

UNITED STATES INTERNATIONAL TRADE COMMISSION

In the Matter of:) Investigation No.
CERTAIN LIGHT-EMITTING DIODE) 337-TA-1213
PRODUCTS, FIXTURES, AND)
COMPONENTS THEREOF)

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1 UNITED STATES INTERNATIONAL TRADE COMMISSION
 2 Washington, D.C.
 3 BEFORE THE HONORABLE CLARK S. CHENEY
 4 Administrative Law Judge

5 - - - - -
 6 In the Matter of:) Investigation No.
 7 CERTAIN LIGHT-EMITTING DIODE) 337-TA-1213
 8 PRODUCTS, FIXTURES, AND)
 9 COMPONENTS THEREOF)
 10 - - - - -

11
 12 United States
 13 International Trade Commission
 14 500 E Street, Southwest
 15 Washington, D.C.

16
 17 Friday, May 7, 2021
 18

19 EVIDENTIARY HEARING, Volume V - REMOTE PROCEEDINGS
 20
 21

22 The hearing commenced remotely, pursuant to the notice
 23 of the Judge, at 9:02 a.m. EDT
 24

25 Reported By: Marjorie Peters, RMR, CRR, FAPR

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9 ** Index appears at end of transcript **

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1 P R O C E E D I N G S (9:02 a.m.)

2 JUDGE CHENEY: We're on the record now in the
3 1213 Investigation. This is Day Five of the evidentiary
4 hearing. The last day.

5 Before we left off on the fourth day of the
6 hearing, we were listening to the cross-examination of
7 RAB's technical expert, Dr. Josefowicz.

8 Before we return to that cross-examination, let
9 me just check in with the parties about any housekeeping
10 matters, including motions for the entry of evidence.

11 Start with counsel for the Complainant, Cree.

12 MR. ERWINE: Good morning, Your Honor.

13 I believe there are documents to be admitted
14 into evidence based on yesterday's testimony. I believe
15 those are all of RAB's witnesses. Cree Lighting doesn't
16 have any objection to those, but I'll leave it to Mr. Roush
17 to move those into evidence.

18 JUDGE CHENEY: Mr. Roush, do you have a motion?

19 MR. ROUSH: Yes, Your Honor.

20 We'd like to move the exhibits into evidence
21 that were from RAB's witnesses yesterday. I believe that
22 was Dr. Jiao and Dr. Akemann.

23 JUDGE CHENEY: Okay. Hearing no objection,
24 those exhibits will be moved into evidence. Please
25 coordinate with the court reporter to make sure the list of

1 exhibits appears correctly in the transcription.

2 (Exhibits, as submitted by counsel and reflected
3 in the attached index, were received into evidence.)

4 JUDGE CHENEY: Any other housekeeping matters
5 from Cree's side?

6 MR. ERWINE: No, Your Honor.

7 JUDGE CHENEY: What about from RAB's side; any
8 housekeeping matters to talk about?

9 MR. ROUSH: Yes, Your Honor. Just one minor
10 thing.

11 We noticed a couple of exhibits were omitted
12 from previous days, and we're working with Cree Lighting
13 and the court reporter to correct those.

14 JUDGE CHENEY: Okay. Please do get those
15 corrected.

16 Let's just talk about the schedule today a
17 little bit. Before I did do that, anything else from RAB?

18 MR. ROUSH: No, Your Honor.

19 JUDGE CHENEY: Okay. So what's going to happen
20 today, we'll maintain our normal break schedule. We'll
21 take a break at 10:45 for 15 minutes, and we'll take a
22 break at 12:30 for an hour. It seems like we're going to
23 go at least that far in the presentation of evidence.

24 When we conclude the presentation of evidence,
25 we'll take probably another 15-minute break. During that

1 time, counsel will confer with each other on the final
2 entry of exhibits. Iron out any disputes or problems or
3 questions for the whole hearing. When we come back on the
4 record, we'll do one final admission of exhibits, and we
5 will close the evidentiary record of this investigation.

6 It would probably be helpful if you have your
7 client representatives present at the end of the hearing.
8 After that 15-minute break, there may be some things that
9 will be productive for us to talk about that your clients
10 might want to hear.

11 Any questions about how we're going to wrap up
12 the evidentiary portion of the investigation today?

13 MR. ERWINE: Nothing from Cree, Your Honor.

14 MR. ROUSH: Nothing from RAB, Your Honor.

15 JUDGE CHENEY: Okay. Great.

16 Well, let's return to the cross-examination of
17 Dr. Josefowicz.

18 Dr. Josefowicz, welcome back. I remind you that
19 you remain under oath.

20 And please proceed when you are ready,
21 Mr. Hamstra.

22 JACK JOSEFOWICZ, PhD,
23 a witness, having been previously sworn, was examined and
24 testified as follows:

25 CONTINUED CROSS-EXAMINATION

1 BY MR. HAMSTRA:

2 Q. Good morning, Dr. Josefowicz.

3 A. Good morning.

4 Q. I would like to discuss a few of the references
5 you discussed yesterday in brief.

6 First of all, there's the Minano reference.

7 Now, that discloses optics for automotive applications;
8 correct?

9 A. Correct.

10 Q. Specifically, the embodiments from Figure -- or
11 the embodiment from Figure 8 that you were relying upon is
12 for an automotive headlight application; is that right?

13 A. That's correct.

14 Q. Another reference you spoke about yesterday,
15 Mandaluniz, that's another automotive application optic;
16 correct?

17 A. Yes.

18 Q. Specifically, a light to illuminate a license or
19 registration plate; correct?

20 A. Correct.

21 Q. You spoke about Parkyn yesterday; right?

22 A. Yes.

23 Q. That's a shelf light; right?

24 A. Yes.

25 Q. I want to turn to some testimony you offered

1 about Holder yesterday.

2 Mr. Jay, could you pull up RDX-6.61, I believe?

3 You spoke about how Holder discloses use of
4 Photopia; right?

5 A. Correct.

6 Q. About how Photopia, once a three-dimensional
7 lens shape is determined, Photopia can be used to create a
8 candela plot; right?

9 A. Correct.

10 Q. Were you present for Mr. Wilcox's testimony
11 earlier this week, Dr. Josefowicz?

12 A. No, I wasn't.

13 Q. Were you aware of his testimony that he created,
14 I think it was close to 100 iterations of his CAD model of
15 the lens related to the '570 Patent?

16 A. I read that in the transcript.

17 Q. You have no reason to dispute that, do you,
18 Dr. Josefowicz?

19 A. No.

20 Q. I'd like to close up with some discussion of
21 your infringement opinions today, Dr. Josefowicz.

22 So for the purposes of your non-infringement
23 analysis, you were comparing the accused products to
24 embodiments disclosed in the specification of the '570
25 Patent; correct?

1 A. Yes.

2 Q. In fact, at your deposition, you would only
3 agree -- or you said you would only agree that RAB
4 infringes if they use an identical CAD model, as was used
5 for the '570 Patent embodiments; right?

6 A. No.

7 Q. Mr. Jay, could you pull up page 53 of
8 Dr. Josefowicz's deposition transcript? Again, at line 4
9 through 16.

10 Dr. Josefowicz, I asked you, "Let me ask the
11 question this way: So you agree that a new and non-obvious
12 design for an optic to distribute light to a preferential
13 side is patentable, but only if the patent requires
14 identical dimensions as to the optic disclosed in the
15 patent; is that right?"

16 Your answer, "I would agree with that. I said
17 it a different way. I said it should have a SOLIDWORKS
18 file that's identical."

19 A. Yes, I was --

20 Q. I responded by saying -- one moment.

21 Then you answered again, "If RAB lenses have the
22 same SOLIDWORKS files as the '570 lens, I would say they
23 are infringing on that lens. But they don't, they have
24 completely different SOLIDWORKS files."

25 Dr. Josefowicz, you gave that answer to my

1 question during your deposition; correct?

2 A. That's correct.

3 So I have a comment about that.

4 Q. Your --

5 A. That was -- that was -- that was one --

6 JUDGE CHENEY: Hold on. We can't have attorneys
7 talking over witnesses, and witnesses talking over
8 attorneys.

9 So, Dr. Josefowicz, you mentioned that your
10 counsel -- you mentioned that you have something more to
11 say about that.

12 THE WITNESS: I do.

13 JUDGE CHENEY: Your counsel will address that
14 with you on redirect. So right now, we're answering
15 Mr. Hamstra's questions.

16 THE WITNESS: Okay.

17 BY MR. HAMSTRA:

18 Q. Dr. Josefowicz -- actually, Mr. Jay, can you
19 pull up slide 21 of Dr. Josefowicz's demonstratives?

20 Dr. Josefowicz, this slide in your
21 demonstratives that you discuss on your direct speaks of
22 Claim 70 of the '570 Patent; right -- sorry, Claim 19 of
23 the '570 Patent?

24 A. That's correct.

25 Q. The Claim 19 of the '570 Patent refers to a

1 juncture of the front and back sectors; right?

2 A. That's right.

3 Q. The word "junction" does not appear in the
4 claims that are now being asserted in this investigation;
5 right, Dr. Josefowicz?

6 A. It doesn't, but the description of the front
7 sector and back sector are tied explicitly to a junction
8 between the back sector and the front sector. So I added
9 the mention of this in Claim 19, although it's not in the
10 asserted claims that we're discussing.

11 So for clarity, I added this, but it doesn't
12 need to be added because it's also discussed in the text
13 relative to specifically the front sector and the back
14 sector having a junction, and that two lens elements, two
15 different lens elements, come together to form a junction,
16 which is the basis of the non-infringement of the RAB
17 lenses, which do not have a junction.

18 Q. So I think you answered my next question, but
19 let me clarify.

20 You are interpreting Claims 1 and 10 of the '570
21 Patent as also requiring there to be a junction between the
22 front and back sectors; correct?

23 A. Correct.

24 Q. Are you aware whether the word "junction"
25 appears anywhere in the specification of the '570 Patent?

1 A. It appears in the text, yes.

2 Q. Anywhere in the text outside of Claim 19; do you
3 know whether it appears anywhere in the text outside of
4 Claim 19?

5 A. I'd have to look at it again. I think it does,
6 but I -- I would have to look at it again.

7 Q. Okay. I think the '570 Patent can speak for
8 itself in that regard.

9 A. I think I would just add that the figures speak
10 for themselves, and the figures show a discontinuity in the
11 drawing, which certainly could be interpreted as a
12 juncture, or would be clearly interpreted as a juncture.

13 Q. You're anticipating my questions,
14 Dr. Josefowicz.

15 You're also interpreting the word "juncture" to
16 require a discontinuity; correct?

17 A. Yes. And it does, according to what I
18 understand about optics, and the way it's described in the
19 figures, and the way it's described in the text of '570,
20 that one of expertise in lens design would understand that
21 that's a discontinuity, and could be described as a
22 juncture, which it is in the patent.

23 Q. To be clear, Dr. Josefowicz, the inner
24 refracting surfaces of all of the accused optics in this
25 case include discontinuities; correct?

1 A. Not in the same way that is described in '570,
2 in Figures 5 and 6, no.

3 Q. Mr. Jay, could you turn on the ELMO here?

4 So, Dr. Josefowicz, I've taken your RDX-6.14,
5 and for the T2 lens, I've drawn a circle around the top
6 point of the T2 lens in the bottom left-hand corner.

7 You agree that's a discontinuity in the inner
8 refracting surface of the T2 lens?

9 A. It's a transition from the curved surface on the
10 right, which comes to a point there, and then changes
11 direction. It's not two separate lens elements coming
12 together to form an interface like is shown in Figures 5
13 and 6. It's a continuous -- it's a continuum of that inner
14 surface, only it changes direction. The distinction
15 being --

16 Q. Go ahead, Dr. Josefowicz.

17 A. The distinction being that I wouldn't call this
18 two separate lens elements coming together to form a
19 juncture. I would call this a free-form lens with
20 continuously varying incident angles. It has no physical
21 break or interface.

22 There's no interface there.

23 Q. To be clear, Dr. Josefowicz, the cross-section
24 coming from the right is angled towards the top left-hand
25 corner of the screen, and then sharply turns in a downwards

1 direction where I circled in this T2 lens; correct?

2 A. Yes.

3 Q. And we see the same configuration in T3,
4 correct, where I circled there?

5 A. Yes. Yes. This would be the same -- this would
6 be the same type of transition as you would have in all of
7 the previous prior art that I described where, for example,
8 if you have a prism, and you have a curved surface on a
9 prism, that's transitioning back to the surface, it has a
10 step.

11 It's the same -- it's the same type of
12 transition as opposed to two lens elements coming together
13 to form what is referred to as a juncture in '570 Patent.

14 So to me, it's a different approach to lens
15 design than the free-form lens that we're looking at -- the
16 free-form lenses that we're looking at here.

17 Q. Mr. Jay, you can take the ELMO down.

18 Can you please pull up RDX-6.25.

19 Dr. Josefowicz, with respect to this slide, you
20 offered some testimony headed, Dr. Lebbly's reliance on the
21 emitter axis is inconsistent with USP '570.

22 Do you recall that testimony?

23 A. Yes, and to be clear, as I heard Dr. Lebbly refer
24 to this, and he was asked several times about this, the
25 question is whether that line that comes off the emitter

1 axis is essentially a plane that runs through the emitter
2 axis perpendicular to the face of this cross-section, and
3 that he was asked repeatedly, so the front sector is to the
4 right of this.

5 In other words, he was saying that the entire
6 volume space. Now, we're looking at two dimensions here in
7 a sort of three-dimensional drawing, but this implies the
8 definition of Dr. Lebbly means that -- and his answers to
9 the question means that a plane through that line,
10 perpendicular to the face of that axis defines a volume
11 space, which is being referred to as the front sector, and
12 that the space behind it, the back sector, is to the left
13 of that plane, that runs through the emitter axis shown as
14 the dotted blue line.

15 Q. Again, Dr. Josefowicz, you gave your testimony
16 yesterday, and your counsel will have an opportunity to ask
17 you any follow-up questions today. I would like you to
18 listen carefully to my questions, and answer those
19 questions, if you would.

20 First of all, Dr. Josefowicz, the emitter axis,
21 it is not a plane. It is a line; correct?

22 A. Yes.

23 Q. The first two bullets on this slide read, "Not a
24 property of the lens but instead property of emitter, and
25 then moves with the emitter."

1 Did I read those correctly?

2 A. Yes, and that refers to "if" -- the hypothetical
3 "if" -- the LED was moved, whether, according to
4 Dr. Leiby's definition, that emitter axis would move with
5 the emitter, and he said yes, it would move with the
6 emitter. The LED.

7 Q. You understand the --

8 A. Sorry. The LED.

9 Q. You understand that the accused products are not
10 bare lenses but are instead light fixtures with the lenses
11 already installed; correct?

12 A. Yes.

13 Q. You understand that LEDiL publishes
14 specifications for where the emitter should be located with
15 respect to its lenses, and where that emitter axis should
16 be; correct?

17 A. Yes.

18 Q. You understand that when RAB sells the accused
19 light fixtures, that the lens is fixed to those light
20 fixtures such that they are immobilized with respect to the
21 emitter; correct?

22 A. Yes. I understand all of that, but this example
23 was to clarify Dr. Leiby's definition. It was not
24 implying -- I was not implying that, you know, one would
25 move the -- the LED, which was very carefully positioned

1 using ray trace analysis to produce a specific illuminating
2 output distribution.

3 No, I understand that. Of course, you wouldn't
4 move the LED, but it was -- this example was used -- I
5 think you're taking this example out of context.

6 This example was only used to clarify
7 Dr. Lebbby's definition. And when he was asked -- as I
8 explained, when he was asked -- so based on your
9 definition, if, hypothetically, you moved the LED, would
10 the emitter axis move with it? Yes.

11 Would that mean that the front sector shrink in
12 size? Would it become smaller? And he answered yes.

13 So it clarified his position that the emitter
14 axis effectively acts as a plane through emitter axis,
15 which defines a sector, a three-dimensional space. That's
16 what I was trying to get clarification for here.

17 MR. HAMSTRA: No further questions. Thank you,
18 Dr. Josefowicz.

19 JUDGE CHENEY: Okay. I just have a couple of
20 questions.

21 Mr. Hamstra, can you put back on the ELMO your
22 version of RDX-6, slide 14. This is a page where you
23 circled some things.

24 MR. HAMSTRA: Do you see that all right, Your
25 Honor?

1 JUDGE CHENEY: I do.

2 Can we zoom into the T2 and T3 images at the
3 bottom row?

4 MR. HAMSTRA: All right. So this is on the
5 ELMO, so let me see what I can do here.

6 Or just the T2 and T3? I think I can get
7 closer.

8 Oh, my apologies.

9 JUDGE CHENEY: Okay. Dr. Josefowicz, do you
10 remember being asked some questions about this slide, which
11 is derived from CDX-0002.0016.

12 THE WITNESS: Yes.

13 JUDGE CHENEY: And 0020.

14 I heard two things that in my mind contradict
15 each other in that testimony, and I wanted to see if you
16 could help me sort them out.

17 I think Mr. Hamstra asked you if the points that
18 are circled on these images are discontinuities.

19 Do you recall him asking you that?

20 THE WITNESS: Yes.

21 JUDGE CHENEY: Are they discontinuities?

22 THE WITNESS: So there are two types of
23 discontinuities that one would talk about here as it
24 relates to Patent '570.

25 JUDGE CHENEY: Okay.

1 THE WITNESS: One is one that I referred to
2 during my testimony oftentimes, which is an optical
3 discontinuity.

4 If you look at all of the free-form lenses that
5 were in the prior art, if you recall, they had steps and
6 curves that ended with a step or sort of vertical lines
7 that came off of, say, a little bit of a prism or facet,
8 and that step would -- could be referred to as an optical
9 discontinuity.

10 So that's one. The other is a juncture or
11 junction between an interface between two separate parts,
12 like sector 20 and 30 in this '570 Patent where two
13 different elements -- lens elements come together forming
14 an interface.

15 That could also be an optical discontinuity, but
16 it's also a physical discontinuity. Here, the T2 and T3
17 lenses are free-form lenses designed by computer-aided
18 design, and this -- the inner surface is a continuum.
19 Although it changes directions many times, it's a
20 continuum.

21 So that's what I -- how I would distinguish
22 discontinuity. One is optical; one is physical.

23 JUDGE CHENEY: Okay. I think your testimony is
24 continuing to highlight in my mind the inconsistency that
25 I'm trying to understand.

1 You told me that these circled points are
2 discontinuities, and then you said that the surface is a
3 continuum. So to make sure I'm thinking of this correctly,
4 when I was taught discontinuity for the first time in my
5 life, it was in calculus, and a discontinuity in calculus
6 has a specific meaning.

7 And I am wondering if what you're calling an
8 optical discontinuity and what you're calling a physical
9 discontinuity means something different than I am familiar
10 with in mathematical terms.

11 THE WITNESS: The discontinuity here -- the use
12 of the term "discontinuity" optically would refer to if
13 rays are incident on this lens from the bottom where the
14 LED is, that where the circle is drawn, the rays would
15 refract in a certain direction, and then the rays needing
16 that step would cause a discontinuity in the sense that
17 there would be a dramatic change in the refraction of the
18 rays that are incident on that very steep slope from the
19 corner down.

20 And likely, that surface would be at an angle
21 that would cause total internal reflection.

22 So you would have a transition from the corner
23 that's marked by the circle optically, because likely, you
24 know, if we draw -- if we drew rays -- the ray traces, you
25 would see the rays transitioning -- refracting and

1 transitioning to the right.

2 They would refract on the inner surface and
3 refract again on the outer surface, and you would get a
4 fan -- likely, a fan of rays to the right.

5 When the rays are incident on that steep slope,
6 they would likely experience total internal reflection so
7 that they would -- because the slope of that step is
8 uniform, they would produce a concentration of rays that
9 would be distinct from the rays that are refracting off the
10 gentle slope to the right.

11 So because you would have two completely
12 different sets of rays in different space that comes out of
13 the outer surface -- like, you asked, I think, a question
14 the other day about a concentration of rays coming upwards
15 and what that was, so that would be similar here.

16 You have rays that are probably fan-shaped to
17 the right, and more concentrated set of rays at a different
18 angle coming off that vertical section.

19 The discontinuity relative to the calculus that
20 you mentioned could also be applied here, but maybe more
21 understood physically that if you have a lens element --
22 let's say that lens was -- had a juncture right at the
23 point where the circle is drawn, and the right side was a
24 lens element that joined the left side, which was a lens
25 element.

1 In describing that mathematically, you would
2 have basically an end point to the dimension and dimension
3 description, and whatever axial space you described it, it
4 would end.

5 So that would be a discontinuity. It would stop
6 to continue, and that space would be distinct from the
7 curve. So you'd have a vertical -- a descriptor for the
8 vertical interface. And as it then turns the corner and
9 becomes the top surface, you'd have another one.

10 JUDGE CHENEY: Thank you.

11 I don't think I have any other questions for
12 this witness.

13 Any redirect?

14 MR. MOSKIN: No, Your Honor.

15 JUDGE CHENEY: Okay.

16 Thank you, Dr. Josefowicz, for being with us.
17 Your testimony helped me to understand the case. You are
18 excused.

19 THE WITNESS: Thank you.

20 And by the way, I am impressed that you said my
21 name perfectly throughout this testimony. Very few people
22 can do that.

23 JUDGE CHENEY: I try my best. Thank you for
24 being with us.

25 THE WITNESS: Thank you.

1 JUDGE CHENEY: Now, does RAB have additional
2 witnesses to call in its defense?

3 MR. MOSKIN: RAB does not.

4 JUDGE CHENEY: Okay. Does Cree wish to call any
5 witnesses in rebuttal?

6 MR. HAMSTRA: Cree Lighting will start its
7 rebuttal case by calling Dr. Katona.

8 C O M P L A I N A N T R E B U T T A L

9 MR. HAMSTRA: It is 6:30 in his local time, so
10 hopefully he's not having any issues.

11 JUDGE CHENEY: Let's go off the record for a
12 moment while we get this set up.

13 (Off the record.)

14 JUDGE CHENEY: We're back on the record now
15 after transitioning to the next witness, Dr. Katona.

16 Mr. Hamstra, please proceed with your direct
17 examination when you're ready.

18 And, Dr. Katona, let me remind you that you
19 remain under the same oath that you took earlier in the
20 week to tell the truth.

