

1 UNITED STATES PATENT AND TRADEMARK OFFICE

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3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

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5
6 HESAI TECHNOLOGY CO., LTD.

7 Petitioner

8 V.

CERTIFIED COPY

9 OUSTER, INC.

10 Patent Owner

11 - - -

12 Case IPR 2023-01456 (US Patent No. 11,178,381)

13 Case IPR 2023-01457 (US Patent No. 11,190,750)

14 Ref. 56432-0092IP2 & 56432-0093IP2

15 WEDNESDAY, OCTOBER 9, 2024

16
17 Oral deposition of JASON A. JANÉT,
18 Ph.D., held in the offices of Fish &
19 Richardson, P.C., 1000 Maine Avenue SW, Suite
20 1000, Washington, D.C., commencing at 9:09
21 a.m., on the above date, before Deborah L.
22 Williams, a Certified Court Reporter.

23 - - -

24
25 No. 24-142462

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THE SULLIVAN GROUP OF COURT REPORTERS

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I N D E X

WITNESS **PAGE NO.**

JASON A. JANÉT, Ph.D.

By Mr. Deutsch.....4, 100

By Mr. Lauppe.....94

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E X H I B I T S

NO. **DESCRIPTION** **PAGE MARKED**

Exhibit 2018 Document.....95

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JASON A. JANÉT, Ph.D., after
having been duly sworn, was examined and
testified as follows:

- - -

EXAMINATION

- - -

BY MR. DEUTSCH:

Q. All right. Thank you for being here
today, Dr. Janét. To start, I'll note, of
course, that our conversation is being
transcribed by the court reporter.

To make her job easier and ensure we
can obtain an accurate record, it's important
not to talk over each other. So I'll ask a
question, and then I'll pause for you to
answer.

If a question is unclear, just let
me know, and I can rephrase or try to clarify.
If you don't ask me to clarify, I'll assume
that you understood the question.

Is that fair?

A. That's fair.

Q. And if you need a break, of course,
just please let me know. We'll try to take

1 breaks regularly.

2 Do you understand that you are under
3 oath and giving testimony today as though you
4 were in front of the Patent Trial and Appeal
5 Board?

6 A. Yes.

7 Q. Is there any reason that you cannot
8 give truthful and accurate testimony today?

9 A. No.

10 Q. To ensure clarity, there's a few
11 terms that we'll use throughout the deposition,
12 a few documents that we'll refer to. So when I
13 use the term '381 patent, I'm referring to US
14 Patent 11,178,381, and I'll give you a copy of
15 that now, which is Exhibit 1001 in IPR
16 2023-01456. And when I use the term '381 IPR
17 or '381 proceeding, I'm referring to that case,
18 case IPR 2023-01456.

19 Does that make sense?

20 A. Yes.

21 Q. And then, similarly, when I use the
22 term '750 patent, I'm referring to US Patent
23 number 11,190,750, and that is marked as
24 Exhibit 1001 in IPR 2023-01457.

25 Do you understand?

1 A. I understand.

2 Q. And I'll give you a copy of that as
3 well at this time.

4 A. Thank you.

5 Q. Dr. Janét, have you ever been
6 deposed before?

7 A. Yes.

8 Q. About how many times have you been
9 deposed?

10 A. I think it's around 50.

11 Q. And how did you prepare for today's
12 deposition?

13 A. I reviewed the testimony I provided
14 and my declarations. I reviewed the prior art
15 and, you know, provided other documents,
16 materials considered.

17 Q. Do you know about how much time you
18 spent preparing?

19 A. I don't know that I have an accurate
20 measurement. It was certainly hours.

21 Q. Did you communicate with anybody in
22 the process of preparing for --

23 A. I did.

24 Q. -- this deposition?

25 A. I did.

1 MR. LAUPPE: Object to the form.

2 THE WITNESS: And I apologize for
3 talking over you. I communicated with
4 counsel, who's present here.

5 BY MR. DEUTSCH:

6 Q. Did you communicate with anyone
7 else?

8 A. No.

9 Q. In terms of the documents, I think
10 you mentioned, generally, you may have -- what
11 references you reviewed, but I'll ask, I guess,
12 a slightly different question.

13 What references did you review in
14 preparation for this deposition?

15 MR. LAUPPE: Object to form.

16 THE WITNESS: The references
17 reviewed include the two declarations from
18 myself and the two declarations from Dr.
19 Shanley, the prior art that was alleged
20 to -- well, that's used in this case by
21 Hesai and Dr. Shanley.

22 And, otherwise, I believe I scanned
23 over the petition, the decision to institute
24 and a couple of other documents that are
25 referenced in my declaration.

1 BY MR. DEUTSCH:

2 Q. Were there any documents not
3 referenced in the declaration that you used in
4 preparation for the deposition?

5 A. No.

6 Q. Where do you currently work, Dr.
7 Janét?

8 A. I currently work for Applied
9 Research Associates.

10 Q. Have you ever done work for Ouster
11 in the past prior to these proceedings?

12 MR. LAUPPE: Object to form.

13 THE WITNESS: I believe I've served
14 as an expert witness. I would have to
15 double-check my resume to be sure. I've
16 been involved with 80 or more matters, so I
17 don't remember all of them.

18 BY MR. DEUTSCH:

19 Q. Understood. Do you recall when you
20 were contacted to begin work on this matter?

21 A. I actually don't. For the IPRs, I
22 don't remember a specific date. I'd probably
23 have to go back and take a look at notes.

24 Q. Do you recall what your next
25 activity was after being contacted by Ouster to

1 work on this proceeding?

2 MR. LAUPPE: Object to form. Scope.

3 THE WITNESS: I don't recall

4 exactly. I assume it had something to do

5 with in reading or catching up on the

6 petition and the decision to institute and

7 the POPR and other relevant documents, of

8 course the prior art, alleged prior art.

9 BY MR. DEUTSCH:

10 Q. And then eventually it got to the

11 point of preparing your declaration in these

12 proceedings.

13 Can you explain the process of

14 preparing your declaration?

15 MR. LAUPPE: Object to form.

16 THE WITNESS: Well, the process that

17 I normally follow and I'm sure I followed in

18 this situation is that I initially tried to

19 get familiar with the positions of the

20 parties and, again, reviewing the patents at

21 issue and the alleged prior art and other

22 relevant information and then writing an

23 initial draft that I believe at a minimum

24 lays out my opinions or at least the

25 foundations for those opinions. And then I

1 send that to counsel and then refine that
2 document in coordination with counsel.

3 BY MR. DEUTSCH:

4 Q. So if I understood you correctly,
5 you said you wrote the first draft of your '381
6 declaration.

7 A. Correct.

8 Q. Did anyone else assist you in
9 preparing that first draft of the '381
10 declaration?

11 MR. LAUPPE: Object to form.

12 THE WITNESS: My recollection would
13 be, no, that I was the one that prepared the
14 initial draft.

15 BY MR. DEUTSCH:

16 Q. Let's turn to the '381 patent,
17 Exhibit 1001, which you have a copy of in front
18 of you. I'd like to step through the '381
19 patent a bit and just get an understanding of
20 your view of the '381 patent. Let's start at
21 Figure 1 of the '381 patent.

22 What does Figure 1 of the '381
23 patent show?

24 MR. LAUPPE: Object to form. Scope.

25 THE WITNESS: I defer, of course, to

1 my description of this patent in its
2 entirety and, of course, Figure 1 to what's
3 in my declaration, which I don't have in
4 front of me right now.

5 In its most basic form, Figure 1
6 provides a graphic or drawing of what's
7 described in a more detailed fashion
8 starting -- well, essentially, in Column 1
9 but in more detail Column 2 where it says
10 that [as read]:

11 "As shown in Figure 1, a
12 one-dimensional optical system 100 for
13 collecting distance information within a
14 field includes: a set of illumination
15 sources labeled 110, which is shown at the
16 bottom right of the drawing in Figure 1,
17 arranged along first axis, each illumination
18 source in the set of illumination sources
19 110 configured to output an illuminating
20 beam of an operating wavelength toward a
21 discrete spot in the field ahead of the
22 illumination source."

23 That beam shown projecting from the
24 bulk optic 120 on the lower left side of the
25 figure and toward a discrete spot in the

1 field ahead of the illumination source would
2 be where it intersects with and is reflected
3 off the surface shown on the left side of
4 the figure, Figure 1.

5 The return or the reflection, as you
6 can see, is shown scattering or diverging as
7 it moves from the reflected surface back to
8 the bulk optic 130 and then passing through
9 an aperture layer labeled 140.

10 The -- once it passes through the
11 aperture layer, the aperture layer defining
12 the field of view, it passes through a lens
13 array, and then the lens array is labeled
14 150 and then a light filter labeled 160, and
15 to be more precise with that, an optical
16 filter labeled 160 shown in the figure but
17 not labeled.

18 Once it passes through the optical
19 filter, it enters and exits from diffusers
20 which within the document are referred to as
21 180. In fact, Column 2, line 54 -- I'm
22 sorry, line 34 mentions the diffuser, and
23 then once it leaves the diffuser, it then --
24 the rays reach the set of pixels 170.

25 There are obviously additional

1 details in the Figure 1 within the document,
2 but I think that gets the gist across.

3 BY MR. DEUTSCH:

4 Q. Yes, thank you. And let's turn to
5 Figure 2, and I have a similar question for
6 Figure 2. What does Figure 2 show?

7 MR. LAUPPE: Object to form and
8 scope.

9 THE WITNESS: Figure 2 from Column 1
10 of the patent says that it's a schematic
11 representation in accordance with one
12 variation of the system. Figure 2 is used
13 for illustrative purposes reviewing the
14 patent to describe, for example, the lower
15 portion of Column 3 around line 61, how the
16 aperture layer is utilized or employed.

17 Otherwise, I would say any
18 additional clarity as it relates to what I
19 utilized in my declaration, we would
20 probably need to visit my declaration
21 regarding this.

22 BY MR. DEUTSCH:

23 Q. Thank you. So in Figure 2, I see
24 two components kind of at the lower right, 111
25 and 112.

1 What does component 111 refer to?

2 MR. LAUPPE: Object to form and
3 scope.

4 THE WITNESS: Well, 111 is referred
5 to as a first illumination source.

6 And what was the other number? 112?
7 I'm sorry.

8 MR. DEUTSCH: Correct.

9 THE WITNESS: Just as a quick scan
10 through the '381 patent, and, again, without
11 the support of my declaration in front of
12 me, I don't see where 112 is -- oh, here it
13 is. It's called out on Column 15, line 44
14 as a second illumination source.

15 BY MR. DEUTSCH:

16 Q. Okay. And let's start with 111. I
17 see five lines extending out from 111.

18 What do those lines depict?

19 MR. LAUPPE: Object to form. Scope.

20 THE WITNESS: Just out of curiosity,
21 is this in my declaration?

22 BY MR. DEUTSCH:

23 Q. I'm sorry, here's your declaration.
24 It's Exhibit 2009.

25 A. Is there a particular reference to

1 Figure 2, particularly those lines, in my
2 declaration?

3 Q. I don't have a paragraph number,
4 but, please, if there is --

5 A. What about in Dr. Shanley's? Is
6 there a reference to Figure 2 in Dr. Shanley's
7 declaration on '381?

8 Q. There's discussion of Figure 2. I
9 guess I'm asking just specifically about the
10 lines that are shown right now and
11 understanding what those five lines are
12 showing.

