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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

THERMALTAKE TECHNOLOGY CO.,)
LTD. And THERMALTAKE INC.)
(a.k.a. THERMALTAKE USA),)
)
 Petitioners,)
)
 v.)
)
LIAN LI INDUSTRIAL CO., LTD.,)
and CHEN, CHIEN-HAO,)
)
 Patent Owners.)

Case No. IPR2024-01230
U.S. Patent
No. 10,690,336

DEPOSITION OF DAVID B. TUCKERMAN, PH.D., taken
on behalf of the Petitioners, at 1900 University Avenue,
5th Floor, East Palo Alto, California, commencing at
9:05 a.m., on Tuesday, July 15, 2025, pursuant to
Notice, before ANDREA AQUINO, CSR No. 14484, a Certified
Shorthand Reporter, in and for the County of Alameda,
State of California.

JOB NO. 10168053

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I N D E X

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Exhibit 1007	JP2018041147A Biblio Abstract Original, translation from Japanese to English; 48 pages	115
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Exhibit 2019	Petition for Inter Partes Review of U.S. Patent No. 10,690,336; 105 pages	143
Exhibit 2020	Declaration of David B. Tuckerman Ph.D. dated December 17, 2024 in black and white ; 83 pages	144
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QUESTIONS INSTRUCTED NOT TO ANSWER

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INFORMATION REQUESTED

None.

1 EAST PALO ALTO, CALIFORNIA;
2 TUESDAY, JULY 15, 2025, 9:05 A.M.

3 THE REPORTER: Good morning. My name is Andrea
4 Aquino. My CSR license Number is 14484. I will now
5 swear in the witness.

6 DAVID B. TUCKERMAN, Ph.D.,
7 called as a witness by and on behalf
8 of the Petitioners, being first duly
9 sworn, was examined and testified
10 as follows:

11 EXAMINATION

12 BY MS. QU:

13 Q. Good morning.

14 A. Good morning.

15 Q. Sir, can you please state your full name for
16 the record.

17 A. David Bazeley --

18 MR. CHEN: Should counsel state their presence
19 as well?

20 MR. WEBER: Yeah. Let's go ahead and do that.

21 MS. QU: So I'm Surui Qu. I'm counsel for
22 Thermaltake, the petitioners in this proceeding. Also
23 with me is my colleague, Brock Weber, also from
24 Pillsbury representing Thermaltake.

25 MR. CHEN: I'm Kyle Chen from Greenberg Traurig

1 representing the patent owners.

2 THE WITNESS: My last name is Tuckerman,
3 T-U-C-K-E-R-M-A-N.

4 BY MS. QU:

5 Q. Thank you, Dr. Tuckerman. So as I said my name
6 is Surui. Good to meet you today. And so I just want
7 to ask you if you have ever given depositions before?

8 A. Yes.

9 Q. How many times have you sat for a deposition?

10 A. I don't have an exact count. I would say the
11 order of a dozen.

12 Q. And just for the record, this deposition,
13 Dr. Tuckerman, is in relation to an inter partes review
14 proceeding at the patent and trademark office. This
15 proceeding is IPR 2024-01230 which relates to U.S.
16 patent number 10,690,336. I will be referring to this
17 patent as '336 patent moving forward, but if you need me
18 to clarify at any time just let me know. Is that okay?

19 A. That's okay.

20 Q. Okay. Since you have done more than a dozen
21 depositions before, I'll just go over a couple of house
22 keeping rules here first. Just a reminder that we have
23 a court reporter here, so please answer all questions
24 verbally and not with physical movements like a nod or a
25 shrug. Is that okay with you?

1 A. Yes.

2 Q. And another reminder, please wait until I
3 finish my question before you respond, and I will do the
4 same when you answer so that we can get a clean
5 transcript. Is that okay?

6 A. That is okay.

7 Q. And if you don't understand my questions, just
8 let me know. If you answer a question, I will assume
9 that you understood it. Okay?

10 A. Okay.

11 Q. Yeah. And just a reminder that your testimony
12 here today is just the same as if you were testifying in
13 court. Do you understand that?

14 A. Yes. I do.

15 Q. Is there any reason why you would not be able
16 to give a truthful and accurate answers today?

17 A. There is no reason.

18 Q. Are you currently taking any medication that
19 would impair your ability to testify truthfully and
20 accurately today?

21 A. I am not.

22 Q. Okay. So you just mentioned that you have
23 testified more than a dozen times before. Have you ever
24 testified at a deposition in a patent related matter
25 before?

1 A. Okay. I think the word I used was the order of
2 a dozen times.

3 **Q. Oh, okay.**

4 A. So plus or minus. But approximately a dozen.

5 **Q. Okay.**

6 A. And some of them were patent related.

7 **Q. So how many were related to patents?**

8 A. The majority of them.

9 **Q. And can you give me a rough number?**

10 A. I can't give you an exact number because I
11 don't really track that. But six to eight maybe.

12 **Q. And how many among those six to eight patent**
13 **related matters did you sit for a deposition?**

14 A. Well, I thought you were asking me -- maybe I
15 misunderstood the earlier question. I thought you were
16 asking me about how many depositions were patent
17 related. So all of --

18 **Q. The six to eight?**

19 A. The six to eight with depositions.

20 **Q. And can you explain to me in detail each**
21 **instance? Of the six to eight patent related**
22 **depositions?**

23 A. Well, a -- 2 to 3 years ago, there was a case
24 involving a company called Asetek that Mr. Chen here was
25 actually on the other side of. And there were multiple

1 depositions in that case. And then more recently,
2 Mr. Chen contacted me to be in support of his work on
3 these cases related to Lian Lee.

4 **Q. So on the Asetek depositions that you just**
5 **mentioned, that relates to a single proceeding?**

6 A. Well, as I recall, Asetek was suing multiple
7 companies for patent infringement.

8 **Q. And so you testified in depositions in the**
9 **district court cases?**

10 A. That I can't recall which court.

11 **Q. And roughly when were those depositions taken?**

12 A. Roughly 2 to 3 years ago.

13 **Q. Do you recall who Asetek sued in those cases?**

14 A. I can't remember all of the companies, but the
15 name Corsair sits in my mind.

16 **Q. How many patents were asserted in those cases?**

17 A. Well, definitely -- definitely one. There may
18 have been others. It was a while ago.

19 **Q. Do you recall what that patent was about?**

20 A. It involved cooling of CPU chips with micro
21 channels essentially.

22 **Q. And the more recent Lian Li proceeding that**
23 **Mr. Chen asked you to help with, how many depositions**
24 **did you do for that proceeding?**

25 A. I think -- I think two.

1 **Q. That's also a district court proceeding?**

2 A. I'm not sure that -- what court again. I know
3 there was both Thermaltake and Fantech involved in the
4 deposing. So.

5 **Q. Do you recall what patent or patents were**
6 **involved?**

7 A. With Lian Li I believe we are talking just
8 about the '336 patent.

9 **Q. And for the Asetek case that you just**
10 **mentioned, what side were you on? Were you on the**
11 **plaintiff -- the patent owner's side?**

12 A. Yes. Patent owner's side.

13 **Q. Okay. What was the nature of your work for**
14 **that case? Were you consulted for patent infringement**
15 **analysis or validity analysis?**

16 A. Well, I was -- I was an expert witness for the
17 case, so an independent consultant. And there was -- as
18 I said it was a while ago, but there was certainly
19 infringement issues and invalidity issues involved in my
20 advice.

21 **Q. So you were consulted for both infringement**
22 **analysis and invalidity analysis?**

23 A. I believe I was.

24 **Q. Were you ever consulted with IPR petitioner in**
25 **that matter for Asetek?**

1 A. I can't recall whether an IPR was involved or
2 not.

3 Q. Have you ever testified at trial in a patent
4 related matter before?

5 A. No.

6 Q. So in all the past matters you worked on, have
7 you ever been disqualified as an expert for any reason?

8 A. No. At least no one informed me of such.

9 Q. Okay. Was your testimony or part of your
10 expert report ever excluded?

11 A. Could you repeat that question, please?

12 Q. Yeah. Of course. Was your testimony or any
13 part of your expert report ever excluded in any matter
14 that you worked on before?

15 A. Well, no one ever informed me that that had
16 occurred.

17 Q. Okay. And just to confirm, do you recall if
18 you ever served as an expert in an inter partes review
19 before?

20 A. I can't recall if an IPR was involved in
21 Asetek. It was a while ago.

22 Q. And you, just to confirm, can you recall if you
23 ever served as an expert in any inter partes proceeding
24 on behalf of any other client?