21 Please proceed.

22 THE WITNESS: Yes, Your Honor.

23 THOMAS KATONA, PhD,
24 a witness, having been previously sworn, was examined and
25 testified as follows:

1 JUDGE CHENEY: We've lost you, Mr. Hamstra.

2 MR. HAMSTRA: Let me try that again.

3 DIRECT EXAMINATION

4 BY MR. HAMSTRA:

5 Q. Dr. Katona, what is the general subject matter
6 of the testimony you intend to provide today?

7 A. I'll be testifying on invalidity in the '270 and
8 '449 Patents.

9 Q. What conclusions did you reach regarding the
10 validity of the '270 and '449 Patents?

11 A. My conclusion is that they are indeed valid.

12 Q. Dr. Katona, I understand that you prepared some
13 demonstrators, so let's call those up.

14 Let's start with CDX-0007.0002.

15 First of all, Dr. Katona, which Cree Lighting
16 patent is this prior art related to?

17 A. This is related to the '270 Patent.

18 Q. Which reference is shown here on slide 2?

19 A. This is a reference from the Ewington patent.

20 Q. What kind of product or device is Ewington
21 directed to?

22 A. Ewington's directed to a stage light or theater
23 lights. This would be the kind of spotlights that you
24 would find at, say, the Kennedy Center or National Theatre
25 that highlight or are used for performances.

1 Q. I see in Paragraph 113, you have highlighted a
2 reference to DMX512.

3 Could you explain for us what DMX512 refers to?

4 A. Yes.

5 So DMX is digital multiplexing, and 512 is
6 indicative of the number of channels that can be controlled
7 with the DMX protocol. They call it a universe. So in a
8 single universe.

9 Q. What sort of functions can be controlled using
10 the DMX protocol?

11 A. You can do quite a bit using the DMX protocol.
12 It's -- you know, the protocol is used for controlling
13 fixtures, and really kind of controlling them in concert
14 with one another.

15 So in this particular patent, they reference
16 strings of red, green and blue LEDs. And so if you wanted
17 to control the intensity, and mixing of those strings, that
18 can be done with the DMX protocol.

19 They can also be used to move the fixture
20 itself. So it controls its motion. People use it for
21 things like stage effects such as releasing smoke at
22 certain times during a performance.

23 Q. Turning to slide 3 of your presentation,
24 Dr. Katona.

25 What do you understand Dr. Shackle to be

1 alleging satisfies the at least one power circuitry driver
2 within the chamber element of Claim 1 of the '270 Patent?

3 A. So my understanding of Dr. Shackle's contention
4 is that item number 224 in the Ewington patent, which is
5 highlighted in red here, Ewington calls that the power
6 supply unit, that is what Dr. Shackle contends is the power
7 circuitry driver.

8 Q. Do you agree with Dr. Shackle, that 224 is, in
9 fact, the power circuitry driver?

10 A. I do not.

11 Q. Why not, Dr. Katona?

12 A. For two primary reasons, and the -- as I
13 testified the other day, a power circuitry driver converts
14 AC input voltage to DC, to a regulated current out the
15 device.

16 So the -- and actually, Dr. Shackle himself said
17 that in his deposition, that the power circuitry driver
18 converts AC to DC power supply. And earlier this week,
19 Dr. Jiao also said the same thing, so I think we're all in
20 agreement on that.

21 And the power supply unit in 224 in this patent
22 does not convert AC to DC; it receives a DC signal.

23 In addition to that, it doesn't provide a
24 constant current out. It actually provides quite a dynamic
25 current out of the device to control the LEDs that are on

1 the downside.

2 Q. Now, item 112 here, you colored that in and
3 annotated it in blue.

4 What does that refer to?

5 A. So 112 here is in the patent referred to as the
6 power connector. Specifically, the patent on this side,
7 it's in line 3, mentions that 24 volts is coming in through
8 112, which powers the internal -- the internal components,
9 the power supply unit, 224. In addition, the controller,
10 226, and some other things, I think it mentions a fan.

11 So there's -- that's the place where the 24-volt
12 DC signal is coming into the light fixture.

13 Q. Do you understand Dr. Shackle to disagree that
14 this device pictured in Figure 2 receives a 24-volt DC
15 power signal?

16 A. It's my understanding that Dr. Shackle does not
17 disagree with this. So the implication is the AC to DC
18 conversion is happening outside of this chamber.

19 Q. You have annotated items 114 and 110 in purple.
20 What do the purple annotations indicate with
21 respect to this figure?

22 A. The purple annotations indicate the two sort of
23 disclosed methods in this patent for how this fixture is
24 really controlled.

25 So 114 in this patent is called the touch panel,

1 and that would be on the fixture, if one wanted to manually
2 program it. So have somebody go in and set up what the
3 controls of the fixture would be such that the light
4 fixture knows and understands how it's supposed to operate
5 and adjust currents over time. That's one way you can do
6 it. It's probably the most simple.

7 110 is a port they call the network connecter.
8 And that would be more conventional if you are receiving
9 the DMX protocol signal, which is really instructing the
10 light fixture what to do.

11 They're highlighted, again, because both of
12 these are outside of the chambers. So what we're
13 effectively saying is the brains of all of the control is
14 happening outside of the chamber.

15 Q. Thank you, Dr. Katona.

16 Let's turn to slide 4 of your presentation
17 today.

18 Does the Ewington reference contain any
19 reference to a drive device that does, in fact, provide a
20 constant current?

21 A. Yeah. The direct linear drive is mentioned and
22 highlighted in this, again, section from the patent.

23 And what -- the way that I think of this is this
24 would typically be kind of coming from the control board of
25 the DMX controller, which is -- you know, in many cases,

1 that's a big board that sits in the AV control area that a
2 lighting engineer or lighting technician would be powering
3 and changing during a performance.

4 Q. Did you find any evidence that this direct
5 linear drive component is located in the electronics
6 chamber of Figure 2 itself?

7 A. I did not. These tend to be fairly large
8 devices, and this is a spotlight. I think Dr. Shackle even
9 testified to that. So I -- I can't think of an instance
10 where something that would do this -- had this type of
11 control, could physically fit within this type of light
12 fixture.

13 Q. Mr. Jay, can you call up JX-004 at page 5?

14 Dr. Shackle, what do you see on page 4 of the
15 '270 Patent here?

16 A. Well, I'm Dr. Katona, but...

17 Q. I apologize.

18 A. Outside of that, I see a reference from the '270
19 Patent of Ewington itself.

20 Q. What does this indicate to you regarding prior
21 consideration of Ewington?

22 A. My understanding is this would indicate that the
23 patent examiner looked at Ewington when examining the '270
24 Patent, and still believed that the patent was valid and
25 the claims held up.

1 Q. Dr. Katona, to summarize, what did you conclude
2 about whether RAB has shown that Ewington anticipates the
3 claims of the '270 Patent?

4 A. I don't -- I don't believe that RAB has shown
5 that Ewington anticipates the claims of the '270 Patent.

6 Q. Mr. Jay, can we pull up CDX-7 again?

7 So, Dr. Katona, let's turn to the other patent
8 on which you're opining, the '449 Patent.

9 In this trial, what, if any, anticipation or
10 obviousness defenses did Dr. Shackle raise?

11 A. So it's my understanding that Dr. Shackle claims
12 that this patent was enabled.

13 Q. So that's the defense that Dr. Shackle did
14 raise.

15 Did you hear him raise any anticipation or
16 obviousness arguments at this hearing?

17 A. I don't believe so.

18 Q. Turning back to Dr. Shackle's enablement
19 opinion, do you agree with Dr. Shackle's conclusion that
20 the claims of -- or Claim 10 of the '449 Patent is not
21 enabled?

22 A. I don't agree. I do think that the claims of
23 the patent do enable that.

24 Q. Did you consider what are referred to as the
25 Wands factors in your enablement analysis?

1 A. Yes, I did, and they're shown here listed out.

2 Q. On slide 5 of your demonstratives?

3 A. Yeah. I can read them in, if that's --

4 Q. I don't think there's any need. Thank you,
5 Dr. Katona.

6 Let's discuss a few of these. Let's turn to
7 slide 6.

8 So first of all, with respect to the breadth of
9 the claims, how did that Wands factor impact your
10 enablement argument -- or enablement analysis?

11 A. So I don't think the -- my analysis is that the
12 claims are not overly broad. The demonstrative here shows
13 both the Court's construction on several of the terms,
14 which are pretty specific, and I think limit the scope of
15 the patent itself, but in addition to that, the patent
16 claims show, for example, highlighted here that you have to
17 mount the solid-state light emitter to the trim element.

18 There's not sort of an infinite number of places
19 you can put these things.

20 The trim element -- the driver components have
21 to be within the trim element space. So, again, there's a
22 constraint that's put here. So it's -- at least in my
23 reading, it's not an overly broad description of the
24 lighting fixture.

25 Q. Thank you. Let's turn to slide 7 -- or rather,

1 8.

2 Dr. Katona, what did the relative skill of those
3 in the art, how did that inform your enablement analysis?

4 A. Yes. So the relative skill in the art that we
5 defined was a bachelor's degree in materials science,
6 mechanical or electrical engineering, equivalent study of
7 field and three years of work.

8 A lot of people have this. This is not an
9 overly high bar for one to sort look at the patent and
10 understand it. I think that that holds.

11 I work with undergraduate students in my normal
12 day job. A number of them, I think, could have replicated
13 large portions of this just by looking at the patent.

14 Q. Turning to slide 9 of your demonstratives.

15 What did you conclude about the level of
16 predictability in the art?

17 A. My conclusion is that the -- based on what's
18 written into the patent, one would be able to predict and
19 understand how to recreate what is shown in the patent.

20 Q. First of all, how did the dimensional
21 requirements imposed by standard light -- standard
22 downlight sizes inform your analysis of the level of
23 predictability in the art?

24 A. Yeah, there aren't really an infinite number of
25 ways to make downlights geometrically. Because as I

1 testified to the other day, there are holes in the ceiling,
2 and the holes have certain sizes, and sort of buildings
3 have codes with different depths.

4 These things are -- when you go about
5 designing -- really almost any lighting device, not all of
6 them, but in a case like this with a can fixture, you have
7 geometrical constraints that define it, and you really
8 can't go outside of those.

9 So it's known to those once you start making
10 them sort of what the boundaries are.

11 Q. How did the level of detail in the drawings of
12 the '449 Patent inform your analysis of the level of
13 predictability in this field?

14 A. In my opinion, the drawings in the patent are
15 fairly detailed. They actually look like they came from a
16 CAD model, so it's -- as opposed to just a hand sketch,
17 which I have seen in other patents.

18 So, you know, I think one would look at those
19 drawings, and be able to interpret, pretty closely, the
20 geometry and dimensions of the vast majority of that
21 lighting device.

22 Q. Dr. Katona, let's move to slide 10 on which you
23 combined two Wands factors, amount of direction or guidance
24 provided and quantity of experimentation needed to make or
25 use the invention.

1 What did you conclude regarding these Wands
2 factors?

3 A. I think following up on the last question and
4 statement, so because the drawings are so specific in this
5 patent, it would take somebody, you know, who's skilled
6 with CAD not a lot of time, and that person definitely fits
7 in our definition of a POSITA -- not a lot of time to
8 replicate those drawings in a CAD file. And once you have
9 that file, most of them actually have a database of all of
10 the materials that are put in the patent, but even if they
11 didn't, you can do a quick Google search for the material
12 properties and plug it in, and it lets you change those on
13 the fly.

14 So you can do -- essentially recreate this light
15 fixture with very little effort to a high degree of
16 accuracy.

17 Q. You put in a reference to heat sinks here.

18 What does that refer to, Dr. Katona?

19 A. Well, so the -- two things. One, there's not
20 much of a heat sink outside of the trim element in this
21 particular fixture. So the -- you're not sort of -- they
22 don't just show a slug of metal, and say figure out how to
23 make the heat sink to get all of the heat out of it.

24 They show the description of the light fixture
25 itself and a detailed drawing, and the trim element is

1 what's providing the heat sinking. So I think they define
2 that relatively well.

3 As -- in addition, they list the number of
4 materials that are possible -- possibilities to enable this
5 invention.

6 Q. Finally, what is the amount of information
7 available about solid-state light emitters?

8 How did that inform your analysis of these Wands
9 factors?

10 A. So when I have designed lighting devices before,
11 you know, the typical process is to just go to the websites
12 or call the manufacturers of different solid-state light
13 emitters.

14 The data sheets all provide their optical output
15 and performance against different operating
16 characteristics.

17 Most of the manufacturers will supply you with
18 the CAD model of their parts to drop right into yours, so
19 that makes it relatively easy.

20 And at least what I have done in the past is
21 just looked at the data sheets, put together a pretty
22 simple Excel spreadsheet, and you can come relatively close
23 to getting the first order -- you know, your estimated
24 performance of the lighting device.

25 Q. In conclusion, Dr. Katona, based on your

1 analysis of the Wands factors, how do they inform your
2 opinion that Claim 10 is enabled?

3 A. My analysis is that they do indeed support that
4 the patent is enabled.

5 Q. Turning to your slide 11, what specific
6 limitations did Dr. Shackle opine on in this hearing?

7 A. Specifically, I'll at least first address that
8 Dr. Shackle contended that there would be no way for one to
9 understand how to make the lighting device such that it
10 would be less than 750 grams.

11 Q. So let's turn to slide 12.

12 What specific weight-cutting approaches did the
13 '449 Patent disclose?

14 A. A primary one was the fact that they utilized
15 the trim element for multiple purposes in the lighting
16 device.

17 So, you know, one way to obviously look at this
18 is if you need to remove heat from the lighting device,
19 I'll get a heat sink. And if I want to get light out of
20 the device in a certain way, then I'm going to design an
21 optic.

22 What the patent teaches is combining these
23 elements together into the trim element. So using trim
24 element for multiple functional purposes. That always --
25 almost always that I can think of -- reduces the weight of

1 the device, because you're pulling out components that --
2 you're pulling out numerous components, and replacing it
3 with one that can serve multiple purposes.

4 So we've got a lighting -- light emitter that is
5 mounted to the trim element, so it becomes a heat sink and
6 we have the trim element being a mixing chamber, so we
7 don't need another optical element.

8 Q. Turning to slide 13 of your demonstratives,
9 Dr. Katona.

10 What other teaching of the '449 Patent guides
11 the weight-cutting shown and claimed in the '449 Patent?

12 A. The '449 Patent also teaches that the trim
13 element itself is the enclosure for the driver. So you're
14 not designing different encasings for another part.

15 So it's -- it becomes the optical, thermal and
16 mechanical structure itself. So, again, you're combining
17 another thing that could be a separate thing into one.

18 Q. Dr. Katona, turning to slide 14, what did the
19 teachings regarding weight or materials -- how did that
20 inform your opinions regarding enablement?

21 A. Yeah. So on the right side, I highlighted from
22 10, 44 through 57, there's a pretty specific listing of
23 material options. As I said, these are -- nothing in here
24 is a strange material that one wouldn't know and be able to
25 readily access the material properties of, and put it into

1 your models.

2 Q. Based on all your analysis, Dr. Katona, what did
3 you conclude about whether the limitation, the lighting
4 device weighing less than 750 grams is enabled?

5 A. It's my belief that it is enabled.

6 Q. Dr. Katona, let's turn to the lumen output
7 limitation included on slide 15.

8 How did this -- or what do you understand
9 Dr. Shackle's position to be regarding this element?

10 A. It's my understanding that Dr. Shackle contends
11 that the patent does not teach how to get more than 500
12 lumens out of the lighting device at less than 15 watts.

13 Q. Mr. Jay, could you pull up JX-3, column 3,
14 line -- let's see -- yes, 36.

15 Dr. Katona, what did the '449 Patent itself
16 disclose about devices that output more than 500 lumens at
17 less than 15 watts of input power?

18 A. So -- yeah, highlighted here from the
19 specification is a reference to Cree's LR6 product, which
20 itself already emitted more than 500 lumens at less than 15
21 watts. So it shows a clear path on how one might think
22 about getting there.

23 Q. Dr. Katona, in view of all of the evidence
24 you've seen, are the claims of the -- Claim 10 of the '449
25 Patent enabled?

1 A. In view of the evidence I have reviewed, yes, it
2 is.

3 MR. HAMSTRA: I pass the witness, Your Honor.

4 JUDGE CHENEY: Is there any cross-examination
5 for Dr. Katona?

6 MR. ROUSH: Yes, Your Honor.

7 CROSS-EXAMINATION

8 BY MR. ROUSH:

9 Q. Good morning, Dr. Katona. Good to see you
10 again.

11 There's -- I just want to start off by briefly
12 going over your opinions with respect to the '270 Patent.

13 Am I correct that the only limitation that
14 you're opining is missing from Claims 1 and 2 of the '270
15 Patent that's not disclosed in Ewington is the "at least
16 one power circuitry driver within the chamber" limitation?

17 A. I believe that's correct.

18 Q. I believe that in support of that, you offered
19 two rationales; the first one is that a power driver
20 circuitry must convert AC to DC, and that the controls of
21 the power supply in Ewington are located outside the
22 chamber.

23 Is that -- do I have that right?

24 A. Those are both correct, yes.

25 Q. So I want to pull up CDX-007.004.

1 With respect to your second point that the
2 controls of the -- that what is controlling the Ewington
3 power supply is located outside the electronic chamber. I
4 believe you cited this paragraph; is that correct?

5 A. Yes.

6 Q. This paragraph is in the background section of
7 Ewington; correct?

8 A. I can see that it's in Paragraph 63. I don't
9 remember if that's the background or not.

10 Q. Okay. Can you -- so I also understand that it's
11 your position that -- I believe you pointed to the network
12 controller of Ewington as being what -- being one of the
13 elements that controls the power supply?

14 A. Yes.

15 Is he frozen?

16 Q. No. I'm just pulling up a document real quick.
17 Sorry.

18 I want to turn to another one of your slides. I
19 believe it's slide 3. Yes. I believe you point to, am I
20 correct, element -- maybe 114 and 110 as being what
21 controls the power supply; is that right?

22 A. Yes, that's correct.

23 Q. Now, neither of these elements here, either
24 112 -- strike that.

25 Neither element 114 or 112 are described in

1 Ewington as being a controller; correct?

2 Actually, I believe I misspoke. Let me rephrase
3 my question.

4 Neither element 114 or element 110 are described
5 in Ewington as being a controller; correct?

6 A. I'm sorry, neither 114 or 110 are described as
7 being the controller?

8 Q. That is correct.

9 A. Yeah. I think the -- so the specific language
10 is highlighted there. It says that, "The controller, 226,
11 receives instructions," which usually are controls, "via
12 the network connector, 110." And it also says the touch
13 panel can do the same.

14 So it doesn't -- to answer your question, it
15 doesn't call them quote, unquote, a controller, but it does
16 say they're sending instructions to the controller.

17 Q. Yeah. And there is a controller disclosed in
18 Ewington here, and it's controller 226; is that correct?

19 A. Right. That receives its instructions from 110
20 and 114.

21 Q. And the controller is located within the
22 electronics chamber, 220; correct?

23 A. 226 is within the chamber.

24 Q. And whatever -- you know, I assume that whatever
25 it's controlling the power supplies for, the LEDs would

1 contain some sort of electronic circuitry; is that correct?

2 A. I would agree that there are circuits within the
3 chamber.

4 Q. You would normally want to protect such circuits
5 from the elements; correct?

6 A. Yes, I -- I'm trying to remember. I think
7 specifically Ewington talks about environmental protection
8 of this.

9 Q. And you would want the elements that are
10 controlling the controller to be protected from the
11 elements such that, you know, rain couldn't get on those
12 elements and, like, cause them to malfunction; correct?

13 A. Agreed. Electronic circuits typically don't
14 like water.

15 Q. Ewington's designed to be used in an outdoor
16 environment; correct?

17 A. It can be.

18 Q. Can you turn to CDX-007.002?

19 Now, in Paragraph 91, Ewington disclosing that
20 Figure 1, which we have been discussing here, is designed
21 to work for an open-air music concert; correct?

22 A. Yes.

23 Q. That would typically, you know, be open-air such
24 that rain could hit the venue?

25 A. Yes. I -- I think I've agreed with this.

1 Q. So wouldn't you want the device that is
2 controlling the power supply, and subsequently, the LEDs,
3 to be within the electronics chamber, 220?

4 A. Presumably, if it would work and fit.

5 Q. Does Ewington mention any actual -- any
6 dimensions for its spotlight?

7 A. It mentions a DMX512 control. So looking at
8 what's available for DMX512 control known by those skilled
9 in the art wouldn't tell you specific dimensions, but it
10 would tell you a range of typical.

11 Q. Have you been to open-air concerts before?

12 A. A couple times. Not any time recently, though.

13 Q. Have you seen spotlights at any open-air
14 concerts?

15 A. I have.

16 Q. Are these small devices?

17 A. They're a range of sizes of light fixtures.

18 Q. I think some of which can be quite large;
19 correct?

20 A. I don't think that all of them are referred to
21 as spotlights, but the size of a spotlight can change.

22 Q. Just one last question. Besides the
23 controller -- Ted, can you go to slide 3 again?

24 Besides the controller, 226, are you able to
25 identify anything in -- described in Ewington as being a

1 controller?

2 A. Again, the exact word "controller" is not used,
3 but when you receive instructions from something, you're
4 being controlled.

5 Q. Okay. Your other thing you believe is that the
6 power driver circuitry of the '270 Patent must convert AC
7 to DC; is that correct?

8 A. Yeah. I believe three of us have testified to
9 that.

10 Q. Okay. There's two types of power sources; is it
11 alternating current, or AC, and direct current, or DC?

12 A. Yes.

13 Q. LEDs must operate at constant current; correct?

14 A. Well, I think specifically here, it's mentioning
15 that the current is not constant. It provides varying
16 current to the LEDs. So I guess -- I think the answer to
17 your question is no.

18 Q. So I mean, I think, ordinarily, I think what
19 it's saying is that you can control the current, but when
20 you're -- if you're going to have a steady stream of light,
21 the current needs to be constant; correct?

22 A. Not always, but -- yeah. So not always, but
23 that's the primary method that's used.

24 Q. Okay. Were you here Wednesday or virtually here
25 Wednesday for Dr. Shackle's testimony?

1 A. I was here for Dr. Shackle's testimony.

2 Q. Ted, can you pull up Wednesday's transcript,
3 page 65, lines 16 to 22.

4 Here -- and that's page 650, to lines 22.

5 In response to a question from Mr. Hamstra,
6 Dr. Shackle said that, "We were talking a few moments ago
7 about the definition of driver, and you noticed the
8 words -- or some words like 'typically' or 'commonly.' The
9 point being that drivers can have DC input, and you will
10 see -- the most important thing is the conversion of
11 constant voltage at the input to constant current at the
12 output." [As Read.]

13 Do you disagree with this statement?

14 A. I believe in my deposition, I was asked a
15 similar question, which is, is it possible to have a DC
16 input to a driver? And I believe my answer was, it's
17 possible. It's not what's shown in the '270 Patent, but if
18 you search for -- online for DC driver, you can find
19 something that's different than what we're talking about.

