

1 IN THE UNITED STATES DISTRICT COURT

2 FOR THE WESTERN DISTRICT OF TEXAS

3 WACO DIVISION

4 JIAXING SUPER LIGHTING) (

5 ELECTRIC APPLIANCE CO., LTD.,) (CIVIL ACTION NO.

6 AND OBERT, INC.,) (6:20-CV-18-ADA

7 PLAINTIFFS,) (

8 VS.) (

9 CH LIGHTING TECHNOLOGY CO.,) (NOVEMBER 2, 2021

10 LTD., ELLIOTT ELECTRIC SUPPLY,) (8:02 A.M.

11 INC., AND SHAOXING RUISING) (

12 LIGHTING CO., LTD.,) (

13 DEFENDANTS.) (

14 JURY TRIAL TRANSCRIPT

15 BEFORE THE HONORABLE ALAN D ALBRIGHT

16 UNITED STATES DISTRICT JUDGE

17 FOR THE PLAINTIFFS: Matthew C. Bernstein
18 Joseph P. Reid
19 Miguel J. Bombach
Evan S. Day
20 Abigail A. Gardner
Perkins Coie, LLP
11452 El Camino Real
21 Suite 300
San Diego, CA 92130

22 Chao (Wendy) Wang
23 Perkins Coie, LLP
3150 Porter Drive
24 Palo Alto, CA 94304-1212
25

1 FOR THE PLAINTIFFS: Cindy H. Chou
2 Attorney at Law
3 15201 Apricot Lane
North Potomac, MD 20878

4 FOR THE DEFENDANTS: Robert S. Hill
5 David C. Schulte
6 Sara S. Staha
Morgan J. Kleoppel
7 Zoe Phelps
Holland & Knight, LLP
200 Crescent Court
Suite 1600
8 Dallas, TX 75201
9 Allison M. Lucier
Holland & Knight, LLP
10 10 St. James Avenue
11 11th Floor
Boston, MA 02116
12 William E. Sterling
Holland & Knight, LLP
13 50 California Street
San Francisco, CA 94111
14 Natalie Parker
Holland & Knight, LLP
15 One Arts Plaza
16 1722 Routh Street
Suite 1500
17 Dallas, TX 75201
18 Sophie X. Jin
Holland & Knight, LLP
19 800 17th Street N.W.
Suite 1100
20 Washington, DC 20006

21 THE COURT REPORTER: Shelly Holmes, CSR, TCRR
22 Certified Shorthand Reporter
23 2593 Myrtle Road
Diana, TX 75640
24 (903) 720-6009
shellyholmes@hotmail.com

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1 center which focuses on electric vehicles and power
2 electronics for electric vehicle charging.

3 We have about 250 faculty and students across nine
4 universities and about 60 industry and government partners
5 associated with that research center.

6 Associated with that work, I received the inventor
7 of the year -- or excuse me, the campus researcher of the
8 year award from USU.

9 I've published many peer-reviewed technical
10 articles, over 200 in my career. I'm the inventor of over
11 30 patents in this field. I'm a senior member and an
12 active participant in our professional society, the IEEE,
13 where I've chaired many conferences and I'm associated
14 editor for their top journals.

15 I've also, since the early 2000s, evenings and the
16 weekends, served part time as an expert, like I am here in
17 this case, evaluating circuits and their operation.

18 MS. LUCIER: Your Honor, at this time, Defendants
19 ask that Dr. Zane be recognized as an expert in the field
20 of electrical engineering.

21 MR. REID: That's fine, Your Honor.

22 THE COURT: He'll be so admitted.

23 Q. (By Ms. Lucier) Dr. Zane, have you provided opinions
24 on the '140 patent in this case?

25 A. Yes, I have.

1 Q. What are your opinions on the '140 patent?

2 A. I've given a summary here of the opinions that I'll be
3 discussing and providing today.

4 I have opinions regarding invalidity. It is my
5 opinion that the '140 or '140 patent would be invalid in
6 light of the prior art. I have three prior art references,
7 Ono, Ivey, and Sadwick, all three of which are references
8 that provide solutions for the shock hazard of these
9 double-ended type tubes.

10 I also have opinions that I've provided regarding
11 non-infringement relative to one aspect, the LT2600, as
12 well as relations of benefits of the '140 patent to prior
13 art or to state of the art, I should say, as well as
14 non-infringing alternatives and secondary considerations.

15 Q. Did you review the '140 patent for purposes of your
16 opinion in this case?

17 A. Yes, I did.

18 Q. Can you provide the jury with a general overview of
19 what is discussed in the '140 patent?

20 A. Yes, I can. I've turned to a slide which I'll use and
21 I'll -- I'll cover just two slides here on the '140 patent.

22 We heard a little bit about it already, so I think
23 we understand the purpose of the '140 or the '140 patent.
24 And that is, of course, to prevent the shock hazard when
25 installing these lamps.

1 But let me provide just a couple of details,
2 because we're going to use these terms throughout as we
3 look at the prior art.

4 So just a couple of details around how exactly the
5 '140 accomplishes the shock hazard protection. It does --
6 it does so using an installation detection circuit or a
7 method that includes three primary elements and then a
8 fourth optional that we'll talk about.

9 The first primary element is the pulse generating
10 circuit. So the pulse generating circuit generates a pulse
11 and injects through that pulse a signal into the power
12 loop. You know, "power loop" is a term we -- we often use.
13 It's just the -- the path for a power to flow.

14 And you can look at this picture of an individual
15 installing the lamp, that the power loop or the power path
16 is from the wires up in the ceiling, you know, down through
17 the fixture, and then down to the LEDs or to the light.
18 And, unfortunately, that can include a person in that loop,
19 and that's the shock hazard.

20 The pulse generator injects that signal into the
21 power loop, and the way that signal responds -- in this
22 it's just a little pulse of current that goes through that
23 loop, if it's firmly -- if the lamp is firmly installed,
24 the way the response from that signal is different, quite
25 different, than it would be, for example, if there were a

1 person or a -- or a human in that loop.

2 And so that is ultimately what is happening, short
3 and quick pulse. Kind of like the inventor mentioned
4 yesterday, you know, touch the hot water and get out and
5 see what's happening. That's essentially what's happening
6 here.

7 So pulse generator injects that signal.

8 And then we have a detector, which is listed here
9 as a detection determining circuit, 2550. The detector
10 determines the response to that -- that signal. Again,
11 that signal would be different whether or not there's a
12 human in the loop. And this is a yes/no question. You
13 know, is it -- is the lamp firmly installed or not? And
14 that's what the detector provides. It can be as simple as
15 a circuit element we call a comparator. Simply compares to
16 a threshold, yes or no, is that signal above or below the
17 threshold?