25 A. The only other patent case I have been involved

1 with was the Asetek set of cases. So.

2 Q. So Dr. Tuckerman, did you do any preparation
3 for the deposition today?

4 A. I did.

5 Q. And did you do the preparation by yourself?

6 A. I did some by myself.

7 Q. Okay. And some I assume with someone else?

8 A. With counsel, Mr. Chen.

9 Q. So for the part that you prepared by yourself,
10 when did you do that?

11 A. Well, when I got notice of the deposition, I
12 took a look over the -- the case and I had a Zoom
13 meeting with Mr. Chen on Friday, and I had an in-person
14 meeting with Mr. Chen on Sunday. And at other times, I
15 would just be looking at the documents on my own and
16 rereading them and such.

17 Q. How long was your meeting with Mr. Chen on
18 Friday?

19 A. I don't remember exactly. It was maybe an hour
20 or two.

21 Q. And what about your in-person meeting on
22 Sunday, how long was that?

23 A. It was several hours.

24 Q. Can you tell me roughly how long was that?

25 A. I can't exactly. It was half the day of the

1 order.

2 Q. Did you meet with anyone other than Mr. Chen in
3 preparation for this deposition today?

4 A. No.

5 Q. Did you speak with anyone other than Mr. Chen
6 in preparation for the deposition today?

7 A. No.

8 Q. During your meetings with Mr. Chen on Friday
9 and on Sunday, did you take any notes?

10 MR. CHEN: I will caution the witness not to
11 reveal any attorney-client communications.

12 BY MS. QU:

13 Q. Dr. Tuckerman, you may answer the question.
14 This is a yes or no question. Did you take any notes?

15 A. I jotted down a few notes. I also took mental
16 notes.

17 Q. Do you have the notes with you today?

18 A. I do not. I was told not to bring anything.

19 Q. Do you still keep the copies of those notes?

20 MR. CHEN: I will caution the witness not to
21 reveal any attorney-client communications.

22 THE WITNESS: I may or may not have -- still
23 have the copies, but I would not normally retain them.

24 BY MS. QU:

25 Q. And you mentioned you took a look at the whole

1 case in preparation for the deposition. So did you
2 review any documents?

3 A. Well, I don't know if I used the word the whole
4 case. I clearly -- clearly there's a lot in this case,
5 and not everything has been exposed to me. So would you
6 repeat the question, please.

7 Q. Yeah. Simple question. Did you review any
8 documents in preparation --

9 A. I didn't hear you. Sorry.

10 Q. Sorry. Let me repeat. Did you review any
11 documents in preparation for the deposition today?

12 A. I reviewed various documents, yes.

13 Q. And what documents are those?

14 A. Well, the '336 patent itself. The patents that
15 were asserted in the IPR by the petitioner. Or I don't
16 know, 6 or 7 of them maybe. I don't know. The IPR
17 petition itself. The deposition of Dr. Wolfe. My own
18 declaration, of course.

19 Q. And --

20 MR. CHEN: Okay. I'm going to object to this
21 line of questioning because it infringes on
22 attorney-client communication, attorney work product,
23 collection of documents reviewed during preparation.

24 MS. QU: I'm not trying to dig into the
25 communications that you had with Dr. Tuckerman. I'm

1 simply inquiring into the documents that he reviewed in
2 preparation for this deposition.

3 MR. CHEN: You did because the selection of
4 document is privileged. Please refrain from asking
5 questions concerning the privileged information. Thank
6 you.

7 BY MS. QU:

8 Q. Did you review anything besides what you
9 believe have been submitted to the PTAB in this IPR
10 proceeding?

11 MR. CHEN: Objection. Whatever that was
12 reviewed in terms of selection is privileged.

13 MS. QU: Not asking questions about content. I
14 am just asking if you reviewed any documents besides
15 what's been submitted.

16 MR. CHEN: I'm instructing the witness not to
17 answer.

18 THE WITNESS: I'm gonna follow counsel's
19 instruction on that one. And if you don't mind, could
20 you speak up just a little bit because I'm a little bit
21 hard of hearing.

22 MS. QU: Of course.

23 THE WITNESS: Yeah.

24 BY MS. QU:

25 Q. Did anything you reviewed in preparation for

1 **this deposition refresh your memory?**

2 A. Of course.

3 **Q. Which document you reviewed refreshed your**
4 **memory?**

5 A. Well, I can't mention a specific one. All of
6 them were generally refreshing to my memory.

7 **Q. So can you do your best to identify the**
8 **documents that refreshed your memory?**

9 A. Excuse me. A what?

10 **Q. Can you do your best to identify the documents**
11 **that refreshed your memory in preparation for this**
12 **deposition?**

13 A. Okay. I'm actually not understanding your
14 words. I'm sorry. Best -- I'm sorry.

15 **Q. Can you do your best --**

16 A. Oh, do my best.

17 **Q. -- to identify the documents that refreshed**
18 **your memory?**

19 MR. CHEN: I'm cautioning the witness not to
20 reveal attorney-client communication during preparation,
21 including without limitation the selection of documents
22 by counsel during review.

23 THE WITNESS: I'm understanding from counsel
24 that I'm not supposed to be specific on those issues and
25 it would be difficult for me any way, because I -- I

1 didn't have anything specific that comes to mind as oh,
2 this particular document refreshed my memory.

3 BY MS. QU:

4 **Q. Dr. Tuckerman, have you performed a patent**
5 **invalidity analysis before this IPR proceeding?**

6 A. Well, with the Asetek case there were
7 definitely invalidity issues that I opined on.

8 **Q. Okay. How many patents did you perform**
9 **invalidity analysis on in that Asetek matter?**

10 A. Again, it was a while ago. So I can't say
11 exactly how many. I imagine there was the order of a
12 dozen.

13 **Q. Have you ever performed patent invalidity**
14 **analysis on behalf of a patent infringement defendant?**

15 A. Not that I can -- I don't think so.

16 **Q. Have you performed an --**

17 A. Well, actually, let me -- let me correct that.
18 I mean I'm sorry. Okay. Asetek was I believe counter
19 sued, so that made them a defendant, too, if I recall
20 correctly. So in that case, to the extent Asetek was
21 defending its patent, that makes them a defendant. So.

22 **Q. So when you mentioned that you did invalidity**
23 **analysis for the counter sued matter on behalf of**
24 **Asetek, did you mean that you did a patent invalidity**
25 **analysis on how the counter patents were invalid?**

1 A. I think so. It was long ago, and I haven't
2 retained details of that case in my memory.

3 **Q. Have you ever performed an obviousness analysis**
4 **before?**

5 A. I can't recall specifically whether I did a
6 formal analysis. Certainly I've offered to my own
7 opinions on that sort of thing to counsel, but I
8 don't -- I don't remember if it's been memorialized in
9 reports.

10 **Q. Dr. Tuckerman, how did you perform your**
11 **invalidity analysis in this proceeding?**

12 MR. CHEN: I'm cautioning the witness not to
13 reveal any attorney-client communication and attorney
14 work product.

15 THE WITNESS: So to answer that sort of
16 question, I -- I think I would need you to call me --
17 call out something specific in my declaration. I don't
18 think I can give a more specific answer without that.

19 BY MS. QU:

20 **Q. Okay. So you have submitted two declarations**
21 **in this proceeding; correct?**

22 A. Yes.

23 **Q. Did you write each declaration yourself?**

24 A. Yes. I'm the author of them both.

25 **Q. You prepared the first draft?**

1 A. Of both, yes.

2 **Q. Did you receive any assistance from anyone in**
3 **drafting the declarations?**

4 A. Yes. Counsel provided editorial assistance.

5 **Q. Did counsel provide any assistance to the first**
6 **draft of your declarations?**

7 A. No.

8 **Q. Roughly how many hours did you spend writing**
9 **each declaration?**

10 A. I can't recall exactly. Each one was for me,
11 occupied me for a couple of weeks.

12 **Q. When did you start working on the declarations?**

13 A. Which one?

14 **Q. Let's talk through them one by one. When did**
15 **you start drafting the first declaration you submitted**
16 **in this IPR?**

17 A. Well, I believe that was submitted in November
18 of 2024. And so I was probably working on it, you know,
19 during late October, early November I would guess.

