Could you repeat the question, please?

9 Q Sure. Paragraph 24 does not describe a
10 single LED device that comprises a plurality of
11 multi-voltage LED circuits; correct?

12 A The question is awkward because there are
13 at least two LED circuits, so there could be more, so
14 I'm struggling with the explicit, because when you
15 say you have two or more circuits, if you have more
16 than two LED circuits, then you could have multiple
17 multi-voltage capability.

18 Q Paragraph 24 does not describe multiple
19 multi-voltage capability; correct?

20 MR. McBRIDE: Objection; form.

21 A That's where, again, I'm struggling,
22 because it's at least two. If it's two, then you

1 only have a single multi-voltage capability. If it's
2 more than two, then you could have more.

3 Q Paragraph 24 describes a multi-voltage LED
4 device that comprises a plurality of single voltage
5 LED circuits; correct?

6 A Yes.

7 Q Okay. Going to paragraph 25, paragraph 25
8 in the first line also describes single voltage
9 series LED circuit; correct?

10 A Yes.

11 Q And beginning on line 4 and wrapping to
12 line 5, paragraph 25 describes a multi-voltage AC or
13 DC LED device; correct?

14 A Yes.

15 Q So paragraph 25 also describes a
16 multi-voltage LED device that comprises a plurality
17 of single voltage LED circuits; correct?

18 A Yes.

19 Q Paragraph 25 describes that the LED
20 circuits may be connected in parallel or in series;
21 correct?

22 A Correct.

1 Q Paragraph 25 does not explicitly use the
2 word "switch"; correct?

3 A The word "switch" does not appear, but it's
4 understood from the description.

5 Q What description in paragraph 25, in your
6 opinion, creates that understanding?

7 A I'll read from paragraph 25. "By way of
8 example, each multi-voltage AC or DC LED device would
9 be able to be driven with at least two different AC
10 or DC forward voltages resulting in a first forward
11 voltage drive level by electrically connecting the
12 two single voltage series LED circuits in parallel
13 and a second forward voltage drive level by
14 electrically connecting the at least two single
15 voltage level LED circuits in series."

16 So if I can change the relationship of the
17 two circuits from series to parallel, a switch has to
18 be involved.

19 Q So in your opinion, the sentence you just
20 read discloses an LED device where the voltages
21 applied to the LED device can be changed during
22 operation?

1 A Could you repeat the question?

2 Q In your opinion, does the sentence you just
3 read disclose an LED device where the voltages
4 applied to the LED device can be changed during
5 operation?

6 A The sentence refers to the -- to changing
7 the configuration so that a different forward voltage
8 would need to be applied to operate the device.

9 I'm struggling because the description says
10 that an AC voltage can be applied, and an AC voltage
11 necessarily changes during operation. So that's why
12 I'm trying to clarify as best as possible. If it's
13 powered by AC, then voltage changes during operation.

14 Q Thank you. Okay. Turning next to
15 paragraph 28 of Exhibit 1018, paragraph 28 in its
16 first line describes single voltage LED circuits;
17 correct?

18 A That's part of the description. There are
19 single voltage LED circuits, but then the same
20 paragraph also describes multi-voltage and/or
21 multi-brightness LED devices.

22 Q So paragraph 28 also describes

1 multi-voltage LED devices comprising a plurality of
2 single voltage LED circuits; correct?

3 A Yes.

4 Q Turning to paragraph 30 of Exhibit 218 --
5 I'm sorry. Going back to 28 for a moment, paragraph
6 28 does not use the word "switch" either; correct?

7 A The word "switch" doesn't appear. But the
8 last sentence states, "Each multi-voltage and/or
9 multi-brightness LED device would be able to be
10 driven with at least two different DC forward
11 voltages resulting in a first forward voltage drive
12 level when the two single voltage LED circuits are
13 connected in parallel and a second forward voltage
14 drive level that is the level of the first forward
15 voltage drive level when the at least two LED
16 circuits are connected in series."

17 So that description of being able to change
18 the connections between the two single voltage LED
19 circuits from series to parallel requires a switch.

20 Q And that sentence in paragraph 28 refers to
21 changing the configuration so that a different
22 forward voltage would need to be applied to operate

1 the LED device; correct?

2 A Could you repeat the question, please?

3 Q That sentence refers to changing the
4 configuration of the LED circuits so that a different
5 forward voltage would need to be applied to operate
6 the LED device; correct?

7 MR. McBRIDE: Objection; form.

8 A Changing the relationship between the LED
9 circuits from series to parallel would require a
10 different forward voltage.

11 I'm struggling a little bit because even
12 though the description is only two single voltage LED
13 circuits, the sentence does say at least two
14 different DC forward voltages, so there's some --
15 it's not necessarily at least two voltages. It's at
16 least two different voltages.

17 Q Okay. So the sentence refers to changing
18 the configuration of the LED circuits so that at
19 least two different forward voltages would need to be
20 applied to operate the LED device; correct?

21 A I would characterize it as could be
22 applied, not would be, because it does say

1 multi-voltage and/or multi-brightness. So if the
2 same current is going through each LED circuit, then
3 whether it's in series or parallel, I'm getting the
4 same brightness or multi-brightness, that means
5 there's a change in current, which necessitates
6 additional change in voltage being applied to the
7 LEDs. So it's a question of voltage to the LEDs
8 versus voltage to the entire circuit.

9 Q Okay. Now moving on to paragraph 30,
10 paragraph 30 also discloses multi-voltage and/or
11 multi-brightness LED device comprising a plurality of
12 single voltage LED circuits; correct?

13 MR. McBRIDE: I'm sorry, Brian, where are
14 you reading that in paragraph 30?

15 Q Okay. We can break it down like we did
16 before. Let me strike that question.

17 The first line in paragraph 30 describes a
18 plurality of single voltage LED circuits; correct?

19 A It does describe at least two single
20 voltage LED circuits.

21 Q And about eight lines down, paragraph 30
22 refers to multi-voltage and/or multi-brightness LED

1 device; correct?

2 A Yes.

3 Q So paragraph 30 also describes a
4 multi-voltage and/or multi-brightness LED device
5 comprising a plurality of single voltage LED
6 circuits; correct?

7 A Yes. There's a little bit more. There's a
8 third LED circuit, starting in the second line it
9 states, "At least one bridge circuit made of LEDs is
10 formed on the same single chip or substrate."

11 So you have the single voltage LED circuits
12 and then you have a bridge circuit that's formed from
13 LEDs as well.

14 Q Okay. Okay. Now moving in Exhibit 1018 up
15 to paragraph 14, let me know when you're there,
16 please.

17 A Okay.

18 Q Paragraph 14 does not describe a switch;
19 correct?

20 A The word "switch" does not appear in
21 paragraph 14.

22 Q All right. Moving to paragraph 15, the

1 second sentence of paragraph 15, which begins on, I
2 believe, line 5 of paragraph 15, states, "This
3 invention comprises circuits and devices that can be
4 driven with more than one AC or DC forward voltage
5 'multi-voltage' at 6 volts or greater based on a
6 selectable desired operating voltage level that is
7 achieved by electrically connecting the LED circuits
8 in a series or parallel circuit configuration," and
9 then it continues on from there.

10 Do you see that portion of that sentence?

11 A Yes, I do.

12 Q You notice the word "multi-voltage" is
13 included in quotation marks?

14 A Yes.

15 Q Is it your understanding that this is
16 defining the term "multi-voltage" for purposes of the
17 specification?

18 MR. McBRIDE: Objection; form, scope.

19 Q To address those objections, I'll reword
20 the question.

21 Do you have an opinion whether this portion
22 of the specification defines the term "multi-voltage"

1 for the specification?

2 MR. McBRIDE: Same objections.

3 A I haven't formed an opinion on that at this
4 stage.

5 Q That sentence in paragraph 15 continues,
6 "and/or more than one level of brightness
7 'multi-brightness' based on a switching means that
8 connects and/or disconnects at least one additional
9 LED circuit to and/or from a first LED circuit."

10 Do you see that portion of the sentence?

11 A Yes.

12 Q Do you have an opinion as to whether this
13 portion of the specification defines the term
14 "multi-brightness" for the specification?

15 MR. McBRIDE: Same objections; form and
16 scope.

17 A I don't believe I formed an opinion on that
18 yet.

19 Q The next sentence in paragraph 15 states
20 that, "The desired operating voltage level and/or the
21 desired brightness level electrical connection may be
22 achieved and/or completed at the LED packaging level

1 when the multi-voltage and/or multi-brightness
2 circuits and/or single chips are integrated into the
3 LED package," and the sentence continues from there.

4 Do you see that portion of the sentence?

5 A Yes.

6 Q So this portion of the specification
7 discloses that the desired operating voltage level
8 may be achieved or completed at the LED packaging
9 level; correct?

10 A Could you repeat the question, please?

11 Q This portion of the specification
12 discloses, among other things, that the desired
13 operating voltage level may be achieved or completed
14 at the LED packaging stage; correct?

15 A I'm struggling a little bit with the
16 question because this is talking about an LED package
17 and we were previously talking about LED circuits.
18 And when you design an LED package, you necessarily
19 specify a voltage range, an operating voltage range,
20 it's inherent to using an LED. So that's the one
21 aspect is it's always defined at the package level.
22 But we're talking about packages here as opposed to

1 circuits, so I'm looking for some clarification
2 there.

3 Q For the embodiments in the '597 patent
4 where individual LED circuits may be connected in
5 either series or parallel, the '597 patent discloses
6 that that electrical connection could occur during
7 one of the manufacturing steps of the LED device;
8 correct?

9 MR. McBRIDE: Objection; form.

10 A '597 is an application, not a patent. I
11 did want to call that out.

12 What's being stated is that -- I'm going to
13 paraphrase or reinterpret the sentence we were
14 discussing before -- that you can design an LED
15 package to have a different target or voltage range
16 or brightness output range by incorporating multiple
17 chips into the LED package and how you connect those
18 LED chips.

19 Q And that connection can be fixed during
20 manufacture; correct?

21 A I'm struggling because of it would depend
22 on the configuration. But if we continue on from

1 paragraph 15, it states, "the LED package may have
2 external electrical contacts that match the
3 integrated multi-voltage and/or multi-brightness
4 circuits and/or single chips within, thus allowing
5 the drive voltage level and brightness level
6 selectability to be passed on through the exterior of
7 the LED package and allowing the voltage level or
8 brightness level to be selected at the LED package
9 user, or the PCB assembly factory [sic], or the end
10 product manufacturer."