13 Coming from 111, it looks like they
14 pass through lens 120 into the field.

15 MR. LAUPPE: Object to form and
16 scope.

17 THE WITNESS: Well, as you can see,
18 it's not annotated, so the particular intent
19 of those lines, which, again, I do not
20 recall referencing in my declaration but I'm
21 happy to review to be sure, it simply refers
22 to it as an illumination source, but those
23 lines aren't annotated.

24 BY MR. DEUTSCH:

25 Q. And if you follow those lines, it

1 looks like after passing through lines 120.

2 They diverge slightly and then hit a spot in
3 the field; is that correct?

4 MR. LAUPPE: Object to form and
5 scope.

6 THE WITNESS: Can you point me to
7 what you're referring to?

8 BY MR. DEUTSCH:

9 Q. Yeah. I'm referring to those five
10 lines in following those from 111 as they
11 travel to the left in the figure, and you'll
12 see the top and bottom of those five lines have
13 arrowheads at that spot in the field.

14 Do you see that?

15 MR. LAUPPE: Object to form and
16 scope.

17 THE WITNESS: Again, if this is in
18 my declaration and we want to discuss my
19 opinions regarding Figure 2, I'm happy to do
20 that, but I'm not seeing five lines with
21 arrows at the ends in the beginning, and
22 you're sort of generally pointing to this.
23 So I see lines. I don't see annotations. I
24 don't see references in the patent as I did
25 a quick review here.

1 If I did a more thorough review, it
2 would be discussed in my declaration, which
3 I'm happy to focus on.

4 BY MR. DEUTSCH:

5 Q. Yeah, please take your time and look
6 at your declaration, if that's helpful.

7 A. (Witness reviewing document.)

8 Q. And I can clarify the question
9 further, Dr. Janét.

10 A. Sure.

11 Q. I'm just looking for your
12 understanding of what's being emitted from
13 component 111 and what happens to that emission
14 as it interacts with the other components that
15 are found in Figure 2.

16 MR. LAUPPE: Object to form and
17 scope.

18 BY MR. DEUTSCH:

19 Q. And if you haven't taken an opinion
20 on that, you can let me know.

21 A. So to your, I guess, initial
22 question, my reference to Figure 2 in my
23 declaration, as far as I can tell, is limited
24 to a quote in my discussion about the aperture
25 later, more specifically I think in paragraph

1 121, which regards the term or the -- let me
2 get my bearings here -- the plurality of pixels
3 has a field of view coincident with an emission
4 of region.

5 And my understanding of Dr.
6 Shanley's understanding regarding the field of
7 view and the term coincident with, I cite to, I
8 believe, Column 4, lines 15 through 18, and I'm
9 quoting [as read]:

10 "The aperture layer 140 includes a
11 relatively thin opaque structure coinciding
12 with (for example, arranged along) the focal
13 plane of the bulk image optic 130, as shown in
14 Figures 1 and 2."

15 As far as I can recall, that is the
16 extent to which I refer to Figure 2. I'm happy
17 to address any other places where you might
18 find that that I don't recall off the top of my
19 head.

20 So then to your second question of
21 what is -- and I'm paraphrasing, so you can
22 correct me if I'm off here -- what is emanating
23 from component 111; is that correct?

24 Q. That's a good place to continue,
25 yeah.

1 A. In Column 5, line 45, it says
2 [as read]:

3 "Generally, photons projected into
4 the field by the first illumination source 111
5 illuminate a particular region of a surface (or
6 multiple surfaces) in the field within the
7 field of view of the first sense channel and
8 are reflected (for example scattered) by the
9 surfaces."

10 So to your question, just from the
11 patent language, photons are projected from the
12 illumination source 111.

13 Q. And to make sure I'm understanding
14 correctly, so you're saying the lines in Figure
15 2 are representative of those photons that are
16 projected from the illumination source 111?

17 MR. LAUPPE: Object to form and
18 scope.

19 THE WITNESS: I don't believe I'm
20 saying that. I think all I've said is that
21 those lines aren't annotated, and I don't
22 recall off the top of my head using or
23 referring to those lines.

24 I see that you're trying to bridge
25 that those lines represent the photons, but

1 I really wasn't asked to opine on that that
2 I recall. I'd defer to my declaration, of
3 course.

4 BY MR. DEUTSCH:

5 Q. Do you have an opinion on what
6 happens to those lines as they are reflected by
7 the surface and then returned to the right in
8 Figure 2?

9 MR. LAUPPE: Object to form and
10 scope.

11 THE WITNESS: Well, again, you're
12 mapping those lines to the photons, and I do
13 not see an annotation related to those
14 lines. I simply would refer to, as I
15 mentioned, Column 5, line 45 where it says
16 [as read]:

17 "Photons projected into the field by
18 the first illumination source 111 illuminate
19 a particular region of a surface (or
20 multiple surfaces) in the field," and it
21 goes on.

22 BY MR. DEUTSCH:

23 Q. Again, just in the context of Figure
24 2, it looks like some of those lines that
25 emanate from 111 pass through what you referred

1 to as the aperture layer; is that correct?

2 MR. LAUPPE: Object to form and
3 scope.

4 THE WITNESS: You're referring to
5 which lines?

6 BY MR. DEUTSCH:

7 Q. The five lines that extend from
8 emitted 111.

9 MR. LAUPPE: Same objections.

10 THE WITNESS: And what was your
11 question? Some of those lines pass through
12 the aperture layer; is that correct?

13 BY MR. DEUTSCH:

14 Q. Correct. To be more specific, the
15 aperture layer that's labeled with numeral 140.

16 MR. LAUPPE: Same objections.

17 THE WITNESS: Again, I defer to my
18 declaration. I do not recall opining about
19 those lines.

20 BY MR. DEUTSCH:

21 Q. So looking at Figure 2, it's not
22 clear to you whether some lines pass through
23 the aperture layer or not.

24 MR. LAUPPE: Object to form and
25 scope.

1 THE WITNESS: There are lines that
2 are moving in a variety of directions in
3 this drawing, and these lines are not
4 individually annotated or even collectively
5 annotated, as I can recall.

6 BY MR. DEUTSCH:

7 Q. So let's just simplify and take one
8 line and follow it from component 111 until its
9 final.

10 So starting at 111, do you see the
11 top line of that set of five lines?

12 MR. LAUPPE: Object to form and
13 scope.

14 THE WITNESS: I do see a top line
15 moving from this rectangle labeled 111.
16 Whether it's moving from or back towards --
17 you know, I realize that it's an emitter,
18 but the significance of that line and the
19 direction that it's moving is not clear
20 immediately at 111, but I do see a top line
21 on the left of the rectangle labeled 111.

22 BY MR. DEUTSCH:

23 Q. And if you follow that top line to
24 the left in Figure 2, it intersects with a
25 component labeled 120; is that correct?

1 MR. LAUPPE: Object to form and
2 scope.

3 THE WITNESS: Again, I do not recall
4 opining about this in my declaration. I see
5 that there's a top line that is drawn and is
6 either through, above or below -- it's hard
7 to tell because it's a 2D rendering -- the
8 component labeled 120.

9 BY MR. DEUTSCH:

10 Q. And if you continue with that line,
11 it angles upwards slightly on the page the way
12 it's drawn and continues to the left where
13 there's an arrowhead and it appears to hit
14 another component; is that correct?

15 MR. LAUPPE: Object to form and
16 scope.

17 THE WITNESS: Assuming it's the same
18 line after exiting or to the left of 120,
19 there is an angled line angled up and with
20 an arrowhead at the top tapered in of
21 whatever is represented on the left side of
22 Figure 2.

23 BY MR. DEUTSCH:

24 Q. And then that line continues back to
25 the right and on the page appears to encounter

1 a component labeled 130; is that correct?

2 MR. LAUPPE: Object to form and
3 scope.

4 THE WITNESS: Well, if you are
5 moving from left to right, that line
6 actually intersects another line, and so the
7 continuity of that is in question to whether
8 it's a straight path or a divergent path.

9 Again, I don't recall opining about
10 Figure 2, other than including a reference
11 to -- to it in the citation in paragraph 121
12 regarding the aperture layer.

13 BY MR. DEUTSCH:

14 Q. And then that top line continues
15 through 130 through an opening in aperture
16 layer 140 through component 151.

17 A. Which top line are you referring to
18 at this point?

19 MR. LAUPPE: Object to form and
20 scope.

21 BY MR. DEUTSCH:

22 Q. The same top line we've been talking
23 about that continues after the arrowhead at
24 component 130.

25 MR. LAUPPE: Same objections.

1 THE WITNESS: Again, if there's a
2 place in my declaration that particularly
3 calls out these details where I opine about
4 this, I'm happy to talk about it.

5 Otherwise, this, as I mentioned
6 before, there is a question as to whether
7 what you were calling the top line to begin
8 with is what continues straight or if
9 there's any sort of exchange of
10 directionality because there's a -- now
11 there's a new top line.

12 BY MR. DEUTSCH:

13 Q. To be clear, I'm referring to the
14 line that passes through an opening in aperture
15 layer 140.

16 Is that the line you were referring
17 to?

18 MR. LAUPPE: Object to form and
19 scope.

20 THE WITNESS: You're referring to
21 which line? Because, again, there's now --
22 there's a top line with an arrowhead that
23 terminates at the aperture layer.

24 BY MR. DEUTSCH:

25 Q. Yeah, thank you for being precise in

1 your answers here.

2 Do you see aperture layer 140?

3 A. Yes.

4 Q. And how many openings are depicted
5 in the aperture layer 140 in Figure 2?

6 MR. LAUPPE: Object to form and
7 scope.

8 THE WITNESS: Well, it would appear
9 there are two openings.

10 BY MR. DEUTSCH:

11 Q. And in the top of those two
12 openings, do you see lines passing through that
13 opening?

14 MR. LAUPPE: Object to form and
15 scope.

16 THE WITNESS: If you're asking me
17 are there lines in the gap between the upper
18 two rectangles that are hashed and
19 presumably part of 140, because they have a
20 similar appearance, there are three lines
21 that are drawn in that gap.

22 BY MR. DEUTSCH:

23 Q. And just to clarify, you don't have
24 an opinion on what the direction of travel is
25 of those lines or what's depicted by those

1 lines?

2 MR. LAUPPE: Object to form and
3 scope.

4 THE WITNESS: Again, this was not
5 something I opined on. I'm happy to go to
6 my declaration.

7 If you'll notice, there's not an
8 arrow on that -- on several of these lines,
9 but I'm assuming that you're referring to
10 the three that are passing through a gap
11 between the upper two rectangles, but the
12 arrowheads are on opposite sides of objects.
13 In fact, it appears that the -- almost as
14 physical the lines terminate at 151.

15 BY MR. DEUTSCH:

16 Q. Now looking at that same gap in 140,
17 if you look just below and to the left, there's
18 a line and an arrowhead that appears to
19 intersect material of 140.

20 Do you see that?

21 MR. LAUPPE: Object to form and
22 scope.

23 THE WITNESS: I think I'm going to
24 stop here. Where in my declaration or Dr.
25 Shanley's declaration is this in-depth

1 analysis on Figure 2?

2 BY MR. DEUTSCH:

3 Q. You did review the '381 patent,
4 correct?

5 A. I did review the '381 patent,
6 correct. I didn't refer to this, other than,
7 as far as I can recall, with regards to the
8 fact that there exists aperture layers that are
9 used for defining the field of view.

10 Q. So you don't have an opinion on what
11 Figure 2 of the '381 patent is depicting when
12 it shows some lines emanating from 111 as
13 passing through the aperture layer and at least
14 one line not passing through the aperture
15 layer; is that correct?