18 Then there's a third key element, and that is the
19 switch. We've heard a lot about the switch. The switch is
20 just a switch. And it's a lot like the light switch, it's
21 opened and closed.

22 In this case it would implemented -- it can be
23 implemented, for example, with a transistor circuit element
24 that acts as a -- a switch.

25 In the embodiment 15B that I'm showing here from

1 the '140 patent, that switch performs actually two
2 functions. One is that it injects that signal, so we can
3 find out what is the response that the detector responds
4 to. And second, it acts as a load switch. It's that
5 protection. So if the lamp is properly installed, the load
6 switch closes. It lets you run the switch. It lets you
7 run the load. If the lamp is not properly installed, it
8 opens. That's the basic idea.

9 And then finally you have that fourth optional
10 element that's used in all of the asserted claims except
11 for Claim 1, and that's a latch, called the detection
12 result latching circuit.

13 All right. That last element, the latch is simply
14 a memory element. It -- it stores the result. So if we
15 realize the lamp is installed properly, it stores that. If
16 the lamp is not installed properly, it stores that so that
17 we can keep the light off and keep things safe.

18 The asserted claims, there are six of them. Three
19 of them are what we call independent claims, meaning they
20 don't depend on each other, it was the full what was called
21 yesterday as the recipe. So there are three independent
22 versions of those, Claims 1, 4, and 24. And then there are
23 three dependent claims, meaning those are extra elements
24 that are added to the recipe. Claims 5, 28, and 31.

25 And the last slide or highlight I'll give on the

1 '140, this is similar to what Dr. D'Andrade -- D'Andrade
2 highlighted yesterday, and that is that with Claims 1, 4,
3 and 24, those are our three independent claims, there are
4 many repeated elements or common elements among them. And
5 I've color coded them across just to remind us.

6 As we go through the prior art, I'll -- I'll walk
7 through the -- the elements that are contained here. And
8 then at the end, I'll give a quick summary how that
9 combined into each of those claims.

10 MS. LUCIER: For the court reporter, is he talking
11 too fast?

12 Q. (By Ms. Lucier) Okay. So Dr. Zane, can you please
13 slow down just a little?

14 So let's turn to the subject of invalidity.

15 Dr. Zane, what is your -- what is your opinion
16 with respect to the validity of the asserted claims of the
17 '140 patent?

18 A. I've given a brief highlight here of my opinions, and
19 we can walk through the details.

20 With regard to Claim 1, as well as Claims 4, 5,
21 24, 28, and 31, my opinion is that all of these claims
22 would be invalid considering the prior art. And I've given
23 a detail here, for example, Claim 1, relative to Ono and
24 Ivey with Sadwick, and the other claims, Ivey I and Ivey I
25 with Sadwick.

1 Q. And turning to Ono --

2 MS. LUCIER: Your Honor, DX-66 is the Japanese
3 language version of the Ono reference, and DX-67 is the
4 certified English translation of the Ono reference. These
5 have been pre-admitted, and Defendants would like to offer
6 them into evidence.

7 THE COURT: They'll be admitted.

8 Q. (By Mr. Lucier) Dr. Zane, did you review the Ono
9 reference in forming your opinions?

10 A. Yes, I did.

11 Q. Could you tell us a little bit about the Ono reference?

12 A. Yes. And I'll try and do this a little more slowly,
13 but not spend too much time.

14 So briefly, let me highlight kind of what -- what
15 is the Ono reference. And I'll start with the dates and --
16 and what we understand.

17 The Ono reference was published, and as I've
18 listed here, on May 24th, 2012, which would be its priority
19 date, meaning this reference is prior art to the '140
20 patent.

21 The 1 -- the Ono reference was not reviewed by the
22 Patent Office when -- when considering the issuance of the
23 '140 patent. As I understand it, there's no dispute in
24 this case that Ono is prior art.

25 As was just mentioned, there are two versions of

1 Ono that I've reviewed. Ono was written natively in
2 Japanese, and there's an English translation. I've
3 referred to both in forming my opinions.

4 In giving a brief highlight of Ono, let me start
5 with the purpose of Ono.

6 As I stated before, Ono is oriented towards a
7 solution for avoiding the shock hazard when installing an
8 LED tube. And I give a couple of highlights here from one
9 of the embodiments, Figure 11, that gives an example
10 highlighting that Ono looks at the consideration when you
11 may have an LED tube where one end would be plugged into --
12 what's listed here as an external power supply, that means
13 one end is connected to power, while the other end could be
14 in contact with a human. That's the basic concept we've
15 been seeing multiple times. That other end as you're
16 installing the lamp.

17 And, therefore, it's possible with the Ono
18 reference to manage the LED illumination while preventing
19 that shock hazard. This is true both for installing the
20 lamp, as well as if a user or an installer would actually
21 remove the lamp while it's operating. Those are both
22 conditions considered by Ono.

23 So the question is how does it do it? And I hope
24 you'll bear with me. I hope you'll enjoy understanding a
25 little bit of the how. But I'm going -- I'm going to go

1 through this fairly briefly, and I've included excerpts
2 from three of the figures of Ono, which I believe you'll
3 have access to.

4 So within Ono, first, on the lower left-hand side,
5 the reference is shown -- sorry. I was just hesitating
6 because I don't see the figure numbers. But this, I
7 believe, is coming from Figure 11 within Ono.

8 At the very bottom, and in white kind of all the
9 way around the outside, is the basic connection of the
10 structure. So at the bottom we have the AC, the voltage
11 connection, the power supply. These are the wires coming
12 from the ceiling that will deliver the power to the
13 fixture. Then you can see the wires going around the
14 bottom and up to the terminals. This is the fixture
15 itself where you're --

16 THE COURT: Doctor, you've got to slow down.

17 THE WITNESS: I will. Thank you.

18 MS. LUCIER: And I know I talk extremely fast. We
19 have to double slow down.

20 A. As we go around the outside, the -- you can see the
21 terminals for the fixture, and this is where you install
22 the lamp. The power then would flow through the wires up
23 to the top where we have the LEDs, and the LEDs are
24 Element 10, these are the little triangles that would
25 generate the light.

1 Specifically, Ono includes a switch that's in that
2 loop, as you can see. That's our safety switch. That's
3 the load switch. Ono uses that switch to protect the user.
4 It would open if it's understood that it's not a safe
5 condition. And once we know that we're safely installed,
6 it would close. And if that condition changes, it would
7 open again.

8 You can see in the lower right-hand side a little
9 picture that I've highlighted in yellow, but this is in --
10 in the figure in Ono, where it shows an Element M, which is
11 a human, and they've used a picture of a hand for the human
12 indicating that there may be a concern of a shock hazard,
13 and that's what Ono is looking to solve.

14 Ono solves this using the control circuit. So
15 control circuit 50 is the circuit that's connected to and
16 turns on and off the switch.

