

UNITED STATES INTERNATIONAL TRADE COMMISSION

WASHINGTON, D. C.

Before the Honorable Bryan F. Moore

Administrative Law Judge

)
 In the Matter of:)
)
 CERTAIN PHOTODYNAMIC)
 THERAPY SYSTEMS,)
 COMPONENTS THEREOF,) Inv. No.
 AND PHARMACEUTICAL) 337-TA-1411
 PRODUCTS USED IN)
 COMBINATION WITH THE)
 SAME)
)

DATE: February 26, 2025

TIME: 9:00 A.M.

DEPOSITION of ROBERT E. GROVE,
in the above-entitled matter, held
Desmarais, LLP, 230 Park Avenue, 26 Floor,
New York, New York 10169, pursuant to
Notice, before MARINA DUBSON, a Notary
Public of the State of New York.

Page 2

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Page 4

2 [REDACTED] deposited before?

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A. I believe I have been deposed twice, but the most recent, I believe, was more than ten years ago. So, I haven't been deposed recently.

Q. Let me just refresh you on the process today. I am going to ask you a series of questions to which you need to provide some answers.

Do you understand?

A. Yes.

Q. And if you don't understand one of my questions, please let me know and I'll try to clarify. If you don't ask, I'll assume you understood my question.

Makes sense?

A. Yes.

Q. From time to time, your counsel may object to my question. Unless you're instructed not to answer, you should go ahead and answer my question.

Do you understand?

A. Yes.

Q. And I'll try to take a break

Page 3

2 [REDACTED] (Claimant's Exhibit 1, Expert Report, was marked for identification as of this date by the Reporter.)

3 (Claimant's Exhibit 2, Rebuttal Report, was marked for identification as of this date by the Reporter.)

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R O B E R T E. G R O V E,

Called as a witness, having been first duly sworn by a Notary Public of the State of New York, was examined and testified as follows:

EXAMINATION

BY MR. GANGULY:

Q. Tuhin Ganguly from the law firm Desmarais LLP, on behalf of complainants Sun Pharma.

Good morning, Dr. Grove.

A. Good morning.

Q. Please introduce yourself for the record.

A. First name, Robert; last name, Grove; middle initial, E.

Q. Dr. Grove, have you ever been

Page 5

2 every hour. If you need to take a break, let me know. I just ask you answer a pending question before we go on break.

A. Okay. Yes.

Q. And while we're on the break, you're not to discuss the substance of the deposition with your counsel until the deposition is over.

Do you understand?

A. Yes, I do.

Q. We've got a court reporter today who is trying to type down everything we're saying. Let's do our best not to talk over each other. Okay?

A. Yes, sir.

Q. Dr. Grove, do you understand you're giving testimony under oath as if you were in court, right?

A. That's my understanding, yes.

Q. Is there any reason you can't give truthful and accurate testimony today?

A. No.

Q. Dr. Grove, I've handed you what's been marked Exhibit 1 to your

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deposition. It is a copy of your opening expert report you provided in this investigation, correct?

A. Yes, I believe so.

Q. And I've also handed you what's been marked Exhibit 2 to your deposition. This is a copy of your rebuttal expert report in this investigation, right?

A. Yes.

Q. Dr. Grove, did you write your own reports?

A. I wrote both these reports in conjunction with my attorneys.

Q. And did you review your reports before signing them?

A. Yes, I did.

Q. Are you aware of any errors that need to be corrected?

A. I'm not.

Q. Do these two reports plus your claim construction reports, do those contain the sum total of your opinions formed to date?

A. I believe they do, yes.

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Q. Dr. Grove, under Biofrontera's definition of ordinary person skilled in the — Dr. Grove, under Biofrontera's definition, a person in the ordinary skill in the art would, individually or as a member of a multidisciplinary team, have a medical degree in fields related to diagnoses of skin conditions and related disease states, right?

Page 8

A. A member of a team would have that expertise. That's not exclusive criterion as written here. I believe a POSA would be a member of a team who has a medical background as you described, and another member of the team that has a scientific background, such as a Ph.D.

Q. You don't have a medical degree, right?

A. I do not.

Q. Have you ever treated any patients before?

A. I have not.

Q. So, individually, you're not a person of ordinary skill under Biofrontera's definition of a POSA, right?

A. Yes, I am. Their definition, as I understand it, is a member of a multidisciplinary team consisting of someone who has a medical background and engineering background, and I have an engineering background. So, I meet that definition.

Q. My question was just you, by

Page 9

yourself, because you don't have a medical degree, you, on your own, don't meet the definition?

A. If I were the only person, yes, that's a fair statement.

Q. Correct. You are a POSA under Biofrontera's definition because you're in consultation with Dr. Ehrenreich, who has a medical degree, correct?

A. I am in the role of tech expert, and Dr. Ehrenreich is an MD with an appropriate medical background to satisfy the definitions of a POSA.

Q. And you're aware that Dr. Jokerst is in consultation with Dr. Shmuylovich, correct?

A. That's my understanding, yes.

Q. Is it also your understanding that Dr. Shmuylovich has a medical degree related to dermatology?

A. That's my understanding.

Q. You're not disputing that Dr. Jokerst is a POSA under Biofrontera's multidisciplinary team definition?

Page 10

1 [REDACTED]
2 A. By herself, no, she is not.
3 Q. But because she's in
4 consultation with a medical doctor, she,
5 like yourself, is a POSA under the
6 multidisciplinary team definition, correct?
7 A. Correct.
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3 Q. Dr. Grove, you are named
4 inventor on a number of U.S. patents,
5 correct?

6 A. Yes.

7 Q. When coming up with the
8 inventions in your patents, did you look at
9 teachings and concepts known in the prior
10 art?

11 A. Yes.

12 Q. You'd agree that inventions are
13 built on and incorporate concepts that were
14 previously conceived and known by other
15 people, correct?

16 A. Sometimes.

17 Q. But that's not uncommon, right?

18 A. It's not uncommon.

19 (Whereupon, an off-the-record
20 discussion was held.)

21 (Claimant's Exhibit 4, U.S.
22 Patent, was marked for identification
23 as of this date by the Reporter.)

24 BY MR. GANGULY:

25 Q. Dr. Grove, you've been handed

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what's Exhibit 4 to your deposition. It is a copy of a U.S. patent number 9,687,671.

Do you see that?

A. Yes, I do.

Q. And you're one of the named inventors on this patent, right?

A. Yes, I am.

Q. Can you describe just high-level what this patent relates to?

A. The title is Optical Sensor and Method for Identifying the Presence of Skin and the Pigmentation of Skin. This patent was issued almost ten years ago, and I have 25 patents. I would need to take some time to read through it to better answer questions as to its content. I don't recall any of the details off the top of my head of this particular patent.

Q. Now, there are two other named inventors besides yourself, Mark V. Weckwerth and Tobin C. Island, named on the patent?

A. Yes.

Q. Did either Mr. Weckwerth or

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Mr. Island have a medical degree?

A. No.

Q. Ph.D.s?

A. Yes.

Q. As you said before, you don't have a medical degree?

A. That's correct.

Q. So, if we turn to claim 1 of this '671 patent. Let me know when you're there.

We can see the claimed invention of your '671 patent relates to the dermatological treatment system, right?

A. Yes.

Q. Is the dermatological treatment system claimed in your '671 patent a system that's intended to be used by a dermatologist?

A. It could be.

Q. So, even though neither you nor your co-inventors had a medical degree, you were able to devise a dermatological treatment system?

A. Yes, we did, in extensive

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conversation with dermatologists.