20 **Q. Roughly how many hours did you spend on**
21 **drafting that first declaration?**

22 A. I don't recall exactly. As I say, it was a
23 couple of weeks work for me.

24 **Q. And when did you first begin working on the**
25 **latest declaration you submitted?**

1 A. That was at the beginning of May.

2 **Q. And do you recall roughly how many hours you**
3 **spent on working on that latest declaration?**

4 A. Again, it was about two weeks of intensive work
5 because we were up against a deadline I believe. I
6 think that one was submitted right in the middle of May.

7 **Q. Were you working under any particular time or**
8 **financial constraints when drafting those two**
9 **declarations?**

10 MR. CHEN: Objection. To form.

11 THE WITNESS: So I've -- both -- both of these
12 had deadlines. So time constraint, sure. Financial
13 constraint, I don't really know what that means. No one
14 told me that I had to limit my time or anything.

15 BY MS. QU:

16 **Q. Are you being compensated for coming here today**
17 **to testify?**

18 A. I am.

19 **Q. In what form, were you paid on an hourly basis?**

20 A. I'm compensated \$550 per hour.

21 **Q. That same hourly rate apply to your time on**
22 **drafting the declarations?**

23 A. It did. I should say that I don't bill all my
24 hours. I tend to give them a break on time sometimes,
25 you know.

1 **Q. Roughly how much you have billed so far in this**
2 **IPR proceeding?**

3 A. I do not recall right now. That's my
4 bookkeeper's job.

5 **Q. Roughly how many hours would you say you have**
6 **billed for your work in this IPR proceeding?**

7 MR. CHEN: Form.

8 THE WITNESS: I thought I just answered that.
9 Was that a different question?

10 BY MS. QU:

11 **Q. Do you need me to repeat the question?**

12 A. I think you asked me the same question. Am I
13 wrong?

14 **Q. I was asking you previously how much you have**
15 **billed so far. Now I'm asking roughly how many hours**
16 **have you billed?**

17 MR. CHEN: Asked and answered.

18 MR. WEBER: I think one is dollar amount, the
19 other one is hours if you can recall.

20 THE WITNESS: Oh. Well, same answer. That's
21 my bookkeeper's job.

22 BY MS. QU:

23 **Q. And you don't recall roughly how many hours?**

24 MR. CHEN: Asked and answered.

25 THE WITNESS: Not exactly. I told you it

1 was -- I was busy for a couple of weeks both times.
2 Fairly intensively.

3 BY MS. QU:

4 Q. Would you say it's over a hundred hours?

5 A. I couldn't say exactly.

6 MS. QU: Please mark exhibit -- what's been
7 submitted as Exhibit 2006 in this IPR proceeding.
8 (Petitioners' Exhibit 2006 was marked
9 for identification by the court
10 reporter.)

11 BY MS. QU:

12 Q. So Dr. Tuckerman, now you have what's been
13 marked as Exhibit 2006 in this IPR proceeding. Do you
14 recognize it?

15 A. I do.

16 Q. What is it? What is this document?

17 A. It is my declaration in support of patent
18 owners' response and contingent motion to amend in IPR
19 2024-01230 dated May 14th, 2025, and respectfully
20 submitted by me.

21 Q. And that's your signature on the front page?

22 A. It is.

23 Q. Can we please take a look at appendix A to this
24 document, which I believe starts from page 83.

25 A. Okay.

1 Q. So appendix A is a copy of your resume; is that
2 right?

3 A. It is.

4 Q. Dr. Tuckerman, is this a complete reflection of
5 your experience and qualifications?

6 A. No. A resume by definition is a summary, but
7 not at all complete.

8 Q. Is there anything missing in this resume that
9 you would think is important for us to understand your
10 experience and qualifications?

11 A. Well, I'm not an academic so I don't prepare a
12 hundred page CVs. There are I'm sure things in my
13 background and knowledge that are pertinent to this case
14 that I haven't specifically included, but if it comes up
15 during our discussions, I can bring in other background
16 or expertise that I have as appropriate.

17 Q. Can you specify any of the sort of background
18 and experience that you just mentioned would be
19 pertinent to the subject matter we discuss today?

20 MR. CHEN: Form.

21 THE WITNESS: It's hard to be specific, you
22 know, without getting into specific questions. I have
23 extensive work experience and patent inventor experience
24 and such. So you know you can't summarize 45 years of
25 work history in these pages, but I can't bring up

1 specifics without being prompted by specifics if you
2 understand what I mean.

3 BY MS. QU:

4 Q. Is there any reason why you do not list -- I
5 still don't know what the experience is. Is there any
6 reason why you do not list that kind of experience in
7 this resume, appendix A?

8 MR. CHEN: Form.

9 THE WITNESS: Because it isn't practical to do
10 that.

11 BY MS. QU:

12 Q. Dr. Tuckerman, do you believe you've included
13 what's most pertinent to the subject matter in appendix
14 A?

15 A. I have a list of things here that could be
16 relevant. I would certainly reserve the right to
17 discuss other experience that's relevant during, you
18 know, as -- if it seems necessary during our discussion
19 today.

20 Q. Okay. But sitting here today, do you have
21 anything that comes to your mind you want to add to
22 appendix A now?

23 A. As I said, nothing specific comes to mind in
24 advance of hearing your questions.

25 Q. Okay. Do you have any direct experience with

1 **cooling fans for computers?**

2 A. Yes. I do. By the way, since you're asking me
3 about, you know, any changes, I did identify two typos
4 in my declaration when I was reviewing it. Can I
5 mention those?

6 **Q. Yeah. Of course.**

7 A. Yeah. So if you will turn to page 36.

8 **Q. Okay.**

9 A. I believe -- okay. So the last line of
10 paragraph 62 and in limitation one D, do you see that?

11 **Q. Yeah.**

12 A. Okay. That should be one C. And similarly,
13 the first line of paragraph 63 instead of limitation one
14 D, it should have said one C. So those two adjacent
15 lines one D changes to one C.

16 **Q. Okay.**

17 A. Typo. Any way.

18 **Q. Thanks for letting me know. Any other**
19 **revisions you may want to make to your declaration or**
20 **anything you want to add to it?**

21 A. Not at the moment. That was the only thing
22 that I noticed.

23 **Q. Okay.**

24 A. That said, I'm not saying I'm perfect, you
25 know. There may be -- there may be something else.

1 Q. So you just mentioned you had direct experience
2 with cooling fans for computers. Can you please specify
3 your experience?

4 A. Well, when I was working at Tessera as the
5 chief technology officer, we had a research project to
6 replace cooling fans with a technology that didn't use
7 fans and was very silent. We called it silent air
8 cooling. So I supervised that project and it, you know,
9 and part of the research involved looking at the state
10 of the art in fans and their performance and their noise
11 and such, and their compactness and how they fit into
12 computers. So I became familiar with -- I mean, I'm
13 also already very familiar with fans, but that was a
14 specific research project.

15 And then later on as a consultant for
16 Microsoft, we built the first underwater data center
17 prototype. It was called I believe Project Natick and
18 it was submerged off the California coast. And I was
19 involved in the design of the cooling system for that,
20 and it had -- inside the data center, there were cooling
21 fans and it was necessary to do performance analysis and
22 such.

23 Q. For the first research project you just
24 mentioned, for Tessera when you serve as the CTO,
25 roughly when was that research project?

1 A. That -- well, I was there from 2003 to 2009.
2 So that was -- it was during that time period. I don't
3 remember exactly, and you know prior to that I was -- I
4 was in a venture capital position. And I saw multiple
5 plans and companies that were involved with chip
6 cooling, and some of them did involve fans and so those
7 are -- yeah. Any way.

8 **Q. And about the Microsoft project, you mentioned**
9 **you designed the cooling system for that project?**

10 A. I was part of a team that designed the cooling
11 system. There was a patent issued, at least -- at least
12 one I believe that has my name on it. And it does I
13 believe mention the cooling fans in the -- yeah, that
14 Microsoft work was 20 -- as shown on my resume it was
15 from 2011 through 2020. So that -- that cooling work
16 was done in that timeframe.

17 **Q. That patent you mentioned that has your name on**
18 **it, is it listed anywhere in appendix A?**

19 A. It may still be a patent application. I may
20 have misspoke on that. I remember seeing it in a patent
21 search, but it may still be in application phase. Oh,
22 no. No. There it is. 9844167. Underwater -- Item 151
23 on my patent list, underwater container cooling via
24 external heat exchanger. And then an earlier one, 144,
25 underwater container cooling via integrated heat

1 exchanger. Yeah.