20 Q. Do you agree that an -- do you agree that power
21 sources can be DC power sources?

22 A. Yes, a battery outputs DC, and is a power
23 source.

24 Q. Such a DC power source would output at constant
25 voltage; correct?

1 A. It could, depending on what's on the other side.
2 Yeah, I mean, it can also not output at a constant voltage.

3 Q. Normally, does a battery output at constant
4 voltage?

5 A. A battery would, but there are other DC power
6 sources.

7 Q. Could another DC power source be at 24 volts?

8 A. 24 volts is a DC voltage.

9 Q. Would a 24-volt DC power source be outputting at
10 constant voltage?

11 A. Presumably, yes.

12 Q. And that constant voltage would need to be
13 constant -- converted to constant current in order for the
14 LEDs to operate; correct?

15 A. Again, that's not always true, but if you wanted
16 the LEDs to be static, that is a common method to do it.

17 Q. When you say -- by "static," you mean output a
18 constant -- maintain a steady light output; would that be
19 correct?

20 A. That's correct.

21 Q. In Ewington, the functions of converting
22 constant voltage to a constant current would be performed
23 by the power supply, 224; correct?

24 A. Well, I think specifically in Ewington it says
25 that it's not outputting to a constant current because it's

1 adjusting the level of the lights.

2 So I guess that would be incorrect.

3 Q. But it's saying it's adjusting the level of
4 lights, but presumably, once you adjust the level of light
5 to what you want, you could maintain it at a constant
6 current; correct?

7 A. If -- well, I don't know why, if that was -- so
8 the patent -- and I don't have it in front of me,
9 obviously, but the wording that I recall is that it talks
10 about having strings of LEDs with many LEDs that you can
11 adjust from on to off, and any variation in between,
12 combining the strings of LEDs.

13 Seems to be specifically talking about the type
14 of dynamic lighting that you would find at an outdoor,
15 in-the-rain festival that you mentioned. So I don't know
16 why you would go through the expense of a DMX512 protocol
17 stage light if all you wanted was a constant beam of light
18 to come out.

19 Q. But presumably, a stage lighting, you don't
20 always want the beam of light to be flickering; correct?

21 A. At a -- yes. You don't want to have the thing
22 strobing the entire time.

23 Q. You would want to be able to control the current
24 to the LEDs because, otherwise, you wouldn't be able to
25 control how the strobing or the flickering would be

1 occurring; correct?

2 A. That's correct.

3 Q. Now, there are -- and also, one other thing --
4 so we have been talking that Ewington is directed to an
5 outdoor -- or discloses that it could be used in an outdoor
6 concert setting; correct?

7 A. Yes, that's correct.

8 Q. And in such an outdoor setting, it could be
9 difficult or maybe even impossible to get an AC power
10 source; correct?

11 A. I am not thinking of an instance where AC
12 wouldn't be available. I mean, anytime I have been to a
13 concert, there's a lot of power in those venues. So I
14 don't know.

15 Q. So at least, you could imagine a time where it
16 might be advantageous to have a, like, 24-volt battery
17 powering a spotlight rather than having to connect to an
18 alternating current from a power line; is that fair?

19 A. I wouldn't want to have a performance relying on
20 a battery that might go out. So no, that seems like a
21 really bad way to run a concert.

22 Q. But there are many other lighting applications
23 where the external power source would not be AC; correct?

24 A. You're asking in stage lighting, or are you just
25 saying in general, are there lights in the world that run

1 off DC?

2 Q. In general, are there other lighting
3 applications where the external power source is not AC;
4 correct?

5 A. Yes, I have a light for my bicycle, and it is
6 DC.

7 Q. Car battery be -- car headlights would be
8 another example; is that correct?

9 A. Car headlights do run off of a DC signal.

10 Q. Also lights that run off solar power would be
11 running off a DC signal; is that correct?

12 A. Well, not if they're in your home, they
13 wouldn't. There's an inverter that changes it to AC for
14 your house, so no.

15 Q. How about for, like, a -- you see -- I've seen,
16 like, a small streetlight I've seen running on solar power.
17 Would that have a -- would that be running on DC power?

18 A. I'm not sure what kind of small streetlight
19 you're talking about.

20 I mean, I guess to answer your question, solar
21 is a way to produce energy. It can be DC. It has -- you
22 know, there are applications that solar provides enough
23 energy for lighting.

24 Q. So let's use a car headlight as an example.

25 So you mentioned the power source for a car

1 headlight would be the car battery; correct?

2 A. Yes, as recharged by your alternator.

3 Q. That would be a DC power source; correct?

4 A. Yes.

5 Q. Car headlights have an LED driver; correct?

6 A. So I -- I mean, just to be completely clear
7 first, I'm not an automotive headlight designer, but the --
8 presumably, from between the battery and your headlight,
9 there is regulation -- circuitry that regulates the power.

10 Q. And that circuitry would convert constant
11 voltage outputted by the car battery to constant current
12 such that the LEDs could be operated; is that correct?

13 A. Yeah. So I'll answer quite honestly, which is I
14 assume that to be true, but what I -- I honestly don't know
15 the details on or -- so there are a lot of specifications
16 on flicker and allowable amount of modulation of light
17 based on eyes.

18 Automotive lighting is a very heavily regulated
19 and specified industry of which I am not an expert.

20 So I can't comment exactly on the output
21 intensity of automotive headlights, and what's allowable or
22 not.

23 Q. Have you ever designed a lighting device that
24 uses a battery as its power source?

25 A. I have designed prototypes in a lab that utilize

1 batteries, not -- not products that we released ever, but
2 it was for demonstration purposes.

3 Q. Sorry.

4 A. I was just saying there were things that we made
5 for demonstration purposes in a lab. It could be
6 convenient to power something with a DC source.

7 Q. Did those DC power sources output at a constant
8 DC voltage?

9 A. Yes.

10 Q. Did those prototypes have a driver in them?

11 A. A driver or power circuitry driver?

12 Q. Well, I'll ask the question this way: Did the
13 prototypes have a driver inside them?

14 A. Yes. They have control electronics.

15 Q. So is it your opinion that a power circuitry
16 driver is different than a driver?

17 A. As used in the '270 Patent, yes, which I think
18 is consistent with Dr. Jiao's testimony, and is consistent
19 with Dr. Shackle's deposition testimony.

20 Q. Does the '270 Patent discuss using -- discuss
21 AC?

22 A. All of the figures in the patent show lighting
23 devices that one working in the space would know run off
24 AC, yes.

25 Q. But it doesn't specifically discuss, you know,

1 anything relating to, like, the power supply circuitry, for
2 example, how AC is converted to DC, does it?

3 A. The specification doesn't describe it. The
4 figures, I believe, do.

5 Q. Can we pull up -- I believe that's RX-004. Can
6 we turn to the figures.

7 Does this figure describe converting AC to DC
8 power?

9 A. So I think that looks like what would be used in
10 a parking lot, or some sort of area floodlighting, and I
11 cannot think of an example of one that does not run off AC.

12 Q. Would that be -- could we just scroll through
13 the rest of the figures.

14 Would that be your same answer for the other
15 figures?

16 A. It would. That's a cobra head. There's a
17 floodlight.

18 Q. Can we now turn to the '449 Patent for a moment,
19 and can you pull up CDX-007.006.

20 You conducted a Wands factor analysis -- or you
21 testified as to the Wands factors here today; correct?

22 A. That's correct.

23 Q. In that analysis, you considered the breadth of
24 the claims; correct?

25 A. Yes.

1 Q. Can you take a look at claim -- you have Claim
2 10 of the '449 Patent there.

3 Claim 10 recites a driver; correct?

4 A. Yes.

5 Q. Although it actually says at least a first
6 driver component; is that correct?

7 A. Yes. It does. It's at least a first driver
8 component. Thank you.

9 Q. In opining RAB's -- as to why RAB's recessed
10 retrofit and Performance downlight products allegedly met
11 this limitation, you pointed to the driver of those
12 products as meeting this limitation; correct?

13 A. Well, I think what we pointed to was a circuit
14 board with a lot of driver components, yes.

15 Q. Claim 10 does not specify whether the lighting
16 device is being supplied with AC or DC electricity;
17 correct?

18 A. I don't think the exact wording is in the
19 patent.

20 Q. So Claim 10 could cover lighting devices being
21 supplied with DC power; is that correct?

22 A. I haven't offered any opinion on that,
23 Mr. Roush.

24 Q. But you did consider the breadth of the claims;
25 correct?

1 A. I did.

2 Q. Can you turn to Claim 1 of the '449 Patent.
3 That's JX-003.

4 Now, Claim 1 is similar to Claim 10; correct?

5 A. Yes. Claim 1 and Claim 10 are similar.

6 Q. Is it also your -- could claim -- is Claim 1
7 broad enough to cover downlights powered with DC
8 electricity?

9 A. It can. I mean, I -- for today's purposes, I
10 wasn't asked to provide any opinions on Claim 1.

11 Q. You were previously asked to provide opinions as
12 to Claim 1; correct?

13 A. I was previously asked, and those opinions are
14 contained in my reports.

15 Q. Are you familiar with the concept of patent law
16 that an independent claim is presumed to be broader than
17 its dependent claims?

18 A. Presumed to be broader than dependent claims; is
19 that your exact wording?

20 Q. I believe so.

21 A. I guess I have not heard it phrased that way.
22 What I typically have been informed on is that if an
23 independent claim is not valid, the dependents are also not
24 valid.

25 So I don't know if that's saying the same thing

1 or not. So I'm not a lawyer, obviously. Sorry.

2 Q. So in other words, a dependent claim is usually
3 narrower than an independent claim?

4 A. It would be, I think so, a more specific
5 instance.

6 Q. Sure. Can we turn to Claim 6 of the '449
7 Patent.

8 Claim 6 recites a lighting device as recited in
9 Claim 1 wherein said -- said electricity -- or said power
10 is about 12 watts as supplied with AC electricity; is that
11 right?

12 A. Yes. That's what Claim 6 says.

13 Q. So in order for Claim 6 to be narrower than
14 Claim 1, wouldn't Claim 1 have to be broad enough to cover
15 either AC power or DC power?

16 A. Again, I'm -- I was asked to provide opinions on
17 Claim 10 today, so I'm not really prepared to answer your
18 question.

19 Q. Do you disagree that claim -- that the driver of
20 Claim 1 of the '449 Patent is broad enough to be supplied
21 with either AC electricity or DC electricity?

22 A. I'm sorry. The -- Claim 1, which I haven't
23 offered an opinion on, is -- just to clarify the
24 question -- is broad enough to have an AC or DC
25 electricity?

1 Q. Correct.

2 A. Is that the question?

3 Confirming, is that the question?

4 Q. Yes. That's the question.

5 Is Claim 1 broad enough to be -- is the
6 downlight of Claim 1 broad enough to be powered by either
7 AC or DC electricity?

8 A. It's possible. I mean, I guess I'm trying to
9 understand -- I'm being asked to speculate on claims that
10 I've offered no opinion on today applied to a different
11 patent in a different context, but -- so yeah, I'm a little
12 bit confused at that point.

13 Q. So Claim 1 recites a driver; correct?

14 A. It recites at least a first component of the
15 driver.

16 Q. So at least that first component of the driver,
17 as recited in '449 Patent appears that it could be supplied
18 with either AC or DC electricity; correct?

19 A. Again, I -- I'm not offering an opinion on that.

20 Q. Are you familiar with Dr. Wetzel?

21 He's another one of Cree Lighting's experts in
22 this investigation?

23 A. I am familiar with Dr. Wetzel.

24 Q. Can you pull up Dr. Wetzel's rebuttal report.
25 Actually, I'll just ask you this question.

1 Are you aware that he opined that, for example,
2 a driver could be stepped down or stepped up DC-to-DC
3 converter that accepts DC electricity as its input?

4 A. I've never seen Dr. Wetzel's rebuttal report.

5 Q. Do you agree or disagree with this statement?

6 A. Well, all I see is a black screen right now. So
7 you're asking me an opinion about a report that I haven't
8 seen with a black screen.

9 Q. Now the opinion is up on the screen, it says at
10 the last sentence, "For example, a driver could be stepped
11 down or stepped up DC-to-DC converter that accepts DC
12 electricity as input."

13 Do you see that?

14 A. So I don't think that's inconsistent with what I
15 said earlier, which is that I -- I know that there are
16 things in the world called DC drivers.

17 Q. So while drivers may ordinarily convert AC to DC
18 power, at least in some circumstances, they are -- they
19 convert DC to DC; is that correct?

20 A. Again, you're using the words "power circuitry
21 driver" from a specific patent and "driver"
22 interchangeably.

23 Q. Okay. So your opinion is that driver is
24 different than power circuitry driver; is that correct?

25 A. I'm saying that the way that these terms are

1 used, the context matters for each one.

2 Q. So can you turn -- so are you saying that the
3 '270 Patent has narrowed the meaning of power circuitry
4 driver from its plain and ordinary meaning; is that your
5 testimony?

6 A. That's not my testimony.

7 Q. Can you turn to CDX-007.00 -- actually, 14. If
8 you can go back one slide. Yes. 0014.

9 With respect to the '449 Patent, you were
10 talking about the weight limitation; correct?

11 A. That is correct.

12 Q. Is it your opinion that the limitation of the
13 lighting device weighing less than 750 grams only requires
14 that the downlight be reduced -- be reduced in weight; is
15 that right?

16 A. Well, I'm -- I think my exact contention is it
17 must be reduced in weight below 750 grams.

18 Q. Now, is there a lower boundary to that 750
19 grams, or less, that would have been understood by a person
20 of ordinary skill in 2009?

21 A. I guess the way that I would answer that is I
22 don't know of an exact number that someone could point to
23 and say it would be impossible to be less than, I'll make
24 up a number, 5 grams and still meet this. Yeah. There's
25 no -- there's nothing that I know of that would define an

1 exact number as a lower bound.

2 Q. But there would be a theoretical lower boundary;
3 is that correct?

4 A. Well, I mean, theoretically, it's zero, but
5 it's -- practically, it would be something much greater
6 than that. Yeah, I -- so...

7 Q. Does the '449 Patent enable a downlight that
8 weighs 5 grams?

9 A. I -- based on looking at it, I believe it's
10 highly unlikely.

11 Q. So I want to turn next to CDX-007.0015.

12 In this limitation, it's, "Wherein if not more
13 than about 15 watts is supplied to the electrical
14 connector, the at least one solid-state light emitter will
15 illuminate so that the lighting device will emit white
16 light of at least 500 lumens."

17 Do you see that?

18 A. Yes, I do.

19 Q. That's directed to the efficacy of the product;
20 correct?

21 A. Yes, it is.

22 Q. In your opinion, as of 2009, would a person of
23 ordinary skill recognize an upper limit for the lumen
24 output limitation?

25 A. For the lumen limitation?

1 Q. Yes.

2 A. I guess in this case, as of 2009, one would be
3 able to at least come practically close to an upper limit.
4 I think several of the experts earlier this week testified
5 on upper limits of lumens per watt, or of, yeah, lumens per
6 watt.

7 I don't think there was any great agreement
8 among them, from the testimony I heard, but that would be a
9 starting point. Although, again, this would just get you
10 in a range of limits because there are a number of loss
11 mechanisms that are coupled into the final lighting system.

12 Q. Are you able to tell me today what that upper
13 limit would be?

14 A. I haven't gone through that calculation, so I am
15 not prepared today to tell you, but it would -- it would
16 take, you know, a little bit of time, but -- yeah, I mean,
17 I could do it, but not on the fly. I'm sorry.

18 Q. Do you have an opinion as to whether or not the
19 '449 Patent would enable a lumen output up to that
20 limitation?

21 A. So I think it's likely the case based on the --
22 several of the constraints that are in the '449 Patent,
23 that one would not be able to reach the theoretical limits
24 of the lumens per watt because the constraints on weight
25 actually work against achieving that, that theoretical

1 limit.

2 Sort of as I described the other day, the --
3 these things are working against one another, and so I
4 believe that the '449 Patent's constraints on weight
5 actually limit the scope of -- eventually, of how high the
6 efficacy of such a device could be because of the heat
7 constraints.

8 So I don't think that this device would ever
9 reach theoretical limits.

10 Q. Do you have an opinion as to what the limit
11 would be of the lumen output limitation in view of the
12 weight limitation?

13 A. I do not.

14 Q. So just a couple more questions.

15 Can you turn to JX-009, or turn back to the '270
16 Patent?

17 This is the prosecution history for the '270
18 Patent. I believe you testified that you found it --
19 thought it was significant that the Ewington reference had
20 been disclosed to the examiner; is that correct?

21 A. Yes, that's correct.

22 Q. Ted, can you turn to page 98 of the prosecution
23 history?

24 This is where the Ewington was disclosed --
25 reference was disclosed.

1 Can we go back a couple of pages? This was
2 in -- two more, I believe. Page 94.

3 This is disclosed in what's known as an
4 information disclosure statement. Are you familiar with
5 information disclosure statements?

6 A. So loosely, as I mentioned, I do have patents,
7 but, you know, quite honestly, this is something that
8 normally the lawyers take care of.

9 Q. So in an information disclosure statement, prior
10 art references are typically disclosed to the examiner for
11 their consideration?

12 A. Is that a question or a statement?

13 Q. Do you understand that to be true?

14 A. That sounds correct.

15 Q. So can we turn to the other pages of this
16 information disclosure statement?

17 Do you know how many -- and on page 98, the
18 Ewington reference is listed. Do you know how many
19 references the applicant disclosed along with the Ewington
20 reference?

21 A. Are you asking me how many other patents are
22 listed there as disclosures?

23 Q. Yes. Patents or other references, publications,
24 other patent applications; how many of those are listed
25 along with Ewington?

1 A. I don't know how many patents come after number
2 four, no.

3 Q. Can we -- keep going. I believe -- going
4 through the reference, I believe -- would you -- do you
5 know if it's hundreds of references were disclosed with the
6 Ewington reference?

7 A. I don't. I know that it's a heavily patented
8 field, so -- but I don't know how many.

9 Q. So you didn't give any analysis as to when -- as
10 to the number of references that were disclosed along with
11 it, and whether or not that would have affected the
12 consideration of the examiner; is that correct?

13 A. Yeah. I think you will find nothing in my
14 reports, deposition or testimony today that testifies to
15 the number of patents disclosed to the patent examiner.

16 MR. ROUSH: Thank you. No further questions.

17 JUDGE CHENEY: Okay. If it's okay with you,
18 Dr. Katona, I'm going to try and ask a few questions, and
19 see if we can wrap things up so you don't have to stick
20 around after the morning break.

21 THE WITNESS: Yes, Your Honor.

22 JUDGE CHENEY: I'd like you to set the lawyerly
23 stuff aside as we talk and help me with the technical stuff
24 that you've called to be -- that you've been called to be
25 an expert about.

1 THE WITNESS: All right. Thank you, Your Honor.

2 JUDGE CHENEY: I'd like you to think about this
3 phrase that we see in the '270 Patent, "power circuitry
4 driver."

5 Does that phrase have an understood meaning in
6 the art?

7 THE WITNESS: So the -- for the types of
8 fixtures we're talking about, a power circuitry driver is
9 commonly what would be referred to as a brick. So it's a
10 block of electronics that it receives its intended input,
11 and has its intended output.

12 So in the case of light fixtures as they're
13 shown in the '270 Patent, you know, there are many
14 thousands of AC to DC current drivers out there that are
15 just the types of things that are bought for these
16 fixtures. So I think it has a standard meaning.

17 I guess all of these words require some context,
18 and I think you've probably picked up from many of the
19 exchanges this week, people use words, in a loose sense,
20 interchangeably, but in context, they do have meanings.

21 JUDGE CHENEY: Does the term "power converter"
22 have an understood meaning in the art?

23 THE WITNESS: Power converter. I usually think
24 of power converter as AC to DC.

25 JUDGE CHENEY: Is it a term that is commonly

1 used?

2 THE WITNESS: It is, Your Honor.

3 JUDGE CHENEY: Is it more or less commonly used,
4 to your knowledge, and you may not know, than the phrase
5 "power circuitry driver"?

6 THE WITNESS: So I -- I think that, broadly
7 speaking, the answer would be yes, and -- because I'm
8 thinking specifically about the field of power electronics
9 and transmission lines, and things like that, "power
10 converter" is a very common term.

11 So across the whole spectrum of applications,
12 yes. I think in the field of LEDs, and lighting, I don't
13 think that it's necessarily a more common -- I would think
14 it's actually found less commonly in that specific field.

15 But across the entire range of electronics, I
16 would guess that, actually, power converter might be more
17 commonly used.

18 JUDGE CHENEY: Okay. Does the word "driver" in
19 this phrase that we've been talking about, "power circuitry
20 driver," help a person of ordinary skill in the art
21 understand some more context about what kind of power
22 circuitry we're talking about?

23 THE WITNESS: I think that just saying "driver"
24 without any other context for application, it would be
25 difficult for one to understand exactly what kind of driver

1 you're talking about.

2 JUDGE CHENEY: I think I heard you testify
3 earlier that the term "power circuitry driver" in the
4 context of the '270 Patent means something different than
5 just the word "driver."

6 Am I recalling your earlier testimony correctly?

7 THE WITNESS: That's correct.

8 JUDGE CHENEY: What is that difference?

9 THE WITNESS: So the power circuitry driver in
10 the '270 Patent, in the context of the types of fixtures
11 we're talking about, implies that it's receiving its load
12 power, and typically, these are designed to be two-stage
13 drivers, where there's a first stage that does the
14 conversion from AC to DC, and then the second stage that,
15 then, converts that to a regulated current out of the
16 device. That's known -- it's what the majority of the
17 industry does.

18 The term "driver" can be sort of any part of
19 that. You actually could just lop off the second part of
20 the power circuitry driver, and say, well, there's a driver
21 in there.

22 So I think that's the difference, is the
23 combination to go from the input power to the output
24 regulated -- to the regulated output.

25 JUDGE CHENEY: Now, if we could put up the

1 Ewington reference, and the image that has been annotated,
2 I believe, by Dr. Shackle, can someone put that up for me.

3 It might be on, for example, slide 3 of the
4 demonstrative exhibit.

5 There we go.

6 So, Dr. Katona, we're looking at CDX-0007, slide
7 3, and this is an excerpt from the Ewington reference,
8 which is CX-0852.

9 In your earlier testimony today, there was quite
10 a bit of discussion about controller 226.

11 Do you see that on this figure?

12 THE WITNESS: Yes, I do, Your Honor.

13 JUDGE CHENEY: What does the patent -- the
14 Ewington patent tell us about the input to controller 226,
15 if anything?

16 This is not a memory test. If you need to look
17 at parts of the patent, we'll put them up for you.

18 THE WITNESS: So the input to 226 -- and it says
19 it there -- the controller is a -- computer processor is
20 arranged to receive instructions via the network 110.

21 So it's getting its input instructions from the
22 DMX controller, which is presumably back wherever the
23 lighting technician or lighting engineer is sitting. That
24 can be a panel of buttons and presets. You know, nowadays,
25 you know, it can also be a laptop controller.