17 Now, I'll just briefly describe the concept and
18 the elements inside that control circuit.

19 So if we look in the upper right-hand section,
20 again, you can see the boxes labeled 50, that's the same
21 control circuit. Inside that box are the key elements,
22 much like I was describing earlier, but in this case, for
23 Ono, on how it's going to find out is there a hand in that
24 loop? Is there a person in that loop or not? Then it will
25 turn the switch on and off accordingly.

1 All right. Ono does this with the box that I've
2 highlighted in pink. It calls this the signal output
3 circuit, which operates as the pulse generating circuit.
4 The pulse generating circuit generates a pulse and injects
5 a signal through that pulse into that power loop. Again,
6 same idea, it's generating a pulse signal, it injects that
7 signal into the power loop to measure is the lamp properly
8 installed.

9 And, again, the way that the system responds to
10 that signal will be quite different whether that hand is in
11 the loop or not.

12 The pulse signal is generated. The response is
13 measured by what's listed here as the detection determining
14 circuit. The element's highlighted in -- in gray. That
15 again, simple comparator, is comparing yes or no is the
16 response higher or lower than a threshold? Is there a
17 human in the loop or not?

18 The output of that decision goes directly to turn
19 the switch on or off. If there's a human, we turn the
20 switch off. If it's a solid connection, you turn the
21 switch on.

22 That is the basic functioning of Ono.

23 And in the lower right-hand section, there's a
24 Figure 8, that just gives examples of what are called the
25 waveforms from that operation, the pulse itself, and then

1 the response, the signal that responds to that pulse. And
2 it uses a -- terminology V_{th} , that's the threshold, is the
3 signal above or below that threshold. That is the
4 detection. That is the basic operation of Ono.

5 Q. (By Ms. Lucier) Dr. Zane, have you reviewed the
6 opinions of Super Lighting's expert, Dr. Phinney, on the
7 Ono reference?

8 A. Yes, I have. It's my understanding that there are two
9 terms that have -- are still potentially in dispute. The
10 first is that pulse signal I just talked about. Is that
11 pulse signal controlling the turn on and turn off of the
12 switch circuit?

13 The second is the sampling signal. That is
14 essentially the detection of that signal injection that I
15 talked about. Is that sampling occurring on the power
16 loop?

17 Q. So hopefully we can spare you and go briefly through
18 the ones that are undisputed.

19 So turning to the claims of the '140, looking at
20 the first element, does Ono disclose this element?

21 A. Yes. Ono does disclose this element. This element is
22 with regard to an LED tube lamp that includes the
23 installation detection circuit, as I just described, and
24 receives an external driving signal, which I've highlighted
25 in purple. That's simply, again, the wires from the

1 ceiling that bring the power in.

2 As was stated, it is my understanding that this
3 term is not disputed and is included.

4 Q. Has the Court construed the term "pulse signals"?

5 A. Yes, the Court has.

6 Q. Have you applied the Court's construction in your
7 analysis?

8 A. Yes, I have. And we saw this construction, I believe,
9 yesterday, and I've just given a briefly highlight as a
10 reminder that pulse signals are -- take on their plain and
11 ordinary meaning. And they include the example that's
12 listed here in the text. And I've given an example of a
13 signal at the bottom to show what that would look like, a
14 signal that goes high and then low again, or vice versa.

15 Q. So turning to the next claim element, does Ono disclose
16 a pulse generating circuit?

17 A. Yes, Ono does disclose a pulse generating circuit. I
18 described this in the overview for Ono, again, highlighting
19 that in the pink, Ono discloses the pulse generating
20 circuit. This is that circuit that generates the pulse and
21 injects the signal.

22 As described here in the paragraphs I've shown,
23 it's described as a rectangular pulse signal. I don't
24 believe -- it is my understanding that this claim term is
25 not under dispute and is included.

1 Q. Has the Court construed the term "properly installed"?

2 A. Yes, it has.

3 Q. Have you applied the Court's construction in your
4 analysis?

5 A. Yes, I have. And, again, just as a reminder, I've put
6 it up here. The Court's construction for properly
7 installed is the plain and ordinary meaning, essentially
8 are both terminals securely fastened in that fixture.

9 Q. Turning to the next element, does Ono disclose this
10 element?

11 A. Yes, Ono discloses this next element, which includes
12 essentially detecting whether or not the lamp is installed
13 properly. And I've described this in the overview that I
14 just provided for Ono. The key aspects are that during
15 those pulse signals, that the detection circuit detects, is
16 that lamp properly installed or not?

17 It does so in the way I described before. And it
18 is my understanding that this claim term is not disputed
19 and is disclosed by Ono.

20 Q. And turning to the next element, does Ono disclose a
21 switch circuit coupled to the pulse generating circuit?

22 A. Yes. It is my opinion that Ono discloses a switch
23 circuit coupled to the pulse generating circuit. And I'll
24 go ahead and take this entire claim element together.

25 There are two components to it. The first is that

1 the switch circuit is coupled to the pulse generating
2 circuit. And the second is that those pulse signals, which
3 come out of the pulse generating circuit, control the
4 turning on and off of the switch circuit.

5 I'll note that this is the one -- the first of
6 those two claim elements that I mentioned earlier are in
7 dispute. So this one is -- is an important one as we
8 consider it.

9 I look at these two together because, first, as we
10 consider a switch circuit coupled to a pulse generating
11 circuit. The inventors in the '140 patent specifically
12 designated that coupled to does not mean it has to be
13 directly connected to. It can have what we call
14 intervening elements.

15 And, in fact, as I consider this overall claim
16 limitation, it's clear to me that the two go hand in hand.
17 Meaning that pulse signals that control turning on and off
18 a switch, if we meet that requirement, clearly the pulse
19 signal -- the pulse generating circuit is coupled to the
20 switch. One depends on the other.

21 So let me turn and explain, then, how the pulse
22 signals control turning on and off of the switch.

23 As designated here -- and, again, I don't know if
24 anybody can see the paragraphs in the bottom section.
25 Probably not. But --

1 Q. Oh, can you not see them on your screen?

2 A. I can't. No.

3 Q. I can see them on my screen.

4 A. Okay. So there's a listing of the paragraphs, and I've
5 forgotten which paragraph it is. But as designated in Ono,
6 it's specifically stated the control circuit 50 controls
7 switch 40. The control circuit, is as I'd indicated
8 previously, and in the upper right hand, the same figure I
9 described earlier, includes the details of -- of Ono and
10 its operation, where the pulse generating circuit is an
11 inherent -- is an important aspect of that control circuit.

12 The -- as I described previously, the way this
13 operates, the pulse generating circuit generates pulses and
14 injects those pulses into the power loop. The detection
15 circuit responds to the signal that was injected into the
16 power loop. And the result is a yes or a no, is the
17 circuit properly installed? That output, yes or no, is
18 directly used to control the switch.