2 **Q. Both patents involve cooling fans?**

3 A. Cooling fans were used in the systems. The
4 patent was -- they -- I would not say they were the
5 focus of the patent, but I am mentioning them to be
6 illustrative of the fact that I worked on the design of
7 an integrated cooling system that did include cooling
8 fans as part of its components.

9 **Q. Are there any other patents that you worked on**
10 **that involve cooling fans?**

11 A. There might be. I -- I don't know. There was
12 a lot of things I worked on.

13 **Q. So Dr. Tuckerman, would you consider yourself**
14 **to have been a person of ordinary skill in the art as of**
15 **December 2018?**

16 A. Yes. I would.

17 **Q. Do you agree with me that before December 2018,**
18 **engineers would understand how to connect fans together**
19 **as part of a larger system; correct?**

20 MR. CHEN: Objection. Form.

21 THE WITNESS: Can you read the question? Is it
22 okay to look at the screen when I -- to refresh what you
23 said. Well, that's a very vague statement that I can't
24 agree with as a blanket statement.

25 MR. CHEN: Counsel, there's only transcript on

1 the screen.

2 MS. QU: Yeah.

3 MR. CHEN: So just to.

4 THE WITNESS: Yeah.

5 BY MS. QU:

6 Q. Dr. Tuckerman, you just mentioned that you
7 worked on a Microsoft project where you designed a
8 cooling system integrated with cooling fans for
9 computers; is that right?

10 A. I was part of a team that designed an
11 integrated system for computers that did include cooling
12 fans.

13 Q. Did you invent the technology to integrate
14 cooling fans into a larger system that you designed or
15 you and your team designed for Microsoft?

16 MR. CHEN: Objection. Form.

17 THE WITNESS: My recollection is that the --
18 our use of cooling fans in the Microsoft system were
19 using conventional industry practices.

20 BY MS. QU:

21 Q. Before December 2018, do you agree that
22 engineers understood how to connect two fans together,
23 two cooling fans together as part of a larger system?

24 MR. CHEN: Objection. Form. Vague.
25 Ambiguous.

1 THE WITNESS: I can't agree with that as a
2 blanket statement.

3 BY MS. QU:

4 Q. Are you saying it would have been beyond the
5 ability to a person of ordinary skill in the art to
6 figure out a way to connect two cooling fans together
7 before December 2018?

8 MR. CHEN: Objection. Asked and answered.
9 Form.

10 THE WITNESS: I'm not saying that either.

11 BY MS. QU:

12 Q. So before December 2018, a person of ordinary
13 skill in the art would know or knew ways to connect two
14 cooling fans together to a larger system; correct?

15 MR. CHEN: Compound.

16 THE WITNESS: I'm not saying that either.

17 BY MS. QU:

18 Q. So what are you saying, doctor?

19 MR. CHEN: Vague and ambiguous. Lack of
20 foundation.

21 THE WITNESS: The -- your use of the words
22 connection and such are not specific enough to give a
23 general answer to -- to your question.

24 BY MS. QU:

25 Q. I'm just asking as of December 2018, could a

1 person of ordinary skill in the art figure out a way to
2 connect two cooling fans together?

3 MR. CHEN: Same objection.

4 THE WITNESS: That's too vague a -- that's too
5 general a question. What is meant by connect?

6 BY MS. QU:

7 Q. What do you understand connect to mean?

8 MR. CHEN: Form. Lack of foundation.

9 THE WITNESS: It depends on context. Are we
10 talking a mechanical connection? Are we talking an
11 electrical connection? What type of electrical
12 connection? It all depends on context.

13 BY MS. QU:

14 Q. Let's start with electrical connection. As of
15 December 2018, engineers would have known a way to
16 electrically connect two cooling fans from computers
17 together; correct?

18 MR. CHEN: Form.

19 THE WITNESS: That's too general a question
20 still.

21 BY MS. QU:

22 Q. You as an expert have an obligation to answer
23 general questions.

24 MR. CHEN: Form.

25 THE WITNESS: Well, let me look at the question

1 again.

2 MR. CHEN: Oh, actually, because opposing
3 counsel can see this.

4 THE WITNESS: I cannot see it or?

5 MR. CHEN: I don't want them to have to, you
6 know, show this every time.

7 MS. QU: Madame Court Reporter, can you just
8 read the last question to Dr. Tuckerman?

9 (The previous question was read back
10 by the court reporter as follows:

11 "QUESTION: Let's start with
12 electrical connection. As of
13 December 2018, engineers would have
14 known a way to electrically connect
15 two cooling fans from computers
16 together; correct?")

17 THE WITNESS: Well, as I said, that question is
18 not specific enough to be able to give a blanket answer
19 to.

20 BY MS. QU:

21 Q. You as an expert are not able to answer that
22 question? Is that what you're saying?

23 MR. CHEN: Objection. Form. Argumentative.

24 THE WITNESS: I'm saying that it's not specific
25 enough to be able to give a blanket answer. There's

1 many questions in life like that.

2 BY MS. QU:

3 Q. As of December 2018, it is beyond the ability
4 for a person of ordinary skill to figure out any way to
5 electrically connect two cooling fans from computers
6 together; is that what you're saying?

7 MR. CHEN: Objection. Form. Asked and
8 answered.

9 THE WITNESS: I'm not saying that at all.

10 BY MS. QU:

11 Q. So what ways could a person of ordinary skill
12 figure out as of December 2018 to electrically connect
13 two cooling fans for computers?

14 MR. CHEN: Same objection.

15 THE WITNESS: Well, to take a simple example,
16 you could plug them both into the same power bus
17 essentially.

18 BY MS. QU:

19 Q. Any other ways?

20 MR. CHEN: Vague and ambiguous. Lack of
21 foundation.

22 THE WITNESS: There are undoubtedly other ways,
23 but you have to be much more specific about the type of
24 connection and how it's done. And I'm really not -- I'm
25 not here to speculate on all the ways that it could be

1 done, because I couldn't -- I couldn't say.

2 BY MS. QU:

3 Q. I'm asking you to tell me specifically how a
4 person of ordinary skill in the art could have
5 electrically connected two cooling fans for computers
6 before December 2018?

7 MR. CHEN: Same objections.

8 THE WITNESS: I just told you one way.

9 BY MS. QU:

10 Q. And you can't think of any other ways?

11 MR. CHEN: Same objections.

12 THE WITNESS: Not off the top of my head.

13 BY MS. QU:

14 Q. Well, you just testified there are undoubtedly
15 other ways to electrically connect two cooling fans
16 together. Can you name one or a few of the other ways
17 to connect two cooling fans?

18 MR. CHEN: Compound.

19 THE WITNESS: As I said, not off the top of my
20 head. And I really mainly answered in the way that I
21 did because I cannot rule out the possibility of other
22 connection means. But that's not the same thing as
23 saying I can think of one other than the one, the
24 example I just gave you.

25 ///

1 BY MS. QU:

2 Q. Before December 2018, was it known to engineers
3 to use electrical connectors to connect two cooling fans
4 for computers?

5 A. Well, in the example I gave you where they are
6 plugged into the same power supply, the same power bus,
7 you would be using certainly electrical connectors in
8 that situation.

9 Q. Connectors were a well known concept well
10 before December 2018; correct?

11 MR. CHEN: Form. Vague and ambiguous.

12 THE WITNESS: Could -- electrical connectors
13 are a well known concept, for sure.

14 BY MS. QU:

15 Q. What about power supply that you just
16 mentioned, is that also a well known concept well before
17 December 2018?

18 A. Power supply is certainly well known.

19 MR. CHEN: Can we please take a short break?

20 MS. QU: Yeah. Of course.

21 (Recess.)

22 A. May I amplify on my answer to your last
23 questions?

24 Q. Of course.

25 A. Yeah. So I mean there are obviously in my

1 report a couple of examples of fans that were
2 electrically connected. The -- page 24, there's Lai and
3 page 77 Tsuji. So clearly those were methods to
4 electrically connect fans that people came up with.

5 **Q. Are you saying that before 2018, it was known**
6 **to a person of ordinary skill that two cooling fans can**
7 **be electrically connected together?**

8 MR. CHEN: Objection. Form.

9 BY MS. QU:

10 **Q. Am I understanding you correctly?**

11 MR. CHEN: Objection. Form.

12 THE WITNESS: Well, these two pieces of art I
13 believe you know predate the priority date of the '336
14 patent. So a POSITA could have been familiar with them.