1 It sends the inputs to, then, tell the
2 controller how it's supposed to behave at that point in
3 time.

4 JUDGE CHENEY: Okay. So one thing input into
5 226, is what we might call data signals; is that right?

6 THE WITNESS: That's correct.

7 JUDGE CHENEY: Okay. What is powering
8 controlling 226?

9 THE WITNESS: The 24 volts from 112. It says
10 that up in the -- up at the beginning of this paragraph
11 we're looking at, Your Honor. Because it says, all of
12 which run at 24 volts.

13 JUDGE CHENEY: So I'm looking at a sentence that
14 says here in Paragraph 100 of the Ewington reference, "The
15 power supply unit, 224, is connected to the power
16 connector, 112, and to the controller, 226. "

17 THE WITNESS: Yeah. Higher up, Your Honor. The
18 very first -- the beginning of the paragraph there.

19 JUDGE CHENEY: Okay. Now I see a passage that
20 says that the controller, 226...all of which run at 24
21 volts, as does the fan, 214.

22 So what is power connector 112, in your mind,
23 highlighted in blue?

24 THE WITNESS: That's -- the power connector 112
25 is where they're connecting in the 24-volt DC signal that's

1 been output from what I would contend is actually the power
2 circuitry driver, which is a DMX AC to DC brick.

3 And they're feeding that signal into 112 to
4 provide power to the internal electronics, as that list of
5 components stated there.

6 JUDGE CHENEY: So as you understand the
7 disclosure in Ewington, what is coming in at 112 is already
8 24 volts, direct current?

9 THE WITNESS: That's correct, Your Honor.

10 JUDGE CHENEY: And in your opinion, you think
11 it's likely that there is a brick somewhere that is not
12 illustrated, that is converting AC to that 24 volts DC.

13 Am I understanding your opinion right?

14 THE WITNESS: That's correct, Your Honor.

15 JUDGE CHENEY: Just to be totally clear, that's
16 not illustrated, but you think that that's what's going on?

17 THE WITNESS: That's correct, Your Honor.

18 JUDGE CHENEY: Okay.

19 Would a power circuitry driver, as you
20 understand that term to be used in the '270 Patent, have
21 different thermal properties than, say, a direct linear
22 drive that is described in the Ewington reference?

23 THE WITNESS: I'm sorry, Your Honor. I don't
24 know what you mean by different thermal properties.

25 JUDGE CHENEY: Would it produce more heat in its

1 operation?

2 THE WITNESS: So the -- I'm not sure that I can
3 answer that. I think that the -- what I can say, Your
4 Honor, is I think that the relative efficiency of each
5 would likely be comparable.

6 You know, most electronics are kind of designed
7 in the range, typically, unless they're either really,
8 really bad or really, really good, in the 70 to 90 percent
9 conversion efficiency.

10 So the thermal properties you asked about would
11 be dependent on the total input load. So if they were
12 comparable input wattages, no, I don't believe that the
13 thermal properties would be drastically different.

14 But what I can't comment on is that for any
15 given lighting fixture, what wattage is relative to the
16 direct linear drive.

17 JUDGE CHENEY: Okay. I think that's all the
18 questions I have for Dr. Katona.

19 Is there any redirect?

20 MR. HAMSTRA: Sorry.

21 No, Your Honor. No redirect.

22 JUDGE CHENEY: Okay. Thank you for coming in,
23 Dr. Katona. Your testimony has helped me to understand the
24 case.

25 We will now take our --

1 THE WITNESS: Thank you, Your Honor.

2 JUDGE CHENEY: You're excused, and we're now
3 going to take our 15-minute morning break. We're off the
4 record.

5 (Whereupon, the morning break was taken, 10:58 a.m.
6 - 11:14 a.m.)

7 JUDGE CHENEY: Okay. We're back on the record
8 now in the 1213 Investigation.

9 Before our morning break, we finished up the
10 rebuttal testimony of Cree's technical expert on the '270
11 Patents, Dr. Katona.

12 Does Cree wish to call any additional rebuttal
13 witnesses?

14 MR. ROBSON: Yes, Your Honor. Cree will call
15 Dr. Wetzel next.

16 JUDGE CHENEY: Dr. Wetzel, welcome back.

17 I'll remind you that during today's examination,
18 you are under the same oath that you took earlier in the
19 week.

20 CHRISTIAN M. WETZEL, PhD,
21 a witness, having been previously sworn, was examined and
22 testified as follows:

23 JUDGE CHENEY: Mr. Robson, please proceed with
24 your examination when you are ready.

25 DIRECT EXAMINATION

1 BY MR. ROBSON:

2 Q. Welcome back, Dr. Wetzel.

3 A. Good morning. Good morning.

4 Q. Do you understand what you are here to testify
5 about today?

6 A. Yes. I'm going to -- I was asked to testify
7 about the validity of the '819 and the '531 Patents, and
8 the asserted claims.

9 Q. Thank you.

10 What is your opinion on validity, generally?

11 A. They are valid.

12 Q. Okay. Did you prepare some slides to assist
13 with your testimony today?

14 A. Yes, did.

15 Q. Can we put up CDX-5, please. Thank you.

16 Dr. Wetzel, are these the slides that you
17 prepared?

18 A. Yes.

19 Q. Okay. Dr. Wetzel, did you form opinions on
20 whether the asserted claims of the '819 and '531 Patents
21 meet the enablement requirement?

22 A. Yes, I did.

23 Q. Let's turn to slide 4.

24 Dr. Wetzel, what is shown here on slide 4?

25 A. Those are the Wands factors.

1 Q. Did you consider the Wands factors in your
2 enablement analysis?

3 A. Yes.

4 Q. Okay. Let's turn to the next slide, please.

5 Dr. Wetzel, what is the first Wands factor?

6 A. It's the quantity of experimentation necessary.

7 Q. I want to turn to some of the disclosures of
8 the -- first, the '819 Patent. Could we please turn to
9 slide 12.

10 Dr. Wetzel, can you please explain what is shown
11 here in your excerpt from the '819 Patent at column 15,
12 line 11 through 25?

13 A. Yes. It's the first embodiment, a depiction in
14 Figure 4 of the physical layout, but also a textual
15 description of the components in here.

16 For example, there are identified heat spreading
17 element, 11; insulating regions, 12; highly reflective
18 surface, 13; conductive traces, 14; lead frames, 15;
19 packaged LEDs, 16; reflective cones, 17; and diffusing
20 element, 18.

21 Moreover, it speaks about how those components
22 are formed and what material they're made of.

23 Q. Okay. If we could turn to the next slide,
24 please.

25 Dr. Wetzel, can you please explain what

1 additional disclosure is provided in the patent regarding
2 the first embodiment in this excerpt, column 15, line 36
3 through 65?

4 A. Here we see details of how the LEDs are grouped
5 in strings. How many of those LEDs components are on the
6 strings and what type. They are greenish, yellowish, and
7 red.

8 It also lists the voltage across each of those
9 individual components and the current that passes through
10 them.

11 Q. Does the '819 Patent, with respect to embodiment
12 1 specify exemplary LEDs that can be used in that
13 embodiment?

14 A. Yes, it does.

15 Q. Okay. Do you recall what LEDs are specified?

16 A. For the blue phosphor-converted yellow, it lists
17 the Cree XT lamp. It is XT290. And for the red one, it is
18 the Epistar.

19 Q. Thank you.

20 Dr. Wetzl, from the disclosures that we just
21 went over as presented here on this slide 13, would a POSA,
22 in your opinion, have been able to calculate the input
23 power to the device?

24 Just to clarify, by "POSA," I mean the person
25 having ordinary skill in the art.

1 A. Yes. A POSA would have easily accomplished
2 that. It's just multiplying the voltage drop with the
3 current through each of those components.

4 Multiply that by the number of LEDs you have in
5 the device, and then add the losses of the driver, and you
6 have the total input power.

7 Q. Okay. Thank you.

8 We could turn to the next slide, please.

9 Dr. Wetzel, can you please explain what is shown
10 here in the '819 Patent excerpts that you have of Figure 8
11 and 9 and associated text?

12 A. Yes. It is a second embodiment that's part of
13 the '819 Patent. Here, you're going more into a physical
14 appearance of a commercial device. In particular, it
15 speaks about mechanical components such as the upper
16 housing, 59, lower housing, 60. There's talk about the
17 mounting clips that fell off. Several of those. The LEDs,
18 68, ballast element, 69, a circuit board, 70, and heat
19 transfer region, 71.

20 Q. Okay. We can turn to the next slide, please.

21 Dr. Wetzel, what is shown here on slide 15, in
22 the excerpts from the '819 Patent, column 17, line 54,
23 through 18, line 14, with respect to the second embodiment?

24 A. There's additional detail provided on that
25 second embodiment. For example, the first string of LED

1 emitters are of the greenish-yellowish type, what type of
2 phosphor they could include and what the phosphor would be
3 doped with, different elements.

4 Then it speaks about other strings of LEDs, and
5 how they are electrically connected to the common power
6 line, where they receive their input from.

7 It also lists that each of those strings can
8 have an individual current regulator that, in itself, can
9 be adjusted factory-side.

10 Q. Thank you.

11 Dr. Wetzel, in light of the disclosures from the
12 '819 Patent that we just walked through, what is your
13 ultimate conclusion regarding the quantity of
14 experimentation that would be needed to practice the '819
15 Patent asserted claims?

16 A. In light of the plenty of details from a
17 component to an entire device level, the amount of
18 experimentation necessary would not have been a lot for a
19 POSITA.

20 Q. Okay. Now let's turn to the '531 Patent, and we
21 can turn to slide 16, the next slide.

22 Dr. Wetzel, how did the disclosures of the '531
23 Patent compare to those of the '819 Patent?

24 A. In the '531, there's essentially the same
25 background provided as in the '819, but in addition, it

1 shows an embodiment as depicted here with -- is actually
2 the embodiment that was tested at NIST, the independent
3 national laboratory, and included here is, for example, the
4 test results of that.

5 Q. By "here," you're referring to the '531 Patent
6 at column 21, line 64, through 22, line 7?

7 A. That's correct.

8 Q. Can we please turn to slide 18 next?

9 Dr. Wetzel, what is being described here in the
10 '531 Patent excerpt that you have illustrated here, which
11 is Figure 1 and associated text?

12 A. Here in particular, it is being discussed
13 mechanical components such as the lower housing, 12, and
14 the upper housing, 14. And in particular, how they relate
15 and address the thermal properties of the device.

16 Q. Okay. We can please turn to slide 20 next.

17 Dr. Wetzel, what does the '531 Patent explain
18 with respect to the types of LEDs used in the embodiment
19 tested by NIST?

20 A. Here, and specifically in this portion, it
21 speaks about the LEDs that have been used.

22 For example, the Cree XLamps by the maker, Cree
23 Incorporated. For the red ones, the saturated ones, it
24 suggests the OSRAM Golden DRAGON made by OSRAM.

25 Q. Thank you.

1 We can turn to the next slide, slide 21.

2 Dr. Wetzel, could you please explain what is
3 shown here on this slide in the '531 Patent excerpt, column
4 21, line 52 through 63, with respect to the power supply?

5 A. Here is more detail provided about that
6 embodiment, specifically about the power supply, 34, and
7 how it is being connected to the strings of LEDs through a
8 junction, 1.

9 The power supply itself seems to be of a
10 switching type. It provides details on the individual
11 commercial components, and how it's taking in the AC
12 current at line voltage and converts it to the DC current
13 as required by the LEDs.

14 Q. Okay. Dr. Wetzel, thank you.

15 In light of the disclosures in the '531 Patent
16 that we just walked through, what is your opinion regarding
17 the quantity of experimentation that would be needed to
18 practice the asserted claims of the '531 Patent?

19 A. Also, in the case of the '531 Patent, in light
20 of the great detail provided and the components identified,
21 it would have taken a POSITA not a lot of experimentation
22 to achieve the same product and same results.

23 Q. Thank you.

24 Let's please turn to the next slide.

25 Dr. Wetzel, what is the second Wands factor?

1 A. It's the amount of direction or guidance
2 presented.

3 Q. What is your opinion regarding the amount of
4 direction or guidance presented in the '819 and '531
5 specifications?

6 A. Again, based on the ample of detail provided,
7 the inclusion of exemplary embodiments, including results
8 on those, there is plenty of guidance provided, and it
9 would -- the level of guidance is high.

10 Q. Okay. Let's please turn to the next slide.

11 Dr. Wetzel, what is the third Wands factor?

12 A. It is the presence or absence of working
13 examples.

14 Q. Do you have any opinion on whether the
15 specification, starting with the '819 Patent, provides a
16 working example?

17 A. Yes. It lists at least two embodiments, a first
18 and a second one.

19 Q. Okay. What about the '531; does that provide
20 any working examples in the specification?

21 A. Yes. It, for example, provides a working
22 example, specifically the one that was tested at NIST.

23 Q. Turn to the next slide, please.

24 Dr. Wetzel, what is the fourth Wands factor?

25 A. It's the nature of the invention.

1 Q. What is the nature of the inventions of the '819
2 and '531 Patents?

3 A. It is the achievement of a high-performing
4 lighting device, in particular, by balancing the issues of
5 optical, thermal, electrical and mechanical aspects herein.

6 Q. Thank you.

7 Let's turn to the next slide, slide 25.

8 Dr. Wetzel, what is the fifth Wands factor?

9 A. It's the state of the prior art.

10 Q. Let's please turn to the next slide.

11 Dr. Wetzel, do you recognize CX-56 shown on
12 slide 26?

13 A. Yes. It's the DOE roadmap dated November 2002
14 that I mentioned in my earlier testimony.

15 Q. Okay. I believe you addressed this, but are the
16 efficiency targets in this DOE roadmap shown in the table,
17 do those relate to the -- a lighting device as a whole or
18 just the LED component?

19 A. No, they are specifically addressing the LED
20 component at the component level only.

21 Q. Okay. How, if at all, was the approach that the
22 '819 and '531 Patent inventors took in their invention
23 different from prior art approaches?

24 A. In contrast to what was targeted here, namely at
25 the component level, the inventors addressed an entire

1 lighting device, including all of the enclosures and
2 provisions and optics necessary that go way beyond those of
3 individual components.

4 Q. Let's turn to the next slide, slide 27.

5 Dr. Wetzel, what is the sixth Wands factor?

6 A. It's the relative skill of those in the art.

7 Q. Okay. Have you formed an opinion as to what the
8 level of ordinary skill in the art for the '819, '531
9 Patents is?

10 A. Yes. Similar to the Court's finding in the
11 early 947 case, I adopted the definition of POSITA to be a
12 bachelor of science degree -- to hold a bachelor of science
13 degree in material science, electrical engineering, or an
14 equivalent field of study, along with three or more years
15 of experience working with LED technology. Moreover, a
16 more advanced degree reduces the threshold for years of
17 experience in working with LED technology.

18 Q. Did you conduct your enablement analysis
19 applying the definition of the PHOSITA that you just went
20 through?

21 A. Yes, I did. I did it from the perspective of
22 such of PHOSITA.

23 Q. Let's turn to the next slide.

24 I'll ask you, Dr. Wetzel, what is the seventh
25 Wands factor?

1 A. It's the predictability of the art.

2 Q. In your opinion, was the LED field in 2006
3 through 2008 time frame more of a predictable or
4 unpredictable field?

5 A. It was more of a predictable field, in
6 particular to quite some other fields.

7 Q. How does the predictability of the art factor
8 into the analysis of enablement that you performed?

9 A. Such a rather higher level of predictability
10 would have lowered the requirement of details provided in
11 order to achieve the same results.

12 Q. Okay. Let's turn to the last Wands factor.
13 What is the last Wands factor, Dr. Wetzel?

14 A. It's the breadth of the claims.

15 Q. Okay. How, in your opinion, does the breadth of
16 the claims compare to the disclosures of the '819 and '531
17 Patents?

18 A. As evidenced from the test results, the -- and
19 their achieved results, the breadth of the claims is
20 commensurate with the -- those -- with the teachings of the
21 '531 and the '819 Patent.

22 Q. Okay. Do you recognize the test results that
23 are shown on the left-hand side of this screen?

24 A. Yes.

25 Q. What are those?

1 A. Those are the one included in the '531 Patent,
2 and they list, in particular, a luminous efficacy, a wall
3 plug efficiency of 113.5 lumens per watt.

4 Q. Okay. Thank you.

5 What about on the left-hand side of the screen,
6 and we're on slide 29, those test results; do you remember
7 what tests those come from?

8 A. Those tests are included in the prosecution
9 history of the '819 Patent, and specifically list out the
10 CSA test results of 79.79 lumens per watt, and 72.7 lumens
11 per watt as the wall plug efficiency.

12 Q. Okay. Thank you.

13 Did you review the file histories of the '819
14 Patent, which is JX-7, and '531 Patent, which is JS-6 --
15 excuse me, JX-6, in formulating your opinions regarding
16 validity?

17 A. Yes, I did.

18 Q. Okay. Now, in light of all of the Wands factors
19 that we just walked through, what is your opinion, your
20 ultimate opinion, as to whether the disclosures of the '819
21 and '531 Patents would enable the PHOSITA to practice the
22 asserted claims without undue experimentation?

23 A. In light of the details -- the vast details
24 provided in specification, in both patents, a PHOSITA would
25 definitely have been enabled to achieve a device of such

1 performance without any undue experimentation.

2 Q. Okay. From all of the disclosures that we just
3 walked through in the patents, what is your opinion
4 regarding whether those specifications meet the written
5 description requirement?

6 A. From all of the details provided, including the
7 test results, it is evident that the inventors indeed
8 possessed devices of such claimed performance.

9 Q. Okay. Thank you.

10 Now, let's turn to your opinions on the asserted
11 prior art. And let's turn to slide 33, please.

12 Do you recognize, Dr. Wetzel, what is shown here
13 on slide 33 as JX-150?

14 A. Yes. It's the Fini/Nakamura reference.

15 Q. Okay. Let's please turn to the next slide.

16 Dr. Wetzel, can you explain generally what this
17 graph on slide 34 excerpted from JX-150.64 is showing
18 generally?

19 A. It shows the light output and efficacy of the
20 SPE package, LED package as a function of applied current
21 through the package.

22 Q. Thank you.

23 In this graph, what does the line with the open
24 circles represent?

25 A. This is the efficacy of that package as a

1 function of the applied current through it.

2 Q. Is the efficacy of an SPE package the same thing
3 as a wall plug efficiency?

4 A. No, it is not.

5 Q. Why is that?

6 A. Here it is mentioned the current through the
7 package, and the light output from both in the power
8 voltage, you can calculate the efficacy.

9 What is missing entirely is how that voltage and
10 that current was provided in relation to the wall outlet as
11 necessary in the present invention.

12 So all of the losses associated with a power
13 supply are not included.

14 Q. What's the highest efficacy that was measured
15 for the SPE LED package?

16 A. The text specifies that this value reaches 80
17 lumens per watt at a low current of 50 milliamps.

18 Q. Okay. Let's please turn to the next slide,
19 slide 55 -- excuse me, 35.

20 Dr. Wetzel, do you see we have JX-150.65
21 excerpted on slide 35?

22 A. Yes, I do.

23 Q. Do you understand that Dr. Jiao relies on this
24 portion of the Fini/Nakamura reference for his prior art
25 opinions?

1 A. Yes, I do.

2 Q. Okay. What does Dr. Jiao contend to be the wall
3 plug efficiency of the SPE fixture reported in the
4 Fini/Nakamura reference?

5 A. He gives the various numbers, and the highest of
6 which is listed as 78 lumens per watt at 50 milliamps.

7 Q. Okay. Thank you.

8 Under Dr. Jiao's interpretation of this
9 reference, what is the drop in efficacy moving from an SPE
10 LED package, so individual component, to the SPE fixture?

11 A. That would be the difference from the 80 lumens
12 per watt number to the 78 lumens per watt number, which is
13 two lumens per watt, or about 2.5 percent.

14 Q. Okay. Now, in light of that drop, what is your
15 opinion as to whether the 78 lumens per watt is a wall plug
16 efficiency for a lighting device?

17 A. That is extremely unlikely, in particular, since
18 we know that the earlier 80 lumens per watt did not include
19 power supply, and how could this one now include a power
20 supply if the performance drop was only 2 lumens per watt.

21 That would not be possible with a regular power
22 supply.

23 Q. Okay. Dr. Wetzel, what is the color temperature
24 of the light associated with the Fini/Nakamura SPE fixture?

25 A. It's stated as about 6500 Kelvin.

1 Q. Okay. Now, is light having that color
2 temperature, 6500 Kelvin, would that be perceived as warm
3 white light?

4 A. No, definitely not. It's a very cool white.

5 Q. Okay. Let's please turn to the next slide.

6 Dr. Wetzel, do you see here on slide 36, you've
7 excerpted Figure 6 from JX-150, page 65?

8 A. Yes, I do.

9 Q. Okay. And focusing on, first, the diffuser
10 component.

11 What is the efficiency associated with the
12 diffuser component?

13 A. It is listed here as having an efficiency of 93
14 percent.

15 Q. Okay. Can the alleged wall plug efficiency of
16 78 lumens per watt possibly have taken into account
17 efficiency losses associated with the diffuser?

18 A. No, they could not. Those losses would already
19 have surpassed 2 lumens per watt we identified.

20 Q. Okay. And Dr. Wetzel, do you see in the caption
21 for Figure 64, it says, "The microlens diffuser is not
22 shown in the picture for clarity"?

23 A. Yes.

24 Q. Does that mean that the diffuser is an optional
25 component?

1 A. No, it does not.

2 Q. Okay. What do you understand as to why the
3 diffuser is not shown in the picture of the device, given
4 this sentence that we just read?

5 A. The function of the diffuser is essentially to
6 obfuscate the contents of that fixture.

7 So a picture would probably be very poor-looking
8 and not reveal any detail of the innards, and therefore, it
9 may have been removed in this lower picture shown here.

10 Q. Now, turning to the reflector array, shown in
11 Figure 64, what is the efficiency associated with the
12 reflector array?

13 A. Specifically, that component is identified with
14 an efficiency of 94 percent. It is not clear if it
15 includes the reflective paint or not, which in itself has
16 97 percent.

17 Q. Okay. Were you here when Dr. Jiao testified
18 that the 94 percent only applies to some portion of the
19 light that would be emitted from the light sources?

20 A. Yes.

21 Q. How does that affect your opinion on whether
22 Fini/Nakamura discloses a lighting device that incorporates
23 losses associated with all of the individual components?

24 A. It is simply not possible, as we just iterated.
25 For example, the diffuser could not have been included.

1 Losses of that could not have been included. Also the
2 power supply losses could not possibly have been included,
3 and if one further would have to address the performance of
4 those reflectants components, it would not at all have been
5 clear how these numbers would go together in order to
6 demonstrate a working lighting device.