11 So this is a description the simplest
12 version of an LED package as to context anode and a
13 cathode. You can have one or more anodes or one or
14 more cathodes. I could have two anodes and two
15 cathodes. I could have one anode, two cathodes, one
16 cathode, two anodes, and these would be different
17 ways of enabling what's described.

18 Q So the paragraph 15 of the '597 application
19 toward the bottom of page 3 refers to electrically
20 connecting the LED circuits in series or parallel.
21 Do you see that?

22 A Yes.

1 Q And the '597 application discloses that can
2 be done, that connection can be made in part by a --
3 using a switch; correct?

4 A Based on a switching means, yes.

5 Q The '597 application also discloses that
6 can be done by using a wired connection that does not
7 include a switch; correct?

8 A I'm not seeing that explicitly, but that's
9 one of the options. There's a wired connection, then
10 everything is fixed at that point, and it's not a
11 multi-voltage or multi-brightness, if that's all
12 we're talking about, you fix the performance level.

13 Q Well, let's go down to paragraph 32 of
14 Exhibit 1018. Paragraph 32 describes a multi-voltage
15 and/or multi-brightness LED device; correct?

16 A Yes.

17 Q And in the second sentence it states that,
18 "The at least two individual LED circuits within the
19 multi-voltage and/or multi-brightness LED devices may
20 be wired in a series or parallel circuit
21 configuration by the LED packager during the LED
22 packaging process, thus providing for at least two

1 forward voltage drive options, for example, 12VAC and
2 24VAC or 120VAC and 240VAC that can be selected by
3 the LED packager."

4 Do you see that?

5 A Yes, I see that.

6 Q Does this disclose that one option is for
7 the LED packager to select whether the circuits are
8 wired in series or parallel?

9 A At the package level that would be one
10 option.

11 Q Going back to paragraph 16 --

12 MR. ERICKSON: What was that? I'm sorry.

13 MR. McBRIDE: Sorry. I was clearing my
14 throat.

15 Q Okay. Turning to paragraph 16, let me know
16 when you're there.

17 A Okay.

18 Q Paragraph 16 also describes the option of
19 selecting the forward voltage for an LED device at
20 the packaging level; correct?

21 A Yes, doing this at the packaging level is
22 described in paragraph 16.

1 Q Paragraph 16 refers to that method of
2 selection as wire bonding them into a circuit at the
3 packaging level; correct?

4 A Yes. LEDs are devices, so you have to make
5 connections between them. At this time, and
6 particularly with gallium nitride LEDs, they're
7 typically grown on insulating, electrically
8 insulating substrates, so anode and cathode
9 connections are on the same top surface and the
10 easiest way to make those connections is by wire
11 bonding.

12 Q Okay. Turning to Figure 9 of Exhibit 1018,
13 let me know when you're there, please.

14 A Okay.

15 Q The specification makes clear that Figure 9
16 is an augmented embodiment of the embodiment in
17 Figure 8; correct?

18 MR. McBRIDE: Objection; form, scope.

19 A I'd have to go back to the description in
20 the application.

21 Q Okay. Let's do that. I believe if you go
22 back to paragraph 59, paragraph 59 states, "Figure 9

1 discloses a schematic diagram with the
2 multi-brightness LED lighting device 62 as shown in
3 Figure 8 with a switch 74 electrically connected
4 between the multi-brightness LED lighting device 62
5 and the AC voltage source 78."

6 Do you see that?

7 A Yes.

8 Q Okay. And if we look at paragraph 58 above
9 that, which describes Figure 8, it states that Figure
10 8 discloses a LED lighting device 62 and that device
11 includes LED circuits 69; correct?

12 A It describes it as a multi-brightness LED
13 lighting device 62. Otherwise, correct.

14 Q All right. So turning back to Figure 9,
15 the LED device 62 in Figure 9 comprises a plurality
16 of LED circuits that are labeled 69 in Figure 8;
17 correct?

18 MR. McBRIDE: Objection; form.

19 A The LED circuits are labeled 69 in Figure
20 8. That label is not carried through to Figure 9,
21 just the reference to 62, and 62 refers to the
22 combination of the LED circuits and the bridge

1 circuits.

2 Q In the embodiment Figure 9, the voltage
3 applied to the LED device is the voltage supplied by
4 what's indicated as 78 in Figure 9; correct?

5 MR. McBRIDE: Objection; form.

6 A 78 is referred to as the AC voltage source.
7 Could you repeat your question?

8 Q In the embodiment Figure 9, the two-way
9 switch 74 determines whether the voltage supplied by
10 AC voltage 78 is applied to only one of the LED
11 circuits or both of the LED circuits in LED device
12 62; correct?

13 MR. McBRIDE: Objection; form.

14 A Could you repeat the question?

15 Q What does the two-way switch 74 do in
16 Figure 9?

17 A Going back to paragraph 58, "When one side
18 of an AC voltage is applied to 72a and the other side
19 of an AC voltage is applied to 72b and 72c
20 individually, the brightness level of the
21 multi-brightness LED lighting device 62 can be
22 increased and/or decreased," it says "I," I believe

1 that's supposed to be "in a fixed manner or a
2 switching process."

3 So applying that to Figure 9, the switch
4 would be determining whether one circuit is powered
5 or both circuits are powered.

6 Q And the circuits in Figure 9, when they're
7 both powered are connected in parallel relative to
8 the voltage; correct?

9 A Yes.

10 Q Figure 9 discloses an embodiment where the
11 same AC voltage is applied to either one or both of
12 the LED circuits; correct?

13 MR. McBRIDE: Objection; form.

14 A Can you repeat the question, please?

15 Q Figure 9 discloses an embodiment where the
16 same AC voltage is applied to either one or both of
17 the LED circuits; correct?

18 MR. McBRIDE: Same objection.

19 A That's consistent with the figure.

20 MR. McBRIDE: Brian, we have been going for
21 about an hour. Is it a good time for a break?

22 MR. ERICKSON: Yes, now is fine.

1 MR. McBRIDE: Maybe 20 after the hour, come
2 back at that point?

3 MR. ERICKSON: Sure.

4 (Recess 10:12 a.m. - 10:25 a.m.)

5 BY MR. ERICKSON:

6 Q Continuing with Exhibit 1018, could you
7 please turn to Figure 4.

8 A Okay.

9 Q Figure 4 does not disclose a switch;
10 correct?

11 A I'm reading the descriptions for Figure 4.
12 There's no symbol for a switch in Figure 4.

13 Q Figure 4 discloses an LED device 30
14 comprising a plurality of AC LED circuits 32;
15 correct?

16 A The description is Figure 4 discloses a
17 schematic diagram of the same multi-voltage and/or
18 multi-brightness LED device 30 as described in Figure
19 3, having the at least two AC LED circuits 32
20 connected in parallel configuration to an AC voltage
21 source and operating at a first forward voltage.

22 It also states a resistor 40 may be used to

1 limit current to the multi-voltage and/or
2 multi-brightness LED lighting device 30.

3 Q So Figure 4 discloses an LED device 30
4 comprising a plurality of AC LED circuits 32;
5 correct?

6 A Yes. Figure 4, again, points back to
7 Figure 3, in which case in Figure 3 the LED circuits
8 are shown as independent.

9 Q The LED circuits 32 are connected in
10 parallel; correct?

11 A In Figure 4 they're connected in parallel.

12 Q So the same AC voltage is applied to each
13 LED circuit 32; correct?

14 A Yes.

15 Q There's no switch described in the text
16 accompanying Figure 4; correct?

17 A No. It just states that the circuits, the
18 AC LED circuits 32 are connected in parallel.

19 Q Turning to Figure 5, Figure 5 also
20 discloses an LED device 30 comprising a plurality of
21 LED circuits 32; correct?

22 A On paragraph 55 it states, "Figure 5

1 discloses a schematic diagram of the same
2 multi-voltage and/or multi-brightness LED device 30
3 as described in Figure 3 having the at least two AC
4 LED circuits 32 connected in series configuration to
5 an AC voltage source and operating at a second
6 forward voltage that is approximately two times
7 greater than the first forward voltage of the
8 parallel circuit as described in Figure 4."

9 There's also discussion on the resistor,
10 the resistor being used to limit the current.

11 Q So Figure 5 also discloses an LED device 30
12 comprising a plurality of LED circuits 32; correct?

13 A AC LED circuits, just to be a little bit
14 more specific, yes.

15 Q There's no switch disclosed in Figure 5 for
16 the accompanying text; correct?

17 A No. Figure 5 points back to the device of
18 Figure 30 and it's showing a different way to
19 configure -- sorry -- points back to Figure 3, and
20 it's showing a different way to configure the AC LED
21 circuits to work with a different forward voltage.

22 Q Does Figure 5 and the accompanying text

1 disclose any way to change the brightness of the
2 light emitted by the LED device as a whole?

3 MR. McBRIDE: Objection; form.

4 A The last sentence of paragraph 55 states,
5 "A resistor may be used to limit current to the
6 multi-voltage and/or multi-brightness LED lighting."
7 The value of that resistor or the resistors
8 specifically stated to limit the current. So
9 changing the value of the resistor would impose a
10 different current limit and, therefore, a different
11 amount of light.

12 Q Does Figure 5 and the accompanying text
13 disclose any other way to change the brightness of
14 the light emitted by the LED device as a whole?

15 A No.

16 Q Does Figure 5 and the accompanying text
17 disclose any way to change the voltage -- strike
18 that.

19 Does Figure 5 and the accompanying text
20 disclose any way to change the AC voltage applied to
21 the LED device other than by adding a resistor?

22 A Figure 5 indicates 240 volts AC, but the

1 description just states that the device is connected
2 to an AC voltage source. So the performance of that,
3 the actual parameters of that AC voltage source are
4 going to have an impact on the amount of light
5 emitted by the device.

6 Q Does Figure 5 and the accompanying text
7 disclose any way to change the amount of voltage
8 applied to the LED device? Let me strike that.

9 Does Figure 5 and the accompanying text
10 disclose any way to change the amount of AC voltage
11 applied to the LED device?

12 A In the sense the text doesn't specify an
13 actual AC voltage, it says connected to a source, and
14 a POSITA would know how to change the voltage of the
15 AC source.

16 Q Turning to Figures 6 and 7, Figure 7 of the
17 '597 application discloses an LED device 50
18 comprising a plurality of LED circuits; correct?