15 BY MS. QU:

16 **Q. And just generally before 2018, a person of**
17 **ordinary skill in the art would have understood how to**
18 **connect two cooling fans together; correct?**

19 MR. CHEN: Asked and answered.

20 THE WITNESS: That is much too broad a
21 question. It's -- these -- two those two pieces of art
22 I cited were two specific methods of creating a
23 connection. So a POSITA presumably would have known of
24 them. Whether those methods were suitable for other
25 applications is an entirely different question. So.

1 BY MS. QU:

2 Q. I'm just asking you in general, setting aside
3 the two specific references that you just mentioned. In
4 general, before 2018, was the concept power socket well
5 known to engineers?

6 MR. CHEN: Form. Asked and answered.

7 THE WITNESS: A power socket as a general
8 concept certainly is known. There is an -- I mean
9 that's a -- those are power sockets on the wall, for
10 example. But it has -- the term has to be used in
11 context. I mean. So.

12 BY MS. QU:

13 Q. And before 2018, were power sockets known to
14 engineers to be used for cooling fans?

15 MR. CHEN: Objection. Form.

16 THE WITNESS: Well, as a specific example, the
17 Tsuji patent uses power sockets in its fans. So that --
18 as of the time of the Tsuji patent application, a POSITA
19 could have been aware of that. That specific example.

20 BY MS. QU:

21 Q. Was the general concept of using power sockets
22 in cooling fans known to engineers before 2018?

23 MR. CHEN: Objection. Form. Asked and
24 answered.

25 THE WITNESS: I've given you a specific example

1 of where a power socket is used. I can't comment on how
2 extensive its use may or may not have been in other
3 applications off the top of my head.

4 BY MS. QU:

5 **Q. Was the use of power sockets in cooling fans**
6 **generally known in 2018?**

7 MR. CHEN: Same objections.

8 THE WITNESS: I don't know what generally known
9 means.

10 BY MS. QU:

11 **Q. Was power sockets known to be able to use in**
12 **cooling fans for computers before 2018?**

13 A. Clearly, yes. From -- as you see from the
14 Tsuji, it was known.

15 **Q. Were fans with illumination areas known to**
16 **engineers before 2018?**

17 MR. CHEN: Objection. Form. Lack of
18 foundation.

19 THE WITNESS: Well, illumination area in the
20 context of the '336 patent is a -- is a claim term. And
21 I'm not -- so it -- I wouldn't -- I know there is art
22 where fans have light emitting features, but whether
23 they -- I wouldn't -- whether they would qualify as the
24 illumination area, you know, in the '336 patent, I can't
25 say that they could.

1 BY MS. QU:

2 Q. Dr. Tuckerman, I'm not talking about the '336
3 patent or how that term is construed in the patent. I'm
4 just talking about whether fans with an illumination
5 area located anywhere on that fan, whether fans with
6 illumination areas were known to engineers before 2018?

7 MR. CHEN: Compound. Lack of foundation.
8 Form.

9 THE WITNESS: Well, as I said, the use of the
10 term illumination area is a very specific claim term in
11 the '336 patent that has a clear meaning in the context
12 of the '336 patent in its specification and its figures,
13 but it is not a, shall we say, a highly common term of
14 art. So I am not comfortable using it in the context of
15 other things.

16 BY MS. QU:

17 Q. What do you mean when you're saying the term
18 illumination area is a very specific claim term in the
19 patent that has a clear meaning in the context of the
20 '336 patent?

21 MR. CHEN: Form.

22 THE WITNESS: Well, I mean that when I read the
23 '336 patent as a POSITA would have read it, I understand
24 what is meant by the term illumination area, but I don't
25 think it's a very commonly used phrase in other

1 contexts. So I prefer to discuss it only in the context
2 of the '336 patent.

3 BY MS. QU:

4 Q. Sir, Dr. Tuckerman, are you saying you're not
5 able to answer my question whether fans with an
6 illumination area were known to engineers before 2018?

7 MR. CHEN: Lack of foundation.
8 Mischaracterizing testimony. Form.

9 THE WITNESS: So I'm saying that at that time,
10 I don't believe the term illumination area was a
11 widespread term of art that would be generally
12 understood. And so it seems like it's a question that
13 can't really be answered unless the engineers were
14 familiar with the '336 patent and its use of the term
15 illumination area. But of course, before 2018 they
16 couldn't have been familiar with the '336 patent, so.
17 BY MS. QU:

18 Q. Were fans with a region that is lit up known
19 before 2018?

20 MR. CHEN: Lack of foundation. Form.

21 THE WITNESS: Fans with light emitting features
22 were known.

23 BY MS. QU:

24 Q. Dr. Tuckerman, you're not answering my
25 question. My question was, were fans with a region that

1 is lit up known before 2018?

2 MR. CHEN: Same objections.

3 THE WITNESS: Well, we have to be careful with
4 our use of terms here. I mean if I have a fan and it's
5 in this room, it's lit up by the -- the lights in the
6 ceiling. So in that context, any fan that is visible to
7 the eye is lit up.

8 BY MS. QU:

9 Q. Dr. Tuckerman, you just testified fans with
10 light emitting features were known before 2018; correct?

11 A. Yes.

12 Q. For the fans that were known to have light
13 emitting features, were any regions of that fan lit up?

14 MR. CHEN: Objection. Form. Asked and
15 answered.

16 THE WITNESS: Well, as I said, lit up is a
17 general term, and ambient light can light up a fan.

18 BY MS. QU:

19 Q. For the fans that were known to have light
20 emitting features, were any regions of the fan body lit
21 up by the light emitting features of that fan?

22 MR. CHEN: Compound. Vague and ambiguous.

23 THE WITNESS: Well, I mean there is the -- this
24 cited patent by Huang that has essentially a translucent
25 fan body.

1 BY MS. QU:

2 Q. Is that a yes to my question?

3 MR. CHEN: Mischaracterizing testimony. Form.

4 THE WITNESS: Well, the only piece of art that
5 is specifically coming to mind is, in an attempt to be
6 responsive to your question, is Huang. But I would say
7 that the Huang patent speaks for itself. If you -- so.
8 I don't have it in front of me, so I can't be more
9 specific. Patent or patent application, I'm not sure.

10 BY MS. QU:

11 Q. Dr. Tuckerman, I'm not asking about Huang. My
12 question was for the fans that were known to have light
13 emitting features, were any regions of that fan lit up
14 by the light emitting features of that fan?

15 MR. CHEN: Compound. Vague and ambiguous.
16 Form.

17 THE WITNESS: Well, I'm -- what is meant by a
18 region of the fan? I mean, I could cite Lai where they
19 have some LEDs and those illuminate the fan blades.

20 BY MS. QU:

21 Q. So it was known to a person of ordinary skill
22 in the art before 2018 that for fans that were known to
23 have light emitting features, some region of it can be
24 lit up by the light emitting features?

25 MR. CHEN: Asked and answered. Form.

1 THE WITNESS: Well, I can't answer that in
2 general for fans that were known to have light emitting
3 features, but I can certainly answer it in the case of
4 Lai where the fan blades were illuminated by LEDs.

5 BY MS. QU:

6 Q. Dr. Tuckerman, so you are not able to answer
7 whether a person of ordinary skill in the art would have
8 knowledge or not before 2018?

9 MR. CHEN: Mischaracterizing testimony. Asked
10 and answered.

11 THE WITNESS: That question is really vague,
12 but what I will say is that a person of ordinary skill
13 in the art could well have been familiar with both Lai
14 and Huang.

15 BY MS. QU:

16 Q. So it was known to engineers before 2018 that
17 for fans that were known to have light emitting
18 features, some region of that fan can be lit up by that,
19 the light emitting features of that fan; correct?

20 MR. CHEN: Same objections.

21 THE WITNESS: Well, you're saying for fans that
22 were known to have light emitting features. I can't
23 speak for all cases. So I cannot agree with the
24 question as posed. I can say in the case of Lai, the
25 fan blades were intended to be illuminated by LEDs and

1 discreet LEDs, and in Huang there was some diffusive
2 illumination of the fan body. So I can say that those
3 two cases were clearly something a POSITA could have
4 been aware of.