7 Q. Thank you, Dr. Wetzel.

8 Now, I'd like to direct your attention to where
9 in the figure it refers to an aluminum heat sink plus
10 electronic driver.

11 Do you see that?

12 A. Yes.

13 Q. Okay. So now, we just went through how the
14 diffuser and reflector array components have certain
15 efficiencies that were specified by the Fini/Nakamura
16 authors.

17 Does Fini/Nakamura report what the efficiency of
18 either the electronic -- excuse me, the aluminum heat sink
19 or electronic driver are?

20 A. No, that is the only disclosure we find about
21 that.

22 Q. Okay. In your opinion, does the alleged wall
23 plug efficiency of 78 lumens per watt take into account
24 losses associated with the heat sink and the electronic
25 driver?

1 A. No, it does not. There's no evidence contained
2 in the report whatsoever.

3 Q. Okay. Let's please turn to the next slide.

4 Dr. Wetzel, do you see here on slide 37, you've
5 excerpted Figure 65 from the Fini/Nakamura reference?

6 A. Yes.

7 Q. Can you please explain what the red line in
8 Figure 65 represents?

9 A. Here it, again, shows the efficacy in lumens per
10 watt, and it corresponds to the right-hand y axis. It is
11 shown, again, as a function of current through, most
12 reasonably, the fixture or the LED. That is not clear.

13 Q. Okay.

14 Let's see. Were you here when Dr. Jiao
15 testified that this figure shows a trend from which one can
16 extrapolate efficacies below 50 milliamps?

17 A. It is definitely discouraged to do any
18 extrapolation of measured data. It may be common to use a
19 trend line as a guide to the eye, but it is known to an
20 engineer that extrapolating is very dangerous and should
21 not be done.

22 Q. Dr. Wetzel, is it the case that -- given this
23 trend line that we've -- that Dr. Jiao has testified to, is
24 it necessarily the case that as the current is reduced to
25 below 50 milliamps, that the efficacy would continue to

1 increase?

2 A. Definitely -- definitely not. It will saturate
3 and will turn around to go down again, simply because the
4 light output overall will drop significantly.

5 I think we've seen evidence also in one of the
6 references cited in Ibbetson.

7 Q. Okay. When you refer to, "it will go down
8 again," are you referring to the efficacy, that --

9 A. Yes.

10 Q. -- it would go down?

11 A. Yes. It's the efficacy that goes down.

12 Q. Okay. Let's turn to the next reference relied
13 on by Dr. Jiao. Let's please turn to slide 38.

14 Dr. Wetzel, do you recognize this to be an
15 excerpt from the Ibbetson report?

16 A. Yes, I do.

17 Q. Okay. Do you see under the photograph of Figure
18 15 from the Ibbetson report, it states, "Experimental high
19 flux lamp module consisting of an array of individual
20 emitters on a metal core circuit board"?

21 A. Yes, I do.

22 Q. Okay. What does the device of Figure 15 look
23 like to you?

24 A. It looks like a bunch of LED packages on a metal
25 core circuit board.

1 Q. Do you see the wires that are emanating from the
2 device?

3 A. Yes. There seem to be a red and a black wire
4 that provides DC current to those LED packages. It seems
5 to be connected with alligator clips to some power supply
6 on the outside.

7 Q. Okay. Does the module shown in Figure 15
8 include an optical enclosure?

9 A. No, that is not apparent from any aspect in
10 here.

11 Q. Do you understand the module of figure 15 to be
12 receiving power from a wall plug?

13 A. Not directly. It would only be the power supply
14 that receives the power from the wall plug.

15 Q. Okay. How do the LEDs shown in this module in
16 Figure 15 receive their power?

17 A. They receive their power from this external
18 power supply, through the red and black cables and
19 alligator clips.

20 Q. Okay. Is there any evidence in the Ibbetson
21 report that the efficacies reported in Table 2 of the
22 Ibbetson report would include losses associated with a
23 power supply module?

24 A. No, none whatsoever.

25 Q. Dr. Wetzell, were you here when Dr. Jiao

1 testified that a lamp, by definition, refers to a lighting
2 device that includes a driver?

3 A. Yes.

4 Q. Were you here when Dr. Jiao testified that, in
5 the industry, there was very standardized definitions
6 around lamp and luminaire?

7 A. Yes.

8 Q. Okay. Now, do you agree with Dr. Jiao's
9 testimony in that regard?

10 A. No.

11 Q. With respect to standardization of definitions,
12 in particular, do you -- would you agree that, within the
13 industry, lamp had a specific definition that was
14 recognized?

15 A. No. Around the time frame, it was clearly so
16 that every lamp, every manufacturer had their own lingo for
17 what they called a lamp. And so one would always have to
18 double-check what they really mean by their terms.

19 Q. Okay. Were you here when Dr. Jiao testified
20 that the Ibbetson reference reported a wall plug efficiency
21 of a lighting device, not just an LED component?

22 A. Yes.

23 Q. Do you recall his basis being that Ibbetson uses
24 the term "lamp"?

25 A. Yes.

1 Q. Okay. Can we please pull up RX-23?

2 Dr. Wetzel, do you recognize what's shown here
3 as RX-23?

4 A. Yes. That's the '947 [sic] Ibbetson Patent.

5 Q. Okay. Can we turn to Figure 1 of the Ibbetson
6 patent?

7 Dr. Wetzel, can you explain what's shown here in
8 Figure 1 of the Ibbetson patent as block 20?

9 A. It is an LED package. It shows a diode in the
10 center and two wires sticking out, 40 and 41.

11 Q. Okay. Is this a completed lighting device?

12 A. No.

13 Q. Okay. Let's go to the Ibbetson patent, column
14 5, line 34 through 38.

15 Dr. Wetzel, do you see here in this excerpt we
16 have on the screen, Ibbetson says, "In certain embodiments
17 of the invention, the lamp, 20, can produce an output of at
18 least 75 lumens per watt at 200 milliamps drive current, in
19 some cases 80 lumens per watt at 20 milliamps drive
20 current, and in some cases at least 85 lumens per watt at
21 20 milliamps drive current"? [As read.]

22 Did I read that correctly?

23 A. In one number, you said 200, which was 20, but
24 otherwise, it was correct.

25 Q. Thank you for that correction, Dr. Wetzel.

1 What word does the Ibbetson patent use to refer
2 to element 20?

3 A. "The lamp."

4 Q. Okay. So when Ibbetson refers to a lamp in its
5 patent, does it mean a complete lighting device that
6 includes a driver?

7 A. Not in the meaning of the asserted patents.

8 Q. Okay. Let's please turn to the next reference,
9 the Medendorp reference, on the next slide in our
10 presentation, slide 39. Thank you.

11 Dr. Wetzel, what is the reference that's shown
12 on slide 39 here?

13 A. It is the Medendorp reference.

14 Q. Okay. Do you see in Figure 1A of the Medendorp
15 reference what is called a control circuit, 150a?

16 A. Yes.

17 Q. Does the Medendorp specification disclose where
18 the LED chips in the device get their drive currents from?

19 A. They get their DC drive current from that very
20 control circuit, 150a.

21 Q. Okay. Are the drive currents used for the LED
22 chips in this Medendorp reference, do those -- are those AC
23 or DC drive currents?

24 A. No. Those are DC.

25 Q. Does Medendorp disclose anything about receiving

1 AC current and then converting it to DC to supply to these
2 LEDs?

3 A. No, no, whatsoever throughout the patent, no,
4 there is no such evidence.

5 Q. Would the PHOSITA reviewing the Medendorp
6 reference conclude that the control circuits convert AC to
7 DC electricity?

8 A. No.

9 Q. Why not?

10 A. Control circuits can do a lot. They can, for
11 example, convert DC to DC upwards or downwards. Maybe they
12 also could do an AC to DC, but it could also be that
13 they're receiving their power from a DC source in itself,
14 and the lighting device would then not at all have any
15 aspect of AC in it.

16 So there's clearly no reason to assume that it
17 would only receive AC. It definitely can receive DC.

18 Q. Okay. Let's please turn to the next reference.
19 Let's turn to slide 41.

20 Dr. Wetzel, do you recognize what alleged prior
21 art reference is shown here on slide 41?

22 A. That is the Narukawa reference.

23 Q. Let's please turn to the next slide, and let's
24 look at Figure 2 of the Narukawa reference and associated
25 text.

1 In the passage that's on the right of our slide,
2 slide 42, what does Narukawa state about what the authors
3 had fabricated?

4 A. A white LED.

5 Q. Okay. Can you please explain in the plot of
6 Figure 2 from Narukawa, what does the line with the open
7 circles on that plot represent?

8 A. That refers to the efficacy as shown on the
9 left-hand axis measured in lumens per watt of that LED.

10 Q. Okay. Do those open circles, do those represent
11 the wall plug efficiency of a lighting device?

12 A. No, not of a lighting device. They're only the
13 efficiency of that LED component.

14 Q. Okay. In the passage to the right, what does
15 Narukawa disclose about the lumens per watt value obtained
16 for this LED component in the low current region?

17 A. In the low current region, it spells out a value
18 of 174 lumens per watt.

19 Q. Okay. Let's please turn to the next slide.

20 Dr. Wetzal, here on slide 43, we, again, have
21 Figure 2 from Narukawa. Do you see where in Figure 2 it
22 says, "At pulse"?

23 A. Yes.

24 Q. Do you see in the excerpt we have on this slide
25 from Narukawa, it says, "All characteristics of the LEDs

1 were measured under pulsed operation (F equals 200 hertz
2 and duty equals 1 percent) at room temperature."

3 Do you see that?

4 A. Yes.

5 Q. What does this mean?

6 A. They are operating their device on a very
7 non-standard pulse mode. Each individual current pulse has
8 only a duration of about 50 microseconds. So that is
9 definitely not a stabilized device.

10 In fact, it is probably designed to avoid all of
11 the thermal issues that are known to affect LEDs
12 components. It is more of a scientific relevance to be
13 able to do that, but not -- would not be used in any
14 reasonable lighting device.

15 Q. So when the LED components were measured at 174
16 lumens per watt, were they at thermal stability in the
17 Narukawa reference?

18 A. No, definitely not.

19 Q. Now, were you at the hearing when Dr. Jiao
20 testified that he can translate this 174 lumens per watt
21 component figure into a wall plug efficiency for a lighting
22 device?

23 A. Yes.

24 Q. Specifically, were you -- do you recall that
25 Dr. Jiao multiplied that 174 by 70 percent to arrive at a

1 wall plug efficiency of, allegedly, 119 lumens per watt?

2 A. Yes.

3 Q. Do you agree with Dr. Jiao's analysis in that
4 regard?

5 A. No. That essentially ignores the teachings of
6 the patent in addressing all of the challenges involved.
7 You cannot simply just multiply those numbers, and say now
8 you have a lighting device, as claimed.

9 There is no basis for those numbers.

10 MR. ROBSON: Thank you, Dr. Wetzel.

11 I will pass the witness at this time.

12 JUDGE CHENEY: Is there cross-examination for
13 Dr. Wetzel?

14 MR. BECK: Yes, Your Honor, there is. This is
15 George Beck for RAB Lighting.

16 JUDGE CHENEY: Welcome back, Mr. Beck. Please
17 proceed when you're ready.

18 MR. BECK: Thank you.

19 CROSS-EXAMINATION

20 BY MR. BECK:

21 Q. Good morning, Dr. Wetzel. Good to see you
22 again.

23 A. Good morning, Mr. Beck.

24 Q. I think you just opined that all of the asserted
25 claims of the '819 and the '531 Patents are enabled;

1 correct?

2 A. Correct.

3 Q. Could we look at slide 5 of your demonstrative
4 slides, CDX-5?

5 Do you recognize this as the Wands factors that
6 you just referred to?

7 A. Yes.

8 Q. I think you just ran through them, and briefly
9 mentioned the last factor you listed, the breadth of the
10 claims; correct?

11 A. Yes.

12 Q. Now, let me just first ask you very generally,
13 would you agree, having reviewed the asserted claims of the
14 patent, that they're very broad; is that a fair statement?

15 A. I would not call them very broad. They're
16 broad, yes.

17 Q. And they would cover any lighting device with --
18 essentially, with a wall plug efficiency greater than 60 as
19 long as it had an LED device or a -- I'm sorry, a
20 light-emitting diode or a least one solid-state light
21 emitter; correct?

22 A. Yes.

23 Q. Let's drill down on that a little bit, if we
24 can.

25 If we could bring up Claim 1 of the '819 Patent,

1 please.

2 So, you know, again, you would -- you would
3 agree the claim -- that Claim 1 of the '819 Patent recites
4 at least 60 lumens per watt of said electronic, but does
5 not recite any upper boundary; correct?

6 A. Correct.

7 Q. And let's bring up Claim 1 of the -- if we can
8 bring it up at the same time, Claim 1 of the '819 Patent so
9 you can refer to that as well.

10 Well, first of all, we'll just recite -- refer
11 to it. You'd agree that there's no upper boundary to the
12 at least 85 lumens per watt wall plug efficiency recited in
13 Claim 1 of the -- I'm sorry, of the '531 Patent; correct?

14 A. Correct.

15 Q. I think, as you performed your enablement
16 analysis, you indicated you considered the devices that
17 were described in both the '819 and '531 Patents; correct?

18 A. Yes.

19 Q. And for the '819 Patent, and I think you
20 referred to both the first embodiment and the second
21 embodiment; is that right?

22 A. Yes.

23 Q. You also referred to the -- to the one
24 embodiment from the '531 Patent that disclosed the test
25 results from NIST.

1 Do you recall that?

2 A. Yes.

3 Q. Okay. Now, I want to just discuss the unbounded
4 range a little bit, and I think you might agree that there
5 may have been some confusion in your prior deposition
6 testimony as to whether a device with a wall plug
7 efficiency of 100 lumens per watt would infringe Claim 1 of
8 the '819 Patent versus whether that -- whether there would
9 be enablement as to a device that had 100 lumens per watt.

10 Do you recall that?

11 A. Yes.

12 Q. Okay. I think you initially indicated that
13 there was no infringement as to 100 lumens per watt device.
14 But then clarified you thought there was enablement;
15 correct?

16 A. Yes.

17 Q. I'm sorry. Let me say that again.

18 You first clarified that there was no
19 infringement as to a device with 100 lumens per watt
20 device, but then clarified that you thought that such a
21 device would infringe Claim 1 of the '819 Patent; correct?

22 A. Yes.

23 Q. Now, is it still your opinion that as to
24 infringement, any device with a wall plug efficiency from
25 60 up to some theoretical limit would infringe Claim 1 of

1 the '819 Patent?

2 A. Yes.

3 Q. Okay. Now, let's talk about your opinion on
4 enablement as to Claim 1 of the '819 Patent. I'm going to
5 give you an example.

6 In your view, could the devices that are
7 described in the '819 Patent achieve a wall plug efficiency
8 of 100 lumens per watt?

9 A. That seems to require quite some
10 experimentation.

11 Q. Okay. So in order to build the device according
12 to the '819 Patent that had 100 lumens per watt, you
13 need -- you said quite some experimentation; correct?

14 A. Correct.

15 Q. Would you agree that it meets, you know, a --
16 more than enough to satisfy the enablement requirement?

17 A. I don't understand this question.

18 Q. Well, you just opined about sufficient
19 experimentation to satisfy the enablement requirement;
20 correct?

21 A. I believe I said the opposite.

22 Q. Let me step back and ask it a different way.

23 Is Claim 1 of the '819 Patent enabled as to
24 lighting devices that have a wall plug efficiency of 100
25 lumens per watt?

1 A. Based on the teaching of the patent, a POSA
2 could not build a device that would achieve 100 lumens per
3 watt.

4 Q. In your view, you would need additional
5 information than what was available in order to achieve a
6 device with 100 lumens per watt; correct?

7 A. Yes.

8 Q. I think you indicated that additional
9 information would be components -- LED components that
10 would allow the device to achieve 100 lumens per watt; is
11 that accurate?

12 A. Among other things, yes.

13 Q. What other things?

14 A. For example, the arrangement would have to be
15 modified, and the thermal considerations would have to be
16 modified, and maybe a better power supply, things like
17 that.

18 Q. Okay. I think we had previously discussed
19 during your deposition whether a device with a wall plug
20 efficiency of 90 lumens per watt could be made according to
21 the teachings of the '819 Patent.

22 Do you recall that?

23 A. Yes.

24 Q. In your opinion, is a lighting device with a
25 wall plug efficiency of 90 lumens per watt enabled by the

1 '819 Patent?

2 A. Based on the teachings of the '819 Patent, a
3 POSA could indeed build a device that achieves 90 lumens
4 per watt, and therefore, the claim would be enabled.

5 Q. Okay. Now, I think we've had a lot of testimony
6 about testing that was done. Including the CSA test
7 reports that I think you referenced in your demonstrative
8 slides.

9 Do you recall that?

10 A. Yes.

11 Q. Okay. And do you recall that the test data
12 submitted by Mr. Negley during the prosecution of the '819
13 Patent had test results from both CSA and tests performed
14 pursuant to the CALiPER program?

15 Do you recall that?

16 A. Yes.

17 Q. I think -- would you agree that the highest
18 reported efficacy value from those test results in the
19 Negley declaration was 79.79 lumens per watt?

20 A. Yes.

21 Q. So -- but now you're indicating that based on
22 the -- strike that.

23 You'd agree that at least as of April 2006, when
24 the CSA tests were conducted that best the inventors had
25 achieved was a device with 79.79 lumens per watt?

1 A. I would have to qualify that.

2 The best number they evidenced in those reports,
3 as we have just reviewed, yes.

4 Q. Okay. So the best in terms of test data that
5 you're -- you had reviewed in connection with your work on
6 this investigation; is that correct?

7 A. Yes.

8 Q. Let's talk about the '531 Patent, and maybe we
9 can bring up Claim 1 of the '531 Patent so you can refer to
10 that.

11 Now, again, you agree that there's no upper
12 limit to the -- at least 85 lumens per watt range specified
13 in Claim 1; correct?

14 A. Yes.

15 Q. Now, in your view, could a person skilled in the
16 art build an LED lighting device with a wall plug
17 efficiency of 200 lumens per watt based on what's provided
18 in the '531 Patent?

19 A. It probably is on the difficult edge of things,
20 and requires probably quite some experimentation.

21 Q. To save time of going through various
22 hypotheticals, what, in your opinion, is the highest level
23 of efficacy for an LED lighting device that could be
24 achieved based on the teachings of the '531 Patent?

25 A. I would -- as I stated earlier, put the mark

1 there at around 200 -- 200-something lumens per watt.

2 Q. I'm sorry. I thought you had just indicated
3 that to reach 200 lumens per watt, it would require
4 probably quite some experimentation.

5 A. Okay. So -- so if that was confusing, I
6 apologize.

7 200 would be too much to expect to achieve
8 without undue experimentation.

9 Q. Okay. What would be the highest level of
10 efficacy, in your opinion, that a person could achieve
11 based on the teachings of the '531 Patent?

12 A. Something below 200.

13 Q. Can you give us a rough number or a narrower
14 range?

15 A. I would have expected it to be around 200. Now
16 that we stated that 200 was too much, I would argue -- and,
17 of course, the numbers are rough. I would say stay below
18 200.

19 That should be possible. You know, with good
20 diligence and a certain amount of effort, that would be
21 undue.

22 Once we want to go above 200, then we'll
23 probably reach the level of where one should say it is
24 undue.

25 Q. Okay. And so as compared to the '819 Patent

1 where I think you indicated the -- the upper limit for
2 enablement was below 100, you're saying that it's somewhere
3 below 200 lumens per watt as to the '531 Patent; is that
4 correct?

5 A. Correct.

6 Q. Now, what is it, if anything, that's provided in
7 the '531 Patent that's not found in the '819 Patent that
8 accounts for that 100 lumens per watt of efficacy that you
9 just identified?

10 A. Could you please explain.

11 Q. Sure. Sorry. Let me try to rephrase that.

12 So on the one hand, when it comes to the '819
13 Patent, you acknowledge that devices could be enabled up to
14 just below 100 lumens per watt; correct?

15 A. Correct.

16 Q. Now, for the '531 Patent, your rough estimate, I
17 believe, for what could be achieved based on the teachings
18 of the '531 Patent was somewhere under 200 lumens per watt;
19 correct?

20 A. Yes.

21 Q. '531 Patent claims priority back to the '819
22 Patent; correct?

23 A. Correct.

24 Q. Okay. So what accounts for the increased
25 ability to -- strike that.

1 What accounts for the higher upper boundary as
2 to enablement that you identify for the '531 Patent as
3 compared to the upper boundary for enablement that you
4 identified for the '819 Patent?

5 A. In a short form, all the differences that are
6 textual difference between the two specifications of those
7 two patents.

8 For example, there is provided in the '531,
9 there's additional disclosure, including its test result.
10 It lists out, for example, different power supply,
11 different LED components themselves.

12 It lists out further optimization of the thermal
13 aspects of the entire lighting device, its mechanical and
14 optical aspects, as I mentioned before.

15 In particular, that is very encouraging evidence
16 of this actual NIST test results that provides numbers that
17 already reach far beyond the earlier ones.

18 Q. Again, let's focus on that.

19 So the NIST test result was 113.5 lumens per
20 watt; correct?

21 A. Yes.

22 Q. That's the test result reported in the '531
23 Patent; correct?

24 A. Yes.

25 Q. Is it your understanding that that device tested

1 by NIST is the device described in the '531 Patent,
2 including the driver and the optical components that are
3 recited in the specification of the '531 Patent?

4 A. Yes.

5 Q. Now, can we take a look at RX-658, please.

6 Do you recall seeing this document, Dr. Wetzel?

7 A. Yes. I believe it's a press release.

8 Q. All right. This is a press release issued by
9 LLF just after the NIST test results were performed;
10 correct?

11 A. I don't know which -- yes, roughly. Roughly.
12 Yes.

13 Q. Could you read the headline?

14 A. "New lamp from LED Lighting Fixture shatters the
15 world record for energy efficiency."

16 Q. So was LLF, in your view, indicating that they
17 thought they just set a new record?

18 A. That would be in wording what they said. They
19 shattered the world record. It seems that this is
20 marketing language for a value that seems to have not been
21 published before.

22 Q. As far as testing that you have identified in
23 your report in connection with this case, you haven't seen
24 any test results from LLF that indicates that they did
25 better than 113.5 lumens per watt; is that correct?

1 A. Yes.

2 Q. If you could bring back up Claim 1 of the '819
3 Patent, please.

4 Dr. Wetzel, you'd agree that Claim 1 doesn't
5 specify any particular approach to generate light -- output
6 light, for example, there's no particular color or type of
7 LEDs that are specified; correct?

8 A. It is very general requiring one light-emitting
9 diode. There is no language that would further limit that.

10 Q. Right. Just at least one, so you could have one
11 LED or more than one LED, according to Claim 1 of the '819
12 Patent; correct?