19 A For Figure 7 in paragraph 57, "Figure 7
20 discloses a schematic diagram similar to the
21 multi-voltage and/or multi-brightness LED device 50
22 shown in Figure 6 integrated within a lamp 58 and

1 connected to a switch 60 to control brightness level
2 of the multi-voltage and/or multi-brightness LED
3 device" -- "LED lighting device 50."

4 Q And the paragraph before that describing
5 Figure 6 states that there's an LED lighting device
6 50 and it comprises at least two AC LED circuits 52;
7 correct?

8 A Yes.

9 Q So Figure 7 discloses an LED device 50
10 comprising a plurality of AC LED circuits; correct?

11 MR. McBRIDE: Objection; form.

12 A Could you repeat the question, please?

13 Q Figure 7 discloses an LED device 50
14 comprising a plurality of AC LED circuits; correct?

15 A What's illustrated are two AC LED circuits.

16 Q Figure 7 discloses a 12 volt AC source;
17 correct?

18 A That's what's indicated is 12 volts AC.

19 Q And the two-way switch 60 determines
20 whether that 12 volts AC is applied to one or both of
21 the AC LED circuits; correct?

22 A Yes.

1 Q In Figure 7 the same AC voltage is applied
2 to each of the AC LED circuits; correct?

3 A If they are both powered. It's stated for
4 a two-way lamp, it's an AC LED for a two-way lamp, so
5 it would depend on the position of the switch as to
6 whether voltage were applied to one or both.

7 Q When an AC voltage is applied to both AC
8 LED circuits, it is the same AC voltage; correct?

9 A Yes.

10 Q Now, with reference to Figure 6 and the
11 text accompanying it at paragraph 56, the '597
12 application discloses that the AC voltage is always
13 connected to point 56a; correct?

14 MR. McBRIDE: Objection; form.

15 Q Let me withdraw that question.

16 Paragraph 56 of the '597 application
17 discloses an example where the AC voltage is only
18 applied to points 56a and 56b; correct?

19 MR. McBRIDE: Objection; form.

20 A Could you repeat the question?

21 Q Paragraph 56 of the '597 application
22 discloses a configuration where the AC voltage is

1 only applied to points 56a and 56b; correct?

2 MR. McBRIDE: Same objection.

3 A The description is, "One side of an AC
4 voltage source line is electrically connected to 56a
5 and on the other side of an AC voltage source line is
6 individually electrically connected to 56b and 56c
7 with either a fixed connection or a switched
8 connection thereby providing a first brightness when
9 AC voltage is applied to 56a and 56b and a second
10 brightness when an AC voltage is applied to 56a, 56b
11 and 56c."

12 Q So that paragraph discloses two
13 configurations; one in which the AC voltage is
14 applied to just 56a and b, and a second where the AC
15 voltage is applied to 56a, b and c; correct?

16 A I'd refer to it as operating states.

17 Q So paragraph 56 discloses two operating
18 states; one in which the AC voltage is applied to
19 just 56a and b, and a second where the AC voltage is
20 applied to 56a, b and c; correct?

21 A Different ends of the AC voltage source. I
22 wouldn't make all of those common. That would be bad

1 electrically. But one side of the AC to 56a, the
2 other side of the AC to 56b, or one side to 56a and
3 the other side of the AC source to both 56b and 56c.

4 Q All right. Let's turn to the '341 patent
5 itself for a moment. Let me know when you have that
6 open and in front of you.

7 A Okay.

8 Q If you could turn to column 10 and the
9 discussion of Figure 3, and go down to line beginning
10 at line 43 of column 10, please.

11 A Okay.

12 Q I apologize. Let's just back up to the
13 beginning of the discussion of Figure 3. So Figure 3
14 discloses an LED lighting device 30; correct?

15 A It's a schematic diagram of a multi-voltage
16 and/or multi-brightness LED lighting device 30.

17 Q And LED lighting device 30 comprises at
18 least two AC LED circuits 32; correct?

19 A It states, "The multi-voltage and/or
20 multi-brightness LED lighting device 30 comprises at
21 least two AC LED circuits 32," and then there's a
22 description of the AC LED circuits.

1 (Audio disruption; court stenographer
2 clarification.)

3 A Then there's a description of the AC LED
4 circuits.

5 Q The '341 patent discloses that the lighting
6 device 30 may be a monolithically integrated single
7 chip 38; correct?

8 MR. McBRIDE: Objection; form.

9 A The statement is, "The multi-voltage and/or
10 multi-brightness lighting device 30 may be a
11 monolithically integrated single chip 38," and there
12 are other options as well.

13 Q So the box that's drawn around the LED
14 circuits in Figure 3 is labeled 38. Do you see that
15 down in the lower right?

16 A Yes.

17 Q And the portion of the specification in
18 column 10 refers to number 38 a couple of times. It
19 states "integrated single chip 38," and then in the
20 next line it refers to "LED package 38," and then in
21 the next line it refers to "a substrate 38."

22 Do you see that?

1 A There's a little more to the descriptions,
2 because the first description is a monolithically
3 integrated single chip 38. The second one is a
4 monolithically integrated single chip integrated
5 within an LED package 38. The third one is a number
6 of individual discrete die integrated onto a
7 substrate 38, and all of them to form a multi-voltage
8 and/or multi-brightness lighting device 30.

9 Q And in each of those the '341 patent
10 discloses that there are at least two AC LED circuits
11 32; correct?

12 MR. McBRIDE: Objection; form.

13 A The multi-voltage and/or multi-brightness
14 LED lighting device 30 comprises at least two AC LED
15 circuits 32. And then the description we just went
16 over is about 38 being a monolithically integrated
17 single chip, monolithically integrated single chip
18 within an LED package, or a number of discrete die
19 integrated onto a substrate to form the lighting
20 device 30. So in each case the lighting device would
21 have at least two AC LED circuits.

22 Q Do any of those three cases imply that

1 there are a greater number of AC LED circuits than
2 any of the other cases?

3 MR. McBRIDE: Objection; form, foundation.

4 A The description at the beginning is --
5 beginning of the discussion on Figure 3 is at least
6 two AC LED circuits.

7 Q So is there anything in those three
8 different cases described at the end of that
9 paragraph that would imply that there would be a
10 different number of AC LED circuits?

11 A There's no implication that there -- I'm
12 trying to think the best way to phrase this. The
13 description treats the three configurations equally.

14 Q Okay. Going back to Exhibit 1018, okay,
15 turning to paragraph 18 of Exhibit 1018, this
16 paragraph describes LED devices that comprise a first
17 operating circuit and additional circuits; correct?

18 A The description is, "It would be further
19 advantageous to provide multi-brightness LED devices
20 that can be switched to different levels of
21 brightness by simply switching additional circuits on
22 or off in addition to a first operating circuit

1 within a single chip and/or LED package. This would
2 allow LED lamps to switch to higher brightness levels
3 just like two-way or three-way incandescent lamps do
4 today."

5 Q In this description there is a first
6 operating circuit and then additional circuits they
7 may be switched on or off; correct?

8 A Yes.

9 Q This paragraph does not describe leaving
10 one of the additional circuits on while switching the
11 first operating circuit off; correct?

12 A Would you repeat the question, please?

13 Q Paragraph 18 does not describe leaving one
14 of the additional circuits on while switching the
15 first operating circuit off; correct?

16 A It discusses switching additional circuits
17 on or off additional to a first operating circuit.
18 So there is not a discussion of switching the first
19 operating circuit off and turning an additional
20 circuit on.

21 Q Turning to paragraph 25, does paragraph 25
22 disclose a driver?

1 A It's implicit in the description. It
2 states, "By way of example, each multi-voltage AC or
3 DC LED device would be able to be driven with at
4 least two different AC or DC forward voltages
5 resulting in a first forward voltage drive level by
6 electrically connecting," and then it goes on there.
7 So if different voltage levels are being provided,
8 there is circuitry that's providing that power.

9 Q Let's turn to paragraph 30, and starting
10 with just looking at the third sentence, does the
11 third sentence in paragraph 30 disclose, by
12 implication or otherwise, the driver?

13 A To make sure we're referring to the same
14 sentence, the sentence is, "Each single voltage LED
15 circuit is designed to be driven with a predetermined
16 forward voltage and preferably matching forward
17 voltages for each circuit such as 12 volt DC, 24 volt
18 DC, 120 volt DC, or other DC voltage levels for each
19 single voltage LED circuit."

20 Q Correct. In your opinion, does that
21 sentence disclose, by implication or otherwise, a
22 driver?

1 A There is an implication of a driver because
2 the circuit is being driven at different forward
3 voltages, so there's a description of different
4 forward voltage levels.

5 Q Are you familiar with the concept of
6 inherent disclosure?

7 A Yes.

8 Q In your opinion, is a driver inherently
9 disclosed --

10 MR. McBRIDE: Objection; form. Sorry.

11 Q In your opinion, is a driver inherently
12 disclosed by that sentence in paragraph 30?

13 MR. McBRIDE: Objection; form, scope,
14 foundation.

15 A I haven't provided an opinion on that yet.

16 Q Do you have an opinion as to whether a
17 driver is inherently disclosed by that sentence in
18 paragraph 30?

19 MR. McBRIDE: Same objections.

20 A I haven't formed an opinion on that. My
21 opinion was related to description in paragraph 80 of
22 my declaration, "Further, the '597 application

1 describes the scenario in which a switch providing a
2 second, different forward voltage would not only be
3 possible, but would be beneficial."

4 Then I refer to paragraphs 28 and 30 of the
5 '597 application, "describing scenarios where an LED
6 device driven with at least two different DC forward
7 voltage" -- sorry. Scroll up -- "two different DC
8 forward voltages and provides a first forward voltage
9 drive level when the two single voltage LED circuits
10 are connected in parallel and a second forward
11 voltage drive level... when the at least two LED
12 circuits are connected in series." And this was in
13 response to the petition saying that multi-voltage
14 level devices weren't described in priority
15 applications.

16 Q Okay. So my question was actually as to
17 drivers, not switches or anything else. And if you
18 want to flip to paragraph 93 of your declaration,
19 this is where you're citing to Exhibit 1018,
20 paragraphs 25 and 30 as, I believe, for the
21 proposition that there is disclosure of a driver.

22 And so my question to you now is do you

1 have an opinion as to whether a driver is inherently
2 disclosed by paragraph 30 of Exhibit 1018?