5 BY MS. QU:

6 **Q. So POSITA could have known before 2018; yes or**
7 **no?**

8 MR. CHEN: Objection. Form.

9 THE WITNESS: That's not a --

10 MR. CHEN: Asked and answered.

11 THE WITNESS: Specific question. Known what?

12 BY MS. QU:

13 **Q. So a POSITA could have known before 2018 that**
14 **for fans that were known to have light emitting**
15 **features, some region of that fan body could be lit up**
16 **by light emitting features?**

17 MR. CHEN: Objection. Mischaracterizing prior
18 testimony. Asked and answered. Argumentative.

19 THE WITNESS: Yes. This is I think the same
20 identical question you asked previously. And I said
21 that I cannot speak to all fans that were known to have
22 light emitting features, whether that -- whether or not
23 that will be a correct statement, I can only at this
24 point specifically mention that those two patents, Lai
25 and Huang, a POSITA could or should have been aware of

1 the specific embodiments of those patents or patent
2 applications.

3 BY MS. QU:

4 Q. Since you mentioned Li and Huang?

5 A. Lai. Lai and Huang. L-A-I.

6 Q. Since you mentioned Lai and Huang, you were
7 saying in Lai -- in the fans of Lai and Huang, they have
8 some region that is lit up by light emitting features of
9 the fan; correct?

10 MR. CHEN: Mischaracterizing prior testimony.
11 Asked and answered.

12 THE WITNESS: In the case of Lai, the fan
13 blades are intended to be illuminated by discreet LEDs,
14 and in the case of Huang, the body is -- is diffusively
15 illuminated by some LEDs as I recall.

16 BY MS. QU:

17 Q. Dr. Tuckerman, so turn back to your
18 declaration, Exhibit 2006. Is this declaration a
19 complete reflection of your analysis of an opinion on
20 the '336 patent?

21 A. Well, it is my formal declaration, you know,
22 submitted to counsel for use in support of their -- of
23 patent owner's response. However, it is not a complete
24 reflection of everything that goes on in my head. I'm
25 sure there are things that I didn't say or and could

1 have said, might have said. I might choose to elaborate
2 on today if needed. So it is not -- it is not the whole
3 story, but it's what is documented on paper at the
4 moment.

5 **Q. Sitting here today, do you have anything you**
6 **want to add or revise with respect to the opinions you**
7 **have provided in this declaration?**

8 A. Well, other than the two typos I already cited,
9 I have no specific changes that I want to make at this
10 moment, but I would reserve the right to comment beyond
11 what's in this report if needed during this deposition.

12 **Q. Your declaration does not address Thermaltake's**
13 **challenges to dependent claim three of the '336 patent;**
14 **correct?**

15 A. That is correct.

16 MS. QU: Okay. Can we please mark what's being
17 submitted as Exhibit 1001 in the IPR proceeding, which
18 is the '336 patent.

19 (Petitioners' Exhibit 1001 was marked
20 for identification by the court
21 reporter.)

22 BY MS. QU:

23 **Q. Dr. Tuckerman, you have reviewed and analyzed**
24 **the '336 patent; correct?**

25 A. I have.

1 Q. In your opinion, is the claimed invention in
2 the '336 patent limited to the specific embodiments as
3 depicted in the figures in the patent?

4 MR. CHEN: Form. Legal conclusion.

5 THE WITNESS: In my opinion, it is not limited
6 to those.

7 BY MS. QU:

8 Q. Can you turn to claim one of '336 -- of the
9 '336 patent?

10 A. Okay.

11 Q. Do you see the term illumination area in claim
12 one?

13 A. Yes.

14 Q. What is your understanding of the term
15 illumination area?

16 MR. CHEN: Legal conclusion.

17 THE WITNESS: Well, the figures identify on
18 Item 3, it's called out in every figure. And it -- in
19 these particular embodiments, they are a pair of strips
20 at the top of the body of the fan that I understand to
21 be glowing, if you -- to use the technical term. So
22 visibly illuminated.

23 BY MS. QU:

24 Q. And you see the term connector in claim one?

25 A. Yes. I see the term used at several places.

1 **Q. What is your understanding of the term**
2 **connector?**

3 MR. CHEN: Legal conclusion.

4 THE WITNESS: Well, as a POSITA would have read
5 this patent in the context of this spec and figures and
6 claims, they are electrical connectors that power can be
7 connected to or power can pass through. So.

8 BY MS. QU:

9 **Q. And they were known before 2018?**

10 MR. CHEN: Objection. Form. Lack of
11 foundation. Vague and ambiguous.

12 THE WITNESS: Connectors in a general context
13 text were very well known.

14 BY MS. QU:

15 **Q. Does the '336 purport to have invented**
16 **connectors?**

17 MR. CHEN: Same objections.

18 THE WITNESS: It does not purport to invent the
19 general concept of connector.

20 BY MS. QU:

21 **Q. And do you see the term power socket?**

22 A. I see that.

23 **Q. And what is your understanding of the term**
24 **power socket?**

25 A. I understand that to mean a socket that could

1 receive power or deliver power or be connected to power.

2 **Q. And power sockets were known before 2018?**

3 A. Well, in a general concept -- context, yes.

4 They, for example, the wall outlet is a power socket.

5 And certainly computer devices have power sockets. So

6 in a general concept, context, power sockets were known.

7 **Q. Does the '336 patent purport to invent power**
8 **sockets?**

9 MR. CHEN: Objection. Form.

10 THE WITNESS: It does not purport to invent the
11 concept of a power socket in general.

12 BY MS. QU:

13 **Q. And do you see the term top of the body in**
14 **claim one?**

15 A. I do.

16 **Q. What is your understanding of top of the body?**

17 MR. CHEN: Legal conclusion.

18 THE WITNESS: So as I and a POSITA would have
19 understood it, the top of the body is the -- the part of
20 the fan that is facing -- that is intended to be facing
21 the -- the user, because that's where the illumination
22 areas are.

23 BY MS. QU:

24 **Q. Just to confirm, did you mean that top of the**
25 **body is where the illumination areas are located?**

1 MR. CHEN: Mischaracterizing testimony.

2 THE WITNESS: I'm not limiting it to that.

3 What I really mean is the -- as is clear, would be clear
4 to a POSITA, these fans have four sides and a top and a
5 bottom. The bottom is not called out specifically, but
6 the top of the fan is the portion of the fan that you
7 can see that -- the face of the fan where you can see
8 the blades in these figures.

9 BY MS. QU:

10 Q. If the --

11 A. And it's the face that has the illumination
12 area on it.

13 Q. If the fan body is turned over, then what is
14 your understanding of what the top of the fan body is?

15 MR. CHEN: Lack of foundation. Legal
16 conclusion.

17 THE WITNESS: Well, in the context of this
18 patent, they have an illumination area that is
19 identified as being at top of the body. So to me, that
20 defines that upper face as being the top of the body.
21 If I flip the fan over, that wouldn't be top of the body
22 in the context of these figures because it's not the
23 side with the illumination area on it.

24 BY MS. QU:

25 Q. So do you mean top of the fan is the side with

1 illumination area?

2 MR. CHEN: Objection. Form. Mischaracterizing
3 testimony.

4 THE WITNESS: I wouldn't make that -- I
5 wouldn't make that general statement. What I'm saying
6 is that in the context of this patent, if something is
7 going to be construed as -- a device is being construed
8 as something that these claims read on, if it has an
9 illumination area on this face, an illumination area can
10 define which face is the top of the body.

11 BY MS. QU:

12 Q. Can you take a look at claim four?

13 A. Okay.

14 Q. Let me know when you're done.

15 A. Okay.

16 Q. Claim four does not mention sliding the groove
17 and the engaging block relative to one another; correct?

18 MR. CHEN: Document speaks for itself.

19 THE WITNESS: I don't see the word sliding
20 used.

21 BY MS. QU:

22 Q. So claim four does not require the groove and
23 engaging block to be engaged by sliding; correct?

24 MR. CHEN: Document speaks for itself. Legal
25 conclusion.

1 THE WITNESS: Well, I haven't -- the cases --
2 the situations I was considering in my analysis involved
3 sliding. I did not consider alternative situations and
4 I'm not going to say, you know -- I'm not going to say
5 that it requires that. I'm not gonna limit the claims
6 any more than what is written.

7 BY MS. QU:

8 Q. And can you take a look at claim five?

9 A. Okay.

10 Q. Claim five does not require the groove and the
11 grooves and -- sorry, the groove and engaging block to
12 be engaged by sliding; correct?