16 MR. LAUPPE: Object to form and
17 scope.

18 THE WITNESS: As far as I can
19 recall, any analysis of the lines that you
20 are trying to maneuver me through is not in
21 my declaration, and the opinions that I
22 formed in this matter or with regard to this
23 matter are in my declaration.

24 I also don't recall any detailed
25 analysis by Dr. Shanley about these lines.

1 Now, I could be wrong on both
2 fronts. If I am, I'm happy to visit where I
3 specifically analyzed these lines that we
4 are analyzing extemporaneously here, but
5 this is kind of verging into hypothetical
6 territory because I didn't really have a
7 reason, I believe, to look at these lines in
8 such detail and form opinions about it.

9 Again, if this is in my declaration
10 or Dr. Shanley's, I'm happy to look at it,
11 and I can analyze it.

12 BY MR. DEUTSCH:

13 Q. So right now sitting here, you don't
14 have an opinion on the field of view of the
15 pixel that corresponds to emitter 111 in Figure
16 2.

17 MR. LAUPPE: Object to form and
18 scope.

19 THE WITNESS: My opinion about the
20 field of view of 111 would be any reference
21 I have to Figure 1. Figure 1 -- again, if
22 I'm wrong, point it to me. But 111 in
23 Figure 1 does not have any lines drawn from
24 it passing through bulk optics and the like.

25 BY MR. DEUTSCH:

1 Q. So you didn't consider Figure 2 in
2 your opinion of the field of view of a pixel
3 and its corresponding emitter.

4 MR. LAUPPE: Object to --

5 MR. DEUTSCH: Let me rephrase that.

6 BY MR. DEUTSCH:

7 Q. Dr. Janét, you didn't consider
8 Figure 2 in your opinion of determining the
9 field of view of a pixel in the '381 system.

10 MR. LAUPPE: Object to form and
11 scope.

12 THE WITNESS: To the best of my
13 recollection, my consideration of Figure 2
14 was limited to what I describe in paragraph
15 121, which relates to [as read]:

16 "The aperture layer 140 includes a
17 relatively thin opaque structure coinciding
18 with (for example, arranged along) the focal
19 plane of the bulk imaging optic 130, as
20 shown in Figures 1 and 2."

21 The thin opaque structure coinciding
22 with the focal plane of the bulk imaging
23 optic, you can see Figure 1 where the focal
24 plane, i.e., the marginal rays, for lack of
25 a better term, converging and that -- and

1 I'm pointing to aperture layer 140 --
2 arranged along the focal plane of the bulk
3 imaging optic 130.

4 So that's the reference. And as far
5 as I can recall off the top of my head --
6 again, if I'm wrong, I'm happy to visit
7 where else I might be describing or
8 referencing Figure 2. But the extent to
9 which I'm referencing Figure 2 or formed any
10 opinions about Figure 2 is the aperture
11 layer coinciding with the focal plane of the
12 bulk imaging optic 130.

13 BY MR. DEUTSCH:

14 Q. So let's talk about the aperture
15 layer. I want to make sure I understand your
16 understanding of aperture layer 140.

17 Could you tell me again how aperture
18 layer 140 functions in the '381 system shown in
19 Figure 2?

20 MR. LAUPPE: Object to form and
21 scope.

22 THE WITNESS: How it functions?

23 BY MR. DEUTSCH:

24 Q. I can clarify that.

25 Maybe I would say what the purpose

1 of aperture layer 140 is.

2 MR. LAUPPE: Object to form and
3 scope.

4 BY MR. DEUTSCH:

5 Q. If it's helpful, we can talk about
6 the bottom of Column 3 of the '381 patent. At
7 line 60 the paragraph begins [as read]:

8 "As shown in Figures 1 and 2, the
9 system includes an aperture layer 140," and
10 then continuing at line 65, "wherein each
11 aperture in the set of apertures 144 defines a
12 field of view in the field coincident a
13 discrete spot output by a corresponding
14 illumination source in the set of illumination
15 sources 110."

16 Do you see that?

17 A. Yes.

18 Q. And so, is that what's shown in
19 Figure 4 with the two apertures that you've
20 identified, or is that referring to something
21 else?

22 MR. LAUPPE: Object to form and
23 scope.

24 THE WITNESS: Well, just to fill in
25 the gaps, starting at 61 [as read] :

1 "As shown in Figures 1 and 2, the
2 system includes an aperture layer 140
3 coincident the focal plane" -- which was the
4 major point for my reference to Figure 2, as
5 far as I could tell, the only reference to
6 Figure 2 -- "defining a set of apertures 144
7 in a line array parallel to the axes of the
8 illumination sources, and defining a stop
9 region 146 around the set of apertures 144,
10 wherein each aperture in the set of
11 apertures 144 defines a field of view in the
12 field coincident a discrete spot output by a
13 corresponding illumination source in the set
14 of illumination sources 110, and wherein
15 stop region 146 absorbs and/or reflects
16 light rays reflected from surfaces in the
17 field outside of fields of view defined by
18 the set of apertures 144 and passing through
19 the bulk imaging optic 130."

20 So just looking at this excerpt as
21 an example, the apertures or the aperture
22 layer defined the field of view outside of
23 which the stop region absorbs and/or
24 reflects light rays that are outside the
25 fields of view.

1 BY MR. DEUTSCH:

2 Q. So you don't have an opinion in
3 Figure 2 which lines represent photons within
4 the field of view or outside the field of view
5 of a particular pixel?

6 MR. LAUPPE: Object to form and
7 scope.

8 THE WITNESS: I'm sorry, were you
9 asking about Figure 4 or Figure 2? I think
10 that your question originally was about
11 Figure 4.

12 BY MR. DEUTSCH:

13 Q. Figure 2.

14 A. So could you ask that again, please?

15 Q. Am I understanding correctly that
16 you don't have an opinion regarding Figure 2 as
17 to which lines represent photons within the
18 field of view or outside the field of view of a
19 given pixel?

20 MR. LAUPPE: Object to form and
21 scope.

22 THE WITNESS: Again, the extent to
23 which I referenced Figure 2 related to the
24 aperture layer being coincident to I believe
25 the -- the aperture layer coinciding with

1 the focal plane of the bulk imaging optic
2 130.

3 Outside of that, I don't believe I
4 formed any opinions about those lines.

5 BY MR. DEUTSCH:

6 Q. What would a person with skill in
7 the art understand those lines to mean in view
8 of the '381 specification?

9 MR. LAUPPE: Object to form and
10 scope.

11 THE WITNESS: Well, I believe that a
12 person with ordinary skill in the art would
13 review the patent for any detailed
14 description about those lines and form an
15 opinion where there are details and specific
16 reference to those lines.

17 I do not recall in my declaration or
18 Dr. Shanley's where any detailed analysis
19 was and opinions formed from these lines.
20 I'm, of course, happy to review anything
21 specific in either declaration.

22 BY MR. DEUTSCH:

23 Q. Understood. That makes sense, you
24 don't recall considering those lines in your
25 analysis to form the opinions in your

1 declaration.

2 MR. LAUPPE: Object to form and
3 scope.

4 THE WITNESS: I'm happy to -- where
5 I formed opinions about those lines, I'm
6 happy to review those with you or whatever
7 Dr. Shanley did.

8 BY MR. DEUTSCH:

9 Q. That's all I'm trying to understand,
10 what your opinions are of those lines. If you
11 didn't consider them, that's fine. If you did,
12 I'd like to know what those opinions are.

13 MR. LAUPPE: Object to form and
14 scope.

15 BY MR. DEUTSCH:

16 Q. Does that make sense?

17 A. I think that you're -- and it might
18 have something to do with how I, as a person
19 with ordinary skill, would interpret what
20 you're saying. So considering versus forming
21 an opinion about seem like two different steps.

22 I don't recall forming an opinion
23 about those lines, and if I did, I'm more than
24 happy to dive into the details of what I've
25 written or stated, and the same for Dr.

1 Shanley.

2 Q. So sitting here right now, you don't
3 have an understanding of what those lines are
4 depicting in Figure 2?

5 MR. LAUPPE: Object to form and
6 scope.

7 THE WITNESS: As far as I can
8 recall, I did not form an opinion about
9 those lines, and I do not see specific
10 annotations that would make it easy for
11 somebody reading this patent to know exactly
12 what those lines are intended to represent.
13 And if I or Dr. Shanley did, I'm happy to go
14 into those details.

15 MR. DEUTSCH: Understood.

16 Would a break be helpful at this
17 point? I know we've been going about an
18 hour.

19 THE WITNESS: I'm fine. We can keep
20 going.

21 BY MR. DEUTSCH:

22 Q. Let's turn to paragraph 122 of your
23 '381 declaration. In paragraph 122 you cited
24 to the Oxford English Dictionary 1989 for a
25 definition of coincident and, in particular, a

1 definition as occupying the same place or
2 portion of space; is that correct?

3 A. That's correct.

4 Q. And I'm just trying to understand
5 what it means to occupy the same place or
6 portion of space as you're referring to it
7 here?

8 MR. LAUPPE: Object to form.

9 BY MR. DEUTSCH:

10 Q. Reading the declaration at paragraph
11 122, and the definition particularly, the
12 language does not recite occupying only the
13 same space; is that right?

14 MR. LAUPPE: Object to form and
15 scope.

16 THE WITNESS: Well, the excerpt from
17 the definition from Exhibit 2011 at 5 is, as
18 I cited it there, occupying the same place
19 or portion of space.

20 Can I make a correction on that?

21 It's, quote, occupying the same
22 place or portion of space.

23 BY MR. DEUTSCH:

24 Q. So, in your opinion, does that --
25 let me rephrase that.

1 Are you suggesting that that means
2 two things need to be exactly in the same place
3 or portion of space in order to be occupying
4 the same place or portion of space as you've
5 used it there?

6 MR. LAUPPE: Object to form.

7 BY MR. DEUTSCH:

8 Q. I can clarify that if it's helpful.

9 A. Uh-huh. Go ahead.

10 Q. As using that definition in
11 paragraph 122, is it your understanding that if
12 two circles are aligned on a common axis, that
13 would be an example of occupying the same place
14 or portion of space?

15 MR. LAUPPE: Object to form.

16 Hypothetical. Object also to scope.

17 THE WITNESS: I fear there might be
18 a few different ways to interpret what
19 you're asking me, so I don't feel I can go
20 into a hypothetical.

21 If you have an example you can show
22 me or something like that, even then I might
23 be hesitant depending on the variability on
24 interpretation, but...

25 BY MR. DEUTSCH:

1 Q. Yeah, and to clarify further, I'm
2 just trying to understand your usage in
3 paragraph 122 and at a high level whether
4 you're saying occupying the same place or
5 portion of space means exactly the same place
6 or portion of space and only the same place or
7 portion of space or if you're suggesting that
8 it means something different.

9 MR. LAUPPE: Object to form.

10 THE WITNESS: To add clarity in
11 response to your question, a little further
12 down in paragraph 122 I say [as read]:

13 "Consistent with this definition, my
14 understanding of the 'each pixel in the
15 plurality of pixels has a field of view
16 coincident with an emission region of a
17 corresponding optical emitter claim language
18 is that it means an emission region of an
19 emitter and a field of view of a
20 corresponding detector occupy substantially
21 the same 'portion of space' in the field."

22 BY MR. DEUTSCH:

23 Q. So what do you mean by
24 "substantially the same portion of space in the
25 field"?

1 MR. LAUPPE: Object to form.

2 THE WITNESS: Substantially is, at
3 least in part, defined by the '381 patent to
4 mean the vast majority of which or, in fact,
5 in the '381 I believe it can be all of the
6 field of view.