13 A. Correct.

14 Q. Okay. Now, do you recall testimony in this
15 investigation this week concerning the BSY+R approach?

16 A. Yes.

17 Q. You would agree that Claim 1 of the '819 Patent
18 is not limited to the BSY+R approach; correct?

19 A. Yes.

20 Q. The BSY+R approach is the approach that was
21 developed by Mr. Negley, and the other inventors at LLF;
22 correct?

23 A. Yes.

24 Q. Now, let's talk about that for a minute.

25 You'd agree that the BSY+R approach uses a

1 combination of two types of emitters, a red LED to emit red
2 light and then a blue-shifted yellow BSY emitter to produce
3 a yellow-greenish light; is that your understanding?

4 A. It's not only that, but that is some aspects of
5 the described technology, yes.

6 Q. Can we look at RX-90, please? I'd like to
7 direct to you slide 4.

8 This is a -- do you recognize this as the
9 presentation given by LLF, which is incorporated into one
10 of the provisionals of the '531 Patent?

11 A. I see that.

12 Q. Okay. Do you agree that slide 1 is referring to
13 a different approach; correct?

14 A. The slide that is shown says that.

15 Q. All right. It describes combining yellow LEDs
16 and red LEDs, and that's what's being referred to as BSY+R;
17 correct?

18 A. Yes.

19 Q. Then it also -- as to the BSY element, it
20 indicates that BSY emitter is emitting light that's in a
21 unique area and color space; correct?

22 A. I don't see such wording.

23 Q. Okay. Then let me help you. Look at the first
24 bullet point.

25 A. Oh, here.

1 Q. Under that, there's a dash.

2 A. Okay, yes.

3 Q. See that right there? It says, "A unique area
4 and color space," then it references CIE 1931 xy chart;
5 right?

6 A. Yes.

7 Q. What's shown in the graph on the right, that's
8 from the CIE 1931 chart; correct?

9 A. Yes. Aspects of it, yes.

10 Q. Okay. It's referring to that color emitted by
11 the BSY emitter as an unconventional color; correct?

12 A. Yes.

13 Q. Okay. Now, you'd agree that LLF relied on the
14 BSY+R approach in order to achieve improved efficacy and
15 color characteristics as compared to approaches that were
16 conventional at the time?

17 A. It seems that those were the approaches by which
18 they achieved those improvements.

19 Q. Right. And they were looking to improve on a
20 first approach that they identified as the RGB approach;
21 correct?

22 A. They contrasted their approach to that earlier,
23 typical RBG approach.

24 Q. Maybe, Mr. Haw, if we could go up in this
25 exhibit, I believe it's two slides. Could you look at

1 slide 3? Yes. Thank you.

2 So we were just talking about the RBG approach.
3 Is that -- would you agree that the reference to RBG, as
4 set forth in slide 3 of RX-90, is referring to conventional
5 red-green-blue approach?

6 A. Correct.

7 Q. That was an approach used to produce warm white
8 light; correct?

9 A. It is -- it is not evident; however, it only
10 refers to that, but it is put in that context here.

11 Q. Okay. Okay.

12 In the context of what's presented here, LLF
13 indicated that that technique had an efficacy of about 40
14 lumens per watt; correct?

15 A. Correct.

16 Q. Okay. Now, this slide by the -- by LLF also
17 referred to another conventional LED warm white approach;
18 correct?

19 A. Correct.

20 Q. That was blue dice with phosphor conversion;
21 correct?

22 A. Correct.

23 Q. You'd agree that the blue dice with phosphor
24 conversion utilizes a blue LED and a phosphor that converts
25 the light from the blue LED to a white color light?

1 A. Here, it specifically says, adding red and green
2 phosphors. So white is, then, what the human eye would
3 hopefully see as a result of that.

4 Q. Right. What the human eye would perceive as the
5 light emitted from the blue dice with phosphor conversion
6 or -- with phosphor conversion would be a result of the
7 conversion of blue light from the LED die to light that a
8 human would perceive as white; correct?

9 A. The partial conversion would, yes, create the
10 red and the green, and then the three, all of them
11 together, one would see as white of variable color
12 temperature, yes.

13 Q. Okay. And according to LLF's presentation, as
14 indicated on this slide, that approach, in their view, had
15 a low efficacy of 15 lumens per watt to 35 lumens per watt;
16 correct?

17 A. Yes, that's how they state it here.

18 Q. Okay. Now, you'd agree that the first
19 embodiment of the '819 Patent that you referenced in your
20 testimony earlier this morning utilized a BSY+R approach;
21 correct?

22 A. Can you please repeat that? Sorry.

23 Q. Sure.

24 Earlier this morning, I think you referred to
25 the first embodiment of the '819 Patent; correct?

1 A. Yes.

2 Q. And would you agree that the first embodiment of
3 the '819 Patent utilized the BSY+R approach developed by
4 LLF?

5 A. Yes.

6 Q. The '819 Patent also utilized -- has a second
7 embodiment.

8 Do you recall that?

9 A. Yes.

10 Q. You'd agree that that second embodiment also
11 utilizes the BSY+R approach; correct?

12 A. Yes.

13 Q. The test data that you referred to earlier that
14 was submitted during prosecution of the '819 Patent, that
15 resulted from tests of prototypes and finished products
16 that utilized the BSY+R approach; correct?

17 A. That's my understanding, yes.

18 Q. Okay. With respect to the '531 Patent, the
19 embodiment that includes the test data from NIST, you'd
20 agree that that utilized a BSY+R approach; correct?

21 A. Yes.

22 Q. Now, let's go back to the breadth of the claims
23 from another perspective.

24 You'd agree that all of the asserted claims of
25 the '819 and '531 Patents effectively cover LED lighting

1 devices having a wall plug efficiency greater than 60
2 lumens per watt; correct?

3 A. In one form or another, yes.

4 Q. Okay. For example, when you conducted your
5 infringement analysis of RAB's -- the RAB accused products,
6 I think you identified all of the accused products of
7 infringing at least Claim 1 of the '819 Patent; correct?

8 A. Yes.

9 Q. So let's say that I wanted to go in the business
10 of making lighting fixtures that used at least one LED, and
11 I wanted to avoid infringing the asserted claims of the
12 '819 and the '531 Patents, what could I do to avoid those
13 asserted claims?

14 A. Stay below 60 lumens per watt, for example.

15 Q. You said "for example," is there anything else?

16 A. You could use an approach that would not use
17 solid-state light emitter or an LED.

18 Q. Okay. Anything else?

19 A. You put me in the shoes of a new inventor, and I
20 should probably protect my ideas here.

21 You could modify cyclotron, for example.

22 Q. I'm not sure I follow your new idea.

23 Could you explain?

24 A. If you accelerate electrons, very high
25 acceleration, they would emit light. For example,

1 Cherenkov radiation would be a light source.

2 Obviously, I'm a little bit on the hot seat here
3 inventing, but it's not unphysical to do that.

4 Q. Okay. So you'd have to invent some entirely new
5 technology that would somehow have -- I'm sure -- I don't
6 want to speculate on what you're trying to describe on the
7 hot seat.

8 But you're not aware of any conventional LED
9 lighting technology that could be employed to avoid the
10 asserted claims of the '819 and the '531 Patents other than
11 just having a lower efficiency; is that correct?

12 A. At the heat of the moment, no. I could spend
13 some time on it and probably come up with some, yes.

14 MR. BECK: Your Honor, this -- I have another
15 line of questioning. I'm happy to keep going. I wasn't
16 sure if this was our normal lunch break time.

17 JUDGE CHENEY: It is our normal lunch break
18 time.

19 Do you have an estimate on how much more time
20 you need?

21 MR. BECK: I'd estimate maybe 20 to 30 minutes,
22 Your Honor.

23 JUDGE CHENEY: Okay. Then we should take our
24 lunch now. We'll be off the record for one hour.

25 When we come back, if someone could give me an

1 exhibit number that shows the lumens per watt of the
2 accused devices, that would be useful for me.

3 MR. BECK: I'll work to do that, Your Honor.

4 JUDGE CHENEY: Maybe a spreadsheet of some sort.

5 Okay. We're off the record for an hour. Enjoy
6 lunch.

7 (Whereupon, the lunch recess was taken, 12:31 p.m.)

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1 A F T E R N O O N S E S S I O N

2 (1:30 p.m.)

3 JUDGE CHENEY: Let's go back on the record.

4 Good afternoon, everyone. I hope you had a good
5 lunch.

6 Does someone have an exhibit number for me that
7 contains the list of lumens per watt for the accused
8 devices?

9 MR. BECK: Your Honor, I had asked my colleague.
10 I'm checking on that right now. Please give me one second.

11 MR. ROBSON: So we have those for you, Your
12 Honor, if I may.

13 This is Matt Robson.

14 JUDGE CHENEY: Go ahead.

15 MR. ROBSON: The exhibit numbers are CPX-693
16 through 696. Those are spreadsheets reporting the lumens
17 per watt figures which range from 60 to 173.7, I believe.

18 JUDGE CHENEY: Can I find those in a certain
19 witness's binder? Where am I going to actually find
20 CPX-693 through 696?

21 MR. ROBSON: So I believe those are referenced
22 in the parties' stipulation on infringement.

23 JUDGE CHENEY: Okay. So they're referenced
24 there.

25 Is that on Box? Is it in EDIS? Where can I

1 actually look at the document?

2 MR. ROBSON: Let me just confirm that for you,
3 Your Honor. We're --

4 JUDGE CHENEY: I see a folder called "Joint
5 Stipulations" in Box, and there's a document in there.
6 It's a PDF.

7 MR. ROBSON: Yes. So I was informed that PDFs
8 of these spreadsheets were uploaded to EDIS.

9 JUDGE CHENEY: So in Box, I'm looking at a joint
10 stipulation. Okay. I have now -- I am now seeing PDFs of
11 the spreadsheet in -- our files.

12 Did someone have CDX- -- sorry, give me one
13 moment.

14 I should not be looking at CDX-697, 698 and 699;
15 is that right? I was just told 693 through 696.

16 MR. ROBSON: Yes. I believe it was Schedule A
17 to the stipulation that has the exhibits.

18 JUDGE CHENEY: Okay.

19 MR. ROUSH: I believe it would be CPX-693C,
20 CPX-694C and CPX-695C.

21 JUDGE CHENEY: Okay. I'm now looking at
22 Schedule A that contains the CX-0693C, and then in the
23 middle column, I'm seeing -- when I say "middle," it's
24 approximately middle.

25 There's maybe ten columns on the left, and maybe

1 eight columns on the right, just roughly.

2 I'm seeing numbers that are to five decimal
3 points for the lumens per watt with a column that says at
4 the top "LPW."

5 Am I looking at the right thing in CX-0693C?

6 MR. ROUSH: I believe that's correct. I was
7 just trying -- my computer is trying to catch up right now.

8 Yes, they're -- oh, yes, that's correct. The
9 LPW column.

10 JUDGE CHENEY: Yes. So there are values in the
11 LPW column that are not in the range 60 to 173.7; right?

12 MR. ROUSH: Yes, Your Honor.

13 JUDGE CHENEY: Okay. I think I have what I
14 need. Thank you very much for directing me there.

15 Are we ready to resume the cross-examination
16 of --

17 MR. ROUSH: If we could, Your Honor, one more
18 housekeeping.

19 I think the most or the largest list or most
20 complete list is, I think, CX-695C. This is sort of the
21 more -- the 693C and 694C are sort of special sub-sets that
22 we had to do to sort of, like, gather the data in sort of a
23 different fashion due to the way the products are sold.

24 The bulk or the vast majority of products, I
25 believe, or SKUs are listed in 695C.

1 JUDGE CHENEY: Cree, do you agree, disagree?

2 MR. ROBSON: No, that sounds right, Your Honor.

3 MR. ROUSH: It would be the efficacy column,
4 Your Honor.

5 JUDGE CHENEY: Which is a column third from the
6 right that has -- well, let me make sure. Give me one
7 moment.

8 It would be helpful if the columns repeated
9 themselves on each page, but they do not -- the column
10 headers.

11 Okay. I'm now looking at the first page of
12 CX-0695C, and the second column from -- no, it looks like
13 the third column from the right is titled "Efficacy," and
14 it gives an efficacy to one decimal place.

15 Am I looking at the right column, Mr. Roush?

16 MR. ROUSH: Yes, Your Honor.

17 JUDGE CHENEY: Cree, am I looking at the right
18 column?

19 MR. ROBSON: Yes, Your Honor.

20 JUDGE CHENEY: Okay. Anything else -- let's
21 resume -- anything else before I resume the
22 cross-examination?

23 MR. BECK: Not for RAB Lighting, Your Honor.

24 MR. ROBSON: Not from Cree, Your Honor.

25 JUDGE CHENEY: Okay. Let's pick up where we

1 left off.

2 Dr. Wetzel, I remind you that you continue to be
3 under oath.

4 Mr. Beck, please proceed when you are ready.

5 BY MR. BECK:

6 Q. Welcome back, Dr. Wetzel. Can I direct your
7 attention to slide 24 of your demonstrative exhibits.

8 Here you listed -- what I understood is you
9 testified as considerations that are balanced by the
10 inventions of the '819 and '531 Patents; is that correct?

11 A. Yes.

12 Q. Okay. If it will help you, we can bring up the
13 claims, but would you agree that nothing in the claims
14 specify any particular optical components that the claims
15 are restricted to?

16 A. Correct.

17 Q. Same for thermal?

18 A. Yes.

19 Q. Same for electrical?

20 A. It speaks about input power.

21 Q. Can we bring up Claims 1 of both the '819 and
22 '531 Patents.

23 Does either claim specify a particular structure
24 or approach to supply electricity of a first wattage?

25 A. No.

1 Q. So the claim would cover as to electrical
2 considerations anything that supplies electricity of a
3 first wattage; is that correct?

4 A. That's correct.

5 Q. Is there any restriction as to mechanical
6 elements or structures that would limit the claims to a
7 particular mechanical approach for achieving the recited
8 wall plug efficiency?

9 A. I should note that in responding to you that the
10 term of lumens per watt was construed to be at the wall
11 plug level. So if that provides mechanical limitation,
12 then you would want to have that counted.

13 If it provides electrical aspects, then I would
14 want to have it counted towards that category.

15 But outside of that, I see in terms of
16 mechanical that it be a lighting device, and obviously is
17 the intention to provide illumination as a device.

18 Q. So in your opinion, when you -- strike that.

19 When you conducted your invalidity opinions
20 in -- I'm sorry -- your validity opinions in response to
21 Dr. Jiao's analysis, did you understand term "wall plug
22 efficiency" to require any particular optical, electrical,
23 thermal or mechanical structure?

24 A. That -- yes.

25 Q. What did you understand to be required by the

1 claims?

2 A. It would be required that such electricity is
3 provided at a customary wall outlet in the US.

4 Q. What -- what characteristics of customary wall
5 outlet in the US are you referring to?

6 A. It's one of the typical voltages of -- that are
7 typically provided in US building settings.

8 Q. Can you specify the typical voltages that are
9 typically provided in US building settings?

10 A. I think we have a couple of -- testimony on it.
11 I think the patent specification speaks about 110 volts.
12 Some buildings it's 270 volts AC. Sometimes it's referred
13 to as 120 volts AC. So numbers like that. And I think
14 another one would be 488 volts.

15 Q. Okay. So in your view, the claims are limited
16 to lighting devices that are supplied with electricity from
17 a standard US power supply; is that correct?

18 A. The term "power supply" is used in other
19 contexts, so I wouldn't mean it to describe the component
20 that converts, so provided AC voltage to the requirements
21 of the LEDs components themselves.

22 I would rather define it as what comes from the
23 power company through to your building.

24 Q. Okay. Is it your view that the use of the term
25 "wall plug efficiency" in the asserted claims require an AC

1 power supply that needs to be converted to DC?

2 A. The definition of wall plug efficiency as
3 construed makes it necessary to construe -- to include its
4 losses, if it is present.

5 Q. I'm not sure I understand your answer.

6 When you said, "the definition of wall plug
7 efficiency as construed makes it necessary to include
8 losses, if it is present" -- that's what you just said.
9 Did I understand correctly?

10 A. I believe so. I can iterate, if that wasn't
11 clear.

12 Q. Well, does that mean that, in your view, claims
13 1 of the '819 and the '531 Patent require an AC to DC
14 conversion in reference to the electricity that's supplied
15 to the lighting device?

16 A. No.

17 Q. Okay. So there could be a DC power supply; is
18 that right?

19 A. Can you please repeat?

20 Q. Yes.

21 I mean, the claims wouldn't exclude a lighting
22 device that was configured to receive a DC power supply, to
23 supply electricity of a first wattage as recited in Claim 1
24 of the '819 Patent and Claim 1 of the '531 Patent?

25 A. Correct.

1 Q. Okay. Can we turn to your prior art analysis.
2 Let's start with the Fini/Nakamura reference.

3 Do you recall that one?

4 A. Yes.

5 Q. Now, Fini/Nakamura reported certain efficacy
6 values in terms of lumens per watt; correct?

7 A. Yes.

8 Q. And just to clarify, you -- in your view,
9 there's no reason to believe that those values that were
10 reported by Fini/Nakamura were obtained in some manner that
11 would be viewed as unreliable; is that correct?

12 A. As I iterated before, I would not see how the
13 requirement of the AC supply trade as intended for the US
14 outlet would be accommodated within that device.

15 So essentially, I'm raising the concerns that
16 from as little as text as is provided there, it is -- it
17 seems impossible or questionable how all of those
18 components could work together. One or the other aspect
19 must be wrong about it, so that is the uncertainty that I
20 raise about it.

21 Q. Thanks for clarifying that.

22 I wanted to ask a somewhat different question.
23 There's been an issue in the case about whether reported
24 wall plug efficiency numbers are obtained in a manner
25 that's reliable; for example, where a device being tested

1 might be thermally unstable.

2 Do you recall that?

3 A. Yes.

4 Q. Do you have any reason to believe that the test
5 data reported by Fini/Nakamura would have been obtained in
6 a manner that would be unreliable in terms of the thermal
7 stability of the device?

8 A. Can you please show me the actual exhibit again,
9 just to confirm that I'm not confusing two?

10 Q. Sure.

11 Can we pull up JX-150?

12 And I'd be happy to pull up your slides, if
13 that's helpful as well.

14 A. Can we go to that figure that...

15 Q. Dr. Wetzell, is this the figure you're looking
16 for, Figure 64?

17 A. Yes. Yes.

18 Q. Okay.

19 A. Can you repeat your question, please?

20 Q. Sure.

21 Do you have any reason to believe that the test
22 data reported by Fini/Nakamura would have been obtained in
23 a manner that would be unreliable in terms of the thermal
24 stability of the device that was tested?

25 A. I do not have any evidence to doubt that. In

1 particular, there is no confirmational text included
2 whatsoever anywhere in the report.

3 Q. What are you referring to by "confirmational
4 text"?

5 A. There is no description provided how it was
6 measured, how it was built. That essentially is the only
7 information we achieve, we obtain about that device.

8 So it is no evidence that would refer us to any
9 explanation how it got measured or aspects thereof.

10 Q. Now, you'd agree that if a device is being
11 tested to determine wall plug efficiency, in your view, it
12 would be standard practice to wait until that device was
13 thermally stable; correct?

14 A. It is good practice, and usually, those testing
15 laboratories spell out such conditions, yes.

16 Q. Right.

17 Do you have any reason to think that the test
18 data reported by Fini/Nakamura was performed in a manner
19 that's inconsistent with the practices as usually performed
20 by a testing laboratory?

21 A. I do not have any reason to believe, other to
22 say that this is a competitive grant that tries to justify
23 the money that it received.

24 Q. I'm sorry. Could you explain your answer?

25 A. No, I'm saying this is typically a report of a

1 progress achieved in a research environment where,
2 typically, one shows the nice values, the good values, in
3 order to justify having received of money, from, for
4 example, the Department of Energy.

5 Q. Are you suggesting that the data would be
6 unreliable because Dr. Fini and Dr. Nakamura was
7 exaggerating the wall plug efficiency numbers that they
8 reported?

9 A. I don't say that they are exaggerating them, no.

10 Q. Okay. I think when this issue came up earlier
11 in the investigation, you indicated that even your students
12 would know these standard engineering practices, and to
13 wait until a device under test was stable before you would
14 test for something like wall plug efficiency.

15 Do you recall that?

16 A. Yes. I stand by that.

17 Q. So you'd agree that if your students are aware
18 of that, that Dr. Nakamura would be aware of that practice;
19 correct?

20 A. Of that practice, yes.

21 Q. Okay. Now, I think you -- one of your
22 criticisms of Dr. Jiao's analysis of Fini/Nakamura related
23 to the use of a diffuser.

24 Do you recall that?

25 A. Correct.

1 Q. Okay. Now, you -- I guess here, in my mind at
2 least, there's two possibilities. The device was tested
3 with a diffuser or without a diffuser.

4 Would you agree with that?

5 A. That leads me to speculate in guesswork. I
6 mean, it seems that we now assume the role of the engineers
7 who usually are charged with describing their product. But
8 here we are reverse-engineering what is no evidence for
9 spelled out.

10 Q. Well, if the reported efficacy numbers were
11 obtained when the device being tested had a diffuser, you'd
12 agree that any losses associated with the diffuser would
13 have been accounted for in the reported numbers?

14 A. I agree, yes.

15 Q. Okay. I understood your opinion to be that the
16 device tested likely did not have a diffuser.

17 Is that a fair statement?

18 A. That, I cannot state. That would be a
19 possibility to explain the otherwise unexplained numbers,
20 but as we saw, there is hints at other numbers that would
21 probably require to build an elaborate model about how to
22 arrive from one numbers to the others.

23 So I was raising the concerns. I cannot say
24 that I found out in which configuration the device was
25 measured.

1 Q. Okay. Well, let me ask you this: You would at
2 least agree that the asserted claims of the '819 and the
3 '531 Patents don't specify a lighting device having or not
4 having a diffuser; correct?

5 A. They're not specific about that, yes.

6 Q. So if the device that was tested by
7 Fini/Nakamura did not have a diffuser, it still would be
8 considered a lighting device, as that term is used in the
9 asserted claims of the '819 and '531 Patent; correct?

10 A. It would speak to not the invention. It would
11 be a device that is hardly distinguished from an LED module
12 or an LED array. It would not be the light fixture that
13 was invented in here. The lighting device, more
14 specifically.

15 Q. So the light fixture that Fini/Nakamura
16 discussed in their article, in your view, could not be
17 considered a lighting device, according to the asserted
18 claims unless it had the diffuser on it; is that
19 essentially what you're saying?

20 A. In reference to the claim, I'm not stating that,
21 no, but I'm stating that in reference to the specification
22 of the patents.