3 MR. McBRIDE: Same objections.

4 A My opinion there points to Exhibit 1014,
5 which I don't have open in front of me right now, as
6 well as Exhibit 1018, and it's describing and I state
7 that those two references describe different drive
8 settings for LED devices or LED lighting devices.

9 Q Right. So looking at the language of
10 paragraph 30 of Exhibit 1018, is it your opinion that
11 paragraph 30 inherently discloses a driver?

12 MR. McBRIDE: Objection; form, scope.

13 A My opinion is based on two references, and
14 as I said, I do not have one open or in the folder I
15 had of documents for this --

16 Q I understand. I'm just --

17 A -- deposition today.

18 I would just like to review the second
19 reference to make sure.

20 Q Well, I'm just asking about each of these
21 cites one at a time. So just taking them in order,
22 you know, is it your opinion that paragraph 30 of

1 Exhibit 1018 inherently discloses a driver?

2 MR. McBRIDE: Same objections.

3 A Actually, it's not in order. You're going
4 in reverse order.

5 Q Do you have an opinion as to whether
6 paragraph 30 of Exhibit 1018 inherently discloses a
7 driver?

8 MR. McBRIDE: Objection; form, scope.

9 A Okay. Exhibit 1014 at paragraph 21 talks
10 about improved reliability integration product and
11 system scalability and solid state lighting design
12 simplicity may be realized with LED circuits and the
13 LED circuit drivers, so there's the discussion on
14 drivers, and then I pointed to Exhibit 1018 as
15 describing different drive settings.

16 MR. ERICKSON: Object and move to strike as
17 nonresponsive.

18 Q Do you have an opinion as to whether
19 paragraph 30 of Exhibit 1018 inherently discloses a
20 driver?

21 MR. McBRIDE: Objection; form, scope,
22 foundation, relevance, asked and answered.

1 A Previously you were asking about paragraph
2 93 of my declaration, and when I was -- you were
3 asking me about a driver in that context and I
4 referred to two different references. You said
5 taking them in order, even though it's reverse order,
6 1018 talks about drive conditions, Exhibit 1014 talks
7 about drivers.

8 MR. ERICKSON: Objection. Move to strike
9 as nonresponsive.

10 MR. McBRIDE: Same objections; asked and
11 answered.

12 Counsel, he said he didn't have an opinion
13 on that about six questions ago. I don't know what
14 you want him to say. He's answered your question
15 over and over again. You're asking him a legal
16 conclusion and he said he doesn't have an opinion.
17 What do you want?

18 MR. ERICKSON: Can you point me in the
19 realtime to where he answered that question?

20 MR. McBRIDE: 11:10:13: "Q: Do you have
21 an opinion as to whether a driver is inherently
22 disclosed by that sentence in paragraph 13?

1 "ANSWER: I haven't formed an opinion on
2 that."

3 MR. ERICKSON: Okay. So that was to one of
4 the sentences in paragraph 30. So if we have the
5 same answer as to paragraph 30, then we can move on.
6 But for the record, let me ask the question again.
7 BY MR. ERICKSON:

8 Q Do you have an opinion as to whether a
9 driver is inherently disclosed by paragraph 30 of
10 Exhibit 1018?

11 MR. McBRIDE: Same objections.

12 A This goes back to the answer I gave
13 previously. My opinion, which I elaborated on in
14 paragraph -- the opinion in paragraph 93 of my
15 declaration, I elaborated upon paragraph 30 describes
16 different drive conditions. I haven't formed an
17 opinion on whether paragraph 30 inherently discloses
18 a driver.

19 Q Thank you. All right. Turning to the '341
20 patent itself, and turning to Figure 12, let me know
21 when you're there, please.

22 A Okay.

1 Q There's no switch illustrated in Figure 12
2 itself; correct?

3 A In the patent bridging columns 11 and 12, a
4 description of Figure 12 states or describes 100 as
5 an LED package and there's no switch on the LED
6 package.

7 Q In the embodiment of Figure 12, the LED
8 circuits are wired into either a series circuit, a
9 parallel circuit or antiparallel circuit; correct?

10 A Could you repeat the question?

11 Q In the embodiment disclosed in Figure 12,
12 the LED circuits are wired into either a series or
13 parallel or antiparallel configuration; correct?

14 A No. Again, the Figure 12 is an LED
15 package, and the statement is, "The LED package 100
16 has electrical contacts 102 that are used to wire the
17 at least two LED" -- "the at least two LED circuits
18 into a series circuit, a parallel circuit or in
19 antiparallel to form an AC LED circuit all within a
20 single LED package."

21 So the connections happen outside the
22 package. What's in the package are two independent

1 circuits.

2 Q So in the embodiment in Figure 12, there
3 would be no way for the end user to change those
4 configurations; correct?

5 A No. The passage I just read says that the
6 contacts can be used. What happens outside of the
7 contact, how those are connected is what would allow
8 a user to change or not be able to change those
9 connections, change it from series to parallel to
10 antiparallel.

11 Q So what does the reference to "wire" mean
12 to a person of ordinary skill?

13 A You're integrating the package into another
14 circuit.

15 Q What does it mean "to wire the at least two
16 series LEDs circuit into a series circuit," what does
17 that mean?

18 A You would be making electrical contacts, or
19 you would be using the electrical contacts 102 and
20 you would be modifying the electrical contacts, you
21 would be adding onto those electrical contacts in a
22 way that the two series LED circuits were in series,

1 parallel, antiparallel.

2 Q Does this mean that the addition is a wire?

3 A No, it wouldn't have to be. Your wire is
4 just saying making additional electrical contacts.

5 Q In the '341 patent, turning back to column
6 7, line 27, it discloses that "the LED packager may
7 wire them into series or parallel connection."

8 Do you see that?

9 A Yes.

10 Q What does that mean?

11 MR. McBRIDE: Objection; form.

12 A Again, it's making an electrical
13 connection. We discussed before that most gallium
14 nitride LED products are grown on a sapphire
15 substrate, which is electrically insulating. Using
16 those chips, the most common of the chips, the
17 sapphire substrate, is what is mounted to something
18 else, which means you have to make electrical contact
19 to the top of the chip, and wire bonds are common
20 there. There are also clip chips, in which case the
21 connection is made without wire bonds. You can also
22 have vertical conduction chips where the contact --

1 you have a contact on the top and bottom. Contact on
2 the bottom would not be with the wire; the one on top
3 would be with the wire.

4 Q Once an LED packager wires the circuits
5 into series or parallel connection, a downstream user
6 would not be able to change that type of connection
7 during operation; correct?

8 MR. McBRIDE: Objection; form.

9 A Could you repeat the question?

10 Q Once an LED packager wires the circuits
11 into either a series or parallel connection, a
12 downstream user would not change that type of
13 connection; correct?

14 MR. McBRIDE: Same objection.

15 A It would depend on the configuration in the
16 application.

17 Q There's no disclosure in the '341 patent of
18 an LED device wherein the LED packager has wired the
19 circuits into either a series or parallel connection
20 and a downstream user changes that type of
21 connection; correct?

22 MR. McBRIDE: Objection; form.

1 A No. We were just discussing Figure 12,
2 which is that exact scenario. There are two LED
3 series LED circuits that are independent, they
4 could be considered in parallel, but the end user has
5 the choice on how to connect the electrodes and they
6 can modify what's already the operating behavior of
7 what's in the package.

8 Q The LED package 100, as illustrated in
9 Figure 12, has LED circuits 92 that are not wired in
10 either series, parallel or antiparallel as
11 illustrated in Figure 12; correct?

12 MR. McBRIDE: Objection; form.

13 A Could you repeat the question, please?

14 Q As illustrated in Figure 12, LED circuits
15 92 are not wired in any of series, parallel or
16 antiparallel; correct?

17 A Each circuit is shown as a series circuit.
18 But as shown in the package, it's independent. And
19 my statement was that depending on what's done with
20 the electrical contacts 102, the end user could
21 modify the operation, the configuration of them.

22 Q And the specification discloses that the

1 LED circuits could be wired into one of those
2 configurations; correct?

3 A Could be wired into series, parallel or
4 antiparallel.

5 Q And there's no disclosure in the '341
6 patent of circuits being wired into one of those
7 configurations and then subsequently being changed
8 into a different configuration; correct?

9 MR. McBRIDE: Objection; form.

10 A I haven't provided an opinion on that. I
11 didn't see that as an issue in the petition.

12 MR. McBRIDE: Brian, we have been going for
13 a while. Whenever is a good time for a break.

14 MR. ERICKSON: Sure. Now is fine.

15 (Recess 11:34 a.m. - 11:48 a.m.)

16 BY MR. ERICKSON:

17 Q Dr. Bretschneider, I would like to move on
18 to Exhibit 2011, which I've just dropped into the
19 chat, if you don't have a copy handy. Let me know
20 when you have that open.

21 A Okay. I have it downloaded.

22 Q Dr. Bretschneider, Exhibit 2011 is an

1 exhibit that you discuss in your declaration;
2 correct?

3 A Yes.

4 Q And this is an excerpt from is it a book
5 "All About Circuits"? Is that right?

6 A Yes.

7 Q You cite to this exhibit with respect to
8 the term "forward voltage"; right?

9 A That's correct.

10 Q And why do you cite to this particular
11 exhibit? For example, is it a particularly
12 authoritative text?

13 A It's fundamental knowledge about how
14 electrical components work, so it was convenient to
15 point to for that.

16 Q Okay. Would a person of ordinary skill in
17 the art have been aware of Exhibit 2011?

18 A They would at least be aware of the
19 content.

20 Q Is there anything in Exhibit 2011 that you
21 disagree with?

22 Are you still reviewing Exhibit 12 -- I'm

1 sorry, 2011?

2 A I am. The last question I just stated that
3 it was common reference and I used it just to
4 illustrate typical behavior of diodes.

5 Q Okay. There was another question pending.
6 I thought you were reviewing the reference to answer
7 it. But I'll restate the question.

8 Is there anything in Exhibit 2011 that you
9 disagree with?

10 A I didn't review all of Exhibit 2011.
11 Again, I was just using it to show typical diode
12 behavior current versus voltage.

13 Q Are you aware of anything in Exhibit 2011
14 with which you disagree?

15 A I'm not aware of anything. Again, I didn't
16 review the entire content of it. I just wanted a
17 reference for current voltage behavior for diodes.