7 But to add further context, the '381
8 is concerned with minimizing waste, wasted
9 energy, while at the same time improving or
10 maximizing the signal-to-noise ratio. So
11 considering where those intersect, a person
12 with ordinary skill would take the
13 position -- and this is mentioned several
14 places in my declaration, and I'm happy to
15 visit them individually -- that it occupies
16 the -- you know, substantially the same area
17 or the same portion of space and in doing so
18 in such a manner that you're again
19 minimizing waste, which is to say loss of
20 emitted energy that would be outside that
21 field of view but maximizing a
22 signal-to-noise ratio, which would entail
23 the vast majority or not all of that field
24 of view.

25 Q. Understood. So when you're citing

1 to that dictionary in 122, you're not saying
2 that it's exactly the same --

3 MR. LAUPPE: Object to form.

4 BY MR. DEUTSCH:

5 Q. -- in order to satisfy that
6 definition, but it could be exactly the same.

7 MR. LAUPPE: Object to form and
8 scope.

9 THE WITNESS: I'm simply following
10 the guidance of the '381 patent where it
11 describes occupying substantially the same
12 amount of space in such a manner that you
13 minimize waste and you maximize
14 signal-to-noise ratio.

15 BY MR. DEUTSCH:

16 Q. And so in some cases, the area is
17 slightly different while still minimizing ways
18 to maximizing the signal-to-noise ratio?

19 MR. LAUPPE: Object to form.

20 Hypothetical. Object to scope.

21 THE WITNESS: The area you're
22 referring to?

23 BY MR. DEUTSCH:

24 Q. The area that you were referring to.
25 I was just trying to understand your answer. I

1 think you said that the '381 patent describes
2 occupying substantially the same amount of
3 space in such a manner that you minimize waste
4 and you maximize signal-and-noise ratio.

5 So I'm trying to understand if that
6 area, in order to minimize waste and maximize
7 signal-to-noise ratio as you've described it,
8 if you're saying the area is exactly the same
9 or there's some leeway where you're still
10 achieving those functions.

11 MR. LAUPPE: Object to form and
12 scope.

13 THE WITNESS: I'm not sure I totally
14 understand your question. First of all, I
15 think you meant signal-to-noise ratio.

16 MR. DEUTSCH: Correct.

17 THE WITNESS: And I think if there's
18 a particular part of my declaration where
19 I'm referencing the area you're referencing,
20 just to make sure we're talking about the
21 areas, that probably would be a better place
22 to start.

23 BY MR. DEUTSCH:

24 Q. Sure. I think one example is
25 paragraph 110 of your declaration, if I'm

1 correct -- correct me if I'm wrong -- in
2 particular, the first sentence of paragraph
3 110.

4 Do you see that?

5 A. Yes. Well, you're referring to the
6 beginning of paragraph 110, which has a -- the
7 first sentence that ends at the top of page 55;
8 is that correct?

9 Q. Correct, it has [as read]:

10 "...to mean that the field of view
11 of each pixel and the emission region of a
12 corresponding [or paired] optical emitter cover
13 covers substantially the same area in the
14 field."

15 So that's the area I'm asking about
16 and particularly what your opinion is regarding
17 substantially the same area in the field.

18 I guess to be more specific, I think
19 you had stated that substantially the same area
20 is intended to minimize waste and maximize the
21 signal-to-noise ratio.

22 Do I have that right?

23 MR. LAUPPE: Object to form.

24 THE WITNESS: So in paragraph 111,
25 among other places, I say [as read]:

1 "In other words, the '381 patent
2 discloses that the 'discrete spot' or
3 emission region of an illumination source
4 110 has substantially the same area in the
5 field as an aperture 140."

6 And I cite [as read]:

7 "The '381 patent the specification
8 discloses: Because a second aperture 142 in
9 the aperture layer 140 is offset from the
10 first aperture 141 and because the
11 particular region of the surface in the
12 field illuminated via the first illumination
13 source 111 does not (substantially) coincide
14 with the field of view of the second
15 aperture 142." And I go on.

16 So the term "substantially" comes
17 from the '381 patent.

18 BY MR. DEUTSCH:

19 Q. Do you have an opinion on what that
20 means?

21 MR. LAUPPE: Object to form and
22 scope.

23 THE WITNESS: As I go on to explain
24 in paragraph 112 that Figure 1 shows light
25 from two illumination sources deflecting off

1 of different areas in the field and entering
2 into different apertures.

3 I also point out that [as read]:

4 "The '381 patent indicates that each
5 emitter's radiation output substantially
6 matches the field of view of its
7 corresponding detector."

8 I was going to elaborate further, if
9 that's okay.

10 MR. DEUTSCH: Please.

11 THE WITNESS: So the discussion
12 about minimizing waste is highlighted in
13 paragraph 113 where I cite to the '381
14 patent where it discloses [as read]:

15 "The illumination sources are
16 configured to illuminate substantially only
17 surfaces in the field ahead of the system
18 that can be detected by pixels in the system
19 such that minimal power output by the system
20 (via the illumination sources) is wasted by
21 illuminating surfaces in the field for which
22 the pixels are blind," so hence my brief
23 statement about minimizing waste.

24 And if I could continue, paragraph
25 114 talks about how the -- what effectively

1 is the improved or maximized signal-to-noise
2 ratio [as read]:

3 "A signal passed into the first lens
4 151 by the first aperture 141 in the
5 aperture layer 140 can exhibit," with
6 emphasis, "relatively high ratio of light
7 rays originating from the first illumination
8 source 111 to light rays originating from
9 other illumination sources in the system."
10 So it serves to distinguish.

11 And skipping some content [as read]:

12 "Each aperture in the aperture layer
13 140 may pass a relatively high proportion of
14 photons originating from its corresponding
15 illumination source than from other
16 illumination sources in the system; that is,
17 due to the geometry of a particular aperture
18 and its corresponding illumination source."

19 BY MR. DEUTSCH:

20 Q. A moment ago you referred to
21 paragraph 112. I'd like to go back to that
22 just for a moment. At the bottom of paragraph
23 112, you indicate that [as read]:

24 "The '381 patent indicates that each
25 emitter's radiation output 'substantially'

1 matches the field of view of its corresponding
2 detector," and then that's followed by a
3 citation to the '381 patent.

4 Is it your understanding that when
5 it says "substantially matches" that it's
6 excluding exactly matches?

7 MR. LAUPPE: Object to form and
8 scope.

9 THE WITNESS: I don't recall making
10 a comparison between those two. If I did,
11 I'm happy to visit that. I'd have to think
12 a little bit more about the specifics of
13 your question, but substantially matching
14 means substantially matching. I also don't
15 recall anywhere in the patent where it talks
16 about whether there's a difference between
17 substantially matching or exactly matching.
18 Again, if it's there, I'm happy to visit it.

19 BY MR. DEUTSCH:

20 Q. You say it could include exactly
21 matching and it could include something other
22 than exactly matching.

23 MR. LAUPPE: Object to form and
24 scope.

25 THE WITNESS: I don't recall

1 focussing on the term exactly. I don't
2 recall the patent using the term exactly in
3 describing this as well.

4 BY MR. DEUTSCH:

5 Q. So you don't have an opinion if
6 substantially matches encompasses complete or
7 exact match?

8 MR. LAUPPE: Object to form.

9 THE WITNESS: I am happy to visit
10 any place where I considered the term
11 exactly matches. I focused on the term
12 substantially matches and, as far as I can
13 recall, didn't form an opinion to
14 distinguish, compare, contrast those two
15 scenarios.

16 BY MR. DEUTSCH:

17 Q. What is the difference between
18 substantially matches and just matches? In
19 other words, when you say "substantially
20 matches," what does that add versus just saying
21 matches? What are you trying to convey?

22 MR. LAUPPE: Object to form.

23 THE WITNESS: Let me see if I can
24 provide some support.

25 As I previously articulated,

1 substantially matches within the context of
2 the '381, from my understanding, includes
3 minimizing wasted power and maximizing the
4 signal integrity discrimination or
5 signal-to-noise ratio.

6 So that would shape a person with
7 ordinary skill's definition of substantially
8 in interpreting this. So if it delivers on
9 those, then -- on both of those, then a
10 person with ordinary skill would understand
11 that the illumination pattern substantially
12 matches the field of view.

13 MR. DEUTSCH: Let's turn to
14 Retterath.

15 Let's go off the record.

16 - - -

17 (Whereupon, a recess was held.)

18 - - -

19 BY MR. DEUTSCH:

20 Q. Let's talk about the Retterath
21 reference. This is Exhibit 1005. If you could
22 please turn to Figure 6. I understand Figure 6
23 to show a side view of emitter elements 100
24 with a macro lens 80; is that correct?

25 MR. LAUPPE: Object to form. Scope.

1 THE WITNESS: What did you call 100?

2 BY MR. DEUTSCH:

3 Q. Emitter elements. I believe that's
4 the label Retterath gives.

5 MR. LAUPPE: Same objections.

6 THE WITNESS: Yes, Retterath defines
7 emitter elements as 100. And then you were
8 asking about 80, which --

9 BY MR. DEUTSCH:

10 Q. If it's helpful, I'm referring to
11 the second paragraph of Column 9 that begins
12 "Referring to Figure 6..."

13 A. Yes, the macro lens 80.

14 Q. And what does numeral 82 refer to?

15 A. The sentence with the number 82
16 reads [as read]:

17 "The macro lens 80 is configured to
18 diverge to produce a plurality of beams 82
19 along a multitude of emitter vectors
20 (coincident axes) 120 throughout the device's
21 field view.

22 Q. And looking at Figure 6, the emitter
23 to the right is labeled with numeral 100; is
24 that correct?

25 A. Yes, it appears to have a LiDAR line

1 from the top right flat surface of the right
2 most component labeled 100.

3 Q. And it looks like there are three
4 emitter elements shown in Figure 6; is that
5 correct?

6 MR. LAUPPE: Object to form.

7 THE WITNESS: They have the same
8 appearance. The other two have the same
9 appearance as the one labeled 100.

10 BY MR. DEUTSCH:

11 Q. Are you saying those are not emitter
12 elements?

13 MR. LAUPPE: Object to form.

14 THE WITNESS: I'm not saying that
15 they're not. The paragraph in Column 9
16 starting at line 12 says [as read]:

17 "Referring to Figure 6, a cross
18 section side view of emitter elements
19 100..."

20 So one may assume that because the
21 other two look very similar to the one that
22 actually is labeled 100 that they are what
23 constitute the plurality of emitter
24 elements, but it's not labeled 100.

25 BY MR. DEUTSCH:

1 Q. Got it. And then in Column 10, the
2 second full paragraph Retterath discusses
3 Figure 10 and says [as read]:

4 "Referring to Figure 10 a cross
5 section side view of a detector element with a
6 macro detector lens 230 is shown according to
7 an embodiment."

8 Do you see that?

9 A. Yes, I see that written there.

10 Q. So in Figure 10, what does numeral
11 220 refer to?

12 A. 220 is defined in Column 10, line
13 34, as a detector vector.

14 Q. And I have a similar question to
15 what I just asked regarding Figure 6.

16 So in Figure 10, it refers to
17 detector elements 200. The right most detector
18 element includes numeral 200 and a wave line to
19 it, and there are two other emitter elements
20 also shown; is that correct?

21 MR. LAUPPE: Object to form.

22 THE WITNESS: As stated before, I
23 acknowledge that it pluralizes the term
24 detector elements 200 and that the other two
25 that are not labeled 200 have a similar

1 appearance to the one on the right that is
2 labeled 200.