19 This is described in Ono in the following
20 paragraphs. And I've given a simplified diagram on the
21 right to show this sequencing.

22 The pulse generating circuit, which is considered
23 the -- is considered as listed in front of us, the pulse
24 generating circuit generates a signal output. That signal
25 is injected into the power loop, as I mentioned. The

1 detector detects the response to that signal.

2 On the basis of that result, the detector outputs
3 a decision. That decision is the control of switch 40.
4 The switch is on or off.

5 As I mentioned before, this element, as I
6 understand it, is still in dispute between the parties.

7 As I understand from Dr. Phinney, which -- who
8 you'll hear from later, his argument is essential -- is
9 that the pulse generating circuit does not turn on and off
10 the switch. And in particular, as I understand it, he does
11 not believe that it can have the detection determining
12 circuit in between the two.

13 As I've stated previously, I disagree with that
14 opinion. It is my opinion that the pulse generating
15 circuit generates the signal, which is what the detection
16 circuit directly responds to, which is what controls the on
17 and off of the switch.

18 Put -- put another way, the switch responds to the
19 pulse signal, and without the pulse signal, the switch does
20 not turn on or off.

21 Q. Turning to the next element, you actually talk about
22 two elements together. Why do you do that?

23 I'll let you drink.

24 A. I've combined these two elements because, as we move to
25 the next section, with these two elements, similar to the

1 presentation that Dr. D'Andrade -- D'Andrade --
2 D'Andrade -- I'm going to get that right here shortly.

3 Q. D'Andrade?

4 A. Similar to the presentation that Dr. D'Andrade
5 provided, this -- these next two claim elements are the two
6 versions of the lamp being installed, when the lamp is
7 being detected as being properly installed or not properly
8 installed, and how it responds.

9 I believe that these next two claim limitations
10 are actually further explaining how the control signal
11 controls the on and off of the switch.

12 So let me take them together.

13 Q. So does Ono disclose these two elements?

14 A. It is my opinion that Ono discloses these two elements.

15 As we can see, first, the consideration is the
16 detection occurs during the pulse signal if the lamp is not
17 properly installed, and the other portion of this is,
18 during the pulse signal, it is determined that the lamp is
19 properly installed.

20 These are both described in the sections that I've
21 highlighted. The output of the rectangular pulse signal is
22 used to determine whether there is what is called, in Ono,
23 an open state, which means that there's a human in the
24 loop, that's not properly installed. It's open, not fully
25 installed.

1 And then, also, when there's a shorted state,
2 which Ono's description means it's fully connected. It's
3 shorted to the terminals in that fixture.

4 It is my opinion that both of these portions of
5 the claim elements are met, and I believe that that is not
6 disputed.

7 Q. Has the Court construed the term "detection determining
8 circuit"?

9 A. The Court has construed detection determining circuit,
10 uh-huh.

11 Q. Have you applied the Court's construction in your
12 analysis?

13 A. Yes, I have. As I've listed here as a reminder, a
14 detection determining circuit is a circuit that detects a
15 sampling signal on the power loop, as we've described
16 earlier, and generates a signal based on whether the
17 sampling signal is higher or lower than a reference value,
18 that thresholding that we've been talking about.

19 I did apply this in my analysis.

20 Q. And that leads to the next question.

21 Has the Court construed the term "sampling
22 signal"?

23 A. Yes, it has. And it --

24 Q. Have you -- oh, sorry.

25 A. Please.

1 Q. Thank you.

2 Have you applied the Court's construction in your
3 analysis?

4 A. Yes, I have.

5 Q. And --

6 A. And again --

7 Q. I was just going to say: Can you explain what a
8 sampling signal is?

9 A. Yes, I can.

10 I've given a brief highlight of that here. The
11 Court's construction of a sampling signal is "a signal
12 based on a measurement of the power loop at a specific
13 time."

14 And, again, just a reminder, that power loop, the
15 wires up in the ceiling to the fixture going through the
16 lamp. So the sampling signal measures that power loop at a
17 particular point in time.

18 Q. So turning to the next claim element, does Ono disclose
19 this element?

20 A. Yes, Ono does disclose this element, as well.

21 This includes many aspects that we've seen already
22 and, importantly, now includes that we're detecting a
23 sampling signal that is on the power loop.

24 The power loop, in concept, I've described
25 already. Now, in the lower left-hand corner I've

1 highlighted the power loop itself in yellow. This is from
2 the wires in the ceiling to the fixture and then up to the
3 LED through the switch.

4 That is the power loop. Every element in that
5 power loop is contained in that loop.

6 The sampling signal is the signal that is the
7 response to the pulse signal. We inject the pulse signal
8 into that power loop. We sample the response of that
9 signal to determine the threshold. That's clearly on the
10 power loop. That's the only way Ono can accomplish its
11 objectives.

12 It was my understanding that this was in dispute.
13 I'm not certain if that is still. And I believe in the
14 earlier dispute, Dr. Phinney's opinion was that the
15 sampling signal may not be on the power loop if the
16 sampling occurs when the switch is in an open state, when
17 the switch is opened.

18 I disagree with that opinion. It is my opinion
19 that the power loop is as identified. It does not matter
20 whether the switch is open or closed. That's always the
21 power loop. That's exactly how Ono is able to inject a
22 signal and measure in that power loop whether it's fully
23 closed.

24 Additionally, in the case that there -- that there
25 is a need for the switch to be closed during the injection,

1 I also point out that Ono does both. Ono considers this
2 both before you install the lamp, which is when that switch
3 would be open, and it also considers if there were the
4 scenario that someone -- an individual were to pull the
5 lamp out while it's in operation.

6 And that's the example given in the lower
7 paragraph, that it can be configured to switch the switch
8 from on state to off state in the switching process when,
9 in the first -- you know, in that detection or
10 determination process, it's been determined that an open
11 exists. The reason you would go from on to off is because
12 you were already on.

13 So I believe in both cases, whether you depend on
14 the location -- operation of that switch, this claim
15 element is clearly met. Ono injects a signal into the
16 power loop and samples that signal.

17 Q. Turning to the next element, does Ono disclose this
18 element?

19 A. Yes. The next element is that the pulse generating
20 circuit is to be independent, meaning, in this case,
21 specifically independent of the detection result. So is
22 the lamp installed or not doesn't determine whether the
23 pulse signal operates.

24 And as indicated in the diagram and in the
25 description, the pulse generating circuit is independent.

1 I don't believe -- as I understand, I do believe
2 that this claim term is not disputed and is met.

3 Q. So turning to the next slide, what do you conclude
4 about Ono?

5 A. We just walked through each of the claim elements for
6 Claim 1, and so here I give just a summary of the elements
7 that we've walked through.