Q. Now, the dermatological treatment system of the '671 patent is expected to be used by end users such as dermatologists?

A. I would like to take some time to read through this patent to refresh my memory, if I may.

Q. Yeah, why don't you take a few minutes?

A. Thank you.

Okay. I have scanned it. I may need to refer to specific sections, depending on the question, but I have refreshed my memory to a degree to continue our discussion.

Q. Okay. A little trip down memory lane?

A. Exactly. That's why I was smiling.

Q. Now, would you agree your patent is addressed to engineers?

A. I wouldn't say that specifically, no. I would say that it

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is -- the invention is an optical sensor and method for identifying the presence of skin and pigmentation of skin.

Generally, presence of skin and pigmentation of skin are topics more of interest to a medical person than an engineer, but it certainly is written in a way that could be understood by other engineers.

Q. So, let's stick with claim 1 of the '671 patent. We can see that the dermatological treatment system comprises -- so if we look at claim 1, we can see the dermatological treatment system comprises an optical device for analyzing a target area, right?

A. The claim states that a dermatological treatment system comprising an optical device for analyzing a target surface. The optical device comprising a housing, and additional elements as described.

Q. So, if we look at the second element, which states: One or more light

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sources provided in the housing and configured to emit light toward a target surface proximate the surface contacting portion.

Do you see what I am talking about?

A. Yes.

Q. In that element, what does "configured to emit light toward a target surface" mean?

A. It means that the light emitted from the optical device emits toward a target surface.

Q. So, we can agree that the claim language "configured to" is describing a capability of the claimed system, right?

A. Could you repeat the question, please?

Q. So, we can agree that the claim language "configured to" is describing a capability of the claimed system, right?

A. In this case, yes. I think that's a fair statement.

Q. All right. And what does

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"proximate the surface contacting portion" mean?

A. In this case, the optical device is actually in contact with the skin. I guess -- yes, it's used in contact with the skin, which is described in the specification.

Q. So, you understood what the word "proximate" means here, right?

A. In this patent, in this claim, the word "proximate" means immediately adjacent or immediately in contact with a surface.

I guess immediately -- as I said, in this patent, the device is in contact with the skin. So, the device is designed to emit light toward a target surface proximate the surface-connecting portion; and as I said, this device is used actually in contact with the skin.

Q. In the specification of the '671 patent, is "proximate" ever defined?

A. I would have to read the specification. I don't recall.

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Page 34

[REDACTED]

9 (Claimant's Exhibit 6,
10 '512 Patent, was marked for
11 identification as of this date by the
12 Reporter.)

13 (Claimant's Exhibit 7,
14 '028 Patent, was marked for
15 identification as of this date by the
16 Reporter.)

17 BY MR. GANGULY:

18 Q. For the record, I've marked
19 Exhibits 6 and 7. Exhibit 6 is a copy of
20 the '512 patent and bears Bates number Sun,
21 dash, ITC, dash, 0149872.

22 Exhibit 7 is a copy of the
23 '028 patent and bears Bates number Sun,
24 dash, ITC, dash, 041 -- I'm sorry. Sun,
25 ITC, dash, 0149892.

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(Claimant's Exhibit 10,
Merriam-Webster definition, was

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marked for identification as of this
date by the Reporter.)
(Claimant's Exhibit 11,
Britannica definition, was marked for
identification as of this date by the
Reporter.)

BY MR. GANGULY:

Q. All right. So, at
paragraph 56, you say "a POSA."

As a POSA, it is my opinion
that "on" means in physical contact with
and supported by the top surface of.

Do you see that?

A. I do.

Q. And then you cite two
dictionaries now, Merriam-Webster and then
Britannica dictionary?

A. Yes.

Q. I followed those URLs and
printed out the dictionaries. Exhibit 10
is the Merriam-Webster and Exhibit 11 are
the Britannica dictionary.

Are these the dictionaries you
reference in paragraph 56?

A. I believe so.

Q. The two dictionaries you cite
are the source for your understanding that
the word "on" means in physical contact
with and supported by the top surface of,
right?

A. I would say that the dictionary
definitions, at least some of the
definitions, they have different usages.
But some of the definitions in each of
Exhibit 10 and 11 are consistent with my
interpretation of what "on" means.

Q. And your interpretation of what
"on" means is: In physical contact with
and supported by the top surface of, right?

A. Yes.

Q. And that is the interpretation
that you are applying in your opinion,
right?

A. Yes.

Q. So, it's your opinion that
because the claims recite the word "on,"
they require the physical contact between
the hinge and the inner side surface of a

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panel, right?

A. That's my interpretation --
that, yes. Yes. I'd like to look at the
claim again, but I believe that's correct.
Can we look at the claim?

Q. Sure. You can either look at
the patents or --

A. Either one.

Q. It might be easier in the
report?

A. Yes.

Q. So, claims '512 are on page 18,
the claims for '028 are on 69.

A. Okay. Now, for your question.

Q. Yeah. Okay. So, in your
opinion, because the claims recite the word
"on," they require physical contact between
the hinge and the inner side surface of the
panel, right?

A. That statement "connected by
nested hinges on inner side surfaces," I
interpret that to mean that they are
connected to those inner side surfaces,
yes.

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15 Q. So, Dr. Grove, you can put that
16 report away, and turn to your opening
17 report.

18 A. Which is?

19 Q. Is Exhibit 1.

20 A. Yes, sir.

21 Q. All right. So, please turn to
22 paragraph 34 of your opening report.

23 A. I have paragraph 34 on page 11.

24 Q. Yep. Okay. So, in
25 paragraph 34, you describe a lamp that

2 emits light with the same intensity across
3 the whole output source of the lamp?

4 A. Correct.

5 Q. Then you describe how the
6 illumination from that lamp on the wall
7 will not be uniform, fair?

8 A. It certainly would be -- the
9 uniformity of illumination from this
10 described lamp, that uniformity would not
11 be great, would not be very uniform over
12 the entire wall if the panel -- if the
13 light -- if the lamp, sorry -- if the lamp
14 is close to the wall.

15 And what I mean by "close" is
16 the distance between the lamp and the wall
17 is small compared to the dimensions of the
18 lamp, then the irradiance on the wall
19 actually would be quite uniform in that
20 central region.

21 That is the region, for
22 example, if there were a light behind the
23 panel, it would be in the shadow. So, in
24 that region, in the region on the wall that
25 the lamp faces, if the lamp is close enough

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to the wall, and I describe what I meant by "close," then you will get good uniformity in both axes, assuming the lamp is square, over that region. But then as you get outside of the region, directly in front of that lamp, you get a fall off of intensity.

Q. And then you say to at least partially compensate for this non-uniform illumination, the lamp can be designed to be brighter near its four edges.

Do you see that?

A. Yes. In the example here, where there's a square lamp so that there's no shorter edge or longer edge, the fall off of irradiance on the wall outside of the area immediately in front of the lamp is the same in the horizontal direction as the vertical direction.

So, if I have a lamp that's square and I put it in front of the wall, if I am close enough to the wall, the illumination -- the irradiance would be uniform within that area. But then as I move out, if I move a detector that's

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measuring the irradiance, if I move that outside of the area immediately underneath, so to speak, the lamp, there's a fall off in that irradiance.

And that fall off in the example here, where the illuminator is a square lamp, that fall off in the vertical direction would be the same as the fall off in the horizontal direction.

Do you follow that?

Q. Yeah.

So, it's your -- is it your opinion that to increase the uniformity of illumination from a light source, the light source should emit light in greater intensity at its four edges?