3 BY MR. DEUTSCH:

4 Q. So are you viewing those as emitter
5 elements 200 as well, or are you viewing those
6 as something else?

7 MR. LAUPPE: Object to form.

8 THE WITNESS: Column 10, line 23
9 says [as read]:

10 Referring to Figure 10 a cross
11 section side view of a detector element with
12 a macro detector lens 230 is shown according
13 to an embodiment. In embodiments, detector
14 elements 200 comprise a substrate 50, a
15 photoreceptor 224, a bandpass filter layer
16 226 and a protective layer 228. In other
17 embodiments, light can be received from a
18 diverging field of view at a macro detector
19 lens 230 that directs in-bound light to the
20 surface of detector elements 200."

21 So the start to the description of
22 Figure 10 refers to a detector element.

23 Then there's discussion about
24 embodiments. And at the last portion of
25 that paragraph, line 30, Column 10, it

1 simply describes that [as read]:

2 "In other embodiments, light can be
3 received from a diverging field of view at a
4 macro detective lens 230 that directs
5 in-bound light to the surface of detector
6 elements 200."

7 The other two, while similar in
8 appearance, are not labeled 200. It just
9 simply refers in that paragraph to the fact
10 that in other embodiments that there would
11 be plural detector elements.

12 BY MR. DEUTSCH:

13 Q. So you're not sure what those other
14 boxes are?

15 MR. LAUPPE: Object to form.

16 BY MR. DEUTSCH:

17 Q. I think those three boxes are all
18 referring to detector elements, and I just want
19 to understand if that's your opinion or if you
20 view those as something else.

21 MR. LAUPPE: Object to form. Scope.

22 THE WITNESS: All I know from the
23 reading -- and, again, if there's other
24 places that identify those other two things
25 as definitively detector elements, I -- I

1 would be able to agree there as well. But
2 in this situation, the initial description
3 about Figure 10 in Column 10 starting at
4 line 23 refers to [as read]:

5 "...a cross section side view of a
6 detector element with a macro detector lens
7 230 is shown according to an embodiment. In
8 embodiments, detector elements 200 comprise
9 a substrate 50."

10 I acknowledge they are similar in
11 appearance, but the only thing that's
12 annotated is the one on the bottom right.

13 BY MR. DEUTSCH:

14 Q. In view of the similarity of
15 appearance, would a POSITA understand those to
16 be detector elements 200?

17 MR. LAUPPE: Object to form.

18 THE WITNESS: I think in these sort
19 of matters, being exacting is really
20 important. POSITA would notice the
21 similarities, may entertain the possibility
22 that they are the same, may not have a
23 reason to believe there's something other
24 but would also recognize that they're not
25 actually labeled.

1 BY MR. DEUTSCH:

2 Q. If you flip the page and continue to
3 Figure 11b --

4 A. Okay.

5 Q. -- I see numeral 200 in the top left
6 quadrant and numeral 100 in the bottom right
7 quadrant.

8 Do you see that?

9 A. I do.

10 Q. In Figure 11b, what do numerals 100
11 and 200 refer to?

12 A. Column 10, starting at line 62 [as
13 read]:

14 "Referring to Figure 11b a physical
15 device layout according to an embodiment is
16 shown. In embodiments, emitter elements 100
17 can be arranged in an emitter electro-optical
18 section 248" -- which is shown on the bottom
19 right corner of Figure 11b -- "and detector
20 elements 200 can be arranged in an emitter
21 electro-optical section 246 of device 240."

22 246 is the upper left-hand corner
23 which provides some containment for what's
24 described as detector elements 200.

25 Q. And in the following sentence, I see

1 Retterath indicates [as read]:

2 "The number of detector elements 200
3 can be equal to or greater than the number of
4 emitter elements 100."

5 A. Correct.

6 Q. Is one of those examples shown in
7 Figure 11b?

8 MR. LAUPPE: Object to form.

9 THE WITNESS: So operating under the
10 assumption that because an area in which the
11 emitter elements 100 are contained,
12 specifically that area being 248, and that
13 all of these circles or each of these
14 circles is an emitter element, it would
15 appear that there are 64 emitter elements in
16 the lower right-hand corner of Figure 11b.

17 Operating the assumption that all of
18 the black dots are detector elements which
19 are contained in the Section 246, it would
20 appear there are 138 detector elements in
21 that Section 246 and called the
22 electro-optical section, if my math is
23 correct.

24 BY MR. DEUTSCH:

25 Q. At any rate, the number of detector

1 elements is greater, assuming we're treating
2 each of those black dots, a detector element as
3 you indicated -- the number of detector
4 elements is greater than the number of emitter
5 elements 100.

6 A. Operating under those assumptions,
7 138 detector elements is greater than 64
8 emitter elements.

9 MR. LAUPPE: And, sorry, I didn't
10 get to chance to register my object to form.

11 BY MR. DEUTSCH:

12 Q. And Retterath also describes
13 examples in which the number of detector
14 elements 200 is equal to the number of emitter
15 elements 100, correct?

16 MR. LAUPPE: Object to form.

17 THE WITNESS: Starting at line 66,
18 Column 10, Retterath writes [as read]:

19 "The number of detector elements 200
20 can be equal to or greater than the number
21 of emitter elements 100."

22 BY MR. DEUTSCH:

23 Q. Is that your answer, or are you
24 looking for more?

25 A. That was my answer.

1 Q. And in Figure 11b, looking at the
2 emitter elements 100, I think you described
3 that as an eight-by-eight arrangement; is that
4 correct?

5 MR. LAUPPE: Object to form.

6 THE WITNESS: It would appear that
7 contained in the Section 248 of Figure 11b
8 there are eight columns of circles and eight
9 rows of circles.

10 BY MR. DEUTSCH:

11 Q. One possible arrangement for the
12 emitter and detector elements of aligned rows
13 and columns; is that right?

14 MR. LAUPPE: Object to form. Scope.

15 THE WITNESS: Well, the paragraph
16 related to Figure 11b or the initial
17 discussion about Figure 11b says [as read]:

18 "Referring to Figure 11b a physical
19 device layout according to an embodiment is
20 shown. In embodiments, emitter elements 100
21 can be arranged in an emitter
22 electro-optical section 248 and detector
23 elements 200 can be arranged in a detector
24 electro-optical section 246 of device 240."

25 BY MR. DEUTSCH:

1 Q. Let's turn to paragraph 157 of your
2 declaration. So at paragraph 157, you cite to
3 a discussion in Retterath beginning at Column
4 9, line 59, and continuing to line 65.

5 Beginning at line 62 Retterath says [as read]:

6 "In-bound optical energy that is
7 more than slightly non-parallel to the receive
8 detector vector (coincident axis) 220 will be
9 substantially blocked by the detector waveguide
10 or directed elsewhere by the macro lens."

11 Is that correct?

12 A. Starting at line 62, Column 9, is
13 the sentence that I believe you just read. It
14 states [as read]:

15 "Inbound optical energy that is more
16 than slightly non-parallel to the received
17 detector vector (coincident axis) 220 will be
18 substantially blocked by the detector waveguide
19 or directed elsewhere by the macro lens."

20 Q. So turning back to paragraph 157, in
21 the first sentence under the annotated figure
22 that you provided, you state [as read]:

23 "Retterath repeatedly discloses that
24 waveguide material 215 only 'partially reduces
25 in intensity' or 'substantially' blocks light."

1 When you quote "substantially," is
2 that sentence we just read from Retterath what
3 you're referring to?

4 MR. LAUPPE: Object to form.

5 THE WITNESS: If you'll notice the
6 range that I am referring to extends from
7 Column 9, line 59 through Column 10, 14 --
8 I'm sorry, Column 10, line 17 and among
9 other places.

10 Starting at line 7 [as read]:

11 "The detector of detector elements
12 200 is fabricated to receive light
13 transmitted substantially opposite to the
14 direction detector vector 220 of the
15 waveguide axis. The waveguide detector
16 comprises a substrate 50."

17 So there's another reference [as
18 read]:

19 "A waveguide 222 shall be an air gap
20 or shall consist of a material that is
21 substantially transparent to the wavelength
22 of emitted light. The waveguide wall shall
23 consist of a material that is substantially
24 non-reflective for the wavelength or range
25 of wavelengths of the emitted light."

1 So there are three mentions of the
2 term substantially. One relates to the
3 macro lens. One relates to the detector
4 element. Another relates to the waveguide
5 wall being made of a material that is
6 substantially non-reflective for the
7 wavelength or range of wavelengths of the
8 emitted light.

9 BY MR. DEUTSCH:

10 Q. So in that sentence in your
11 declaration at paragraph 157, which are you
12 quoting?

13 MR. LAUPPE: Object to form.

14 THE WITNESS: Reading on in
15 paragraph 157 [as read]:

16 "Indeed, the only light that
17 Retterath indicates that the waveguide
18 material 215 is configured to absorb is 'the
19 wavelength or range of wavelengths of the
20 emitted light.'"

21 Continuing, "In other words,
22 Retterath's waveguides are only designed to
23 absorb light emitted by the system itself.
24 Retterath does not provide any indication
25 that the waveguide material 215 absorbs or

1 blocks any other wavelengths of light, stray
2 light from the environment. Indeed,
3 Retterath's disclosure of 'partially' or
4 'substantially' blocking light indicates
5 that there are wavelengths of light that
6 Retterath's waveguide material 215 lets
7 through."

8 Continuing, "Since Retterath's
9 waveguide material 215 is partially
10 transparent to certain light, it is my
11 opinion that Retterath's waveguide material
12 does not constitute an 'opaque structure'
13 per claim 7."

14 And Dr. Shanley seemingly agrees
15 when he testified that, quote, If it's an
16 opaque material, it shouldn't, and if you
17 choose your material right, it shouldn't.

18 BY MR. DEUTSCH:

19 Q. So correct me if I'm
20 misunderstanding, at Column 9 when Retterath
21 says, "In-bound optical energy that is more
22 than slightly non-parallel to the receive
23 detector vector (coincident axis) 220 will be
24 substantially blocked by the detector
25 waveguide," you're interpreting that as

1 excluding completely blocked?

2 MR. LAUPPE: Object to form.

3 THE WITNESS: My understanding is
4 that Dr. Shanley is trying to map these
5 waveguides, particularly the material 215,
6 to the opaque material and that if it's
7 substantially blocked by the detector
8 waveguide, as I mentioned, then that does
9 not exclude inherently all light is not
10 opaque.

11 BY MR. DEUTSCH:

12 Q. So you're interpreting Retterath
13 when it uses the term substantially to modify
14 blocked, that it's excluding the possibility
15 that it completely blocks inbound optical
16 energy as it's described there?

17 MR. LAUPPE: Object to form.

18 THE WITNESS: What I know is that --
19 and Dr. Shanley agrees -- that the word
20 opaque is not in here, and the best that Dr.
21 Shanley can do in that situation is rely on
22 the term substantially, whether it
23 represents transparency or blocking.

24 And he also goes on to, as far as I
25 can tell, agree that if it's opaque, it

1 simply should not let light through.

2 And this part of the description in
3 Retterath does not indicate that it is
4 stopping light from passing through. It
5 hedges with the term substantially.

6 BY MR. DEUTSCH:

7 Q. What do you mean when you say "it
8 hedges with the term substantially"?

9 MR. LAUPPE: Object to form.

10 THE WITNESS: Meaning, it falls
11 short of saying that it's opaque.

12 BY MR. DEUTSCH:

13 Q. I guess I'm trying to understand how
14 you're understanding substantially, because I
15 hear, if I'm understanding correctly, you're
16 saying that when it uses substantially blocked,
17 it means something different than blocked or
18 completely blocked.