8 It is my under -- it is my opinion, based on the
9 discussion we just walked through, that each and every
10 element of Claim 1 is met by Ono.

11 Q. So let's talk about the Ivey I reference now.

12 MS. LUCIER: Your Honor, DX-65 is what we are
13 calling the Ivey I patent.

14 This has been pre-admitted, and Defendants would
15 like to move it into evidence.

16 THE COURT: It's admitted.

17 MS. LUCIER: And just for the jury, we're calling
18 it Ivey I because you're going to hear about an Ivey II
19 later.

20 Q. (By Ms. Lucier) Dr. Zane, did you review the Ivey I
21 reference in forming your opinions?

22 A. Yes, I did.

23 Q. Could you tell us a little bit about how the Ivey I
24 reference works?

25 A. Yes, I can. And I'll give a brief overview. There are

1 similarities, so I believe we can cover this one perhaps a
2 little more quickly. But I won't speak more quickly.

3 Q. Yeah, you'll cover it quickly slower.

4 A. Again, let me just briefly highlight for Ivey I, the
5 Ivey I was filed on July 10th, 2013, which would be
6 considered its priority date, which, again, makes it prior
7 art to the '140 patent.

8 Ivey was not reviewed by the Patent Office when
9 reviewing the '140 patent, and it is my understanding that
10 there is no dispute in this case that Ivey I is prior art.

11 Similar to my start with Ono, let me begin with
12 the purpose of Ivey, what Ivey I is solving. Like Ono,
13 Ivey I is also specifically directed to a solution to solve
14 the problem of installing LED-based lamps in scenarios
15 where shock protection is required, when you can insert
16 power on one end and potentially be shocked at the other
17 end.

18 That is the purpose of Ivey I.

19 Similar to Ono, then, let me just walk briefly
20 through how Ivey I accomplishes that goal of protecting
21 against the shock hazard.

22 Ivey I also has a pulse generating circuit. It
23 calls it the oscillator, Element 130, that I've listed here
24 in red or pink.

25 Again, the pulse generating circuit generates a

1 pulse and it uses that pulse to inject a signal on the
2 power loop. Same general concept as before. The idea is
3 inject the signal, detect the response, and find out: Is
4 it a nice closed circuit, or is there a human in the loop?

5 Here in this figure, you can see Ivey's indicating
6 in the figure a model it calls a human body model. This is
7 its way of saying: You know, is there a human, kind of
8 like the hand from Ono, in that loop or not?

9 Ivey uses the pulse generating circuit to inject
10 that signal. It then uses a detection circuit, again, a
11 comparator to detect a threshold, yes or no, is the
12 response to that injection indicating that there's a person
13 or not in that loop?

14 That detection result is then optionally stored in
15 a latch and used to turn the switch on and off. That's the
16 basic operation of Ivey.

17 Q. Have you reviewed the opinions of Super Lighting's
18 expert, Dr. Phinney, on the Ivey reference?

19 A. Yes, I have.

20 Q. What elements does Dr. Phinney believe are missing in
21 Ivey I?

22 A. It is my understanding that there are three elements
23 that we go through that have been disputed.

24 The first is whether or not Ivey discloses an LED
25 tube lamp. The second is, again, whether or not those

1 pulse signals I just described control turning on and off
2 the switch circuit.

3 And the third is whether or not Ivey includes the
4 claimed latching circuit.

5 Q. Do you agree with Dr. Phinney?

6 A. I disagree with his opinions on each of those three,
7 and I can provide further details.

8 Q. So turning to the claims of the '140 patent, looking at
9 the first element, does Ivey I disclose this element?

10 A. Yes, it is my opinion that Ivey I discloses this
11 element, which incorporates the installation detection
12 circuit, as I just described, the connection to the
13 external receiving signal, again, those wires in the
14 ceiling, and the light-emitting diode tube lamp. Each of
15 those are indicated as highlighted here.

16 I'll describe a couple of details on this. As was
17 mentioned, this term was at one point under dispute, and I
18 understand from Dr. Phinney's opinion is that, although
19 LED-based lights were disclosed, LED-based tube lamp was
20 not.

21 I disagree with that opinion. I do believe that
22 Ivey discloses an LED-based tube lamp that would be used
23 for this claim term and/or at the very least would be
24 obvious to use Ivey for an LED tube lamp.

25 And I give as details, for example, Paragraph 37

1 in Ivey I where Ivey discloses specifically that the
2 solutions for Ivey for shock protection can be used for
3 LED-based light, as well as for other electrical devices.

4 And furthermore, Ivey provides a specific example
5 in Paragraph 5 that the type of solutions and systems that
6 Ivey I is describing include devices where there's a
7 separation between the two connectors, where it may be
8 possible, as is highlighted here, to have power connected
9 on one end and be able to connect -- touch the other side
10 before it -- it is also installed where, for example, a
11 person installing a new bulb could come in contact with
12 that second terminal.

13 I believe it's clear to me that a skilled person
14 would recognize, for an LED-based light with this problem,
15 the first example you would think of is an LED-based tube.

16 I believe this claim limitation is met.

17 Q. And so turning to the next claim element, does Ivey
18 disclose -- Ivey I disclose this element?

19 A. Yes, Ivey I discloses a pulse generating circuit in
20 Element 130, which it designates as an output of an
21 oscillator. I believe that this element is not disputed
22 and is included --

23 Q. Turning -- oh, sorry.

24 Turning to the next claim element, does Ivey I
25 disclose this element?

1 A. Yes. Ivey I discloses the -- the requirement to detect
2 whether or not the LED is properly installed in exactly the
3 ways that I described previously during the pulse signals
4 by responding to that pulse injection and the signal
5 generated from the external driving signal in each of the
6 ways I described.

7 Again, I understand that this claim element is not
8 disputed.

9 Q. So turning to the coupled-to limitation, does Ivey I
10 disclose a switch circuit coupled to the pulse generating
11 circuit?

12 A. Yes. It is my opinion that Ivey I discloses a switch
13 circuit coupled to the pulse generating circuit and that
14 the pulses that output from the pulse generating circuit
15 control the turning on and off of the switch.

16 As I described with Ono, I believe that these two
17 are coupled together, that having pulse signals that
18 control turning on and off the switch clearly means that
19 the switch circuit is coupled to the pulse generating
20 circuit.

21 Once again, this is the first of the -- or the
22 second in this case, but once again, this is one of those
23 disputed terms.

24 It is my opinion that Ivey discloses this -- this
25 term.

1 And just to give additional detail, I've also
2 designated here the sections and the paragraphs in Ivey I
3 that walk through exactly what I stated, that the pulse
4 generating circuit generates a pulse and injects that
5 signal into the power loop, that the detection determining
6 circuit responds to that signal, and that that response,
7 the yes or no, are we installed properly or not, turns on
8 and off the switch.