18 Q Turning to paragraph 49 of your declaration
19 where you discuss Exhibit 2011 and you incorporate a
20 figure from 2011, do you see that?

21 A Yes.

22 Q Right above the figure you state that the

1 forward voltage varies from about .5 volts to a
2 maximum of about .9 volts. Do you see that?

3 A Yes.

4 Q Where did you get the numbers .5 volts and
5 .9 volts?

6 A That's just an approximation looking at the
7 curve.

8 Q For a given current there is a single
9 forward voltage as illustrated in the figure in
10 paragraph 49 of your declaration; correct?

11 A There's some caveats to do that. For an
12 individual diode at a constant temperature, then
13 there is a relationship between current and voltage.

14 Q Is that a one-to-one relationship?

15 A I hesitate to say one-to-one, because that
16 can be interpreted as a linear relationship, and you
17 can see from the diode equation, it's an exponential
18 relationship, so I'm uncomfortable with saying
19 one-to-one. But it's a defined function or it can be
20 mapped, a given current will have one voltage, again,
21 provided temperature is constant. If the temperature
22 changes, then that voltage will vary somewhat.

1 Q So an individual diode at a constant
2 temperature, there is a single forward voltage;
3 correct?

4 MR. McBRIDE: Objection; form.

5 A It's a constant temperature and constant
6 current. Again, you can see from figure -- from
7 Exhibit 2011 they showed the diode equation, and you
8 can see the diode current as a function of the
9 voltage applied across the diode.

10 Q In the example -- let's skip that.

11 Let's go to Exhibit 2012, which I will drag
12 and drop into the chat room if you don't have a copy
13 handy.

14 A If you could please do that.

15 Q Maybe I've overestimated my abilities here.
16 There we go. It's on its way.

17 A Okay. I have it open.

18 Q Exhibit 2012 is a data sheet for a Samsung
19 product. Is that correct?

20 A It's for a Samsung LED product.

21 Q For a particular unit of the Samsung LED
22 product at a constant temperature and constant

1 current, there will be a single forward voltage;
2 correct?

3 A Correct.

4 Q On page 5 of Exhibit 2012 you see there's a
5 chart and one of the rows is labeled "Forward Voltage
6 (V)," and there are two bin codes, A0 and A1, and --
7 do you see that?

8 A Yes.

9 Q Okay. So this page of the Exhibit 2012
10 indicates that for bin code A0 the forward voltage
11 may be between 5.9 volts and 6.1 volts. Is that
12 correct?

13 A Yes.

14 Q So for this Samsung LED product, bin code
15 A0, an example of a forward voltage is 6 volts;
16 correct?

17 A It could be, depending on the exact
18 voltage, the current and the temperature. Again, the
19 bin codes refer back to the previous page we were
20 looking at, on page 3 of Exhibit 2011 -- sorry, page
21 3 where it calls out forward current of 650 milliamps
22 and a junction temperature of 25 Celsius.

1 Q Would a voltage of 3 volts be a forward
2 voltage for the Samsung LED device described in
3 Exhibit 2012?

4 A In what context to a POSITA, no.

5 Q Under your -- strike that.

6 In your opinion, the term "forward voltage"
7 as properly construed in the '341 patent would not
8 include a voltage of 3 volts for the Samsung LED
9 device described in Exhibit 2012; correct?

10 A That's correct. If you look, for example,
11 at claim 1 of the '341 patent, the preamble "An LED
12 lighting device comprising," and then below that it
13 says "first operating LED circuit," so we know it's
14 operating, it's emitting light.

15 If you look at page 10 of Exhibit 2012,
16 there's a plot in the top left, it's forward current
17 characteristics at a 25 degree Celsius junction
18 temperature, and you can see at 5 volts the current
19 is essentially 0. Anything lower 5 volts there is no
20 current. If you look at the plot to the right of
21 that one, there is luminous flux versus forward
22 current, and, not surprisingly, at a forward current

1 of 0 milliamps the relative luminous flux is 0
2 percent, so it wouldn't be operating. That
3 operating, there is a design current through the LED
4 and through the circuit and that's what dictates the
5 forward voltage.

6 Q What about at 6 volts, would the Samsung
7 LED device described in Exhibit 2012 -- strike that.

8 Would 6 volts, in your opinion, be a
9 forward voltage for the Samsung LED device described
10 in Exhibit 2012?

11 A I will say it could be. Again, it depends
12 on what the specifications for operation are, because
13 that same page 10 of Exhibit 2012 shows some
14 information, some other behaviors. If you look at
15 the middle of the page, there's relative luminous
16 flux versus temperature. So as the temperature
17 increases, the luminous flux goes down, and also, as
18 the temperature increases, the relative forward
19 voltage decreases. So it's a combination of what's
20 the design light output and operating temperature
21 which would allow you to go back to current and
22 voltage. Or you could specify it the other way, you

1 could specify the current and temperature and that
2 would tell you the voltage and a light output.
3 Usually the design of lighting devices is all based
4 around light output and an operating temperature.

5 Q Would 12 volts, in your opinion, be a
6 forward voltage for the Samsung LED device described
7 in Exhibit 2012?

8 A For a single package, no. It would destroy
9 the device. If you go back to Exhibit 2011 where you
10 look at the diode equation, the current is an
11 exponential function of voltage. So as you're
12 increasing the voltage, the current is rapidly
13 increasing, and you can see that in the plot in
14 Exhibit 2012, in the top left you can see a small 6
15 -- a small change in voltage results in a very large
16 change in current, that also correlates back to heat
17 generation. And if you are trying to operate an LED
18 at more than twice its intended forward voltage or
19 nominal forward voltage, you'll destroy the LED in a
20 fraction of a second, probably microseconds. It
21 wouldn't operate.

22 Q Okay. Going back to the example of 3

1 volts --

2 A How many volts?

3 Q 3.

4 A Okay. 3.

5 Q I believe -- I believe you testified
6 earlier that at 3 volts this Samsung LED device in
7 Exhibit 2012 would not be an operating LED circuit;
8 correct?

9 A It wouldn't be an operating device. You
10 measure some small finite current, a very, very small
11 current. For all intents and purposes, the light
12 output would be zero.

13 Q In your declaration at paragraph 48,
14 second-to-last sentence, you state, "The term
15 'drives' underscores that the forward voltage must be
16 in the range sufficient to operate the LED circuit,
17 that is, to turn on the LED circuit at the desired
18 light intensity." Do you see that?

19 A Yes.

20 Q So if a forward -- I'm sorry. Strike that.
21 If the applied voltage is below that range,
22 the LED circuit will not be turned on; correct?

1 A It wouldn't be driven according to the
2 understanding of a POSITA.

3 Q Would a POSITA understand the LED circuit
4 to be off under those circumstances?

5 A They describe it as non-functional.

6 Q Turning to paragraph 73 of your
7 declaration, where you discuss claims 3, 10 and 17,
8 do you see that?

9 A Yes.

10 Q In paragraph 73 you discuss the fact that
11 the claims in the '341 patent state that the first
12 LED circuit is operating. Do you see that?

13 A Yes.

14 Q And the claims recite a first operating LED
15 circuit. They also recite one additional LED
16 circuit; correct?

17 A Yes.

18 Q I understand your opinion as to the
19 operating LED circuit. Do you have an opinion as to
20 whether the claims also require that the additional
21 LED circuit be operating?

22 A It's an awkward question as you're asking

1 it.

2 I'll read from claim 1, there is it
3 includes the at least one additional LED circuit
4 being configured to emit different color light
5 compared to the first operating LED circuit. So if
6 the circuit is configured to emit a different color
7 of light, that says the LEDs in the circuit are
8 operating.

9 Then further in the claim below the
10 discussion of the switch, subsection B, "switching
11 the at least one additional LED circuit on or off."
12 So if the one additional LED circuit is on, it's
13 being driven, it's emitting light. If it's off, then
14 it's not being driven and it's not emitting light.

15 Q Would the off state encompass the state
16 where voltage is still being applied to the
17 additional LED circuit, but that voltage is
18 insufficient to put that additional LED circuit in an
19 operating state?

20 MR. McBRIDE: Objection; form.

21 A I haven't formed an opinion on that.

22 Q Turning to paragraph 38 of your

1 declaration, let me know when you're there, please.

2 A Okay.

3 Q The first sentence you state, "A POSITA
4 would understand that an LED circuit would
5 necessarily contain one or more LED package and that
6 an LED package would contain one or more LED chips
7 connected in a series, parallel or series/parallel
8 configuration." Do you see that sentence?

9 A Yes.

10 Q Is there anything else a POSITA would
11 understand that an LED circuit would necessarily
12 contain other than the items you list in that
13 sentence?

14 MR. McBRIDE: Objection; form.

15 A I don't think I've formed an opinion on
16 that yet.

17 MR. ERICKSON: Okay. Let's go off the
18 record.

19 (Recess 12:27 p.m. - 1:20 p.m.)

20 EXAMINATION

21 BY MR. KATSANTONIS:

22 Q All right. Dr. Bretschneider, how are you

1 doing?

2 A Good. How are you?

3 Q Good. Thank you.

4 Do you happen to have Exhibit 2008, your
5 declaration pulled up?

6 A Yes, I do.

7 Q And can I direct your attention to
8 paragraph 142 of your declaration, please, and let me
9 know when you're there.

10 A Okay.

11 Q So this paragraph, paragraph 142 of your
12 declaration, this discusses Dowling's two-way switch
13 190. Is that correct?

14 A Yes, that's correct.

15 Q And in paragraph 142, approximately nine
16 lines down, it is your opinion that "While user
17 interface 1 of Dowling (which may correspond to
18 two-way switch 190) may be capable of receiving input
19 from a user, "example, changing a mode), it does not
20 switch any LED circuits as the claim describes."

21 Did I read that correctly?

22 A Yes.

1 Q So specifically referring to Dowling's
2 two-way switch, you agree that Dowling explains that
3 a user can interact with that switch. Is that right?

4 A Yes.

5 Q And so based on a user directly interacting
6 with Dowling's two-way switch, a user can then
7 command set the LED circuits of Dowling into certain
8 modes. Is that correct?

9 MR. McBRIDE: Objection; form.

10 A No. The user selects the mode, but the
11 mode is actually controlled by the processor and
12 what's in the memory.

13 Q So if I'm understanding you correctly, it
14 is your opinion that Dowling's two-way switch doesn't
15 satisfy the independence claim -- the independent
16 claims because it is indirectly connected to the LED
17 circuits?