19 In other words, it excludes being
20 completely blocked, but then in other context
21 when you say substantially, it could mean
22 completely or a little bit different.

23 MR. LAUPPE: Object to form and
24 scope.

25 THE WITNESS: I think that you're

1 conflating a couple things. The '381 patent
2 and the '750 patent provide context for
3 substantially in that it addresses the need
4 to minimize, perhaps eliminate, wasted
5 energy and to maximize the ability to
6 discriminate the signals that are emitted,
7 again, euphemistically maximize the
8 signal-to-noise ratio.

9 In Retterath, I don't see any
10 similar context. The term substantially is
11 not the same as opaque. Substantially
12 blocking, partially blocking where that
13 might be used, it's not the same as opaque.

14 BY MR. DEUTSCH:

15 Q. You had mentioned another instance
16 of substantially in Column 10, particularly
17 lines 14 through 17. It says [as read]:

18 "The waveguide wall shall consist of
19 a material that is substantially non-reflective
20 for the wavelength or range of wavelengths of
21 the emitted light."

22 Do you see that?

23 A. Yes.

24 Q. And so that sentence is calling out
25 a requirement for the waveguide wall indicating

1 that it shall consist of material that has a
2 certain characteristic in particular, but it's
3 substantially non-reflective for the wavelength
4 or range of wavelengths of the emitted light.

5 Does it say anything about other
6 wavelengths?

7 MR. LAUPPE: Object to form.

8 THE WITNESS: Well, we just
9 reviewed -- let me back up.

10 By describing what's allowed and
11 particularly in light of how Dr. Shanley is
12 interpreting this waveguide wall, the -- can
13 you repeat your question just to make sure
14 I'm answering it?

15 BY MR. DEUTSCH:

16 Q. Sure. In your paragraph 157, you
17 say that [as read]:

18 "...the only light that Retterath
19 indicates that the waveguide material 215 is
20 configured to absorb is 'the wavelength or
21 range of wavelengths of the emitted light,'"
22 and that's followed by a citation to Retterath
23 Column 10, lines 14 through 17.

24 A. Right.

25 Q. And it sounds like you're saying

1 that the only light that Retterath -- excuse
2 me, that other wavelengths would not be
3 absorbed by the waveguide wall.

4 Is that what you're stating with
5 that sentence, or am I misunderstanding?

6 MR. LAUPPE: Object to form.

7 THE WITNESS: The following sentence
8 I think answers your questions [as read]:

9 "In other words, Retterath's
10 waveguides are only designed to absorb light
11 emitted by the system itself. Retterath
12 does not provide any indication that the
13 waveguide material 215 absorbs or blocks any
14 other wavelengths of light, for example,
15 stray light from the environment. Indeed,
16 Retterath's disclosure of 'partially' or
17 'substantially' blocking light indicates
18 that there are wavelengths of light that
19 Retterath's waveguide material 215 let's
20 through."

21 BY MR. DEUTSCH:

22 Q. So I'm understanding, the basis for
23 your understanding that Retterath waveguides
24 are only designed to absorb light emitted by
25 the system itself when the sentence in

1 Retterath Column 10 that you cite to is simply
2 stating a requirement that it must block
3 certain wavelengths that you state there.

4 MR. LAUPPE: Objection.

5 BY MR. DEUTSCH:

6 Q. It doesn't say in that sentence that
7 it's transmissive to other wavelengths.

8 MR. LAUPPE: Object to form.

9 THE WITNESS: I think the only way I
10 can reasonably answer that or add clarity to
11 that is in 158, I mentioned that [as read]:

12 "Since Retterath's waveguide
13 material 215 is partially transparent to
14 certain light, it is my opinion that
15 Retterath's waveguide material does not
16 constitute an 'opaque structure' per claim
17 7."

18 BY MR. DEUTSCH:

19 Q. I'd like to go back to that sentence
20 where you say, Retterath's waveguides are only
21 designed to absorb light emitted by the system
22 itself.

23 So if every other wavelength is
24 allowed to pass through material 215, what
25 would a POSITA understand about the functioning

1 of Retterath's system?

2 MR. LAUPPE: Object to form.

3 Hypothetical.

4 BY MR. DEUTSCH:

5 Q. Would the system work?

6 MR. LAUPPE: Object to form.

7 Hypothetical. Scope.

8 THE WITNESS: I don't really know
9 that I can speculate entirely or even
10 partially about that. As I'm sitting here,
11 I don't know where I address that specific
12 scenario in my declaration. I'm happy to
13 visit that.

14 BY MR. DEUTSCH:

15 Q. Yeah, I can point you to that.

16 A. Okay.

17 Q. In the annotated figure at the top
18 of page 87 in paragraph 157, you have a yellow
19 arrow --

20 A. Right.

21 Q. -- passing through the material
22 that's labeled 215.

23 A. Correct.

24 Q. So I understand you're saying that
25 that material passes through wavelengths of

1 light that are not emitted by the system
2 itself.

3 MR. LAUPPE: Object to form.

4 THE WITNESS: Well, what I'm saying
5 here is that Retterath -- and we can visit
6 other places where this is mentioned. The
7 top of page 87 [as read]:

8 "Retterath repeatedly discloses that
9 waveguide material 215 only 'partially
10 reduces in intensity' or 'substantially'
11 blocks light," hence the opinion that it is
12 at least partially transparent and doesn't
13 properly map to being an opaque structure,
14 hence the yellow arrow and yellow-ish
15 annotation "partially transparent."

16 BY MR. DEUTSCH:

17 Q. So you're not saying that the yellow
18 arrow represents wavelengths other than the
19 emitted light.

20 MR. LAUPPE: Object to form.

21 BY MR. DEUTSCH:

22 Q. I can clarify that question, if it's
23 helpful.

24 A. It might be. It's hard to say. You
25 can try.

1 Q. I'm just trying to understand your
2 annotation and, in particular, what wavelengths
3 of light are you suggesting are represented by
4 your yellow arrow that would pass through
5 material 215?

6 MR. LAUPPE: Object to form.

7 THE WITNESS: I think just the best
8 way of answering that is in the middle of
9 the paragraph on page 87 [as read]:

10 "In other words, Retterath's
11 waveguides are only designed to absorb light
12 emitted by the system itself. Retterath
13 does not provide any indication that the
14 waveguide material 215 absorbs or blocks any
15 other wavelengths of light, for example,
16 stray light from the environment. Indeed,
17 Retterath's disclosure of 'partially' or
18 'substantially' blocking light indicates
19 that there are wavelengths of light that
20 Retterath's waveguide material 215 let's
21 through."

22 MR. DEUTSCH: Off the record.

23 - - -

24 (Whereupon, a recess was held.)

25 - - -

1 BY MR. DEUTSCH:

2 Q. At paragraph 157 again you cited
3 Retterath beginning at Column 9, line 59, and
4 that sentence begins, "In-bound optical
5 energy"?

6 A. Yes.

7 Q. Are you interpreting that to include
8 only the emitted optical energy?

9 MR. LAUPPE: Object to form.

10 THE WITNESS: I can search for other
11 mentions of this, but Column 3 there is
12 discussion of discriminating between
13 emitters of the particular LiDAR system that
14 those emitters reside on and, quote, similar
15 LiDAR devices.

16 It also talks about the use of
17 multi-beam emitter sequences and so forth
18 and reducing interference from non-LiDAR
19 devices that are transmitting or reflecting
20 energy at the target detector wavelength.

21 I understand that that's talking
22 about multi-bit sequences, but it's also an
23 acknowledgement that there is energy that
24 enters the LiDAR system from either other
25 LiDAR devices or non-LiDAR devices.

1 I can continue looking, but I think
2 that that provides an answer that the light
3 coming -- potentially reaching these
4 detectors isn't only the light that the
5 LiDAR system itself produces. Again, I can
6 continue looking. There are probably other
7 examples that are discussed in here about
8 how light from other sources, other types of
9 light, non-LiDAR emitted light, can pass
10 through the -- pass into the LiDAR system
11 itself and reach the detectors.

12 BY MR. DEUTSCH:

13 Q. If I'm understanding correctly, when
14 Retterath refers to in-bound optical energy,
15 there's any number of sources that that energy
16 could be from. It could be the emitters. It
17 could be a different system. It could be just
18 other optical energy in the environment that
19 the system is operating in.

20 Do I have that correct?

21 MR. LAUPPE: Object to form.

22 THE WITNESS: Well, again, Column 3,
23 starting on 15, Retterath mentions that
24 there could be interference from other
25 emitters and other similar LiDAR devices.

1 BY MR. DEUTSCH:

2 Q. So are you saying in-bound optical
3 energy is only referring to energy from
4 LiDAR-type systems?

5 MR. LAUPPE: Object to form.

6 THE WITNESS: Well, I didn't finish
7 what I was saying.

8 BY MR. DEUTSCH:

9 Q. Oh, continue.

10 A. And it also talks about reducing
11 interference from, quote, non-LiDAR devices
12 that are transmitting or reflecting energy at
13 the target detector wavelength.

14 Q. I'm not sure I'm understanding if
15 you're saying it would include other optical
16 energy in environments or not.

17 MR. LAUPPE: Object to form.

18 THE WITNESS: So one example here --
19 again, I'm sure as we read we'll find
20 more -- Column 5, line 55, Retterath says
21 [as read]:

22 "Care must be taken to ensure that
23 signals received by the photoreceptor are
24 reflected light from the desired emitted
25 source."

1 And then Retterath goes on to
2 provide an example of where there might be
3 two LiDAR units, call them A and B,
4 operating with lasers at the same wavelength
5 have the potential to experience cross talk.

6 So that's an example of how other
7 LiDAR units can produce light that can enter
8 the LiDAR system.

9 BY MR. DEUTSCH:

10 Q. Is that the only thing that can
11 produce light that can enter the LiDAR system?

12 MR. LAUPPE: Object to form.

13 THE WITNESS: So I'll repeat that
14 Retterath acknowledges in Column 3 that
15 interference can come from non-LiDAR devices
16 that are transmitting or reflecting energy
17 at the target detector wavelength.

18 BY MR. DEUTSCH:

19 Q. Let me take a step back, and I can
20 help clarify the question here. I'm still
21 looking at paragraph 157 of your declaration,
22 and I understand that you're talking about that
23 in-bound optical energy. That's what you're
24 referring to as the basis for light that is
25 partially reduced in intensity or

1 substantially, as I'm understanding what that
2 light is that you're referring to.

3 MR. LAUPPE: Object to form.

4 THE WITNESS: Well, I really feel
5 that the answer to your question is in the
6 same paragraph, that Retterath does not
7 provide any indication that the waveguide
8 material 215 absorbs or blocks any other
9 wavelengths of light, for example, stray
10 light from the environment.

11 BY MR. DEUTSCH:

12 Q. And is that because you're excluding
13 stray light from the environment from
14 Retterath's description of in-bound optical
15 energy?