9 In that way, I believe that the pulse signal
10 controls turning on and off the switch. You can see in the
11 Paragraphs 21, 29, and 36 listed over here on the left,
12 output of the oscillator goes to the test switch. The
13 detector detects the oscillation change. The output of the
14 detector, which is that decision, low -- low output, the
15 switch is turned off. High output, the switch is turned
16 on.

17 Again, as I stated, it is my understanding that
18 this claim term is being disputed. And as I understand
19 Dr. Phinney's argument, similar to Ono, is that the
20 pulse -- pulses from the pulse generating circuit, in his
21 opinion, do not turn on and off -- do not control turning
22 on and off the switch circuit. In particular, that he
23 believes that the detection determining circuit should not
24 be in the middle.

25 Again, for similar reasons as I described with

1 Ono, I disagree with his opinion. It is my opinion that
2 these (sic) switch circuit is coupled to the pulse
3 generating circuit and that the pulses do control the
4 turning on and off of the switch circuit.

5 Again, put that other way, the switch turn on and
6 off is responding directly to the injection from the pulse
7 signals. Without the pulse signals, the switch does not
8 turn on or off.

9 Q. So turning to the next slide, you, again, talk about
10 the two claim elements together.

11 Does Ivey I disclose these two claim elements?

12 A. Yes, Ivey I does. And similar to the way I approached
13 this with Ono, I covered these two together.

14 Again, this is a refining of the requirement on
15 how the pulse signals are required to control the on and
16 off of the switch. In this case, the detection occurs
17 during the pulse signals that the lamp is either not
18 properly installed or properly installed.

19 And I show, for example, in Paragraph 24 how this
20 occurs. Output of the oscillator, as I mentioned
21 previously, detects a variation in the current or voltage
22 drawn. That's the response to that signal. Is it above or
23 below that threshold, yes or no? That yes or no drives --
24 is the determination that we're looking for.

25 And the second aspect of these two claim elements

1 is that, if there's a human in the loop, we keep it off; I
2 mean, and if there isn't, then we turn the switch on,
3 meaning not properly installed and properly installed.

4 These, again, are designated and clearly shown in
5 Paragraph 32 that this claim limitation is met.

6 It is my understanding that this claim limitation
7 is not disputed.

8 Q. Turning to the next claim element, does Ivey I disclose
9 this claim element?

10 A. Yes, it does. Ivey I discloses a sampling signal on
11 the power loop. The power loop, I've described now in
12 yellow and could also include the power supply feeding in.

13 As before, the injection occurs on that power loop
14 and the sampling occurs on that power loop. That's how
15 Ivey I is able to detect whether or not the lamp is
16 installed.

17 It is my understanding that this claim element is
18 not disputed.

19 Q. All right. So turning to the next claim element, which
20 appears in only Claim 24, does Ivey I disclose this
21 element?

22 A. Yes, Ivey I does disclose -- disclose this element.
23 This is a specific detail on the comparing. So we inject a
24 signal into the power loop, and we now sample that signal
25 to find out is it above or below that threshold.

1 This requirement is that, when the signal is less
2 than that threshold, less than the pre-defined signal, we
3 control the switch to be in the off state; meaning, we
4 protect when we determine that there's a human in the loop.
5 This is not properly installed.

6 Paragraph 32 states this. I believe this claim
7 element is not disputed.

8 Q. And turning to the next claim element, does Ivey I
9 disclose this element?

10 A. Yes. This is that claim element that requires that the
11 pulse generating circuit generates the pulses independent
12 of the detection result. And, again, as is shown, the
13 pulse generating circuit here does not depend on that
14 result.

15 Again, I don't believe that this claim element is
16 disputed.

17 Q. So turning to the next slide, what claim elements have
18 you been -- have you discussed so far with reference to the
19 Ivey I?

20 A. So far, with respect to Ivey I, going through each of
21 those elements we just walked through, we've covered each
22 and every element associated with Claim 1, and I've marked
23 those off here.

24 Then with respect to Claim 4, we've marked off
25 each of the claim elements, as I've highlighted here,

1 except for the bottom one, which requires a detection
2 result latching circuit.

3 You may recall that Ivey I does include a latch
4 but does not include the specifics required for the claimed
5 detection result latching circuit.

6 Similarly, for Claim 24, we've walked through each
7 and every element that I've marked as a check, except the
8 one that is open that also requires a detection result
9 latching circuit.

10 Q. And, Dr. Zane, have you provided opinions with regard
11 to modifying the disclosure of Ivey I?

12 A. Yes, I have.

13 Q. Could you tell us about those modifications?

14 A. Yes. The modification is -- I looked at for Ivey I
15 involves connections with that latch. And I would like to
16 first just do a reminder of what is disclosed and included
17 in Ivey I, and then I will detail the modification that I
18 believe would be an obvious modification to Ivey I
19 regarding that latching circuit.

20 So, first, Ivey I discloses a latch. I've shown
21 that in the previous diagrams in Figure 3. All those
22 diagrams I've shown so far for Ivey I include a latch, as
23 indicated here in Paragraph 41.

24 This is to store that result. You might recall
25 the latch is just that memory element. It holds the result

1 of the detection.

2 Also, Ivey I explains that there are many options
3 that can be implemented when realizing that latch. The
4 options that are listed include, for example, as stated
5 here and I've marked in yellow, a flip-flop, such as a D or
6 SR, which we'd recognize as a set/reset latch, or other
7 type of flip-flop or latch. This is a description that a
8 skilled person working in this space would clearly
9 understand.

10 Also, it designates specifically that the latch
11 may be connected to the Oscillator 130; meaning, Ivey I
12 discloses that it would be understood to a skilled person.

13 And I've used the term "skilled person." This is
14 a term we use when we're considering modifications or
15 obviousness of a claim term.

16 And in this case, that would be, for example,
17 someone with an undergraduate degree in electrical
18 engineering or a similar field and two to four years of
19 experience in this area.

20 And so a skilled person would recognize how to
21 make these types of changes as disclosed -- disclosed in
22 Ivey I, connect the Oscillator 130 to the latch and
23 implement the latch using different types of latches that
24 are known to the skilled person.

25 The disclosures in Ivey, then, are summarized in

1 this slide. This is the same Figure 3 we've been looking
2 at with the dotted line. The red dotted line is what Ivey
3 just stated that you could connect to the output of the
4 oscillator to the latch, Latch Circuit 315. And then that
5 latch connects to the switch, as I stated before.

6 So this gets us to the modification that I believe
7 would be an obvious modification in light of what the
8 skilled person would understand and the disclosures of
9 Ivey I.