18 MR. McBRIDE: Objection; form.

19 A That's difficult to say even indirectly,
20 because the switch interacts again with the program,
21 which reads information from the memory, and then the
22 program running in the processor issues commands to

1 controllers.

2 Q And you agree with me that that whole
3 process is kicked off by the user interacting with
4 the two-way switch. Is that right?

5 A I'd say that's a part of the process.

6 Q And so the commands issued by the
7 controllers, that is causally linked to the user's
8 interaction with the two-way switch. Is that right?

9 MR. McBRIDE: Objection; form.

10 A The user's interaction with the two-way
11 switch sets the mode, and the mode is determined by
12 the processor and the program running at the time.

13 Q And turning back to paragraph 142 of your
14 declaration, Exhibit 2008, you state, "To the extent
15 two-way switch 190 may select the modes discussed
16 with respect to Figure 1, the two-way switch 190
17 corresponds to the user interface 1." Is that
18 correct?

19 A The interface 1 shown in Figure 1.

20 Q Thank you. And so it is the user via the
21 user interface who is selecting the mode. Is that
22 right?

1 A Yes.

2 Q Now turning to paragraph 144 of your
3 declaration, it is your opinion that the claims
4 require that the switch individually switch a single
5 LED circuit. Is that right?

6 A That's what's stated, "a switch capable of
7 at least one of: (a) switching a voltage level input
8 to at least one of the first operating LED circuit or
9 the at least one additional LED circuit, or switching
10 the at least one additional LED circuit on or off,"
11 wherein a or b is selectable by the user switching
12 the switch.

13 Q And you would agree with me that "at least
14 one" means one or more. Is that correct?

15 A If we're talking about "the at least one
16 additional."

17 Q The phrase, quote, "at least one" can mean
18 one or more; correct?

19 A I would say it does mean one or more.

20 Q Okay. Thank you. And to the extent there
21 are a plurality, for example, LED circuits, and there
22 is at least one LED circuit, you would understand

1 that at least one would be mutually inclusive of all
2 LED circuits. Is that right?

3 MR. McBRIDE: Objection; form.

4 A I'm not sure I follow the question.

5 Q For example, if you were to have three LED
6 circuits, and you can select at least one of those
7 three LED circuits, you could select any one of those
8 LED circuits or all of those LED circuits?

9 A Yes.

10 Q And, therefore, if you were to select all
11 three LED circuits, you would be selecting at least
12 one of the LED circuits?

13 A Yes.

14 Q So turning to claim 1 of the '341 patent,
15 Exhibit 1001, at a high level, claim 1 requires that
16 a switch is capable of performing at least one of two
17 functions, functions (a) and (b). Would you agree
18 with that?

19 A Yes.

20 Q And, therefore, the switch is capable of
21 performing (a) by itself. Is that right?

22 A That's one of the options.

1 Q And another option is that the switch is
2 capable of performing function (b) by itself?

3 A Yes.

4 Q And it also means that the switch is
5 capable of performing both function (a) and function
6 (b)?

7 A At least capable of (a) or (b). Could be
8 capable of both, but not necessarily. As I
9 understood your question, the switch has to be
10 capable of both, the language is at least one of (a)
11 or (b).

12 Q But it also encompasses the situation where
13 the switch is capable of performing both (a) and (b).
14 Is that right?

15 A It's possible the switch could do both (a)
16 and (b).

17 Q Doctor, it is a claim requirement based on
18 the at least one of that it is capable of performing
19 both function (a) and function (b). Is that right?

20 MR. McBRIDE: Objection; form.

21 A Again, it's not a requirement because it
22 states that the switch is capable of at least one of

1 (a) or (b). That means the switch could only do (a)
2 or the switch could only do (b). It's not a
3 requirement that the switch be capable of both.

4 Q But another possibility -- but the third
5 possibility is that the switch could also do --
6 strike that.

7 But the third possibility is that the
8 switch is capable of performing function (a) and
9 function (b)?

10 A I would characterize it as a third
11 possibility. It's not necessarily unique because
12 it's at least one of, which means it could do both
13 and could possibly be capable of other things. But
14 in terms of the explicit descriptions of (a) would be
15 the switch is capable of (a), capable of (b), or
16 could be capable of (a) and (b).

17 Q So just to clarify, a switch that is
18 capable of performing function (a) and (b) would be
19 within the scope of a claim to a switch that is
20 capable of performing at least one of function (a) or
21 function (b). Is that correct?

22 A Yes.

1 Q Now, with respect to function (a) of claim
2 1, the claim further recites, "switching a voltage
3 level input to at least one of the first operating
4 LED circuit or the at least one additional LED
5 circuit." Did I read that correctly?

6 A Yes.

7 Q So it is within the scope of a claim that
8 the switch capable of switching voltage level input
9 to the at least one of the first operating LED
10 circuit or the at least one additional LED circuit
11 may include both the first operating LED circuit and
12 the at least one additional LED circuit?

13 MR. McBRIDE: Objection; form.

14 A Yes.

15 Q And regarding the latter additional LED
16 circuit, claim 1 also provides that there is at least
17 one additional LED circuit. Is that correct?

18 A Could you repeat the question?

19 Q In function (a) of claim 1, the claim also
20 states that there is at least one additional LED
21 circuit. Is that right?

22 A Yes.

1 Q So again going back to the example, if
2 there were three additional LED -- strike that.

3 Going back to the example of having three
4 LED circuits in the context of there being now three
5 additional LED circuits, if you were to select all
6 three additional LED circuits, you would have
7 selected at least one of the additional LED circuits.
8 Is that correct?

9 MR. McBRIDE: Objection.

10 A Yes.

11 Q And the same would be true with function
12 (b), wherein the switch is capable of switching the
13 at least one additional LED circuit on or off?

14 A I'm having problems matching that back up
15 to your previous question, because your previous
16 question referred to a scenario with all three
17 circuits, and this is talking about at least one
18 additional LED circuit. And with three LED circuits
19 total there are only two, so I can't select three
20 additional LED circuits is how I was reading the
21 question as being mapped to the second one.

22 Q I will clarify. Thank you.

1 With respect to function (b), the claim
2 reads, "a switch capable of switching the at least
3 one additional LED circuit on or off."

4 Did I read that correctly?

5 A Yes.

6 Q And so, again, to the extent there are
7 three, for example, three additional LED circuits, if
8 you turn on or off all three LED circuits, you would
9 be turning on or off at least one of the additional
10 LED circuits?

11 MR. McBRIDE: Objection; form.

12 A I'm having trouble mapping that to the (a)
13 and (b) options, because the (a) option is switching
14 the voltage input to at least one of the first
15 circuit, or at least one additional circuit. So it's
16 the first one, or since we're talking about three
17 circuits, the second or third. And the (b) option is
18 switching the at least one additional LED circuit on
19 or off, which means the first circuit is outside of
20 that. So from the options of (a) or (b), that's
21 where I'm struggling.

22 You're asking about (b) and (b) is not

1 referring back to the first circuit. (B) is
2 exclusive because it says the one additional
3 circuit -- sorry, the at least one additional LED
4 circuit. So that would be two or three.

5 Q Okay. So in this example with respect to
6 what I believe you are calling the second or third
7 circuits, which are the at least one additional LED
8 circuits. Is that correct?

9 A Yes.

10 Q And so switching on or off both the second
11 and third additional LED circuits would be within the
12 claim scope of switching the at least one additional
13 LED circuit on or off. Is that correct?

14 MR. McBRIDE: Objection; form.

15 A That would be consistent with switching the
16 at least one additional LED circuit on or off, and in
17 this example, the second LED circuit and the third
18 LED circuit.

19 Q So now tying this all together, it is
20 within the claim scope that a switch capable --
21 strike that.

22 It is within the claim scope that a switch

1 capable of switching the voltage level input to all
2 LED circuits and switching all LED circuits on and
3 off?

4 A Sorry, it didn't sound like the end of a
5 question there. Could you repeat?

6 Q Yes. Thank you.

7 Is it within the claim scope that a switch
8 is capable of switching the voltage level input to
9 all LED circuits and switching all LED circuits on
10 and off?

11 A I don't think I've provided an opinion on
12 that yet.

13 Q Directing your attention to paragraph 105
14 of your declaration, can you please let me know when
15 you're there.

16 A Okay.

17 Q In paragraph 105 of your declaration you
18 acknowledge that "Claim 4 requires 'an LED light' --
19 'an LED lighting device comprising... a switch'
20 wherein that 'switch is connected between the AC
21 voltage power source and the LED lighting device.'"

22 Did I read that correctly?

1 A Yes.

2 Q And so turning now to Exhibit 1001, the
3 '341 patent, Figure 7, please let me know when you're
4 there.

5 A Okay.

6 Q I apologize. Directing your attention to
7 Exhibit 1001, column 11, lines 18 through 22.

8 A Okay.

9 Q The '341 patent states that "Figure 7
10 discloses a schematic diagram similar to the
11 multi-voltage and/or multi-brightness LED device 50
12 shown in Figure 6 integrated within a lamp 58 and
13 connected to a switch to control the brightness level
14 of the multi-voltage and/or multi-brightness LED
15 lighting device." Did I read that correctly?

16 A Yes.

17 Q And so now turning to Figure 7, if you can
18 let me know when you're there.

19 A Okay.

20 Q According to the passage you just read as
21 it relates to Figure 7, the specification defines the
22 LED lighting device as element 50. Is that right?

1 MR. McBRIDE: Objection; form.

2 A Yes.

3 Q And looking at Figure 7, element 50 is a
4 box; correct?

5 A Correct.

6 Q And this box element 50 encompasses a
7 plurality of LED circuits. Is that right?

8 A Yes.

9 Q Element 50 in Figure 7, however, does not
10 encompass switch 60. Is that correct?

11 A That's correct.

12 Q And now looking at your declaration Exhibit
13 1001 -- I'm sorry, Exhibit 2008, you provide between
14 paragraphs 105 and 106 an annotated Figure 7. Is
15 that right?

16 A Yes.

17 Q And in annotated Figure 7 of your
18 declaration, you extend the box 50 to encompass
19 switch 60. Is that right?

20 A Yes.

21 Q And in paragraph 106 of your declaration,
22 you use this annotated Figure 7 to show an

1 arrangement where the switch is both a part of the
2 LED device and between the AC voltage power source
3 and the LED device. Is that correct?