A. If the goal is to have an illuminated area which is within a certain percentage of the illumination directly underneath the center of the illuminator, then you can increase that region of uniformity. And by that, I mean meeting whatever the definition of uniformity might be. You can increase that region by

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partially compensating for the drop off of irradiance by increasing the -- let's call it the exitance. But for here, we'll just call it increasing the intensity of the light source, in this example, along all four edges in order to get the maximum uniformity.

Q. So, is it your opinion that a person of ordinary skill would have designed a lamp to be brighter at its four edges to increase the uniformity of the measure of illumination?

A. If the illuminator were square, then a person of ordinary skill in the art would increase the intensity at the four edges of that illuminator to expand the area of uniformity. If the illuminator is not square, then it's a different situation, different circumstances.

Q. So, in the last sentence on paragraph 34, you say: To at least partially compensate for this non-uniform illumination, the lamp can be designed to be bright, i.e., emit light at a greater

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intensity at the four edges than in the central region.

When you wrote this paragraph -- strike that.

When you wrote "near its four edges," you had an understanding of what it meant to be near four edges, right?

A. Yes, it's a general term. I think Sun's preferred word is "close."

Q. Okay. But yeah, so like you said, you understood what the phrase "near its four edges" meant when you wrote this, right?

A. Yes, I did.

Q. So, if a person of ordinary skill designed a rectangular lamp to be bright near its four edges such that the light had equal intensity around the four edges, it would not meet the claim language which requires a higher intensity of light emitted proximate the second edges compared the intensity of light emitted not proximate to the second edges, correct?

A. Let me see if I can state your

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question in a way that makes it easier for me to understand. If a person has an illuminator which is not square, is rectangular, then by definition, a rectangle has a shorter dimension and a longer dimension.

There's an opportunity to introduce a lot of confusion into this language by saying shorter edge or longer edge. The optics behind this, the science behind it, is that if you have a rectangle illuminator that's of rectangular shape that has a shorter dimension, let's say in the vertical direction, and a longer dimension in the horizontal direction, then I have an illuminator that looks like this.

So, this is the shorter dimension and this is the longer dimension. Okay. There's an opportunity for a great deal of confusion. When instead of talking about the shorter dimension, which in this orientation vertical, and the longer dimension, which is horizontal, if you start talking about the length of the edge

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versus the dimension in one direction or another, there's an opportunity to introduce a great deal of confusion about shorter edge, longer edge.

The way I would describe it that's technically correct, is that if you have an illuminator that's rectangular in shape that has a shorter dimension, that is the shorter dimension of the rectangle, and also has a longer dimension, that in order to increase the uniformity of illumination, the design objective is to increase the intensity at the edges of the shorter dimension. This is the shorter dimension.

And the reason is that the wider the panel, the longer the panel, the longer this rectangle is in the horizontal direction, obviously the more uniform the light is going to be, the larger the area of uniformity in the horizontal direction.

(Clarified by the Court

Reporter.)

A. So, I have this panel that's very wide in this direction and not so wide

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in this direction, and as I just described, the uniformity of this horizontal direction, this panel 1 foot from the wall is going to be very good. But the uniformity in the shorter dimension, which in this case is vertical, is not nearly as good, because the intensity falls off here and falls off here.

So, if this is my illuminator, never mind short side, long side, I have a shorter dimension and I have a longer dimension. The goal to increase the uniformity of illumination is to increase the intensity close to the edges in the shorter dimension, which in this case, would be along the top and the bottom.

You'll note that these edges in the shorter dimension actually are longer than the edges in the other dimension. But what's relevant to uniform illumination is that in order to maximize the area of uniformity, you can attempt to increase the area of uniform illumination in the shorter dimension by increasing the output

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intensity close to the edges that are in this shorter dimension, higher intensity in this orientation, along the top, higher intensity along the bottom, and that improves the uniformity for this orientation in the vertical direction.

I hope that makes sense.

Let me add another comment to make it, I think, even clearer. Hopefully it made sense when my illuminator looks like this.

Q. For the record, you're holding a piece of paper in landscape orientation.

A. Yes. In this particular case, this piece of paper is much wider in the horizontal direction, greater length in the horizontal direction than in the vertical direction.

So, what I was describing was an illuminator that's in this landscape orientation. I think that's fair. And to improve the uniformity in the vertical direction, I would -- or in the vertical dimension, sorry, vertical dimension, I

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2 would increase the intensity close to the
3 top and bottom edges in this orientation,
4 because this is the -- these sides are in
5 the narrower dimension, whereas -- that is,
6 the top and bottom sides are in the
7 narrower dimension of the panel, whereas
8 the left and right sides are in that long
9 horizontal dimension. Okay.

10 So, I have increased intensity
11 along here, along the top edge, sorry, and
12 increased intensity along the bottom edge.

13 If I cut this panel, this
14 illuminator, which is, as shown, one panel,
15 if I cut it into five panels, same outside
16 dimension, but now five panels, I still
17 would want to design each of those panels
18 so that it has a higher intensity along
19 this edge and this edge than along the two
20 sides, even though I cut it up into panels.

21 In that case, I have a higher
22 intensity along the shorter edge of these
23 five panels than this dimension. When you
24 talk about short edge and long edge, it
25 introduces an uncertainty as to what's

Page 123

2 being described, whereas if you refer to
3 increasing the intensity in the shorter
4 dimension of a rectangular source, there's
5 no confusion.

6 Q. So, the claims include the
7 language: Wherein each of at least five
8 panels has two first edges and two second
9 edges, shorter than the two first edges?

10 A. Yes.

11 Q. Correct?

12 A. Yes.

13 Q. And it also says that the light
14 sources are arranged such that the higher
15 intensity of light is emitted proximate the
16 second edge as compared to the intensity of
17 light not proximate to the second edges?

18 A. And those second edges there
19 are described as the shorter edges.

20 Did I hear you correctly?

21 Q. Yes. So, if a POSA designed a
22 rectangular lamp to be bright near four
23 edges, such that the light had equal
24 intensity around the four edges, it would
25 not meet the claim limitation that we just

Page 124

2 discussed, right?

3 A. It would not. No, it would
4 not. The claim language you just read
5 referred to a higher intensity, I think in
6 that claim, along the second edges, I
7 believe it was referred to, which are also
8 referred to as the shorter edges. So,
9 what's in the claim is a description of how
10 to improve the uniformity of illumination
11 by increasing the intensity at the second
12 edges of the panels as they are defined in
13 those claims.

14 Q. And similarly, if the
15 rectangular lamp is brighter near its
16 longer edges as opposed to the center
17 region, it would not meet the claim
18 language which requires a higher intensity
19 of light emitted proximate the second
20 edges, which are the shorter edges, right?

21 A. Again, there's a lot of
22 confusion and misunderstanding about
23 shorter edge and longer edge.

24 Q. I understand that. I want to
25 stick with the context of the claim.

Page 125

2 A. The question, one more time.

3 Q. So, if the lamp is brighter
4 near the longer edges of a rectangular lamp
5 than its central region, then that would
6 not meet the claim language which requires
7 a higher intensity of light is emitted
8 proximate the second edges, which are also
9 referred to as the shorter edges?

10 A. I can explain that with an
11 example, if I may.

12 Q. Well, I am just asking, do you
13 agree or not?

14 A. Depends on how the shorter and
15 longer edges are defined. If there are a
16 set of five rectangular panels and those
17 five rectangular panels are such that the
18 shorter edges are at the top and the bottom
19 of those panels, and the longer edges are
20 the vertical sections, then in that
21 configuration of those five panels, you
22 would improve the uniformity of
23 illumination by increasing the intensity
24 along those shorter edges.