10 The modification is to look at the circuit, as we
11 understand it, to look at the connection that Ivey I
12 discloses between the oscillator, which is the pulse
13 generating circuit, and the Latch 315 and recognize that
14 the -- the pulse generating circuit controls two switches:
15 The switch that we've been emphasizing and talking about on
16 the far right, which is the load switch and performs all of
17 the detections we just described; and then a second switch,
18 which is Switch 135, this is how the pulse generator
19 injects that signal onto the power loop.

20 Ivey uses two switches: One to inject the signal,
21 one to perform the protection and the load switch control.

22 The modification that I believe would be an
23 obvious change to make is, once the skilled person sees
24 that the pulse generator is now controlling two switches
25 and it's actually connected to the same latch that controls

1 the load switch, why not just have one switch?

2 The modification, then, is simply to delete the
3 Switch 135 and realize that the single switch on the
4 right-hand side, the load switch, actually could perform
5 both functions. You turn on the switch, that injects the
6 signal as before.

7 The skilled person would recognize that that
8 signal is so short it won't impact the load, 180, which is
9 your LEDs, and it could actually perform both the injection
10 of the signal, which would still be detected by the
11 detection circuit as before, would still control the on and
12 off of the switch as before, and it could still act as that
13 load switch.

14 The skilled person would be motivated to make this
15 combination because now we go from two switches to one.
16 And the skilled person would have a reasonable expectation
17 of success because it's using all the same circuitry, and
18 it would operate in the same way as disclosed with Ivey.

19 Q. Has the Court construed the term "detection result
20 latching circuit"?

21 A. Yes, it has.

22 Q. Have you applied the Court's construction in your
23 analysis?

24 A. Yes, I have, and I give just a brief summary here of
25 the Court's construction.

1 The Court has construed a detection result
2 latching circuit in a fairly specific way, that includes "a
3 circuit" -- it is "a circuit that stores the detected
4 result and outputs a high logic value when either the
5 stored detected result," which, again, is the yes or no,
6 are we installed properly, "or the pulse signal," the pulse
7 that we've been talking about, "has a high logic value."

8 In the Court's construction, examples were given
9 from the '140 patent, from embodiments of the '140 patent.
10 And I show one example here, Figure 15E, and I've shown in
11 the color coding the two inputs: The output of the pulse
12 signal and the detection result, the yes or no.

13 Q. Does this modification to Ivey I render obvious this
14 claim element?

15 A. Yes. It is my opinion that the modification to Ivey I,
16 as I've just described, converting from two switches to one
17 and keeping all other circuitry essentially the same, would
18 render obvious the claim limitation.

19 This includes each of the elements listed above,
20 including now the detection result latching circuit.

21 And let me just zoom in to the latch itself, 315,
22 with this modification so we can see how that connects.

23 We now zoomed in. On the left-hand side is Ivey I
24 with the Latch 315. Again, Ivey discloses that latch can
25 be connected to the oscillator, which is the pulse

1 generating circuit. Ivey discloses that this can be
2 implemented in a variety of ways that are known to the
3 skilled person, a D-type latch, an SR latch, et cetera.

4 And here I'm showing that it would have the two
5 inputs, the pulse signal from the pulse generating circuit
6 and the detection result, which is the response to the --
7 to the pulse and its injection into the power loop.

8 I believe that this would be an obvious
9 modification, and it would meet the claim limitation. This
10 is a disputed term, as I've noted here. It is my
11 understanding that Dr. Phinney has an opinion that the
12 modification that I've proposed of going from two switches
13 to one would not be obvious and that the -- the
14 implementation of this latch with those two inputs would
15 not be obvious.

16 I disagree with that opinion for all the reasons
17 that I've just stated. I believe a skilled person would be
18 motivated to make that change and would have an expectation
19 of success because of the way that this would operate.

20 Q. So let's turn to the Sadwick reference now.

21 MS. LUCIER: Your Honor, DX-68 is what we are
22 calling the Sadwick reference. This exhibit has been
23 pre-admitted, and Defendants would like to offer it into
24 evidence.

25 THE COURT: It'll be admitted.

1 Q. (By Ms. Lucier) Dr. Zane, did you review the Sadwick
2 reference in forming your opinions?

3 A. Yes, I did.

4 Q. What is the priority date of the Sadwick reference?

5 A. The priority date for the Sadwick reference is
6 October 31st, 2014.

7 Q. Do the prior -- do the parties dispute whether the
8 Sadwick reference is prior art to the '140 patent?

9 A. It is my understanding that there is no dispute that it
10 is prior art.

11 Q. Was the Sadwick reference considered by the Patent
12 Office when it was reviewing the '140 patent?

13 A. Yes. The Sadwick reference was considered by the
14 Patent Office when first issuing the '140 patent and was
15 found to not disclose all elements of the '140 patent.

16 Q. Was the combination of the Sadwick reference and the
17 Ivey I reference considered by the Patent Office when it
18 was reviewing the '140 patent?

19 A. It was not.

20 Q. Can you explain your modification of Ivey in light of
21 the Sadwick reference?

22 A. Yes, I can. And in doing so, let me just start with
23 the end, a bit of a spoiler alert. The only thing I'm
24 bringing Sadwick in for is to provide further -- let's see
25 if I can speak -- to provide further motivation for the

1 same modification that I just described for Ivey I.

2 So if it's not clear to us at this point, it would
3 be obvious to go from two switches to one, combine those
4 two functions of the switches into one switch from Ivey I.
5 Sadwick, I believe, makes this clearly obvious that that
6 would be an option that the skilled person would do.

7 So in describing that modification, let me just
8 briefly describe Sadwick relative to Ivey. As a high
9 level, first, the skilled person would be motivated and
10 would certainly understand both Ivey and Sadwick, would be
11 motivated to consider the two together and the learnings
12 between the two because they are both oriented to the
13 same -- the same challenge and actually have similar
14 implementations and complementary aspects that are missing,
15 potentially between the two.

16 Sadwick, like Ivey, is oriented specifically to
17 the shock hazard solution for LED tube lamps.

18 And I give examples here from the abstract, as
19 well as Figure 8 from Sadwick indicating an FLR, which is a
20 fluorescent tube replacement, and a human that could
21 potentially be in that loop, Sadwick shows a solution for
22 what do you do and how do you avoid that shock hazard when
23 you connect the two.

24 The skilled person would recognize, okay, here's
25 another reference also solving the problem that Ivey I was

1 oriented to and there may be learnings between the two that
2 could be helpful.

3 Sadwick uses a pulse signal. Sadwick has what is
4 called a hiccup mode described in Paragraph 83 where it
5 describes a timing sequence that periodically sends a
6 pulse. This pulse is sent to a transistor, which as I said
7 before is a switch. In Figure 14, which I'll turn to next,
8 this is the pulse signal generator that Sadwick includes
9 which also drives the switch.