23 Q. Okay. You're referring to your testimony about
24 what the invention was about in your view --

25 A. Correct.

1 Q. -- that's described in the specification? Okay.

2 But that's, I think we agree, not what's in
3 the -- there's no requirement in the claim for diffuser/no
4 diffuser; correct?

5 A. Yes.

6 Q. Okay. Now, you also pointed to the use of a
7 reflector in the device described by Fini/Nakamura.

8 Do you recall that?

9 A. There is one identified. That's why I'm
10 referring to that, yes.

11 Q. Right. I understood your testimony was to the
12 effect that the reported wall plug efficiency numbers did
13 not account for losses associated with the reflector that's
14 mentioned in Fini/Nakamura; is that correct?

15 A. I did not say it does not. I stated it is
16 incomprehensible, it cannot be reconstructed from the
17 information provided just how those losses would go
18 together with the other numbers provided. So it seems
19 unexplicable.

20 Q. Okay. Again, I think you'd agree that either
21 the device tested had a reflector or did not have a
22 reflector, we don't know -- according to your testimony, we
23 don't know for sure, but it's one or the other; correct?

24 A. Barring other odd configurations, yes.

25 Q. Okay. Now, assuming that there was no reflector

1 included in the device tested by Fini/Nakamura as you've
2 posited, I think you indicated that the reflector would
3 account for 92 percent loss -- I'm sorry, an 8 percent
4 loss, the reflector's only 92 percent efficient; is that
5 right?

6 A. I don't think -- I don't recall the very numbers
7 now, but if those are the numbers that I mentioned, then I
8 would agree with that.

9 Q. Okay. Whatever the number, I mean, you would
10 agree that for the reflector, not all of the lights that's
11 produced by the device discussed by Fini/Nakamura would be
12 subject to reflection at the time the device is being
13 tested; right?

14 A. At that point, it's very difficult to stay in
15 the position of a POSITA. We are obviously now drawing on
16 my university professor experience and imagination. So I
17 want to remind you of that, that we're probably going out
18 of the POSITA situation.

19 Q. But even from your perspective as an expert in
20 the field, you'd agree that not all of the light produced
21 by whatever device was tested by Fini/Nakamura would be
22 subject to reflection; correct?

23 A. It seems that the reflector is placed in such a
24 way that would make this statement true. Yes.

25 Q. And I think you also expressed concerns about

1 Fini/Nakamura with respect to the lack of explanation of
2 the power supply being used.

3 Do you recall that?

4 A. Correct.

5 Q. Okay. Now, you would agree that the -- whatever
6 the device was that was tested and had efficacy numbers
7 reported, had to have been connected to some kind of power
8 supply; correct?

9 A. Correct.

10 Q. At the time the test was conducted, wouldn't the
11 test account for whatever losses would be attributable to
12 the power supply?

13 A. This would be very highly unlikely. Doubtful.

14 Q. Now, you'd agree at least that the lighting
15 device that was being tested would be drawing power from a
16 standard power supply?

17 A. What do you mean by "standard power supply"?

18 Q. Well, I guess maybe we can refer back to your
19 earlier testimony, talking about power supply commonly used
20 in the US.

21 A. In a lab, yes. Oh, in the US?

22 Q. Yes, in the US.

23 A. Yes. I furthermore believe that it would most
24 likely be of -- deemed reasonable, this being a research
25 lab, that it is one of those 20, 40-pound variable

1 controllable stabilized power supplies that one typically
2 finds in laboratory settings.

3 Q. Okay. Maybe we could move on to the Ibbetson
4 reference. This is JX-151. Actually, why don't we look at
5 your slide 38, that might be more helpful. Slide 38.

6 Now, do you recall that you provided some
7 testimony this morning about the clips supplying power to
8 the device shown in Figure 15?

9 A. Yes.

10 Q. I think your testimony is that in your opinion
11 those clips would be supplying DC power to the device shown
12 in Figure 15, the lamp module; correct?

13 A. Yes.

14 Q. Now, whatever power is being supplied to that
15 lamp module at the time test data was being obtained as to
16 the efficacy of that device, you'd agree that any losses
17 associated with the power supply would be accounted for in
18 the test data?

19 A. No. Definitely not.

20 Q. Why is that? Why, in your opinion, is that the
21 case?

22 A. Because we don't have any evidence of the power
23 supply used, and typically, those power supplies provided
24 are so highly versatile, and accommodating that they would
25 be a major factor in reducing any achieved -- or efficiency

1 measurement.

2 So it is not -- how should I say that? For
3 once, we have no evidence that it is taken from the wall
4 plug, and the other argument is that it would have been
5 pointed out in the text if provisions would have been made
6 to include those in their measurement.

7 Q. So in your view, unless an article like Ibbetson
8 or Fini/Nakamura article, you know, expressly says that the
9 power is from an AC power supply, and that the losses are
10 accounted for, that the reported efficacy number is not the
11 same as what the claims require.

12 Is that your opinion?

13 A. Correct.

14 Q. Can we look at the Narukawa reference, or
15 discuss the Narukawa reference. I think -- I'll try to
16 find your slide, if that will be helpful.

17 Do you recall that you were distinguishing
18 Narukawa based on the use of a pulsed power supply?

19 A. Correct.

20 Q. You would agree that -- and this is in your
21 slide 42; correct?

22 A. Correct.

23 Q. Okay. You would agree that regardless of
24 whether the power supply to the device is pulsed or not,
25 it's still being supplied with electricity of a particular

1 wattage; correct?

2 A. Yes.

3 Q. Now, I don't believe there's any dispute that
4 Narukawa was talking about, you know, a component-level
5 LED.

6 That's what you pointed that out this morning;
7 correct?

8 A. Correct.

9 Q. Okay. And I think you criticized Dr. Jiao's
10 estimation of percentage loss that would happen if Narukawa
11 was used in a lighting device. Do you recall that?

12 A. Yes.

13 Q. Okay.

14 Do you have any estimate of your own of what the
15 likely loss would be if Narukawa was used in a lighting
16 device?

17 A. The first -- I would have to start assembling
18 such a calculation now based on my present status as a
19 technical expert; obviously not a POSITA now.

20 For example, the current provided is driven only
21 for 58 microseconds. It's pulse at a time. If you
22 multiply that by 100 to achieve a continuous current, you
23 would have a substantial higher thermal load to every
24 element in the lighting device.

25 So I think we heard earlier in this

1 investigation that any degree of junction temperature
2 increase de-rates the performance by a significant amount.

3 I don't have any numbers handy here right now,
4 but those numbers would go down rapidly. Seems -- you
5 know, I -- at the same time was working on my green LEDs.
6 When I first saw about their work being pulsed, I said,
7 gee, that is so outrageous.

8 We immediately started building that and see
9 where we could get by essentially trying in, thus, strange
10 direction.

11 Q. So, Dr. Wetzel, is it fair to say you don't have
12 an estimate based on your review of Narukawa as to what the
13 likely loss would be if Narukawa was used in a light
14 fixture?

15 A. That's fair to say, yes.

16 MR. BECK: Okay. I have no further questions at
17 this time.

18 JUDGE CHENEY: Okay. I don't think I have very
19 many questions for you at this point, Dr. Wetzel, but I do
20 have one.

21 What is the most efficient light fixture that
22 you know about today that produces white light in terms of
23 lumens per watt?

24 THE WITNESS: I don't have a number ready on top
25 of my mind. I would have to think about it. It could be

1 reaching 200.

2 It could be, but it could be 10 percent above
3 it. It could be 10 percent below it.

4 I've seen a high value in one of the asserted
5 products. I would otherwise refer to the theoretical work
6 that I was alluding to earlier, which puts the numbers
7 around 250 lumens per watt.

8 Wherever it has been achieved, I cannot be
9 positive about that. But I thought it was around 200 or
10 something.

11 JUDGE CHENEY: Okay. It has been represented
12 before -- well, actually right after our lunch break, I was
13 talking with the parties about where I could look at the
14 lumens per watt, the devices accused in this investigation,
15 and it was represented to me that the high end of that in
16 this investigation was 173.7.

17 Does that roughly match with your understanding
18 about the most efficient devices involved in this
19 investigation?

20 THE WITNESS: Yes.

21 JUDGE CHENEY: Okay. So if I'm understanding
22 your testimony right, there are other devices out there,
23 not in this investigation, that are even more efficient
24 that you're aware of?

25 THE WITNESS: Per my understanding, not

1 necessarily in a commercial product. Most likely, more
2 laboratory reported values, or, and in one case, a
3 theoretical simulation.

4 JUDGE CHENEY: Okay. I want to make sure I
5 understand your testimony about theoretical limits.

6 Do you remember you and I talked about this
7 earlier in the week?

8 THE WITNESS: Yes.

9 JUDGE CHENEY: You gave me two different
10 numbers, 200 lumens per watt and 300 lumens per watt.

11 THE WITNESS: Yes.

12 JUDGE CHENEY: Sounds like we're now putting --
13 we're narrowing that a little bit to something more
14 specific; is that right?

15 THE WITNESS: Yes.

16 JUDGE CHENEY: Were you in the hearing when
17 Dr. Jiao was asked similar questions about theoretical
18 limits?

19 THE WITNESS: I believe -- yes. Yes, I think I
20 saw that episode, yes.

21 JUDGE CHENEY: Dr. Jiao was quite insistent that
22 the theoretical limit is not a range, but it's a specific
23 number.

24 Do you recall him giving him that --

25 THE WITNESS: Yes. Yes.

1 JUDGE CHENEY: -- giving that testimony?

2 Do you agree or disagree with that?

3 THE WITNESS: I disagree with his
4 mischaracterization -- of his characterization of my
5 testimony at the time.

6 I had given a number for a light source that
7 would not be called white, what its maximum value would be,
8 where I said 600 to 700. You probably recall that. And he
9 said, it is not a range. It is 683.

10 I meanwhile looked up, and, yes, this is the
11 number. 683 is the number that I had not on top of my
12 memory, but I was describing. As by bracketing between 600
13 and 700, I was describing this number.

14 But that was referring to what -- as he
15 described it better, a very narrow wavelength light source,
16 and I think he said 555 Nanometers. So I confirmed that.

17 But illumination under that light, everything
18 would look either green or black. So it's a green/black
19 contrast.

20 A light source that human eyes need to see
21 different colors would necessarily encompass a wider
22 spectrum than just a narrow line at 555 nanometers. The
23 human eye wants to see from roughly 400 nanometers to
24 roughly 650 nanometers, and it wants to have a light source
25 in that spectrum to distinguish colors that are otherwise

1 identified as having wavelengths in that spectrum.

2 The eye is somewhat tolerant, how much it needs
3 for each of those, but in order to see what we call white,
4 preferably a broad spectrum within that range is present.
5 Else, we have low color rendering index.

6 And as I said in the one extreme example,
7 everything looks green/black, which would be a very low
8 color rendering index.

9 Now, these compromises, to what extent one would
10 call something a pleasant white, a decent white, takes away
11 from the realistically achievable, or let's say, even
12 maximum theoretical possible limit of efficacy.

13 So, for example, because blue is -- might be
14 necessary for you to -- for color rendering purposes, blue
15 is very inefficient in producing lumens. So you need a lot
16 of photons to create a few number of lumens.

17 So this taxes your maximum achievable efficacy
18 away from the high numbers that I mentioned, the absolute
19 maximum 683.

20 So if you balance some compromise, and say
21 people might be happy with that, then maybe you can, in the
22 absolute, realistic -- or I should -- I'm mixing terms
23 here.

24 300 lumens per watt, by some theory estimates,
25 if there's no electrical losses, should already -- should

1 possibly be something that could be achieved, and still be
2 called white light.

3 As it stands here, we're obviously far away from
4 that. And it presently stands, you ask me -- I recall
5 values of having seen around 200. I cannot be for sure if
6 it's slightly above 200 or below 200. I knew the values of
7 173 in the asserted product, and I was a little bit
8 surprised how high that value actually is.

9 JUDGE CHENEY: Thank you. I have no other
10 questions for this witness.

11 Is there any redirect?

12 MR. ROBSON: No redirect, Your Honor.

13 JUDGE CHENEY: Okay. Thank you again,
14 Dr. Wetzel. Your testimony has really helped me understand
15 this case.

16 THE WITNESS: Thank you, Your Honor.

17 JUDGE CHENEY: You may be excused.

18 Let us now see if Cree has any other rebuttal
19 witnesses to call?

20 MR. ROBSON: Your Honor, we're just switching
21 over attorneys. We'll be just a moment.

22 JUDGE CHENEY: Okay. Let's go off the record
23 while we get set.

24 (Off the record.)

25 JUDGE CHENEY: We're back on the record now

1 after preparing for Cree's next rebuttal witness.

2 I don't think the witness has actually been
3 called yet, Mr. Hamstra, so please call the witness.

4 MR. HAMSTRA: I believe we called Dr. Lebbby for
5 his opening testimony, but Cree Lighting calls Dr. Lebbby on
6 rebuttal.

7 JUDGE CHENEY: Okay. Welcome back, Dr. Lebbby.

8 I'll remind you that the testimony that you're
9 about to give remains under oath just as you took the oath
10 earlier in the week.

11 MICHAEL LEBBY, PhD,
12 a witness, having been previously sworn, was examined and
13 testified as follows:

14 JUDGE CHENEY: The floor is yours, Mr. Hamstra.

15 MR. HAMSTRA: Thank you, Your Honor.

16 DIRECT EXAMINATION

17 BY MR. HAMSTRA:

18 Q. Good morning by you, Dr. Lebbby, I believe.

19 First of all, can you remind us what patent you
20 are opining on today?

21 A. The '570 Patent.

22 Q. What will be the subject matter of your
23 testimony today?

24 A. The subject matter is the optical secondary lens
25 that sends lighting in a preferential direction from the

1 '570 Patent.

2 Q. Thank you.

3 Were you here for Mr. Wilcox's testimony on
4 Monday?

5 A. Yes, I was.

6 Q. Mr. Jay, could you pull up the Day 1 trial
7 transcript at page 56, lines 11 through 23?

8 Dr. Leiby, which elements of the lens Mr. Wilcox
9 developed relating to the '570 Patent did he identify as
10 important?

11 A. So we can see in lines 12 and 13 of this
12 excerpt, air gap is one which relates to the back cavity,
13 and in line 13, we can see TIR wall, total internal
14 reflection wall, which is the primary back reflecting
15 surface.

16 Q. Thank you, Dr. Leiby.

17 Did you happen to prepare some demonstratives
18 for your testimony today?

19 A. Yes, I did.

20 Q. Mr. Jay, can we call up CDX-0006.05?

21 Can you identify where those features are shown
22 on this annotated version of Figure 14 of the '570 Patent?

23 A. Yes, I can.

24 The reflecting primary back surface I have
25 annotated in that purple curved contour on Figure 14. And

1 the back cavity, as Mr. Wilcox calls the air gap, I have
2 annotated in yellow shading.

3 Q. Thank you, Dr. Leby.

4 Dr. Leby, do you understand that RAB's prior
5 art and validity defenses are limited to obviousness over
6 Minano alone or in combination with other references?

7 A. Yes, I understand obviousness based on Minano.

8 Q. I want to ask you a few questions about that
9 Minano reference.

10 First of all, could you share with me the
11 intended application of the embodiments of Minano relied
12 upon by Dr. Josefowicz?

13 A. Yes.

14 Minano talks about forward lighting for motor
15 vehicles, motorcars, lorries, trucks, vehicles that would
16 need lighting at their front.

17 Q. How does that application described in Minano
18 compare to the street lighting and similar applications
19 intended for the '570 Patent?

20 A. Well, it's completely different. The forward
21 lighting for a vehicle needs to illuminate the road ahead
22 of you, so when you are traveling, you can actually see
23 things, especially at nighttime.

24 In the '570 Patent, the light is sent to a
25 preferred direction so it can illuminate a roadway in a

1 stationary position.

2 Q. Mr. Jay, could you pull up CX-968, and Figures
3 28 and then 31 thereof?

4 First of all, Dr. Lebbby, do you see the Figures
5 28 and Figure 31 of Minano shown in front of you?

6 A. Yes, I do.

7 Q. Did you find that there were any substantive
8 differences between these two embodiments of Minano?

9 A. I don't see any substantive differences. I
10 mean, both have a primary lens, both have a secondary lens.

11 In Figure 28 on the left, we can see the output
12 to surface, 94, is circular or ellipsoid, and we can see
13 the output surface in Figure 31 on the right, which is
14 rectangular, that's 104.

15 Generally, they're very similar.

16 Q. Thank you.

17 Mr. Jay, can you turn to CDX-0006.009?

18 So with respect to these figures of Minano,
19 could you explain a little bit more how the -- well, what
20 you called the primary optic of Minano works?

21 A. Yes.

22 We can see the primary optic in Figure 28 on the
23 left, and I have annotated one side of it in yellow, that's
24 the side that has the reflector.

25 I've also annotated the primary optic in Figure

1 31, what I've annotated in yellow. As you can see from the
2 specification in the top right-hand corner of the slide,
3 the spec talks about metallized reimaging reflector, 106,
4 is using the same term in the lower left-hand corner of
5 Figure 28.

6 Q. Can you explain a little bit about how that
7 primary optic operates given that reimaging reflector on
8 one half?

9 A. So that primary optic works in actually allowing
10 light to go on the left-hand side of that dotted line, and
11 the light going on the right-hand side.

12 So it prevents light from going on the
13 right-hand side.

14 Q. Thank you.

15 Mr. Jay, can we turn to slide 11?

16 Dr. Leby, this includes a little bit larger
17 annotated version of Figure 31. Let's start with the
18 dotted line in purple.

19 What is that showing?

20 A. That purple vertical dotted line is where I have
21 annotated the emitter axis.

22 Q. Is any part of the secondary optic of Minano to
23 the right side of the emitter optic -- or emitter axis?

24 A. Not at all. I mean, the optic is positioned to
25 the left side of the emitter axis.

1 Q. Dr. Leby, what do the blue lines represent in
2 this annotation?

3 A. So those are ray traces that I've hand drawn. I
4 didn't use CAD. And I depicted where the direction of
5 light would leave out of surface 104.

6 And I read the spec and the spec indicates that
7 this is a forward driving light, where light generally goes
8 in the direction of the emitter axis.

9 Q. So how do the blue rays you drew exiting surface
10 104 compare to the emitter axis?

11 A. Well, as far as I can tell from the teaching of
12 the Minano patent, they look mostly parallel. You know, at
13 least in line. They certainly are not off-axis.

14 Q. Let's turn to JX-005 at column 1.

15 Beginning at line 48, Dr. Leby, could you
16 explain what the '570 Patent background teaches about
17 approaches like Minano that block off half of the emitted
18 light?

19 A. Yeah.

20 The '570 Patent actually criticizes these types
21 of lens structures with reflectors as being reasonably
22 inefficient. So the inventive thing from my standpoint
23 from the '570 Patent is to circumvent that, and they
24 certainly have done that through things like the TIR
25 reflector, et cetera.

1 Q. Mr. Jay, can we turn back to CDX-6, and let's go
2 to slide 8?

3 The type of optics shown by Minano, which is
4 entirely on one side of the emitter axis, what does Minano
5 refer to that type of optic?

6 A. You can see in the top right-hand corner, I have
7 annotated in yellow, Minano calls this is a decentered
8 lens.

9 And so that is a lens that is actually, as you
10 can see from Figure 31 in the center, is to the left-hand
11 side of that emitter axis.

12 Q. And -- oh, sorry. Go ahead, Dr. Leppy. You can
13 continue.

14 A. I would also add that if you wanted to, for
15 example, name that side of the lens to be the preferred
16 side, then you would not have a non-preferential side,
17 because there's no light going there in the first place.

18 Q. If there is no non-preferential side, what is
19 the implication of that to the claims of the '570 Patent,
20 which recite a back sector and back cavity on that side?

21 A. So first of all, if you didn't have a
22 non-preferential side, you wouldn't have a back cavity. So
23 not having preferential, non-preferential sides, then it
24 wouldn't meet the claims of the '570 Patent.

25 Q. What's the implication of this decentered

1 approach to whether there can be a back sector centered on
2 the non-preferential side?

3 A. It wouldn't exist.

4 Q. So what does the decentered approach of Minano
5 teach you about whether it's possible to satisfy the claims
6 of the '570 Patent with a decentered lens like this?

7 A. In my opinion, this cannot satisfy the claims of
8 the '570 Patent.

9 Q. Dr. Leby, I think I only have one last question
10 for you.

11 When was the first time you heard
12 Dr. Josefowicz's Minano opinions he delivered yesterday in
13 this case?

14 A. Yesterday.

15 MR. HAMSTRA: I pass the witness, Your Honor.

16 JUDGE CHENEY: Okay. Is there cross-examination
17 for Dr. Leby?

18 MR. ROUSH: Yes, Your Honor.

19 JUDGE CHENEY: Please proceed when you're ready,
20 Mr. Roush.

21 MR. ROUSH: Brad Roush on behalf of RAB
22 Lighting.

23 CROSS-EXAMINATION

24 BY MR. ROUSH:

25 Q. Good afternoon, Dr. Leby. I just have very few

1 questions for you.

2 Now, you were just opining on Minano; correct?

3 A. That is correct.

4 Q. Are the claims of the '570 Patent limited to
5 roadway lighting?

6 A. I believe you asked me that question in my
7 deposition. I believe, if I remember correctly, the claims
8 of the '570 Patent don't call out roadway lighting, but
9 have lighting applications in general. I believe that was
10 noted in the background, if I remember correctly.

11 Q. The claims of the '570 Patent could cover
12 automotive lights; correct?

13 A. I believe they could, yes.

14 Q. Could we pull up slide 8 of your presentation?

15 The figure in the middle, that's a ray trace
16 diagram; correct?

17 A. I have annotated Figure 31 with three hand-drawn
18 ray traces, that is correct.

19 Q. So you didn't use any computer optical
20 simulation software in order to create this diagram;
21 correct?

22 A. That is correct.

23 Q. In your ray trace diagram, there's no light
24 going to the right side of the emitter axis; is that
25 correct?

1 A. I haven't shown that light exiting outer surface
2 104 going to the right. I looked at what the patent,
3 Minano patent was teaching me, and that's the forward
4 direction of illumination.

5 Q. Did you use a particular formula in creating
6 this ray trace diagram?

7 A. No, I did not use a particular formula. These
8 lines are actually drawn, I think, using PowerPoint, so the
9 accuracy of the graphics package is reasonably rough.

10 What I did was is I looked at what the Minano
11 patent teaches a person of ordinary skill in the art, and
12 that's forward direction lighting for motor vehicles,
13 lorries and trucks and things.

14 So clearly, the intent is to have light going,
15 what I determined, is parallel to the emitter axis.

16 Q. So would you agree that these could be off by a
17 few degrees; is that correct?

18 A. Well, a few degrees, I can accept, but we have
19 to put ourselves in the position of, you know, the driver
20 of a motor vehicle at night. I mean, the '570 Patent
21 teaches that the preferred direction is 30 or 40 degrees.