13 MR. CHEN: Lack of foundation. Document speaks
14 for itself. Legal conclusion. Vague and ambiguous.

15 THE WITNESS: It does not mention sliding. The
16 embodiment that I was considering in my analysis did
17 involve sliding, but I'm not going to say that it's
18 precluded without a lot more thought, which I don't --
19 can't do in realtime. To be clear, that not sliding --
20 I'm not gonna say that not sliding is precluded.

21 BY MS. QU:

22 Q. And claim five requires a groove to be provided
23 on two sides of the body. Do you see that?

24 A. Yes.

25 Q. Does the language of claim five require the

1 groove to be on the same two sides as the first and
2 second connectors under claim one?

3 MR. CHEN: Legal conclusion. Vague and
4 ambiguous.

5 THE WITNESS: Well, first of all, there's --
6 you say the groove. There's a groove on two sides and
7 on one fan, and then there's a groove on two sides of
8 the body of another illumination fan. So essentially a
9 total of four grooves as I understand and as a POSITA
10 would understand the patent. I don't see that the
11 connectors are specifically called out under this claim.
12 So I would interpret it, you know, as -- I would
13 interpret it broadly. You know, if there's not a
14 limitation.

15 BY MS. QU:

16 Q. So claim five does not require the groove
17 claimed there under to be on the same two sides where
18 first and second connectors are located under claim one;
19 correct?

20 MR. CHEN: Form. Legal conclusion.

21 THE WITNESS: So the claim, you know, to my
22 mind, speaks for itself and does not specifically add
23 qualifications regarding the first and second connectors
24 as I read it. I will call your attention to figure --
25 to the preferred embodiment in Figure 4, a preferred

1 embodiment at any rate, which is consistent with the --
2 the claim language. Is -- and you can see how the
3 connectors connect in that figure, but I'm not gonna say
4 that there is a limitation in that regard because it's
5 not written into the claims, and there could be other
6 embodiments, you know, with different connector
7 configurations. So.

8 BY MS. QU:

9 Q. Let's go back to claim one.

10 A. Okay.

11 Q. You see the term side or sides in claim one?

12 MR. CHEN: Vague and ambiguous.

13 THE WITNESS: So side is used in two different
14 contexts in this claim. There's discussion of an
15 illumination area on at least two sides of the fan at
16 top of the body. And then there is a first connector on
17 one side of the body and a second connector on another
18 side of the body.

19 So there's sides of the fan and there's side of
20 the body, and those are -- those are not identical
21 meanings of side. They're talking about two different
22 things. So in other words, the word side as a stand
23 alone is insufficient to interpret this. You have to
24 ask, are we talking sides of the fan or side of the
25 body?

1 BY MS. QU:

2 Q. Are you telling me that the same term side
3 means differently in different places in claim one?

4 A. I'm saying that it has to be interpreted in
5 context.

6 Q. So are you telling me that the same term means
7 differently in different places in claim one?

8 MR. CHEN: Asked and answered.

9 Mischaracterizing testimony.

10 THE WITNESS: It does not have an identical
11 meaning in those two different concepts -- context.
12 Which is generally true of the word side. It has to be
13 understood only in the context of side of what? Side of
14 the fan or side of the body? I'm saying the word side
15 only has meaning when it's contextualized by what
16 follows.

17 BY MS. QU:

18 Q. So what is your understanding of side of the
19 body in claim one?

20 MR. CHEN: Legal conclusion. Lack of
21 foundation.

22 THE WITNESS: So as I and as a POSITA would
23 have read this patent, the fans in all of these figures
24 have four sides on their bodies. The bodies of the --
25 the bodies of the fans have four sides, they're roughly

1 square fans in this picture if not perfectly square.

2 BY MS. QU:

3 Q. How are you choosing what four sides are the
4 claim sides in your opinion?

5 MR. CHEN: Lack of foundation. Vague and
6 ambiguous.

7 THE WITNESS: Well, if we go to the claim
8 language in claim one, there is -- and we are talking
9 about sides of the body here. There is a power socket
10 and a first connector on one side of the body, and that
11 is illustrated in several figures. Certainly Figures 1
12 and 2 and 4, so -- and 5. So that defines that -- that
13 defines one of the four sides.

14 It's the -- you know, there's a side with a
15 power socket and a connector, which because it's on the
16 same side of the power socket, it's by definition the
17 first connector. And then they also call out a second
18 connector on another side of the body, and that is also
19 shown on Figure 1 and Figure 2. And it's visible in
20 Figure 4 and visible in Figure 5, the second connector.
21 So that defines that side. Yeah. And then there's two
22 other sides.

23 BY MS. QU:

24 Q. How are you choosing the other two sides?

25 MR. CHEN: Lack of foundation. Vague and

1 ambiguous.

2 THE WITNESS: They are in -- in this -- in
3 these embodiments, they are the two sides that are
4 perpendicular -- that are parallel to each other and
5 perpendicular to the sides that have the first and
6 second connector respectively.

7 BY MS. QU:

8 **Q. So are you saying the sides are defined by**
9 **where the connectors are located?**

10 MR. CHEN: Mischaracterizing testimony. Vague
11 and ambiguous. Lack of foundation.

12 THE WITNESS: Well, the way I -- the claim
13 language identifies a power socket and a first connector
14 on one side of the body. So the existence of those two
15 on a particular side qualifies it to be one side of the
16 body under the claim language. And if there is a second
17 connector on another side of the body, which again there
18 is on these embodiments shown, that second connector
19 defines what is another side of the body. Don't know
20 how to make it clearer than that.

21 MS. QU: Can we please take a break? Let's go
22 off the record.

23 (Recess.)

24 MS. QU: Please mark as Exhibit 1027.

25 (Petitioners' Exhibit 1027 was marked

1 for identification by the court
2 reporter.)

3 BY MS. QU:

4 **Q. Dr. Tuckerman, I'm handing you a demonstrative**
5 **that we have prepared for the deposition today. It is**
6 **an exerted view of one of the fan bodies from Figure 2**
7 **of the '336 patent with the illumination area three**
8 **removed.**

9 A. Okay.

10 **Q. And the second image if you turn to the next**
11 **page, that is the same fan body, just rotated and added**
12 **with yellow annotations. Do you see that?**

13 A. I see yellow annotations.

14 MR. CHEN: Objection. Mischaracterizing
15 document.

16 BY MS. QU:

17 **Q. Dr. Tuckerman, can you identify for me what is**
18 **the top of the fan body with respect to the first image**
19 **here of Exhibit 1027?**

20 MR. CHEN: Objection. Vague and ambiguous.
21 Form. Incomplete hypothetical.

22 MR. WEBER: Dr. Tuckerman, I'll just point that
23 you're looking at the second figure. The question is
24 regarding the first one.

25 THE WITNESS: Oh. Well, on the first page,

1 since your figure is incomplete, no illumination area
2 shown, I don't know -- you would have to show me a fan
3 with an illumination area for me to opine on that.

4 BY MS. QU:

5 Q. Okay. If you take a look at the second figure
6 on the next page of Exhibit 1027?

7 A. Okay.

8 Q. You see the two highlighted annotations?

9 A. I see two yellow strips, yes.

10 Q. If illumination areas are placed in locations
11 highlighted in yellow here, as shown here, would that be
12 considered top of the body as claimed in claim one?

13 MR. CHEN: Objection. Incomplete hypothetical.
14 Mischaracterizing document. Vague and ambiguous.

15 THE WITNESS: Well, I'll say that it's a
16 configuration that I had not considered and because I
17 haven't considered it, I'm not prepared to opine in
18 realtime on that question.

19 BY MS. QU:

20 Q. Dr. Tuckerman, but you just testified that an
21 illumination area can define which face is the top of
22 the body; correct?

23 MR. CHEN: Mischaracterizing testimony. Vague
24 and ambiguous.

25 THE WITNESS: Well, I didn't say exactly that.

1 What I believe I said was, certainly intended to say,
2 was in the context of the embodiments shown in the
3 patent, the existence of those illumination areas marked
4 as three make it clear that those -- that's where the --
5 that they're on the top of the body, hence defines the
6 top of the body for -- in these embodiments certainly.

7 BY MS. QU:

8 **Q. So Dr. Tuckerman, you can't tell us what the**
9 **top of body is in the second figure of Exhibit 1027?**

10 MR. CHEN: Mischaracterizing testimony.
11 Argumentative.

12 THE WITNESS: What I said is it's not a
13 configuration that I have considered in my analyses and
14 therefore I'm not prepared to opine on that issue today.