4 MR. McBRIDE: Objection; form.

5 A What I state the switches at the interface,
6 by acting as the interface, the switch is both a part
7 of the LED lighting device as the independent claims
8 require, and between the AC voltage power source and
9 the LED lighting device as the dependent claims
10 require.

11 Q So it's in your opinion that something can
12 be -- strike that.

13 So it's your opinion that the switch can be
14 both part of the LED device, lighting device, and
15 between the LED lighting device?

16 A The description here is related to an
17 electron configuration and it's a question of whether
18 the input power is the switch or if the input power
19 is other components before the switch.

20 Q And, Doctor, I'm correct in that paragraph
21 106 of your declaration you state that the switch is
22 acting as an interface between the AC voltage power

1 source and the LED lighting device. Is that right?

2 A The specific is "By acting as the
3 interface, this switch is both a part of the LED
4 lighting device (as the independent claims require)
5 and between the AC voltage power source and the LED
6 lighting device (as the dependent claims require)."

7 Q Looking at Figure 7, looking at your
8 annotated Figure 7 in your declaration, the 12 volt
9 AC power source has two connection lines to the LED
10 device. Is that correct?

11 A Yes.

12 Q With the right-most connection line
13 connecting to the switch which you have drawn within
14 LED lighting device 50. Is that right?

15 A Yes.

16 Q And the left-most connection line is
17 connected directly to LED lighting device 50?

18 A Yes.

19 Q There is no switch in between lighting
20 device -- LED lighting device 50 and the left-most
21 connection line to the AC voltage input source. Is
22 that correct?

1 MR. McBRIDE: Objection; form.

2 A There is none shown.

3 Q So as to the left-most connection line,
4 there is no switch between LED -- between the LED
5 lighting device and the 12 AC voltage source. Is
6 that correct?

7 A Could you repeat the question, please?

8 Q As it relates to the left-most connection
9 line between the 12 volt AC voltage source and LED
10 lighting device 50, there is no switch between those
11 two components?

12 A There is none shown.

13 Q Turning to the figures of the '341 patent,
14 is any figure -- strike that.

15 Turning to the figures of the '341 patent,
16 is any patented -- I'm sorry. Strike that again.

17 You would agree with me that no figure in
18 the '341 patent matches the figure that you have
19 drawn in your declaration. Is that right? And to
20 clarify, what you have annotated in your declaration.

21 A Figure 9 is a schematic diagram, does not
22 show the switch physically being a part, so no exact

1 match to the annotated Figure 7 that I have.

2 Q And in your declaration, Doctor, you do not
3 cite to the specification to support the composition
4 of the switch being within LED lighting device 50.
5 Is that correct?

6 MR. McBRIDE: Objection; form.

7 A I don't. I rely on the knowledge and
8 understanding of the POSITA, as I state in paragraph
9 106, "a POSITA would understand that claims 4, 11 and
10 18 are simply specifying where in the LED device the
11 switch would be connected relative to the power
12 source. In other words, the claims are directed to a
13 switch that acts as the interface between the AC
14 voltage power source and the LED lighting device."

15 Q Going back up to paragraph 13 of your
16 declaration, Exhibit 2008, can you please let me know
17 when you're there.

18 A Okay.

19 Q I'm sorry, that was actually technically
20 below, not up. So in section 113 of your
21 declaration --

22 A I'm sorry, I thought you said paragraph 13.

1 I didn't catch the 1.

2 Q Oh, apologies. 113.

3 A You had me confused. Okay.

4 Q This paragraph, paragraph 113, is
5 discussing the Bruning reference. Is that correct?

6 A Yes.

7 Q And you would agree with me that the
8 Bruning reference discloses LED arrays red, green or
9 blue, which are capable of emitting different color
10 lights. Is that right?

11 A I cite paragraph 26, it states "each
12 subarray 110R, 110G, 110B contributes the requisite
13 amount of red, green and blue light so that LED array
14 110 outputs controlled white light," red, green and
15 blue, not or blue.

16 Q Now jumping down to paragraph 123 of your
17 declaration, please let me know when you're there.

18 A Okay.

19 Q I'm sorry, I'm getting a little bit ahead
20 of myself here. One moment, please. Sorry.

21 Starting at paragraph 115 of your
22 declaration, the portion on page 56, four lines down,

1 it is your opinion that "Switch Q1 is a transistor
2 'controlled by controller 224,' which sets the 'duty
3 cycle of switch Q1' and is, therefore, not capable of
4 being switched by a user."

5 Did I read that correctly?

6 A Yeah.

7 Q So it's your opinion that because switch Q1
8 cannot be directly interacted with by a user, it
9 cannot satisfy the independent claims. Is that
10 right?

11 MR. McBRIDE: Objection; form.

12 A What I state, the claims require that a
13 user be able to modify the switch by the user
14 switching the switch, since Q1 is a transistor
15 controlled by controller 224, which sets the duty
16 cycle of switch Q1, and is therefore not capable of
17 being switched by a user.

18 Q Exactly. So it is because the user is, in
19 your words, not able to modify Q1, that it is
20 therefore not capable of being switched by a user?

21 A There is more detail to my opinion on that.
22 The controller controls Q1. But in paragraph 116 I

1 go on, it is impossible for the user to switch
2 transistor Q1, which has cycles each having a period
3 on the order of 10 microseconds.

4 And the next paragraph 117, my comment "the
5 independent claims require switching on or off,
6 further emphasizing that they anticipate a relatively
7 long period of time that the circuit is left on
8 before it is eventually switched back off." So a
9 transistor switching on the order of microseconds is
10 not something a person is capable of doing. And in
11 Bruning it is not done by a switch; it's done by a
12 light panel setting, the controller controls Q1.

13 Also, in paragraph 119 I state, "Further,
14 the claims require that the switch individually
15 switch a single LED circuit," I refer back to claim
16 1, and conclude the paragraph by "shown in Bruning
17 Figure 4 Q1 through primary winding N1 affects
18 voltage to each secondary windings N2 through N4 and
19 therefore LED circuits 210R, 210G and 210B
20 simultaneously. In other words, it does not
21 individually switch any of these circuits."

22 Q So, Doctor, I really want to focus on

1 paragraph 115. We'll get to those sections later.
2 But, and that, again, is the portion of your
3 declaration on page 56 where you say, "Switch Q1 is a
4 transistor controlled by controller 224 which sets
5 the duty cycle of switch Q1 and is therefore not
6 capable of being switched by a user." And to arrive
7 at that opinion you cite to paragraph 37 and 38 of
8 Bruning Exhibit 1004. Is that correct?

9 A Yes.

10 Q So directing your attention to Bruning
11 paragraph 38, do you have that open? Or do you need
12 me to provide that to you?

13 A I believe I have that.

14 Q We'll drop in the chat --

15 A I was about to say please drop it in,
16 because I'm trying to select it, but it's not popping
17 up on my screen, so it's buried or it's lost. I'm
18 not sure which.

19 Q It is just taking a moment to upload.
20 Were you able download Exhibit 1004?

21 A Okay. Now I have it. Okay.

22 Q And are you looking at paragraph 38?

1 A Yes.

2 Q A little more than halfway down through
3 that paragraph, it is the last sentence, actually,
4 Bruning states, "a panel light setting input to
5 central controller 224 controlled, for example, by a
6 user or other input, including video input, adjusts
7 the duty cycle of Q1 and thus the maximum light
8 output of the LED subarrays 210R, 210G and 210B."

9 Did I read that correctly?

10 A Yes.

11 Q And so Bruning teaches that the panel light
12 setting input can be controlled by a user. Is that
13 right?

14 A Could be controlled by a user.

15 Q And a user controlling the panel light
16 setting input can adjust the duty cycle of Q1. Is
17 that right?

18 A Yes.

19 Q And by adjusting the duty cycle of Q1, a
20 user can affect the maximum light output of the LED
21 subarrays. Is that right?

22 MR. McBRIDE: Objection; form.

1 A It would affect the LED subarrays
2 simultaneously.

3 Q And by affecting the LED subarrays as
4 specifically identified in 38, that would mean --
5 that would include changing the light output of the
6 LED subarrays. Is that right?

7 A Well, there's an issue there with the light
8 output, and the claims are directed to a switch
9 selectable by a user for switching a voltage level
10 input, switching an additional circuit on or off.
11 And again, the user is not interacting with the
12 switch, they're not switching the switch. The
13 controller is switching the switch. And the
14 discussion here is not affecting one circuit by
15 itself. It's not capable of switching an additional
16 circuit on or off.

17 Q So it's because, in your opinion, in part,
18 that because a user is not directly interacting with
19 switch Q1, it is not -- a user is not switching the
20 switch. Is that right?

21 MR. McBRIDE: Object to the form.

22 A Part of it is the claims require that a

1 user be able to modify the switch by the user
2 switching the switch. There are other issues as well
3 that I touched on. We're getting to it's like
4 describing an elephant here. I'll stay with that for
5 this stage.

6 Q But, Doctor, you would agree with me that a
7 user, as described in Bruning, a user can interact
8 with a panel light setting and the light output of
9 the LED subarrays can be altered based on that user
10 interaction?

11 A The statement from Bruning is a panel light
12 setting input to central controller controlled, for
13 example, by a user or other input. So the user can
14 adjust the panel light setting.

15 Q So as discussed in paragraph 38 of Bruning,
16 a user can cause the amount of light emitted by the
17 LED subarrays to change by interacting with the light
18 panel setting. Is that correct?

19 A The panel light setting. I think you said
20 light panel setting. But that's what paragraph 38
21 states.

22 Q Now moving over to paragraph 119 for a

1 moment, your position is that -- your opinion,
2 rather, is that the claims require that the switch
3 individually switch a single LED circuit. Is that
4 right?

5 A Yes.

6 Q But as we discussed before with respect to
7 Dowling, it is within the claim scope that the switch
8 be capable of both switching a voltage level input to
9 all the LEDs. Is that right?

10 MR. McBRIDE: Objection; form.

11 A From what I recall of the discussion,
12 because we had the (a) and (b) options, and the (a)
13 option is switching a voltage level input to at least
14 one of the first LED circuit or the at least one
15 additional LED circuit. So that's a first or second
16 or third, as we were discussing. And then (b) is
17 switching the at least one additional LED circuit on
18 or off. Also, we have that voltage level input,
19 which is absent from Bruning because Bruning is using
20 pulse with modulation.