22 Now, if we applied that into motor vehicle, then
23 I wouldn't be able to see and drive the car. One or two
24 degrees, as you know from a headlight being -- I believe
25 it's also called out in column 1 of the '570 Patent --

1 sorry, of the Minano patent, that part of the design
2 criteria is to reduce glare in oncoming vehicles.

3 So, yes, from a practical standpoint, it could
4 be, you know, a half a degree, one degree, but it's
5 certainly not going to be 30 or 40 degrees.

6 Q. So it may not be actually parallel to the
7 emitter axis, but your understanding is it could be some
8 reasonable level close to parallel; is that what you're
9 saying?

10 A. Well, there's another embodiment in the
11 Minano -- I believe it's Figure 15 -- that shows a very
12 nicely collimated beam. I believe it may be one degree off
13 horizontal, but, you know, you look at the teachings of
14 what Minano gives you, and I'll accept a half degree or a
15 degree because that's normal with headlights.

16 It's certainly not going to be off axis as has
17 been construed from a preferential direction from the '570
18 Patent.

19 Q. Now, in this simple ray trace diagram, all of
20 the light is going to the left side of the emitter axis; is
21 that correct?

22 A. Well, Minano teaches that there's no way light
23 can go to the right-hand side of that emitter axis because
24 it's a covered reflector.

25 Q. The right hand of the emitter axis, that's the

1 non-preferential side?

2 A. Well, I'm only looking at what the opposing
3 witness gave in their expert report, and that was they
4 called this side the preferential side. So for argument's
5 sake, I have just used that same analogy.

6 If you call this side the preferential side,
7 then there won't be a non-preferential side.

8 Q. So the claims of the '570 Patent require a
9 preferential side and a non-preferential side; correct?

10 A. Certainly, that's noted in the spec in the
11 claims.

12 Q. So is it your opinion that the non-preferential
13 side of the emitter axis requires at least some light to be
14 emitted in that direction? Am I correct in that?

15 A. Well, if you look at what the '570 Patent
16 teaches you is that some light does go to the
17 non-preferential side, to the opposite side of the emitter
18 axis, and encounters a TIR, and then gets reflected back.

19 This -- this is a decentered lens with nothing
20 on one side of the emitter axis. Whether you call it
21 non-preferential or preferential, it's not even close.

22 Q. If you have a light in the emitter axis, does
23 the '570 Patent require at least some light to go to the
24 non-preferential side of the emitter axis?

25 A. Well, Figure 14 shows you the light rays, and

1 you can -- if I remember correctly, to the left of the
2 emitter axis is the non-preferential side, and I do believe
3 there are light rays going on the left, and I believe
4 there's light rays going on the right.

5 In this Figure 31, there's no light rays going
6 to the right of the emitter axis. So it's designed as a
7 decentered optic, as indicated in the Minano teachings.

8 Q. So is there -- can you -- is there a minimum
9 amount of light that must go to the non-preferential side,
10 according to the claims of the '570 Patent?

11 A. I don't believe that the '570 Patent teaches a
12 minimum or maximum. It shows that there is light going to
13 the left of the emitter axis, to the non-preferential side,
14 and there's light going to the right of the emitter axis on
15 the preferential side.

16 Q. Can you turn to, I believe it's RDX-17. This is
17 an annotated version of the drawings you provided of Figure
18 31 of Minano.

19 Because there are different -- different angles,
20 what comes out of the optic is also at different angles;
21 correct?

22 A. I don't understand your question.

23 Q. Well, you know, when you have the light shown
24 here -- like, the light is coming out of the optic at 107;
25 correct?

1 A. I can see that.

2 Q. And it's going to hit the lens where there's red
3 circles; correct?

4 A. Yes.

5 Q. Then there's going to be some refraction once
6 the light encounters the lens; correct?

7 A. Yes. That -- there will be some optical
8 refraction, as I've indicated, by the kink in the blue
9 line.

10 Q. But you don't know the incident angles in
11 Minano; correct?

12 A. As I indicated, these -- this is a hand-drawn
13 ray trace. I don't have a lot of the details of the
14 materials, and how the sawtooth is formed.

15 But I looked at the teachings of Minano for
16 forward illumination lighting for, you know, motorcars and
17 lorries and trucks, and things like that, and that's
18 clearly in a non-off-axis scenario, and I've drawn that.

19 Q. So if the rays are incident on the facets and
20 the optics, what's shown here is the sawtooth parts are
21 incident angles between 0 and 90 degrees, you would have an
22 array of angles; correct?

23 A. I'm not sure I follow you.

24 Q. But when the light is bouncing off -- it's going
25 to not necessarily -- I mean, the light's going to enter

1 the lens, and then it's going to spread out.

2 It's not just going to be a pure, like, one
3 angle of direction; correct?

4 A. So what I have indicated here is my
5 understanding. As you can see, what's highlighted in the
6 slide in the annotated yellow, the light is redirected
7 upwards. So it's very clear that it's being directed
8 upwards to exit through rectangular top phase 104 for a
9 forward lighting driving situation.

10 So the best of my knowledge, this is where the
11 ray trace would be.

12 Q. In fact, the rays coming out of lens, that would
13 mimic or correspond to the angles at which the rays would
14 fan out from the emitter; is that correct?

15 A. Well, you have a sawtooth waveform here, and
16 that waveform is designed to redirect the light upwards, as
17 indicated in the specification.

18 Q. So the rays, when they're directed upward would
19 not necessarily be in the parallel to the emitter axis
20 direction; correct?

21 A. Well, that's the ray traces I've drawn. So my
22 understanding is that for a headlight to work, you want to
23 have the rays going out, as I -- best as I could understand
24 it, parallel to the emitter axis.

25 Q. So, Dr. Leiby, are the refractive rays you've

1 drawn from a light source, are they in the off-axis
2 direction?

3 A. Well, the light that exits the optic surface 104
4 is reasonably, as best as I can see, parallel to the
5 emitter axis, and that is not off-axis. That is actually
6 offset and parallel.

7 Q. But the rays that you've drawn here, as they
8 leave the actual emitter, they are in the off-axis
9 direction; correct?

10 A. So the rays as they leave 107 of the primary
11 lens, and as they enter the secondary lens, are certainly
12 off-axis to the emitter axis, but that's not the criteria.

13 The criteria is that the rays leaving outer
14 surface 104 are reasonably parallel to the emitter axis,
15 and that's the criteria.

16 Q. So you would agree with me that at least some
17 refraction is taking place in the Minano lens; is that
18 correct?

19 A. So we can see in the secondary lens, I've
20 actually depicted some optical refraction as the rays enter
21 the sawtooth, and as they hit the total internal reflector
22 to get redirected upwards and exit to the rectangular top
23 face.

24 Q. So would these rays -- could you turn back to
25 CDX-006, slide 6. I believe -- I'm sorry. Go back to the

1 slide 8. Yes, that's the slide we're looking for.

2 Are you interpreting -- so Minano references
3 these -- the rays of Minano going in an upwards direct; is
4 that correct?

5 A. Well, Minano teaches that the optical rays that
6 exit that square outer surface 104 are going upwards, and
7 it's in an automotive forward driving light application.

8 Q. So are you interpreting "upwards" to mean
9 exactly orthogonal?

10 A. Orthogonal to what?

11 Q. The emitter axis.

12 Are you interpreting -- are you interpreting --
13 strike that.

14 Are you interpreting "upwards" to mean exactly
15 orthogonal to the emitter plane?

16 A. Well, I wouldn't use the term "exactly" because
17 I've done a hand drawing ray trace. And as I have already
18 indicated on the record, when you are looking at the
19 driving lights for a vehicle, Minano also indicates that it
20 wants to be able to reduce the glare from oncoming
21 vehicles.

22 And I've already indicated on record -- I mean,
23 it's plus or minus a half a degree or a degree, that's
24 fine. It's mostly parallel to the emitter axis, and that
25 will be orthogonal to the emitter plane, which is

1 orthogonal to the emitter axis, as indicated in the '570
2 Patent.

3 MR. ROUSH: No further questions.

4 JUDGE CHENEY: Okay. I don't think I have any
5 other questions for you, Dr. Lebbby.

6 Is there any redirect?

7 MR. HAMSTRA: No, Your Honor.

8 Thank you very much, Dr. Lebbby.

9 THE WITNESS: Thank you.

10 JUDGE CHENEY: Thank you, Dr. Lebbby. Your
11 opinions and testimony have helped me understand this case.

12 You're excused.

13 Does Cree call any more witnesses in rebuttal?

14 MR. HAMSTRA: Your Honor, Cree Lighting rests
15 its case.

16 JUDGE CHENEY: Okay. Okay. Are there any other
17 witnesses to be called at all from RAB?

18 MR. ROUSH: No, Your Honor.

19 JUDGE CHENEY: Okay. So it sounds like we
20 should be taking our afternoon break.

21 During the break, I would like you to coordinate
22 on the final motion for admission of exhibits, and,
23 Counsel, will the court reporter have that final list
24 today?

25 MR. ERWINE: Your Honor, I can speak to that.

1 That is our intent. I can't guarantee it, but I certainly
2 am hopeful that by 3:00 we'll be able to have that list
3 finalized, and provide it to the court reporter.

4 JUDGE CHENEY: Okay. I want it to be accurate,
5 so don't -- don't rush unnecessarily. We'll take whatever
6 time we need right now to get it all correct.

7 So I will leave this platform open, and I will
8 know that you're ready to come back on the record when I
9 see your video tiles appear unless -- are you going to be
10 negotiating through this platform or in another way?

11 MR. ERWINE: I believe we'll do it another way,
12 Your Honor.

13 JUDGE CHENEY: Okay.

14 Anything else that we should talk about before
15 we take this break from Cree's perspective?

16 MR. ERWINE: The only thing that I was going to
17 raise, Your Honor, I think it can certainly wait until
18 after the break, was the parties have to discuss page
19 limits for the post-hearing briefing -- post-trial
20 briefing.

21 JUDGE CHENEY: Okay. Is there a proposal you
22 want me to be thinking about during the break?

23 MR. ERWINE: There is, Your Honor. The proposal
24 is similar to the one that we did in 1168 where the parties
25 would have 50,000 words that they could use across the two

1 briefs.

2 JUDGE CHENEY: How does RAB feel about that?

3 MR. ROUSH: RAB joins the proposal. We agree.

4 JUDGE CHENEY: Okay. I will noodle on that
5 during the break.

6 Anything else that we should talk about?

7 MR. ERWINE: Nothing else from Cree, Your Honor.

8 MR. ROUSH: Nothing else from RAB, Your Honor.

9 JUDGE CHENEY: I'm just looking through my
10 notes.

11 Okay. Let's take a 15-minute break. Take
12 whatever time you need beyond that to get the list of
13 exhibits in order, and I will watch for you before we
14 resume on the record.

15 We're now off the record.

16 (RECESS, 2:48 p.m. - 3:36 p.m.)

17 JUDGE CHENEY: We're back on the record now in
18 the 1213 Investigation.

19 Before our afternoon break, we listened to the
20 completion of the testimonial evidence in this
21 investigation.

22 Is there any motion for admission of exhibits?

23 MR. ERWINE: Yes, Your Honor.

24 The parties have conferred and have an agreed
25 list that we will provide to the court reporter. So we

1 would move to have those exhibits admitted into evidence.

2 JUDGE CHENEY: Hearing no objection, those
3 exhibits will be admitted into evidence.

4 (Exhibits, as submitted by counsel and reflected
5 in the attached index, were received into evidence.)

6 JUDGE CHENEY: Does Cree wish to have any other
7 evidence submitted on the record of this investigation?

8 MR. ERWINE: No, Your Honor.

9 JUDGE CHENEY: Does RAB wish to have any other
10 evidence submitted on the record in this investigation?

11 MR. ROUSH: No, Your Honor.

12 JUDGE CHENEY: Okay. The evidentiary record in
13 this investigation is now closed.

14 Let's talk about where the investigation
15 proceeds from here. I just want to check in with the
16 attorneys about some -- about my understanding of some
17 issues.

18 Counsel for Cree, I just want to confirm that
19 there will be no subparagraph C domestic industry argument
20 in the post-hearing briefs; is that right?

21 MR. ERWINE: That is my understanding, and
22 Mr. Lasher will step in if that's not the case, but that is
23 my understanding.

24 JUDGE CHENEY: Okay. Not hearing from
25 Mr. Lasher, that's my understanding now, too.

1 MR. LASHER: Sorry, Your Honor. In our
2 prehearing brief, we did have a short section on subsection
3 C. I think we were planning to maintain that position with
4 respect to the case law that essentially says that when the
5 practicing product embodies the patent it features, then
6 nexus is presumed. That was -- we were going to still
7 maintain that position.

8 JUDGE CHENEY: Okay. Thank you for letting me
9 know that.

10 My next comment, I just want you to know that I
11 have not come to a decision on the issue that I'm about to
12 discuss, but it is of such a looming question in my mind
13 that I really want some briefing that will help me.

14 I want you all to prepare your briefs to allow
15 me to understand the economic prong of the domestic
16 industry argument if the unbounded claims of the '819 and
17 '531 Patents -- by unbounded, I mean the claims that have
18 no upper limit on wall plug efficiency -- if those claims
19 are found to be invalid, I want know what the economic
20 prong looks like in that circumstance.

21 Does anyone have any questions about what I am
22 seeking?

23 MR. LASHER: Not from our end, Your Honor. We
24 did that in our prehearing brief as well, so we will be
25 doing it in our post.

1 MR. ROUSH: No, Your Honor.

2 JUDGE CHENEY: Okay. The request for the
3 50,000-word post-hearing briefs to be divided as you see
4 fit is granted.

5 MR. ERWINE: Thank you, Your Honor.

6 JUDGE CHENEY: Use the words wisely.

7 As always, your figures don't count against the
8 words, and in this case, boy, can I use as many helpful
9 figures as you can provide me. There's a lot of geometry
10 involved, so please do include helpful figures.

11 Any other questions about the briefing, the
12 post-hearing briefing?

13 MR. ERWINE: Nothing from Cree Lighting, Your
14 Honor.

15 MR. ROUSH: Nothing from RAB, Your Honor.

16 JUDGE CHENEY: Are there any other post-hearing
17 issues that you all want to discuss before I give you my
18 final thoughts?

19 MR. ERWINE: That was it from Cree Lighting,
20 just the briefing word limits, Your Honor.

21 MR. LASHER: Apologies, Your Honor, I did have
22 one question.

23 There are a number of native documents. Per
24 your ground rules, those are to be labeled as physical
25 exhibits. Obviously, we can't submit physical exhibits to

1 you in -- obviously, we can't submit physical exhibits to
2 you, but we were still planning on providing you our native
3 CPXs, JPXs, et cetera, in electronic format.

4 Is that fine with you, Your Honor?

5 JUDGE CHENEY: Yeah. Please provide them on
6 Box.

7 MR. LASHER: Will do.

8 JUDGE CHENEY: I only recall one actual physical
9 object being discussed at the hearing, that was the
10 prototype light that was tested by Mr. Negley.

11 Are there other physical objects that are going
12 to be in the record?

13 MR. ERWINE: My understanding, Your Honor, is
14 that's the only physical exhibit, at least from Cree
15 Lighting's perspective.

16 MR. ROUSH: We agree with that, Your Honor.

17 JUDGE CHENEY: Okay. Does anyone -- how are we
18 going to handle that in our current constrained
19 environment? Are you just going to submit a photograph and
20 say, this is CPX-whatever, and -- how are we going to do
21 that?

22 MR. ERWINE: Yeah, if it's acceptable with you,
23 Your Honor, we'd be happy to submit a photograph.

24 JUDGE CHENEY: Okay. What about your view,
25 Mr. Roush?

1 MR. ROUSH: That is fine with RAB, Your Honor.

2 JUDGE CHENEY: I would like, if I can, to get a
3 concession from each side on the record that that
4 photograph is sufficiently representative for me to make
5 whatever factual findings I need to make about that object.

6 Can Cree stipulate to that?

7 MR. ERWINE: Yes, we can, Your Honor.

8 JUDGE CHENEY: Can RAB stipulate to that?

9 MR. ROUSH: Yes, Your Honor.

10 JUDGE CHENEY: Okay.

11 Let me give you some final thoughts, then.

12 I have enjoyed the opportunity to learn more
13 about this industry and the work that these two companies
14 are doing. I enjoyed listening to Mr. Negley and
15 Mr. Edmond describe the process of their invention. And I
16 enjoyed hearing the teaching of these excellent experts. I
17 learning a lot about this dispute from hearing from
18 Mr. Barna and learning about his family's company.

19 To the clients, I will say that you were
20 represented by real professionals in this investigation.
21 Their integrity has been on display this week and
22 throughout the investigation, and I thank them for
23 upholding the ideals of the legal profession.

24 I want to thank our court reporter for her
25 excellent transcription and for her patience with all of us

1 this week.

2 I want to thank my excellent staff, particularly
3 Carlita Cochran, who was with me in trial for the last time
4 this week.

5 I also want to thank my attorney-advisor, Ben
6 Rudofsky, who has been so valuable in discussing this
7 technology with me throughout the hearing and throughout
8 the investigation.

9 We have now been through the catharsis of trial.
10 Each side has had the opportunity to hear the arguments of
11 the other, the good ones and the bad ones. There have been
12 some very good arguments and there have been some less
13 meritorious arguments. I think that I can confidently say
14 that both sides will have some disappointment in my final
15 decision.

16 Now that you've seen the evidence, you might see
17 that there are ways that you can narrow this case even
18 further, and I encourage you to confer again before the
19 post-hearing briefs are due to see if there are parts of
20 the case that should go away. You only have so many words,
21 and I will understand your more nuanced, more meritorious
22 arguments better if you spend your words on those
23 arguments.

24 The decision that I'm required to make now is
25 not whether one of these companies is more innovative than

1 the other or whether one contributes to society more than
2 the other.

3 I will be applying some highly constrained and
4 complex law, and making some very specific findings of
5 fact. I take seriously the legal requirement that I must
6 presume that a patent issued by the United States
7 Government is valid unless there is clear and convincing
8 evidence showing otherwise.

9 I also note that some aspects of infringement
10 and of the domestic industry have been conceded in this
11 case. I urge both parties to consider those circumstances
12 carefully, and to attempt further settlement discussions
13 while I write my decision.

14 I encourage the clients to listen to the wisdom
15 of their attorneys about the likelihood that their
16 arguments will prevail. You know your businesses better
17 than I do, and you know what you need to achieve in this
18 litigation.

19 You can also end the uncertainty surrounding
20 this litigation sooner by settlement instead of having it
21 drag on for a couple of more years through a Commission
22 review and a Federal Circuit appeal.

23 If you're unable to resolve your dispute
24 independently, I will give you an answer no later than
25 August 17th, and I hope that my views will help you resolve

1 your dispute.

2 Thank you again for all who have given so much
3 to help me understand this case. I wish you all good
4 health, and we're off the record.

5 (Whereupon, the proceedings were concluded, 3:47
6 p.m.)

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1	I N D E X		
2	Witnesses	Direct	Cross Redirect Re-Cross
3	Jack Josefowicz	994	
4	Thomas Katona PhD	1012	1027
5	Christian Wetzel PhD	1059	1087
6	Michael Lebby PhD	1134	1141

7
8

9		PAGE
10	Afternoon Session	1108

11

12 Confidential Sessions: (None)

13 E X H I B I T S

14 EXHIBIT NO: RECEIVED

- 15 Jiao
- 16 JX-0001
- 17 JX-0002
- 18 JX-0014
- 19 JX-0017
- 20 JX-0150 color version
- 21 JX-0151 color version
- 22 JX-0157
- 23 JX-0159
- 24 RDX-0002
- 25 RPX-0001

1 RX-0024
2 RX-0038
3 RX-0040
4 RX-0050
5 RX-0054
6 RX-0090
7 RX-0493
8 RX-0726
9 RX-0737
10 RX-0738
11 RX-0743
12 RX-0745
13 RX-0750
14 RX-0752
15 RX-0756
16 RX-0765
17 RX-0853
18 Akeman
19 RDX-008C
20 RX-0852
21 Wilcox
22 RDX-011C
23 Bakewell
24 RDX-0110C
25

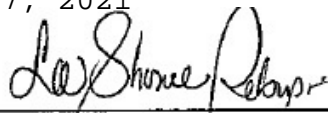
- 1 Katona
- 2 RDX-0115
- 3 Wetzel
- 4 JX-1
- 5 JX-2
- 6 JX-14
- 7 JX-45
- 8 JX-6
- 9 JX-7
- 10 JX-150
- 11 JX-151
- 12 RX-20
- 13 RX-23
- 14 RX-38
- 15 RX-40
- 16 CX-56
- 17 CX-1693
- 18 CDX-5
- 19 CPX-693C
- 20 CPX-694C
- 21 CPX-695C
- 22 CPX-696C
- 23 CPX-697C
- 24 CPX-698C
- 25 CPX-699C

1 CDX-1C
2 Katona
3 CDX-0007
4 CX-0852
5 JX-0003
6 JX-0004
7 Josefowicz cross
8 RDX-0006
9 JX-0005
10 CDX-0010
11 Lebby rebuttal
12 RDX-0006
13 CDX-0006
14 CX-0968
15 Josefowicz direct
16 RX-0854
17 RX-0759
18 RX-0758
19 RX-0733
20 RX-0735
21 RX-0060
22 RDX-0006
23
24
25

1 CERTIFICATE OF REPORTER
2 TITLE: Certain Light-Emitting Diode Products, Fixtures,
3 and Components Thereof
4 INVESTIGATION NO: 337-TA-1213
5 HEARING DATE: May 7, 2021
6 LOCATION: Washington, D.C. - Remote
7 NATURE OF HEARING: Evidentiary Hearing

8 I hereby certify that the foregoing/attached
9 transcript is a true, correct and complete record of the
10 above-referenced proceedings of the U.S. International
11 Trade Commission.
12 Date: May 7, 2021

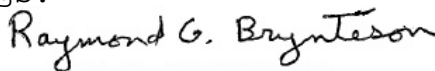
11 SIGNED:



12 Signature of the Contractor of the
13 Authorized Contractor's Representative
14 1220 L Street, N.W., Suite 206
Washington, D.C. 20005

15 I hereby certify that I am not the Court Reporter
16 and that I have proofread the above-referenced transcript
17 of the proceedings of the U.S. International Trade
18 Commission, against the aforementioned Court Reporter's
19 notes and recordings, for accuracy in transcription in the
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21 Signature of Proofreader

22 I hereby certify that I reported the above-referenced
23 proceedings of the U.S. International Trade Commission and
24 caused to be prepared from my tapes and notes of the
25 proceedings a true, correct and complete verbatim recording
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25 Signature of the Court Reporter