25 Q. Sorry, I don't mean to

Page 126

interrupt you. I am asking for a given panel.

A. Here it is. I got it.

Q. So, if in a given panel the light is brighter near the longer edges than the central region, it would not meet the claim language which requires a higher intensity of light is emitted proximate the second edges, which the claim says are the shorter edges, right?

A. It's an invalid question, because the shorter edge and longer edge refers to the particular geometry as described in the claim and in the specification. In that geometry, where you have a series of panels oriented side by side that have a shorter edge at the top and bottom and longer edges along the sides, that's one situation where to improve the uniformity, you would increase the intensity along those shorter edges.

However, there could be a different situation of a different illuminator that is essentially designed to

Page 127

accomplish the same task, where instead of five panels, it's one panel.

Now as we talked about before, one panel that is rectangular that has two short vertical sides and one long horizontal side, the way to improve the uniformity here is to increase the intensity along the longer edge, not the shorter edge.

So, the meaning of this specification and the optics that underlie it are not which edge is shorter and which edge is longer, but the edges in the shorter dimension versus the edges in the longer dimension, that's what's relevant in terms of underlying optics.

And any POSA would understand that if his or her illuminator were a rectangle in the landscape orientation, that the way to improve the uniformity on the wall being illuminated by this illuminator is to increase the intensity along the longer edge, because that is the edge in the shorter dimension.

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So, the underlying optics or optical physics as described are correct, but as I said, it's easy to get misled by this language of shorter side and longer side. Because if I take this panel and I increase the intensity along here, along the upper edge and the lower edge, I am saying it would improve the uniformity on the wall.

But if I take this like this, one, two, three, four, five panels and I hold it up, these are now the shorter edges. So, shorter edges and longer edges gets you a lot of confusion unless you think about it in the context of shorter dimension and the longer dimension.

Q. So, Dr. Grove, in your opinion, the asserted claims are obvious in the combination of Lundahl plus Larsen, right?

A. Yes.

Q. So, your primary reference for the combination is Lundahl?

A. Yes. I don't know if I would say primary. They're both -- so, Lundahl

Page 129

has an illuminator which has higher intensity at the edges in the shorter dimension as is the case with panels -- strike that, as in the case.

The Lundahl reference teaches an illuminator for photodynamic therapy in which the illuminator has a higher intensity close to the edges in the shorter dimension of the illuminator.

The Larsen reference does not have fluorescent tubes, but instead has LED panels. And it is the combination of Lundahl in light of Larsen or Larsen in light of Lundahl, I don't know how the attorneys describe it, those two references together, in my view, make the '028 and '512 patent claims obvious under the prior art.

Q. Can you turn to page 120, paragraph 292, Exhibit 1?

A. This is Exhibit 1?

Q. Uh-huh.

A. Okay. Page?

Q. 120.

Page 130

A. Okay. Paragraph?

Q. 292. So, you say: It's my opinion that Lundahl, in view of Larsen, renders obvious these claims, and you list a number of claims for the '028 patent. And so you would agree that incorporating the hinged panel LED displays of Larsen into the PDT device of Lundahl?

A. I think that's a fair statement. That's the way I think about it. There are elements of this claim that are clearly in Larsen and elements that clearly come from Lundahl, so those two references together, I think, make this claim obvious.

Q. So, you start with Lundahl and then combine in elements from Larsen to come to your conclusion that the claim is obvious, right?

A. That's the way I think about it. The way that patent attorneys, would they use that exact language, I am not sure. But this statement here is consistent with what I have been told by my

Page 131

attorneys.

So, yes, it's my opinion Lundahl in view of Larsen renders obvious, at least, claims listed on page 120.

Q. We're going to talk about that. I wanted to get to the starting point. You start with Lundahl and then combine elements from Larsen to come to your conclusion that the claims are obvious; is that fair?

A. I think so, yes. If you start using a lot of legal terms, I am going to have to start using a lot of technical terms, then we'll both be in trouble.

Q. I'll try not to use legal terms. So, if can you please turn to paragraph 269. That's on page 107.

Halfway down, after this parenthetical for a cite to Lundahl, what it says here is: Based on Lundahl's disclosure that the spacing of lights achieved the desired uniformity and highly uniform output irradiance, the decision to arrange the LEDs taught by Larsen in the

Page 132

same uneven spacing disclosed by Lundahl would have been based on the desire to maintain the desired uniformity and highly uniform output.

Do you see that?

A. Yes.

Q. Then you go on to say: Based on Lundahl's disclosure that the uniformity was achieved for the face and scalp, a motivation existed to modify Lundahl's device to incorporate LEDs as taught by Larsen, as LEDs were a superior technology by 2015, for the reasons I mention above, as taught by Lundahl?

A. Yes.

Q. To summarize, the combination has the uniformity disclosure of Lundahl, the light sources spacing of Lundahl, but the LED of Larsen; is that fair?

A. That's fair. The primary difference, of course, is that Lundahl had fluorescent tubes and Larsen has LEDs. But the important aspect of Lundahl is that he introduces this concept of a higher

Page 133

intensity near the edges of the shorter dimension, and Larsen introduces this idea of creating an illuminator consisting of five LED panels.

(Claimant's Exhibit 12, Patent, was marked for identification as of this date by the Report.)

BY MR. GANGULY:

Q. Dr. Grove, I've handed you Exhibit 12 to your deposition, which is the Lundahl patent, the '071 Patent, right?

A. Yes.

Q. If we turn to Lundahl Figure 4?

A. Figure 4A and 4B?

Q. Yep. Let me know if you're there.

A. Yes.

Q. In your opinion, a POSA would be motivated to break Lundahl up into five panels to meet Larsen's five-panel disclosure, correct?

A. Yes. There were, I think, after use of the -- considerable use of the Lundahl invention, which was the original

Page 134

BLU-U, there were a number of instances where the fixed U shape of the tubes was clearly not ideal for certain treatment situations. And so the desire arose to be able to adjust the illumination to more closely maintain distance from the light source to the patient's skin.

Q. Okay. So, just -- I understand that part. I was just getting the basic question. In your opinion, a POSA would be motivated to break Lundahl up into five panels to meet Larsen's five-panel disclosure, right?

A. Yes. I would say that's correct.

Q. On Figure 4A, can you indicate how you would break up Lundahl into five panels?

A. Yes, although it's not terribly scientific. So, I put one panel in the middle here.

Q. And then can you just initial that?

A. Sure. This is one manner in

Page 135

which it could be reembodyed by LED panels, but there's no requirements that all of the panels be the exact same size. They may or may not be, but this is one way to implement Lundahl's concept with five LED panels.

Q. Now your report lists out for each element of the claims which reference Lundahl or Larsen is supplying -- strike that.

Your reports lists out for each element of the claims which reference Lundahl or Larsen is supplying that element in the combination, right?

A. I would have to look. My general impression is that the -- that as you described before and as is written here, that Lundahl in view of Larsen, I believe is the way it was written, make the claims obvious. I would have to look specifically at each claim and see if I felt that one reference or the other exclusively involved a specific claim. But in general, it's Lundahl in view of Larsen.

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Q. We can take a look at that.

You agree the idea using five panels connected by hinges comes from Larsen, not Lundahl?

A. Correct.

Q. Let's turn to 296.

A. Page?

Q. Sorry. Page 121, paragraph 296.

A. Okay.

Q. So, for the first element: An illuminator comprising five panels connected by hinged structures on inner side surfaces of adjacent panels, your opinion is that Larsen discloses that element, right?