16 MR. LAUPPE: Object to form.

17 THE WITNESS: Yeah, not really. I'm
18 not -- I think that if you look at the
19 construction even described in Retterath,
20 the optical energy in the environment, in
21 the field, is not only the light that comes
22 from the emitters, that there is a plethora
23 of other types of optical energy, whether
24 the type is differentiated by the source or
25 the type is differentiated by the wavelength

1 or other descriptors. And the descriptions,
2 as I recall them, from Retterath, for
3 example, the three types of lenses, the
4 macro lens, which is in Figure 6 and Figure
5 10, which rejects more on the basis of
6 directionality or incident angle, and then
7 you have the global lens and micro lens that
8 are used to describe Figure 11b. Figure 11b
9 does not describe the macro lens or that it
10 would be used with it. And as best as I can
11 recall, they aren't described as filtering
12 out on the basis of excluding everything but
13 the energy emitted by the LiDAR emitters.

14 So -- and it's a well-known problem
15 in the field. And, again, I'm confident, as
16 I continue through even Retterath's written
17 description, mentions of other types of
18 noise that light can get into the LiDAR
19 system and that light does not have to
20 strictly be what was emitted by the LiDAR
21 unit itself.

22 I had another qualifier and that is
23 that if as Retterath is suggesting using the
24 pulse codes -- and I think Borowski does the
25 same thing --

1 BY MR. DEUTSCH:

2 Q. Go ahead.

3 A. Well, if you're filtering out
4 everything but the emitted energy, then you
5 wouldn't need to really use the pulse codes.
6 So it's a de facto acknowledgement that there
7 are other variations of light entering.

8 Q. A moment ago you indicated that
9 other types of noise and light can get into the
10 LiDAR system. I'd like to understand what you
11 mean by that.

12 My understanding is there's kind of
13 multiple pathways or ways that light can get
14 into the system including -- through the
15 waveguide opening; is that correct?

16 MR. LAUPPE: Object to form. Scope.

17 BY MR. DEUTSCH:

18 Q. You're not saying the only way light
19 can get in through the LiDAR system is through
20 the waveguide material, correct?

21 MR. LAUPPE: Same objections.

22 THE WITNESS: I'm not really
23 following your question, and I don't know
24 that I was asked to or endeavored other
25 paths that light might be taken to get into

1 the LiDAR unit, particularly to get into the
2 photo detectors.

3 Aside from what's referenced, my
4 discussions about the alleged prior art
5 obviously with Retterath and Hipp and -- now
6 I'm blanking. I'm going to mispronounce his
7 name. It starts with a G. Grzesik. But
8 aside from opining on those, I did not do an
9 open-ended analysis as to all of the ways
10 light may come in. It's just simply, how
11 does it get to the photo detectors? And,
12 more specifically, how are those photo
13 detectors able to focus only on the emitted
14 light from the paired or corresponding
15 emitter?

16 So if you can agree that Dr. Shanley
17 pointed to these waveguides and the material
18 that surrounds it 215 as the opaque
19 structure, then that's the basis for my
20 opinions.

21 BY MR. DEUTSCH:

22 Q. Let's shift gears and talk about the
23 Weimer reference. This is Exhibit 1008.

24 If you could turn to Figure 3a.

25 A. Okay.

1 Q. What is 318 referring to? One
2 example where 318 appears is at the top of
3 Column 10, beginning at line 2 where Weimer
4 refers to transmit optics 318 and/or receive
5 optics 322.

6 A. So to provide a little context here,
7 this Figure 3a has a single emitter, has one
8 laser in it, and this is the only figure that
9 has elements 318 and 322 represented here, and
10 the definitions of 318 and 322 are respectively
11 transmit optics and receive optics.

12 Q. And I see there's an axis labeled
13 direction of flight and cross track.

14 Do you see that?

15 A. Yes.

16 Q. And the axis labeled direction of
17 flight appears to be going vertically on the
18 page, and the axis labeled cross track appears
19 to be going laterally on the page.

20 A. Right. This is also called a
21 spacecraft, but surprisingly there are trees in
22 view. Anyway, go ahead.

23 Q. And so looking at that axis and
24 transmit optic 318 and receive optic 322, in
25 Figure 3a, the transmit optic 318 is offset

1 laterally and aligned vertically with the
2 received optic 322; is that correct?

3 MR. LAUPPE: Object to form. Scope.

4 THE WITNESS: The oval forms that
5 are on here, which don't, as far as I can
6 tell, represent an actual shape of a lens,
7 are laid out just like everything else on
8 this image in more of a logical format as
9 opposed to a positional format. And, again,
10 this is a single laser system shown in
11 Figure 3a. That's to say it's not a
12 plurality of optical emitters.

13 BY MR. DEUTSCH:

14 Q. Let's turn to the Imai reference.
15 This is Exhibit 1009. Let's turn to paragraph
16 224 of your declaration, which I believe
17 discusses Imai. In paragraph 224 you indicate
18 that [as read]:

19 "Imai discloses that the irradiation
20 range of each of its emitters is 'larger' than
21 the 'corresponding light receiving ranges' of
22 the detectors," and you cite Imai at paragraph
23 101.

24 Could you read the first sentence of
25 paragraph 101?

1 A. Yes. It says [as read]:

2 "The irradiation range of each laser
3 diode or LD is set to be slightly larger than
4 corresponding light receiving ranges of the
5 four photo diodes, PD."

6 Q. So in paragraph 224 you just said
7 larger. Is there a reason you just said larger
8 and not Imai's description of slightly larger?

9 MR. LAUPPE: Object to form.

10 MR. DEUTSCH: I can rephrase.

11 THE WITNESS: Did I skip that? Did
12 I skip a word?

13 BY MR. DEUTSCH:

14 Q. No, I think you read it correctly.
15 I'm referring to the quote in 224.

16 To rephrase the question, in that
17 sentence in 224, did you mean to say, quote,
18 slightly larger when quoting Imai?

19 MR. LAUPPE: Object to form. Scope.
20 Argumentative.

21 THE WITNESS: It's still larger, so
22 there wasn't an intentional omission there,
23 if that's what you're asking.

24 BY MR. DEUTSCH:

25 Q. No, no, I'm just trying to get your

1 understanding of larger versus slightly larger
2 and what that means with respect to your
3 definition of coincident.

4 MR. LAUPPE: Object to form. Scope.

5 BY MR. DEUTSCH:

6 Q. So just to make sure I'm
7 understanding, when you say larger here and you
8 said it's still larger whether it's larger or
9 slightly larger, are you equating larger with
10 slightly larger?

11 MR. LAUPPE: Object to form.

12 THE WITNESS: I think I'm merely
13 acknowledging that it's larger, and this is
14 foundational to the subsequent content in my
15 declaration where I point out that while
16 Imai describes a situation where the
17 irradiation range is larger than the light
18 receivable range, there are also embodiments
19 described by Imai that are smaller. And as
20 a person in ordinary skill reading this, it
21 would, consistent with my declaration -- and
22 of course I defer to the details of my
23 declaration -- indicate that Imai is not
24 purposefully having that irradiation range
25 be substantially the same or occupy

1 substantially the same area given that it
2 tolerates a very broad range of irradiation
3 range area to light receivable range
4 scenarios.

5 BY MR. DEUTSCH:

6 Q. Understood. And so that -- you're
7 saying that's the case. Even though Imai
8 describes it being only slightly larger, that
9 because of those factors, it wouldn't be
10 substantially the same area as you're using
11 that phrase?

12 MR. LAUPPE: Object to form.

13 THE WITNESS: I'm not really --

14 MR. DEUTSCH: I can try to clarify.

15 BY MR. DEUTSCH:

16 Q. Later in paragraph 224, you indicate
17 that the emission regions of emitters in Imai
18 do not cover substantially the same area in the
19 field as the field of view of their
20 corresponding pixels. And that's because in
21 the preceding sentence, you're indicating that
22 the emitters have a larger irradiation range
23 than the corresponding light ranges of the
24 detectors.

25 So my question is, even though Imai

1 is only slightly larger, you're saying that's
2 out of the scope of your substantially the same
3 area as you're interpreting it?

4 MR. LAUPPE: Object to form.

5 THE WITNESS: You look, for example,
6 at Figure 5 annotated in my declaration.
7 The difference between the light receivable
8 range and the irradiation range is -- in the
9 context of the '381, the difference is
10 substantial. And the -- even though Imai
11 might use terms like slightly to describe
12 the area -- the excessive amount of area
13 that is illuminated compared to the field of
14 view of the detectors or the offsets or
15 something like that, then one could
16 reasonably conclude that slightly is -- does
17 not put it within range of being
18 substantially the same area.

19 This is also true if you look, for
20 example, on Figure 7, which is annotated in
21 my declaration, just above paragraph 228.
22 Those don't look substantially similar. In
23 the scenario on the left, that's not
24 covering substantially the same amount of
25 area. It's covering substantially less.

1 And on the right, it's not covering
2 substantially the same amount of area. It's
3 covering more.

4 BY MR. DEUTSCH:

5 Q. Is that the actual size of the
6 detectors?

7 MR. LAUPPE: Object to form.

8 THE WITNESS: I think if they're
9 using qualifiers like slightly and then they
10 have examples like this, I would not put
11 this in the -- if that's the definition of
12 slightly, then I know that slightly will
13 lead to waste, for example, what's shown on
14 the right side of Figure 7, Figure 7b or a
15 lower signal-to-noise ratio which would be
16 shown on Figure 7a.

17 MR. DEUTSCH: Let's shift to the
18 '750 patent.

19 MR. LAUPPE: Does it make sense to
20 break for lunch before that?

21 MR. DEUTSCH: Dr. Janét, do you have
22 a preference? Are you okay continuing?

23 THE WITNESS: I defer to the crowd.

24 MR. DEUTSCH: Why don't we go off
25 the record.

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(Whereupon, a recess was held.)

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BY MR. DEUTSCH:

Q. Welcome back, Dr. Janét.

A. Thank you.

Q. Let's turn to the '750 declaration.

If you could turn to paragraph 122 discussing claim 44, and at paragraph 124 you discuss testimony from Dr. Shanley and his declaration and his cross-examination regarding the threshold distance of Retterath.

And then at 125 you state [as read]:

"It is my opinion that the Retterath-Borowski combination does not satisfy claim 44 of the '750 patent because there is no threshold distance beyond which the fields of view pixels are not overlapping."

In reaching that conclusion, is the discussion in paragraph 124 part of your basis for the conclusion that there's no threshold distance beyond which the fields of view pixels are not overlapping?

MR. LAUPPE: Object to form.

BY MR. DEUTSCH:

1 Q. I can clarify because the
2 question is really about -- you know, what I'm
3 trying to understand is the importance here
4 ascribing to the testimony you cited regarding
5 a number for the threshold distance.

6 And so in paragraph 124, you
7 indicated that [as read]:

8 "Dr. Shanley testified that
9 Retterath is not absolutely designed as an
10 absolute number on it," and continued that, "he
11 can't be certain about what the threshold
12 distance of Retterath is. Further, Dr. Shanley
13 testified that he doesn't believe any patent
14 discloses the threshold distance like claim 44
15 of the '750 patent requires," and then conclude
16 in 125 that there's no threshold distance
17 beyond which the fields of view of pixels are
18 not overlapping.

19 And so when you say there is no
20 threshold distance beyond which the fields of
21 view of pixels are not overlapping, that's
22 based on the preceding testimony that you cited
23 in paragraph 124 regarding the lack of an
24 absolute number around threshold distance?

25 MR. LAUPPE: Object to form.

1 THE WITNESS: It informs paragraph
2 125 that Dr. Shanley testified that
3 Retterath is not, quote, absolutely designed
4 as an absolute number on it and then
5 testified that he, quote, does not or
6 doesn't believe any patent discloses a
7 threshold distance like claim 44 of the
8 '750. So just on the basis of Dr. Shanley's
9 opinions and testimony, that certainly
10 informs paragraph 125.