10 Now, the very important aspect of this for
11 Sadwick, when considering Sadwick as a way to learn and
12 modify Ivey, is that Sadwick discloses a single switch.
13 Sadwick uses a single switch indicated here, that switch
14 1430 from the previous slide. That single switch is in
15 series with the load. It acts as the load switch, like
16 Ivey, to provide the protection on and off based on the
17 yes/no, the detection of are we properly installed?

18 It also includes a detector, which includes a
19 comparator that detects that result. Are we above or below
20 that threshold, yes or no? And are we properly installed?

21 Sadwick shows that you can accomplish in this case
22 both functions of Ivey in one switch. When Sadwick in that
23 hiccup mode pulses on the switch, that injects the signal
24 into power loop, the purpose of the first switch in Ivey,
25 and it is used after the detection as the load switch.

1 So in considering these two together, I have
2 Sadwick on the left, Ivey I on the right. Both of them use
3 a pulse generating circuit, both of them use a load switch
4 to provide the protection of shock hazard for LED-based
5 tube lamps.

6 Ivey uses two switches, one to perform the
7 injection, one to perform the load switch. Sadwick uses
8 one switch for both.

9 Sadwick also describes there are various
10 embodiments that can be modified within Sadwick to perform
11 the protection and includes a mention that you could use a
12 latch. But Sadwick does not provide the details of how to
13 place the latch and how to use the latch in Sadwick.

14 Ivey includes a latch and explains the types of
15 latches that could be used and how this could be operated.

16 That is the background feeding into the
17 modification. So to answer the question, the modification
18 of Ivey I in light of Sadwick that I believe would be
19 obvious combining these -- in considering these two is the
20 same modification that I described previously.

21 But now with the further motivation that Sadwick
22 shows, not only could you combine those two switches, but
23 it actually works. When you combine the two switches into
24 one, you can pulse the one switch. It doesn't affect the
25 LED load that is in series with the switch. That provides

1 the motivation.

2 Since Sadwick also shows that this could work, a
3 skilled person would have a reasonable expectation of
4 success in -- in performing this combination.

5 Q. Does this combination of Ivey I and Sadwick render
6 obvious this claim element?

7 A. Yes, it is my opinion for the same reasons that I
8 provided for Ivey I, that with this modification, the claim
9 element that requires a detection result latching circuit
10 that responds to both the pulse signal itself and the
11 detection result that's derived from the pulse signal is
12 met.

13 And once again, we'll just zoom into the same
14 waveform -- the same schematic diagram that we looked at
15 before. In the upper left-hand side, once again, we have
16 the latch. We have the two inputs to that latch. One is
17 the pulse signal, one is the detection result, which is the
18 response to that pulse signal. It -- it is my opinion that
19 it would be obvious to make this modification, and that
20 that would meet the limitation.

21 As before, this is a disputed term. It is my
22 understanding that Dr. Phinney has an opinion that this
23 combination would not be obvious and that the modification
24 to the latch in the way that I've described would not be
25 obvious.

1 Again, I disagree with that opinion in this
2 scenario. I do believe it would be obvious given the
3 disclosures in Ivey, combined now in light of Sadwick, to
4 implement this latch using one of the options Ivey
5 described.

6 For example, a D-type latch that was listed. And,
7 for example, the pre-set, which was listed in Ivey, as
8 well. In that case now when the pulse signal is injected,
9 it would pre-set the latch. That would generate the -- the
10 injection I've talked about, and then the detection result
11 in response to that pulse signal would still perform the
12 function of the protection.

13 Q. So turning to the next slide, what is your overall
14 opinion with respect to Ivey and Ivey I in combination with
15 Sadwick?

16 A. It is my opinion, and I believe I walked through each
17 of those claim elements, that Ivey I and Ivey I in
18 combination with Sadwick continues to meet each of the
19 claim elements for Claim 1, as I stated previously, and now
20 meets all of the requirements for Claim 4 and all of the
21 requirements for Claim 24.

22 Q. Dr. Zane, have you provided an opinion with respect to
23 the dependent claims of the '140 patent?

24 A. Yes, I have.

25 Q. Would you like to go through them?

1 A. Yes. I'll -- I'll briefly go through each of these.

2 This is Claims 5, 28, and 31. With respect to
3 Claim 5 is a requirement that the installation detection
4 circuit with the pulse generating circuit be coupled
5 between the detection result latching circuit and the pulse
6 generating circuit, and as I've shown, these two are
7 connected or coupled, and Claim 5 would be met.

8 With regard to Claim 28, there's an additional
9 requirement that there's a certain timing that the pulse
10 signal would be incorporated with timing between
11 10 microseconds and one millisecond, and one millisecond is
12 one thousandth of a second.

13 But the key point here being that that pulse
14 signal would be relatively short. As we described, a quick
15 touch to find out would the detection be appropriate, are
16 we -- are we truly installed.

17 For example, Ivey I does disclose a potential
18 frequency, which is of the order of one millisecond for the
19 period associated with that frequency. It's clear within
20 that disclosure that that would include the requirements of
21 Claim 28.

22 And then for Claim 31, there's a requirement on
23 the latching circuit that is actually inherent in the way
24 the Court has construed a detection, that result latching
25 circuit. And as I've described previously, this type of a

1 connection that the circuit receives one or more pulse
2 signals to control the turning on and off of the switch,
3 that is included and inherent in the description I gave
4 previously. So Claim 31 is also met.

5 Q. Let's turn to non-infringement.

6 Dr. Zane, as part of your opinions that you
7 offered in this case, did you offer a rebuttal opinion to
8 the infringement opinion that was offered by Super
9 Lighting's expert, Dr. D'Andrade?

10 A. Yes, I did.

11 Q. Were you in the courtroom yesterday for Dr. D'Andrade's
12 testimony?

13 A. Yes, I was.

14 Q. So turning to the next slide, Dr. Zane, can you explain
15 what is shown on this slide?

16 A. Yes, I can. What I've shown here are details from
17 Dr. D'Andrade's analysis of the operation of the LT2600 and
18 2600G chipset. And in this case, specifically the behavior
19 of what he's identified as a pulse generating circuit and
20 how it operates with the circuit elements around it to
21 create a pulsing signal.

22 And I may just take one step back, as I describe
23 both the circuit, as well as my analysis.

24 In considering my opinions -- actually, let me
25 stop with an answer to your question. Make sure I didn't

CERTIFICATION

I HEREBY CERTIFY that the foregoing is a true and correct transcript from the stenographic notes of the proceedings in the above-entitled matter to the best of my ability.

/S/ Shelly Holmes
SHELLY HOLMES, CSR, TCRR
CERTIFIED SHORTHAND REPORTER
State of Texas No.: 7804
Expiration Date: 10/31/2023

11/2/2021
Date