A. So -- yeah, Larsen has, it says here, at least five hinged panels. And yeah, so claim 1(a) is an illuminator comprising five panels connected by hinged structures on inner side surfaces of adjacent panels. And in paragraph 296, it states that Larsen's illuminator has at least five hinged panels. Those are both

Page 137

correct.

Q. Right. So, just to be clear, all I am asking you is for this element, you're relying on Larsen; is that correct?

A. I'm relying on Larsen as it relates to the -- yeah, I think that's correct, that it comprises of five panels.

The reason that I am thinking about it, a clarification is that I would have to read this more carefully to see how Larsen's panels are connected. They may be connected -- I'm not sure -- I would need to look at Larsen's reference to see how those panels are connected, but there are five panels as shown in Larsen Figure 1.

Q. So, we can agree that you're not relying on Lundahl's teaching for this element; is that fair?

A. Certainly not for five panels. Absolutely correct.

Q. So, if we turn next to paragraph 305 on page 125.

A. Paragraph 305, okay.

Q. For the element light sources

Page 138

disposed on surfaces of the five panels, your opinion is that Larsen discloses this element, correct?

A. Yes.

Q. You don't rely on Lundahl for this element, true?

A. Correct.

Q. If you turn next to page 126, paragraph 308.

A. Yes.

Q. So, for the third element, the illuminator being configured to uniformly illuminate a treatment surface of the patient via the light sources --

A. Yes.

Q. -- if we turn to paragraph 310, you're relying on Lundahl's disclosure for providing uniform distribution for visible light, correct?

A. Yes.

Q. If we look at paragraph 313, you're specifically relying on the 60 percent measurement in Lundahl for uniformity between 2 and 4 inches, right?

Page 139

A. Yes.

Q. In paragraph 314, you point to Larsen's scan engine that moves the light sources with linear movements so that there are not any unradiated gaps?

A. Yes. That's an element described in Larsen's patent.

Q. But Larsen -- we can agree, Larsen doesn't disclose how to achieve uniformity meeting the requirements of 60 percent of the measured maximum at all points, correct?

A. Correct.

Q. That teaching is coming from Lundahl, right?

A. Correct.

Q. And so I want to talk a little bit about how Lundahl achieves uniformity. Let's look at the Larsen patent and maybe we can look at the abstract.

A. Okay. Give me a moment here. Okay.

Q. So, in order to achieve uniformity, Lundahl uses U-shaped

Page 140

fluorescent tubes driven by electronic ballasts.

A. Lundahl uses fluorescent tubes driven by electronic ballasts, and he achieved more illumination by the placement of those tubes.

Q. Lundahl also -- so, the tubes in Lundahl are covered by a polycarbonate shield which directs cooling airflow. That's true, right?

A. Yes.

Q. And then Lundahl discloses an aluminum reflector located behind the tubes increases both the output irradiance and the uniformity of the output distribution, right?

A. Yes.

Q. Lundahl also teaches that the spacing of the U-shaped tubes is varied to increase the output at the edges of the illuminator to make the output more uniform, correct?

A. Lundahl discloses that he improves the uniformity by adjusting the

Page 141

spacing between these U-shaped fluorescent tubes in the shorter dimension of the illuminator. He doesn't use those exact words, but that's, in fact, what he does in this patent.

Q. So, that means Lundahl does disclose that the spacing of the U-shaped tubes can be varied to increase the output at the edge of the illuminator to make the output more uniform, right?

A. Yes. Correct.

Q. Lundahl also discloses that different portions of the tubes are cooled to different amounts to improve uniformity, right?

A. Yes.

Q. And Lundahl also teaches using a light sensor that monitors outputs from the U-shaped tubes to provide a signal for adjusting the output from the tubes, right?

A. I believe that's in here, yes.

Q. So, to summarize, Lundahl discloses many features to achieve uniformity, including its cooling system,

Page 142

the aluminum reflector, the spacing of the tubes, and the light sensor, right?

A. That's generally correct. Yes.

Q. Now regarding the reflector, let's take a look at Figure 5B.

So, the reflector in Lundahl is shown in Figure 5B?

A. Correct.

Q. The reflector here has nine segments, right?

A. Correct.

Q. And there are particular angles and distances given for those segments?

A. Correct.

Q. For example, the center segment is 3.266 inches, right?

A. Correct.

Q. The next segment is 3.257 inches, correct?

A. Correct.

Q. So, Lundahl is providing measurements to the thousandth of an inch, fair?

A. Apparently so.

Page 143

Q. Now the device disclosed in Lundahl is angled to match the contours of the human body, right?

A. It is an effort to match the contour of the human face of an adult.

Q. Turning to your report to paragraph 317, which is at the bottom of page 129.

A. Okay.

Q. For the fourth element, one of the five panels being positioned as a center panel configured to face the treatment surface and two or more of the five panels are configured to be relevant to the center panel. For that element, you're relying on Larsen's disclosure, correct?

A. Yes.

Q. You're not relying on Lundahl, true?

A. Yes. The Lundahl does not have center panels and certainly doesn't have five panels, correct.

Q. So, the only disclosure in

Page 144

Larsen you rely on for this paragraph is paragraph 72 in Larsen, which talks about treating the backs of humans and being in an equidistant position above the skin?

A. I don't have Larsen in front of me. Is that in this report?

Q. If you look at paragraph 318, take a look at that, and I'll ask my question.

A. Okay. Your question?

Q. The only disclosure in Larsen you rely on for this element is paragraph 72 in Larsen about treating the backs of humans and being in an equidistant position above the skin.

A. That's what I refer to in paragraph 318. I don't know if there are other places in Larsen that refers to the panels or back, but this sentence here teaches that the applicators are suitable for the treatment of, for example, the backs of humans, and so become adjustable for an equidistant positioning of the applicators, thirteen, above the skin.

Page 145

Q. For this element, the only disclosure in Larsen that you cite to in your report is from paragraph 72 of Larsen, right?

A. That's the one I cite here. Yes, that's correct.

Q. And just to be clear, you don't cite any other disclosure from Larsen besides 72 in paragraph 318, correct?

A. Correct.

Q. Let's take a look at paragraph 320, right below, still on page 130. For the fifth element, where the five panels are positioned to allow treatment within approximately 4 inches of the treatment surface, you're relying on Lundahl's disclosure, correct?

A. Give me a moment to read paragraph 320.

Okay. Yes. I am relying on Lundahl here, yes.

Q. Okay. You're not relying on Larsen for this element, correct?

A. Correct.

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Q. Larsen is silent as to treatment distance, true?

A. I don't recall if in Larsen there's any discussion of treatment distance, but there's certain discussion of treatment distance in Lundahl, yes.

Q. You don't cite Larsen for any discussion on treatment distance, right?

A. Okay. Yes.

Q. And so in paragraph 322, you're relying on Lundahl's disclosure of treatment within 2 and 4 inches to achieve 60 percent uniformity, right?

A. As it says, Lundahl -- paragraph 322, Lundahl further teaches that the light-emitting surface of the PDT device is positioned such that it is at a distance of 2 inches to 4 inches from the treatment surface.

And then the paragraph continues stating that, quote, according to a preferred embodiment of the present invention, the measured output over the active emitting area is within 70 percent

Page 147

of the measured maximum when measured with a cosine response detector at distances of 2 inches and 4 inches.

Q. You're relying on Lundahl's disclosure of 2 to 4 inches to achieve uniformity, fair?

A. Yes.

Q. And as you summarize in paragraph 323 on page 132, you're using the teachings of Lundahl pertaining to positioning relevant to the treatment surface and apply them to the hinged panels of Larsen?