11 BY MR. DEUTSCH:

12 Q. Does the '750 patent identify a
13 number for a threshold distance?

14 MR. LAUPPE: Object to form.

15 THE WITNESS: Unlike Retterath, the
16 '750 patent describes how a person of
17 ordinary skill would arrive at a number.

18 BY MR. DEUTSCH:

19 Q. Can you walk me through that, how a
20 person of ordinary skill would arrive at a
21 number?

22 MR. LAUPPE: Object to form.

23 MR. DEUTSCH: And specifically I'm
24 asking, like you said, based on the '750
25 patent.

1 THE WITNESS: Right.

2 MR. LAUPPE: Same objections.

3 THE WITNESS: Well, I suppose I
4 could.

5 First and foremost, my opinions are
6 formed on the basis of Dr. Shanley's
7 testimony, and in the absence of him
8 identifying how an absolute number could be
9 derived or an absolute design achieved and
10 the more blanket statement that he doesn't
11 believe that any patent discloses a
12 threshold distance like what's described in
13 claim 44, then paragraph 125 is in many ways
14 an acknowledgement of that, you know, how do
15 you respond to a conclusory statement that
16 doesn't have foundation to it?

17 If Dr. Shanley expressed how one
18 would derive that threshold on the basis of
19 his interpretation of the '750, that might
20 help with our discussion on this matter, if
21 you have his declaration.

22 BY MR. DEUTSCH:

23 Q. Let's take a look at Figure 1 on the
24 '750 patent. Can you identify the threshold
25 distance in Figure 1?

1 MR. LAUPPE: Object to form. Scope.

2 THE WITNESS: I'll answer with yes,
3 but I was not asked to provide that, and Dr.
4 Shanley did not provide his interpretation
5 of how he would derive that threshold
6 distance, as far as I can recall.

7 BY MR. DEUTSCH:

8 Q. What is -- what is the threshold
9 distance in Figure 1?

10 MR. LAUPPE: Same objections.

11 THE WITNESS: The threshold distance
12 is where the fields of view, any two fields
13 of view cease to be overlapping in the field
14 external to the optical imaging system.

15 BY MR. DEUTSCH:

16 Q. You'll recall there was a break just
17 before we reconvened here. Did you speak with
18 anyone during the break?

19 A. Not about the testimony today.

20 Q. So no discussion about the substance
21 of your testimony?

22 A. No, not at all.

23 Q. Did you talk about the mechanics of
24 the deposition process and the sequence of
25 questions from me or Ouster's counsel?

1 A. No.

2 MR. DEUTSCH: No further questions
3 at this time.

4 - - -

5 EXAMINATION

6 - - -

7 BY MR. LAUPPE:

8 Q. So, Dr. Janét, did you bring
9 anything with you to today's deposition?

10 A. I did.

11 Q. And what did you bring with you
12 today?

13 A. This is a list of things that I
14 would like to correct in my '381 declaration.
15 I believe it's my '381. Yes, it's my '381.

16 MR. LAUPPE: And I'd like to
17 introduce that as Exhibit 2018 in the '381
18 IPR.

19 MR. DEUTSCH: Objection. Scope.
20 Outside the scope of cross-exam.

21 MR. LAUPPE: Can we introduce this?
22 Can we get that marked with a sticker?

23 COURT REPORTER: What number was it?

24 MR. LAUPPE: 2018.

25 - - -

1 (Whereupon, the document was marked,
2 for identification purposes, as Exhibit
3 2018.)

4 - - -

5 BY MR. LAUPPE:

6 Q. And so, Dr. Janét, you said
7 Exhibit 2018 indicates corrections that you
8 would like to make to your declaration in the
9 '381 IPR; is that correct?

10 A. That's correct.

11 MR. DEUTSCH: Objection. Scope.

12 BY MR. LAUPPE:

13 Q. So what is the first correction that
14 you'd like to make to your '381 declaration?

15 A. It's just that I think that the
16 reader would be able to understand that -- the
17 intent behind all of these corrections, but
18 there's a reference -- the first one is in
19 regards to paragraph 129 where I previously
20 wrote claim 1(c). That should be restated as
21 claim 1(d).

22 Q. What is the next correction that you
23 would like to make to your '381 declaration?

24 A. The next correction is there was a
25 link error apparently when the document was

1 saved or converted in paragraph 132 where in
2 the document it says, "Section Error!
3 Reference source not found," and just simply
4 clarify that that was previously a link to and
5 was supposed to be written as Section VII.A.

6 Q. Do you have any other corrections to
7 your '381 declaration?

8 A. I do.

9 Q. What's the next correction?

10 A. The next one is in regards to
11 paragraph 141. Where it says "six other
12 emitters" should be six other detectors.

13 Q. Do you have any other corrections
14 you'd like to make to your '381 declaration?

15 A. I do.

16 Q. What's the next correction you'd
17 like to make?

18 A. The next one is regarding paragraph
19 145 where I wrote "claim 1" and meant to write
20 claim 3 twice.

21 Q. Do you have any other corrections
22 you'd like to make to your '381 declaration?

23 A. I do.

24 Q. What's the next correction you'd
25 like to make?

1 A. In paragraph 156, I, even though I
2 was referring to claim 7, wrote "claim 6" and
3 seek to clarify that as claim 7.

4 Q. Do you have any other corrections
5 you'd like to make to your '381 declaration?

6 A. I do.

7 Q. What's the next correction?

8 A. In paragraph 190, I'm referring to
9 Weimer but inadvertently wrote an addition of
10 Hipp. So I wanted to change what should have
11 been Weimer to Weimer, not Hipp.

12 Q. Do you have any other corrections
13 you'd like to make to your '381 declaration?

14 A. Yes, sir.

15 Q. What's the next correction?

16 A. Paragraph 210. Paragraph 210 refers
17 to the G. Ground 1G: Claims 6 through 8, 17
18 over Retterath, Borowski, Weimer, Hipp and
19 Pacala, but in paragraph 210 I left off one of
20 them. I think I left off Hipp. So I wanted to
21 add Hipp back in. It's obvious that I'm
22 referring to that given the title of that
23 section.

24 Q. Do you have any other corrections
25 you'd like to make to your '381 declaration?

1 A. Yes, sir.

2 Q. What's the next correction?

3 A. Paragraph 221, I have a similar link
4 error that was not noticed before. It's in
5 bold and it says, "Section Error! Reference
6 source not found," and I was referring to
7 VII.A, So I want to correct that to say Section
8 VII.A

9 Q. Do you have any other corrections
10 you'd like to make to your '381 declaration?

11 A. Yes, sir.

12 Q. What's your next correction?

13 A. The heading for VIII.J.1.

14 Q. Do you have a page for that?

15 A. I'm sorry, I didn't put it in there.
16 It should be page 119.

17 Q. What's the correction you'd like to
18 make to page 119?

19 A. It should say, "The
20 Imai-Higashi-Pacala combination does not
21 satisfy 'a bulk imaging optic disposed adjacent
22 to the bulk transmitting optic,' and this is in
23 reference to claim 1(d).

24 Q. Do you have any other corrections
25 you'd like to make to your '381 declaration?

1 A. Yes, sir.

2 Q. What's the next correction?

3 A. Paragraph 241, same general section,
4 I -- again I'm referring to claim 1(d) but
5 wrote in paragraph 241 claim 1(e) a couple of
6 times, and that should be claim 1(d).

7 Q. Do you have any other corrections
8 you'd like to make to your '381 declaration?

9 A. Yes, sir.

10 Q. What's your next declaration?

11 A. Again, the heading for Section
12 VIII.J.1(b), which is on the next page, page
13 120, just in response to -- or just kind of
14 keeping with Dr. Shanley's combinations, it
15 should be, "The Imai-Higashi-Pacala combination
16 does not satisfy 'each pixel in the plurality
17 of pixels has a field of view coincident with
18 an emission region of a corresponding optical
19 emitter' (claim 1(e))."

20 Q. And are there any other corrections
21 you'd like to make to your '381 declaration?

22 A. Yes, sir.

23 Q. What's the next correction?

24 A. Paragraph 243, same general section,
25 instead of Grzesik, it should be Pacala.

1 Q. And do you have any other
2 corrections you'd like to make to your '381
3 declaration?

4 A. Not that I recall at this point.

5 MR. LAUPPE: Thank you. No further
6 questions.

7 MR. DEUTSCH: I just have a couple
8 more questions.

9 - - -

10 EXAMINATION

11 - - -

12 BY MR. DEUTSCH:

13 Q. This document that you're reading
14 from labeled Exhibit 2018, is that something
15 you created?

16 A. Yes. Well, I didn't -- I couldn't
17 print it up. I handwrote it. So during my
18 discussion with counsel yesterday, I brought
19 these to their attention. Since I couldn't
20 print it up where I'm staying, I asked them to
21 do it.

22 Q. And Counsel mentioned another
23 version of that document.

24 Are you familiar with that?

25 A. Another version of the document?

1 What are you referring to?

2 Q. A moment ago counsel had mentioned
3 another document that seemed to be similar to
4 Exhibit 2018 but perhaps different.

5 A. Can you read -- is there testimony
6 you can read exactly so I can understand what
7 you're referring to?

8 MR. DEUTSCH: I'm asking about that
9 document that you were talking about that's
10 in the bag.

11 MR. LAUPPE: No further copies of
12 that. I'm sorry we didn't have a copy for
13 you, Craig.

14 MR. MORTON: That's all I was
15 talking about.

16 THE WITNESS: Yeah, I really -- I
17 can't fathom what you're asking about.

18 BY MR. DEUTSCH:

19 Q. That's all, just that other document
20 that was mentioned earlier in the context of
21 Exhibit 2018.

22 A. When you say "earlier," what are you
23 referring to? What time frame?

24 Q. When Exhibit 2018 was handed out.

25 A. Just a few minutes ago.

1 Q. Correct.

2 A. But we can't find it in the
3 testimony where somebody said something about
4 another version?

5 Q. Correct, that exchange wasn't
6 captured.

7 A. I mean, I simply don't remember. I
8 can't think of what would be another version
9 either.

10 MR. DEUTSCH: Understood. No
11 further questions.

12 - - -

13 (Witness excused.)

14 - - -

15 (Deposition concluded at 1:44 p.m.)

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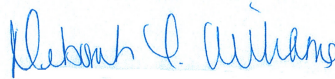
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C E R T I F I C A T E

I do hereby certify that I am a Notary Public in good standing, that the aforesaid testimony was taken before me, pursuant to notice, at the time and place indicated; that said deponent was by me duly sworn to tell the truth, the whole truth, and nothing but the truth; that the testimony of said deponent was correctly recorded in machine shorthand by me and thereafter transcribed under my supervision with computer-aided transcription; that the deposition is a true and correct record of the testimony given by the witness; and that I am neither of counsel nor kin to any party in said action, nor interested in the outcome thereof.

WITNESS my hand and official seal this 16th day of October, 2024.



Deborah L. Williams, CCR, CLR
Notary Public

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Please read your deposition over carefully and make any necessary corrections. You should state the reason in the appropriate space on the errata sheet for any corrections that are made.

After doing so, please sign the errata sheet and date it.

You are signing same subject to the changes you have noted on the errata sheet, which will be attached to your deposition.

It is imperative that you return the original errata sheet to the deposing attorney within thirty (30) days of receipt of the deposition transcript by you. If you fail to do so, the deposition transcript may be deemed to be accurate and may be used in court.

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I, _____, do hereby
certify that I have read the foregoing pages ____
to ____ and that the same is a correct
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My commission expires:

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