21 Q Does changing the amount of light output by
22 the three LED subarrays as described in paragraph 38

1 of Bruning change the amount of light output by at
2 least the red LED subarray?

3 MR. McBRIDE: Objection; form.

4 A Could you repeat the question, please?

5 Q Regarding paragraph 38 of Bruning, does
6 changing the amount of light output by the three LED
7 subarrays change the amount of light output by at
8 least the red LED subarray?

9 MR. McBRIDE: Same objection.

10 A No, the discussion in paragraph 38 is about
11 adjusting the maximum output of the LED subarrays.

12 Q And as we discussed with Dowling earlier,
13 if I recall correctly, because there are -- because
14 the voltage level input can be switched to at least
15 one of the LED circuits, it would also allow for the
16 voltage level to be altered for both LED circuits.
17 Is that right?

18 A If you could refresh my memory about which
19 part of Dowling.

20 Q Can I direct you to your declaration,
21 paragraph 82, and please let me know when you're
22 there.

1 A Okay. I'm at paragraph 82.

2 Q You state, "Because the claims provide
3 different voltages to 'at least one of' the two
4 circuits, they clearly allow for different voltages
5 to one or both of the LED circuits." Is that right?

6 A That's correct.

7 Q So regarding paragraph 38 of Bruning, by
8 changing the light output of the LED arrays is within
9 the claim scope of changing the voltage level input
10 to at least one of the LED circuits?

11 MR. McBRIDE: Objection; form.

12 A This is where one of the issues, because
13 Bruning is teaching it's a pulse with modulation,
14 it's changing the light output by changing a duty
15 cycle, not changing a voltage. So there's a problem
16 with trying to map Bruning to changing a voltage
17 level input to an operating LED circuit.

18 Q Let me ask a slightly different question.
19 Does changing the maximum light output of the three
20 LED subarrays in Bruning change the maximum light
21 output of at least the red LED subarray?

22 A Yes.

1 Q Directing your attention to paragraph 36 of
2 Bruning, a little more than halfway down it is, I
3 believe it is the last sentence, "The level of
4 voltage VRO" -- I'm sorry. Are you -- are you there
5 yet?

6 A Yes.

7 Q Okay. "The level of voltage VRO applied to
8 LED subarray 210R is a function of (among other
9 things), the duty cycle of switch Q1." Is that
10 correct?

11 A Yes.

12 Q So a user by controlling the panel light
13 setting to adjust the duty cycle of Q1 can adjust the
14 voltage VRO applied to LED subarray 210R?

15 MR. McBRIDE: Objection to form.

16 A I'm having trouble mapping this, because
17 what Bruning is talking about is a pulse with
18 modulation and using duty cycle to adjust the light
19 output. And the way pulse with modulation works is
20 you're changing the percent of times that an LED is
21 being driven. But when it's on, it's at a constant
22 level.

1 So the statement here about changing the
2 voltage applied at the subarray doesn't map back to
3 using pulse with modulation. And it also doesn't map
4 back to the circuit, because what Dr. Neikirk was
5 referring to for the circuits includes more than just
6 the LEDs, and now you're asking about the question of
7 the LEDs as opposed to the entire identified circuit.

8 Q Looking at paragraph 43 of Bruning. Are
9 you there yet?

10 A Yes.

11 Q Paragraph 43 of Bruning states that "Where
12 the duty cycle of Q5 is constant, there is thus a
13 pulse amplitude modulation of light output of red LED
14 230." Did I read that correctly?

15 A Yes.

16 Q And now looking at paragraph 41 of Bruning,
17 "Assuming that switch Q5 of Figure 4b is turned on
18 (and maintained on for a sustained interval), the
19 applied voltage VRO creates a maximum current I_{max}
20 through red LED 230R." Is that right?

21 A That's what it states.

22 Q And the current I_{max} -- for clarity,

1 paragraph 41 continues by stating that, "The current
2 I_{max} through LED 230R is generated by a full
3 application of VRO to the circuit and thus provides
4 the maximum level of light output by red LED 230R."
5 Is that correct?

6 A That's what's stated.

7 Q So assuming Q5 is on for a prolonged period
8 of time, does changing the maximum light output of
9 the three LED subarrays change the maximum light
10 output of at least the red LED subarray?

11 MR. McBRIDE: Objection; form.

12 A I don't recall providing an opinion on
13 that.

14 MR. McBRIDE: Chris, we have been going on
15 for over an hour now. Is there a good time for a
16 break?

17 MR. KATSANTONIS: That works for me.

18 (Recess 2:37 p.m. - 2:56 p.m.)

19 BY MR. KATSANTONIS:

20 Q Dr. Bretschneider, during this most recent
21 break did you speak with anyone?

22 A Only my dogs.

1 Q And during any other break have you -- did
2 you speak with anyone?

3 A Only the same two dogs.

4 Q So I believe where we left off before the
5 break was assuming that switch Q5 is switched on for
6 a maintained period of time such that the voltage
7 applied VRO creates a maximum current through LED
8 230R, and as I recall, I believe you said that you
9 did not previously form an opinion on that. Is that
10 correct?

11 A I wasn't sure. I did review my
12 declaration, and, actually, between paragraphs 124
13 and 126 there's a discussion on that. Paragraph 125,
14 "Bruning teaches varying the output using various
15 modulation techniques, including pulse amplitude
16 modulation, pulse frequency modulation and pulse
17 width modulation," and I point to paragraph 43 of
18 Bruning.

19 And then the following paragraph, "Bruning
20 changes the light output of the LED by varying the
21 duty cycle at frequencies in the order of
22 microseconds, with the actual voltage level staying

1 the same. The light output in Bruning is varied by
2 pulse modulation, not by providing different DC
3 voltages. Bruning therefore does not disclose
4 providing different DC forward voltages to the LED
5 circuits."

6 Q So my question is that assuming Q5 is
7 switched on for a maintained period of time, the
8 voltage VRO creates a maximum current through LED
9 230R. Is that right?

10 A That's what's stated.

11 Q And referring back now to paragraph 38 of
12 Bruning, Bruning teaches that the maximum output of
13 LED subarrays are controlled by a user at the panel
14 light setting by controlling the duty cycle of Q1.

15 A Paragraph 38 I think that's -- I'm
16 paraphrasing, but the controller is what controls the
17 duty cycle, and hence, the maximum light output of
18 the LED subarrays.

19 Q So by adjusting the duty cycles of Q1, the
20 maximum current through LED 230R can be altered
21 through the application of voltage VRO. Is that
22 correct?

1 MR. McBRIDE: Objection; form.

2 A Would you repeat the question, please?

3 Q By adjusting the duty cycles of Q1, the
4 maximum current through LED 230R can be altered
5 through the application of VRO, of voltage VRO?

6 A That's what's stated in paragraph 41.

7 Q Would the application of VRO provide a
8 forward voltage through LED 230R -- provide a forward
9 voltage to LED 230R?

10 A I don't see that I provided an opinion on
11 that.

12 Q So it is your testimony today that the max
13 current flowing through the LED 230R does not provide
14 a forward voltage?

15 MR. McBRIDE: Objection; form. Misstates
16 the witness' testimony.

17 A No, I just stated I don't recall providing
18 an opinion on that.

19 Q Looking at paragraphs 123 to 126 of your
20 declaration, which I would like to take in turn
21 actually starting at paragraph 124, let me know when
22 you're there.

1 A Okay.

2 Q In paragraph 124 your discussion relates to
3 switch Q5. Is that correct?

4 A Yes.

5 Q And in paragraph 125 your discussion
6 relates again to Q5. Is that right?

7 A Yes.

8 Q And in paragraphs 123 through 126 you do
9 not discuss Q1. Is that correct?

10 A I don't see Q1 mentioned.

11 Q Directing your attention above to paragraph
12 119, you agree that Q1 through primary winding N1
13 affects voltage to each of the secondary windings N2
14 through N4 and therefore, LED circuits 210R, 210G and
15 210B. Is that correct?

16 A Actually state, "As shown in Bruning Figure
17 4, Q1 through primary N1 affects voltage to each of
18 secondary windings N2 through N4 and therefore LED
19 circuits 210R, 210G and 210B simultaneously." And I
20 go on, "In other words, it does not individually
21 switch any of these circuits."

22 Q You agree that Q1 affects the voltage of

1 LED circuits 210R, 210G and 210B. Is that correct?

2 A Indirectly, because, again, Q1 only affects
3 through the primary winding and then the secondary
4 windings.

5 MR. KATSANTONIS: I think that is it. I
6 pass the witness.

7 MR. McBRIDE: Okay. Great. Can I have a
8 short break and then I'll get back on and see if I
9 have any redirect, I guess. Thanks. Take 10
10 minutes.

11 MR. KATSANTONIS: Sounds good.

12 (Recess 3:11 p.m. - 3:17 p.m.)

13 MR. McBRIDE: We have no further questions.
14 Thank you, everyone.

15 MR. ERICKSON: Thank you, Doctor.

16 (Ending time: 3:17 p.m.)

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1 CERTIFICATE OF CERTIFIED SHORTHAND REPORTER

2
3 I, MONIQUE VOUTHOURIS, Certified Court
4 Reporter and Notary Public within and for the State
5 of New Jersey, do hereby certify:

6 That ERIC C. BRETSCHNEIDER, Ph.D., the
7 witness whose deposition is hereinbefore set forth,
8 was duly sworn by me before the commencement of such
9 deposition, and that such deposition was taken before
10 me and is a true record of the testimony given by
11 such witness.

12 I further certify that the adverse party,
13 LYNK LABS, INC., was represented by counsel at the
14 deposition.

15 I further certify that the deposition of
16 ERIC C. BRETSCHNEIDER, Ph.D., occurred remotely, on
17 Thursday, October 20, 2022, commencing at 9:08 a.m.
18 CST to 3:17 p.m. CST.

19 I further certify that I am not related to
20 any of the parties to this action by blood or
21 marriage, I am not employed by or an attorney to any
22 of the parties to this action, and that I am in no

1 way interested, financially or otherwise, in the
2 outcome of this matter.

3 IN WITNESS WHEREOF, I have hereunto set my
4 hand this 1st day of November 2022.

5

6

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Monique Vouthouris

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Monique Vouthouris, CCR, RPR, CRR

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Notary Public of the State of New Jersey

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My commission expires: April 8, 2024

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