A. Correct.

Q. So, 324, the bottom of page 132.

A. Yes.

Q. For the sixth element, wherein each of the five panels has two first edges and two second edges shorter than the two first edges, that comes from Larsen, right?

A. The panels come from Larsen, yes, and they have two first edges and two second edges.

Page 148

Q. Okay. You're not relying on Lundahl for this element, correct?

A. Correct.

Q. Now, in this -- in your discussion of this claim element which is in paragraph 324 and 325, you don't actually cite anything in the specification of Larsen that discloses this element other than figure 1 of Larsen, right?

A. With respect to the five panels with first edges and second edges, I -- certainly that's the case in this figure. They may be described in the text as well. I don't recall.

Q. You don't cite anything from the text, though?

A. Yes. Apparently not.

Q. You're relying on the dimension shown in figure 1 from Larsen in meeting this element, correct?

A. Yes. I think that's correct. They appear to have second edges shorter than the first edges.

Q. You don't say anything anywhere

Page 149

in here, paragraphs 324 and 325 -- strike that.

So, in paragraph 326 at the bottom of page 133.

A. Yes.

Q. For the seventh element regarding a higher intensity proximate the shorter edges, here, you're relying on Lundahl spacing and light distribution of the light source?

A. Yeah. Pardon me. Are you referring to footnote 7? What are you referring to?

Q. Let's turn to paragraph 326.

A. Yes.

Q. So, for this element, which is 1(g).

A. Yes.

Q. And this -- for the element regarding a higher intensity proximate the shorter edges --

A. Yes.

Q. -- here, you're relying on Lundahl's spacing and light distribution of

Page 150

the light source, not Larsen's spacing, correct?

A. Correct.

(Whereupon, a short break was taken at this time.)

BY MR. GANGULY:

Q. So, Dr. Grove, we were at paragraph 326 on page 133, and as we had discussed for the element regarding a higher intensity proximate the shorter edges, you're relying on Lundahl's spacing and light distribution of the light sources, not Lundahl spacing?

A. Higher intensity of light is emitted proximate the second edges.

Q. Let me start over. For the element which starts at paragraph 326.

Do you see where I am?

A. Yes.

Q. That element is the light sources are arranged such that a higher intensity of light is emitted proximate the second edges compared to the intensity of light emitted not proximate to second

Page 151

edges?

A. Correct.

Q. For that element regarding higher intensity, you're relying on Lundahl's spacing and light distribution of the light sources, not Larsen's spacing, right?

A. Correct.

Q. And then you break up Lundahl's one panel device into five panels, correct?

A. I break up the device? Are you referring to something in my document?

Q. Yeah. So, -- so, in paragraph 338 on page 140.

A. Okay. Paragraph 338, yes.

Q. Okay. So, down near the bottom, there's a parenthetical which reads: Effectively taking the single long U-shaped panel of Lundahl and dividing it into five sections as illustrated in Larsen, right?

A. Yes.

Q. So, you're using Lundahl's spacing and light distribution of the light

Page 152

source and then dividing Lundahl's one panel device into five panels; is that fair?

A. Yes. One U-shaped tube device into five panels, yes.

Q. So, moving onto paragraph 391, which is on page 158.

A. Paragraph 391.

Q. Yes, 391. And here, we're now talking about claim 16.

Do you see that?

A. Yes.

Q. In claim 16, for the element, five panels connected by hinged structures to allow continuous illumination across the five panels, wherein the five panels are individually configureable to control illumination from each of the five panels?

A. Yes.

Q. For this element, you're only relying on Larsen for this element, correct?

A. Yes.

Q. And so you're not relying on

Page 153

Lundahl for individually configureable to control illumination, true?

A. Not panels that are individually configureable, correct.

Q. If we look at paragraph 397 next.

A. 397, okay.

Q. Now in this paragraph, you're discussing Larsen, true?

A. Relies on Larsen's disclosure, yeah.

Q. And in this paragraph, you're reading claim 5 of Larsen as disclosing that each of the panels are individually able to be switched on and off?

A. I would like a moment to read paragraph 397.

Q. Go ahead.

A. Yes. Okay.

Q. So, my question was, in paragraph 397, you're reading claim 5 of Larsen as disclosing that each of the panels are individually able to be switched on and off, correct?

Page 154

A. Yes. Based on the disclosure of claim 5, Larsen teaches illuminating or darkening individual light sources, which necessarily alters or configures the power output and/or light intensity of the associated applicator or applicators.

Q. So, I just wanted to confirm in your understanding — so, it's your understanding that claim 5 of Larsen discloses that each of the panels are individually able to be switched on and off, right?

A. Yes. I believe that's correct, yes.

Q. Let's turn to 409, which is on page 164.

A. Okay. I'll read that here. Okay.

Q. So, for element 1 of claim 16, which is one or more fans mounted to at least one of the five panels, here, you're relying on the Lundahl, right?

A. Yeah. Is it claim 16-L or claim 16-1?

Page 155

Q. 16(I). For claim 16(I), one or more fans mounted to at least one of the five panels, you're relying on Lundahl, correct?

A. Yes.

Q. Now, Lundahl discloses a cooling system to ensure proper bulb operation; is that fair?

A. Yes.

Q. And it's correct that you're not relying on the disclosure of fans from Larsen, right?

A. Correct, although there may have been fans in Larsen's device. I don't recall.

Q. But in this section —

A. In this section, it refers just to Lundahl, yes.

Q. Now, as we talked about earlier, Lundahl discloses ballasts, correct?

A. Correct.

Q. You use Lundahl's ballast in the proposed invention?

Page 156

A. If the device that is created by the combination of Lundahl and Larsen has fluorescent tubes, it would necessarily have ballasts for those fluorescent tubes. However, if the device, the illuminator, incorporates LEDs in place of fluorescent tubes, then no ballast is required.

Q. Can you please turn to page 144 in your report?

A. 144?

Q. Page 144, and starting at paragraph 346.

A. Yes.

Q. So here, we see we have claim 2, and that reads: The system of claim 1, wherein the illuminator is configured to output red light at a dose of 30 joules per centimeter squared to 150 joules per centimeter squared.

Do you see that's the claim being discussed?

A. Yes.

Q. So, in paragraph 347, you have a discussion of Lundahl's teachings and you

Page 157

are referencing the ballasts in that paragraph.

Do you see that?

A. I see, yes, Lundahl's device, which has fluorescent tubes, is accomplished in a preferred embodiment in the present invention by a timer which controls electrical power to the ballasts, yes.

Q. Does that mean you're using Lundahl's ballasts in your combination for this claim?

A. No, it does not mean that.

Q. Then why are you discussing Lundahl's ballasts if you're not using it in the combination?

A. The paragraph begins, 347: Lundahl teaches that since total light dose in joules per squared centimeter is equal to irradiance in watts per squared centimeter times time in seconds, the only additional parameter that needs to be controlled for delivery of the correct treatment light dose is exposure time.

Page 158

And since Lundahl has a device with fluorescent tubes, Lundahl controls the exposure time by the present invention of a timer, which controls electrical power to the ballast, which can then be set by a physician.

If the device does not contain fluorescent tubes, then there's no ballasts in the electrical circuit. It's a requirement for powering fluorescent lamps, but not LEDs.

Q. We had a discussion earlier in which we looked at Lundahl's reflectors.

Do you recall that?

A. Yes.

Q. And you used Lundahl's reflector in your proposed combination of Lundahl and Larsen?

A. The reflectors that Lundahl shows are sized and positioned to correspond to the U-shape of the fluorescent tubes in a device as shown by Larsen, in the sense each panel could be thought of as its own source of light,

Page 159

which it is, and there is not a need for five or nine reflectors behind those panels.

The panels themselves are adjustable and the light output -- the light output from a device containing, for example, five panels of LEDs, does not need a reflector or reflectors behind it to function properly.

Q. So, in your combination of Lundahl and Larsen, are you using reflectors?

A. I would say no, that the panels of Larsen, as I understand it, I could read the specification again, but as I understand it, they do not have reflectors in each panel. And since the light only comes out from the front of the panels, there's no need for a reflector behind.

The reflectors are driven by -- or the need for reflectors are driven by the fact that fluorescent tubes puts light output in all directions facing the person's head inside this U. And also, it

Page 160

puts out light in the opposite direction from the patient's head.

So, in order to capture that light and not waste it, you certainly want to reflect it back toward the patient's head. If you have a light source that is directional, you don't need that reflector behind it.

Q. I believe we discussed this before. You're using Larsen's scan engine in the proposed combination of Lundahl and Larsen for some of the claim elements, correct?

A. It's my interpretation as a POSA that the scan engine of Larsen is an element which can be employed, if desired, in an effort to improve uniformity. But it's my opinion as a POSA that the panels of Larsen would work just fine if the scan engine was not activated. In other words, the light source is not moved side to side from each panel, but simply emitted from each panel.

So, I don't view the scan

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engine as a key element of Larsen. The key element of Larsen is the LED panels, which are individually configureable.

(Claimant's Exhibit 13, Patent Application, was marked for identification as of this date by the Reporter.)

BY MR. GANGULY:

Q. Dr. Grove, you've been handed Exhibit 13 to your deposition, which is a copy of the application of -- the '522 application to Hente, and it bears Bates number BF, underscore, 1411, underscore, ITC, underscore, 00015806.

Now, Hente is directed to a light-emitting device, correct, Dr. Grove?

A. Yes.

Q. Does Hente ever mention photodynamic therapy and diagnosis?

A. I don't believe so.

Q. Dr. Grove, would you agree that one of the goals of the asserted patents is to reduce or eliminate dead spaces and provide a more -- sorry. Let me start

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over.

Would you agree that one of the goals of the asserted patents is to reduce or eliminate optical dead spaces and provide for a more uniform light distribution in an adjustable illuminator?

A. I think one of the patents, either the '512 or the '028, refers to optical dead spaces. I don't recall that both do.

Q. If you can look at the '028 patent.

A. Yes. The '028 patent states in the abstract, for example: The second panel acts as a lighted hinge to reduce or eliminate optical dead spaces between adjacent panels when -- the second panel acts as a lighted hinge to reduce or eliminate optical dead spaces between adjacent panels when the illuminator is bent into a certain configuration.

That's from the abstract of the '028 patent.

Then looking at the

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'512 patent, it also mentions optical dead spaces.

So, they both mention optical dead spaces.

Q. Hente doesn't ever mention eliminating optical dead spaces, correct?

A. I don't recall. Give me a moment and let me review quickly the specification of Hente. Apparently, it's not very long.

Yeah, the specification of Hente describes connection between sections, which may be hinges being positioned at the outer rims of the light-emitting device, respectively sections.

Q. Right. So, Hente doesn't mention eliminating optical dead spaces?

A. I don't believe so.

Q. And Hente doesn't discuss the uniformity of light distribution?

A. In some respects, the patent describes altering the four panels shown in figure 3 to change the intensity

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distribution of his device. So, for example, he shows an embodiment where that light is concentrated, and he shows another embodiment where it's a flat panel.

So, he's discussing intensity distribution but not in the same context as Lundahl, for example.

Q. There's an element in Hente that's labeled 50 and that's -- Hente describes that as a connection mean, correct?

A. Yes, I believe so.

Q. And Hente explains that a connection mean may be a hinge, a stamping, a cutting, or a foil, right?

A. Yes.

Q. And so the connection mean shown in figure 2 of Hente might be a hinge, a stamping, a cutting, or a foil, right?

A. I believe so.

Q. Looking at figure 2 in Hente, it's your opinion that figure -- that in figure 2 of Hente, there's a space between

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the outer rims of sections 20 and 30, correct?

A. Yes.

Q. Okay.

A. A small space, yeah.

Q. Right. Now, does Hente contain any explicit disclosure of a hinge flange?

A. I think the discussion of the hinge was in the paragraph you read. I don't recall the word "flange" in there.

Q. And so not all hinges have flanges; is that right? You would agree?

A. Not all hinges have flanges of the type that are in the Biofrontera device or that are in common door hinges. I think that if you have a hinge that is a piece of foil, there's no distinction between what's the flange and what is the hinge. It sort of could be all one piece.

Q. Does Hente contain any explicit disclosure of a recess?

A. There's a recess which is indicated in -- between panels in both figure 2, and perhaps more explicitly in

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figure 3, where the element 50 is a hinge. And it looks as though from the drawing that the — both the panel 30 and the panel 20 have a recess at the corner where they come together to make room for the hinge 50.

Q. But there's no explicit disclosure of a recess between panels 20 and 30, correct?

A. In the specification?

Q. Yeah.

A. I don't believe, but I'd like to look, if you give me a moment.

Could you repeat your question, please?

Q. There's no explicit disclosure of a recess between panels 20 and 30 in the Hente specification?

A. I have not seen one.

Q. Did you see any explicit disclosure of an indentation in Hente's specification between panels 20 and 30?

A. No, I have not seen that in the specification.

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Q. Now, Hente describes an OLED light-emitting device, correct?

A. He does.

Q. And OLED is a sheet-like light sources [sic], correct?

A. An OLED is an organic light emitting diode. So, OLED stands for organic light-emitting diode. This material can be made into discreet LEDs, as are of a type seen in the Sun device or the Biofrontera device, or it can be made into sheets which is the embodiment, if that's a correct word, in this patent application.

Q. When you say this patent application, we're talking about Hente, right?

A. Correct.

Q. Now, in Hente, in the embodiment, each layer of the OLED device is very thin.

We can agree on that?

A. The OLED layer is thin. It describes the various layers that make up this sandwich, and I will need to refer to

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the section of the specification that describes these layers. It's in paragraph 0007. It says: The object of the invention is achieved by a light-emitting device with at least one first and at least one second section.

I am going to skip a phrase.

And then it goes on to say:

Each section comprises a stack of layers of a substrate with a basic layer, a first electrode layer, a second electrode layer, and an inorganic light-emitting layer, wherein the organic light-emitting layer is sandwiched between the first electrode layer and the second electrode layer. The organic light-emitting layer is emitting an artificial light in an expanded position.

I'll end the reading of paragraph 0007 there.

Q. Okay. So, if we look at paragraph 0009 —

A. Yes.

Q. — we can see that the thickness of the layers in Hente are given

Page 169

in nanometers. And so we can agree that the layers that each of the light-emitting layers — strike that.

So, we can agree that the sections of the Hente light-emitting devices are thin, right?

A. The portions of Hente's device that emit light is, in fact, the layer that is OLED, and that layer is quite thin.

Q. The sections of Hente's light-emitting device are thin enough that they can be connected with a flexible, thin polymer layer, right?

A. The sections shown by Hente have a thickness which is determined, obviously by more than the thickness of the layers described.

So, in paragraph 0009, for example, they talk about, or the specification describes a series of layers, one being 5 to 500 nanometers, another being 100 nanometers. You can have a lot of layers of 100 nanometers and still have something much thinner than this piece of

Page 170

paper.

So, the sections of Hente are obviously thicker than some of these layer thicknesses that is described, but -- so, it's incorrect to assume that the thicknesses of Hente's sections or panels is simply the sum of these nanometer figures. For example, they would be much too thin to manipulate.

Q. But the sum of the layers are thin enough so that they can be connected with flexible, thin polymer layer; is that true?

A. The layers Hente describes are so thin, we're talking about 5 to 100 nanometers. I mean, this is incredibly thin. If the sections consisted only of a few layers that were a few hundred nanometers, they could not be connected by either ordinary hinge or a flexible piece of metal.

When you read Hente, it describes four sections which can be manipulated to put them in a plane so that

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it provides illumination over a broad area, or manipulated to concentrate that light on a small area.

In order to realize this invention, each of the panels have to be thick enough to manipulate. In my understanding of the reading of this patent, although I don't see a description of the thicknesses of each of these panels, it would be my understanding as a POSA that each of the panels, for example, shown in figure 3 might be perhaps a centimeter in thickness, or perhaps even 2 centimeters in thickness.

So, you could add up a few layers of a hundred nanometers and you have a long way to go to get to 2 centimeters. So, there are other surfaces, other materials, that sandwich the OLED layer and its electrodes between them so that it can be manipulated.

Q. One of the connection means of Hente is a flexible, thin polymer layer?

A. Yes. And with those panels --

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with panels of the kind of thickness I described, they could be connected with a thin hinge or polymer of some sort.

Q. Right. So, whatever the final thickness of Hente's layers are, it still has to be in a range, like you said, maybe 1 centimeter or 2 centimeters, that the sections could be connected by a thin flexible, polymer layer, right?

A. What I said is that the thickness of these sections or panels shown by Hente are obviously, based on the specification, are much thicker than some of the thickness of the OLED layers and the electrode layers. So, they're obviously layers that are much thicker, perhaps millimeters, on either side of that OLED layer and electrode layer, that as a full sandwich, comprises a panel.

And that panel is connected to an adjacent panel through some element, which I think Hente says could be a hinge or could be a flexible piece of metal, something that allows connection between

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these sections.

Q. Okay.

All I am saying, because one of the connection means could be this flexible, thin polymer layer, as a person of skill in the art reading this Hente specification, you wouldn't think the sections are like 3 inches in thickness, correct?

A. No. I would imagine they're more likely 1 or 2 centimeters in thickness, although I don't believe it's specified in the specification. I was trying to point out looking at the layers of these, the thicknesses of these various layers of 5 nanometers or 100 nanometers, you would need thousands of those layers to get something even a millimeter thick.

Q. No, I understand that. The thing I was just asking is you don't know what the final dimension is --

A. Correct.

Q. -- but you know -- but you do know that it's relatively small, because

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you wouldn't be able to connect sections with a flexible, thin polymer layer that were very thick?

A. No, I would not say that. I would say reading the specification and describing the way these sections are manipulated to effect various illumination results, it can be assumed that each section is perhaps half a centimeter, perhaps a centimeter, perhaps 1.5 centimeters. But regardless of the thickness, whether it's a few millimeters or a couple of centimeters, they can be connected with what I call a common hinge, or they can be connected with a flexible piece of metal or a polymer, to allow one section to be rotated with respect to the other.

Q. All right. So, why don't we turn to paragraph 192 on page 74?

A. Okay. Let me find that. And we're back to?

Q. We're still in your opening expert report.

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A. Exhibit 1?

Q. Exhibit 1.

A. Page number is?

Q. 74.

A. 74.

Q. Paragraph 192?

A. Paragraph 192.

Q. Yes.

A. Okay. I have it.

Q. Okay. In this paragraph 192, you say that the patents are not enabled because there's not adequate guidance regarding how to provide uniform illumination to the extremities and torso, right?

A. Yes. That's -- let me read it to myself for a moment here. Okay. And I want to take just another quick look at the asserted patents here. I need one more moment.

Q. Okay. While it's your opinion -- strike that.

While in your opinion, you believe that the patent does not -- the

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asserted patents do not adequately provide guidance regarding how to illuminate the extremities and torso, would you agree there's adequate guidance in the asserted patents for providing uniform illumination to the face?

A. I believe so, but let me look again and see what these two patents say about the illumination of the face. Yes. There is information here -- I am looking in the '028 patent -- that shows that quite good uniformity can be obtained over a surface representing a face with the described illuminator. Yes.

Q. So, I think you were just looking at the '028 patent?

A. I was.

Q. If you -- if we turn to paragraph 197, you also include -- you include language from the '512 patent.

Do you see that?

A. In paragraph 197, yes, apparently the text in narrower spacing is from the '512 patent, if I understand this

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correctly. Yes.

Q. Okay. So, when you were looking at the '028 patent, was this the same -- you know, there was overlap in disclosure, was this the disclosure you were looking at?

A. I didn't look at this particular paragraph, but it's my understanding the specification in the '028 patent is virtually identical to the '512 patent.

Q. Okay.

And looking at this disclosure in paragraph 197, which comes from column 8 of the '512 patent, you would agree that the disclosure in column 8 of the '512 patent describes how the embodiment of the present invention achieved uniformity when treating the face at 2 to 4 inches; is that fair?

A. Yes. I believe there's a uniformity measurement at 2 inches and 4 inches but -- or perhaps that was Lundahl. In any case, yes, that's the

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range.

Q. When considering the features of the face, including the cheeks, nose, ears, it's true that the face includes more contoured surfaces as compared to, say, the back or the torso of a person?

A. Yes.

Q. Dr. Grove, you have obviously reviewed the asserted patents and their associated file histories, correct?

A. Yes.

Q. And the provisional application from which the '512 and '028 patents stemmed was filed on October 15, 2015, right?

A. I don't know that date off the top of my head.

Q. That's true. Okay.

Do you have an understanding of the priority date for the asserted patents in this case?

A. Yes. 2015, is the year I recall.

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[REDACTED]

Page 183

[REDACTED]

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[REDACTED]

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3 Today, we talked through your
4 expert reports. And you stand behind all
5 the opinions in your reports, right?

6 A. I do.

7 Q. There's nothing that you want
8 to change sitting here today?

9 A. No.

12 (Whereupon, at 5:50 P.M., the
13 Examination of this Witness was
14 concluded.)
15
16

17 ROBERT E. GROVE

18 Subscribed and sworn to before me
19 this ____ day of _____ 20____.
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22 NOTARY PUBLIC
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EXHIBITS

CLAIMANT EXHIBITS

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	PAGE
1	Expert Report	3
2	Rebuttal Report	3
3	User Manual	11
4	U.S. Patent	21
5	Diagram	28
6	'512 Patent	34
7	'028 Patent	34
8	piece of paper	42
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INFORMATION AND/OR DOCUMENTS (None)	

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QUESTIONS MARKED FOR RULINGS
PAGE LINE QUESTION (None)

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CERTIFICATE

STATE OF NEW YORK)
:
COUNTY OF RICHMOND)

I, MARINA DUBSON, a Notary Public for
and within the State of New York, do hereby
certify:

That the witness whose examination is
hereinbefore set forth was duly sworn and
that such examination is a true record of
the testimony given by that witness.

I further certify that I am not
related to any of the parties to this
action by blood or by marriage and that I
am in no way interested in the outcome of
this matter.

IN WITNESS WHEREOF, I have hereunto
set my hand this 26th day of February 2025.


MARINA DUBSON

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ERRATA SHEET 1

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ROBERT E. GROVE

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THIS ____ DAY OF _____, 20__.

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1	ERRATA SHEET 2			
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