15 BY MS. QU:

16 **Q. Dr. Tuckerman, if the fan body of the '336**
17 **patent is turned over upside down, does that change what**
18 **you think is the top of the fan body?**

19 MR. CHEN: Vague and ambiguous. Lack of
20 foundation. Mischaracterizing document. Incomplete
21 hypothetical.

22 THE WITNESS: Well, what I will say is that in
23 these -- the fans shown in these figures, if I were to
24 invert the fan and there was no illumination area on
25 that other side, then I would still say that the side

1 with the illumination area is top of the body. Even if
2 it's upside down and not visible in the figure because
3 it has the illumination area, I would deem it that side
4 to be the top of the body.

5 MS. QU: Can we please mark Exhibit 1028.
6 (Petitioners' Exhibit 1028 was marked
7 for identification by the court
8 reporter.)

9 BY MS. QU:

10 Q. Dr. Tuckerman, it's a multipage document. You
11 can take a look through it and let me know if you
12 recognize this document.

13 A. It's a -- yes. I recognize it.

14 Q. What is it?

15 A. It's my expert declaration regarding claim
16 construction in district court case involving
17 Thermaltake.

18 Q. That's the district court case between the same
19 parties in this IPR proceeding; correct?

20 A. That's my understanding.

21 Q. And your opinion is regarding the claim
22 construction of the same '336 patent; correct?

23 MR. CHEN: Objection. Vague. Ambiguous. Lack
24 of foundation.

25 THE WITNESS: Well, I say I offer opinions on

1 line -- paragraph 2 of my report. I offer opinions with
2 respect to the disputed claim terms in the '336 patent.
3 BY MS. QU:

4 Q. And on the cover page of this document, that's
5 your signature; correct?

6 A. It is.

7 Q. Is the term illumination area at issue? Is
8 that one of the claim -- disputed claim terms that you
9 offered opinions on?

10 A. Well, you will have to give me a chance to
11 refresh my memory because this happened not to be one of
12 the documents I prepared on. So it was more than a year
13 ago.

14 Q. Of course. Please take your time.

15 A. Yes.

16 Q. Looking at the document.

17 A. Illumination area is one of the things that I
18 did discuss, yes.

19 Q. Is it your opinion that the term illumination
20 area should be given its plain and ordinary meaning?

21 MR. CHEN: Document speaks for itself.

22 THE WITNESS: So what I say in my declaration
23 is that on page 12 at the top, that illumination area --
24 the word is not technical in nature. I'm talking about
25 illumination area and at top of the body. I say the

1 words are not technical in nature, their plain and
2 ordinary meaning is simply a region at the top of the
3 body that is lit up. Accordingly, a POSITA in the art
4 would have understood illumination area as used in the
5 claims of the '336 patent to define a sufficiently
6 definite structure. So I've -- what I've given is how
7 I'm saying there how a POSITA would have understood the
8 meaning of the term illumination area.

9 BY MS. QU:

10 Q. Can you take a look at line 11 through 12 on
11 page 13?

12 A. On page 13.

13 Q. Oh. Sorry. Page 13 on the top or page 12 on
14 the bottom?

15 A. Okay.

16 Q. Can you take a look at lines 11 through 12?
17 There you said the term instead should be given its
18 plain and ordinary meaning.

19 A. Yes. That's what I say.

20 Q. And you stand by that statement?

21 A. Yes.

22 Q. And thank you for reading that out loud. In
23 the same paragraph you state:

24 "Their plain and ordinary meaning
25 is simply a region on the top of the

1 body that is lit up."

2 Do you see that?

3 A. I see that.

4 Q. Do you stand by that statement today?

5 A. That's what I wrote. Yes.

6 Q. So your description of how a person of ordinary
7 skill in the art would understand the term illumination
8 area is a region that is lit up; correct?

9 MR. CHEN: Mischaracterizing testimony.
10 Document speaks for itself.

11 THE WITNESS: Glowing might be a better word,
12 but.

13 BY MS. QU:

14 Q. You didn't say glowing in your declaration;
15 correct?

16 A. I did not.

17 Q. Are you changing your testimony here today from
18 what you previously submitted to the district court?

19 A. No. I'm trying to clarify using an alternative
20 colloquial word I guess.

21 Q. But you stand by the statement here that their
22 plain and ordinary meaning is simply a region on the top
23 of the body that is lit up; right?

24 MR. CHEN: Objection. Mischaracterizing
25 testimony. Asked and answered.

1 THE WITNESS: With the understanding that it is
2 internally lit, not by for example the -- you know, by
3 the -- by the street lights. A POSITA would have
4 understood it to mean a structure that is providing
5 visible light.

6 BY MS. QU:

7 **Q. And connector is the next disputed claim term**
8 **that you provide an opinion on; correct?**

9 A. Yes.

10 **Q. Can we go back to the last question. Your**
11 **definition in the declaration doesn't mention that the**
12 **area provides or provided visible light. But in your**
13 **declaration it's a region that is lit up; correct?**

14 MR. CHEN: Mischaracterizing testimony.
15 Document speaks for itself.

16 THE WITNESS: So in this context, a POSITA
17 would have understood my use of the term lit up to mean
18 providing its own visible light. And that's how a
19 POSITA would have understood what the illumination area
20 meant.

21 BY MS. QU:

22 **Q. So regarding your opinion on the construction**
23 **of the term connector, you opine that connector should**
24 **be given its plain and ordinary meaning; correct?**

25 MR. CHEN: Document speaks for itself.

1 THE WITNESS: Well, if we go back to -- I have
2 a very lengthy discussion on connector in section B.
3 But if we simply go back to summary of my opinions on
4 page 10, my conclusion is it does not need any special
5 construction and should be given its plain and ordinary
6 meaning.

7 BY MS. QU:

8 Q. And on page 15, paragraph 47, there you state a
9 connector broadly speaking just connects two things
10 together. Do you stand by that statement?

11 MR. CHEN: Document speaks for itself.

12 THE WITNESS: Broadly speaking as I used, as I
13 said, I stand by the statement.

14 BY MS. QU:

15 Q. And in the next sentence you say in my opinion
16 the term connector in the context of the '336 patent
17 does not refer to only a conductive structure, but to an
18 electromechanical device providing a connection. Do you
19 stand by that statement?

20 A. I do.

21 Q. And you also offered opinions on the term power
22 socket; correct?

23 A. I did.

24 Q. And the term power socket should be given its
25 plain and ordinary meaning in your opinion?

1 MR. CHEN: Document speaks for itself.

2 THE WITNESS: That is my stated opinion.

3 BY MS. QU:

4 Q. And on page 20, paragraph 59, there you state:

5 "The claimed power socket in the

6 '336 patent is no more than a device

7 that is supplied with power as

8 consistent with the claim language."

9 And you stand by that statement?

10 MR. CHEN: Document speaks for itself.

11 THE WITNESS: That's what I wrote and that's
12 what I agree with.

13 BY MS. QU:

14 Q. In your opinion, the '336 patent does not

15 require the power socket to connect directly with a

16 power supply; is that right?

17 A. That is my opinion. Yes.

18 THE WITNESS: Are you gonna put the transcript
19 up?

20 MR. CHEN: Yeah.

21 BY MS. QU:

22 Q. And to confirm, in your opinion the '336 patent

23 allows for a power socket of a fan to be supplied with

24 power from the power socket of another fan; correct?

25 A. Okay. That was a lengthy question. I'm gonna

1 need to read it if you would put it up, Kyle, please.

2 MR. CHEN: My apologies. Can we take a short
3 break to solve this technical issue?

4 MS. QU: Okay. Let's go off the record.

5 (Recess.)

6 THE WITNESS: Okay. So to answer your
7 question, the power socket of a fan can be supplied with
8 power from a variety of sources. There is -- there are
9 internal connections in the -- which is clear to a
10 POSITA from reading the patent between the first
11 connector, the second connector, and the power socket.
12 They're all essentially on the same power bus.

13 And therefore, a power socket could be supplied
14 from either directly or it could be supplied from --
15 basically it could be supplied from any source that I
16 mentioned. It could be supplied from the first
17 connector, the second connector, the power socket
18 itself. It can be -- and those, so there is no -- no
19 limitation on which of those sources could supply power
20 to the power socket.

21 BY MS. QU:

22 Q. Can we turn back to the '336 patent?

23 A. Okay.

24 Q. To the language of claim one?

25 A. Okay.

1 **Q. Reading claim one, the claim language does not**
2 **mention the illumination area being electrically**
3 **connected with the power socket; correct?**

4 MR. CHEN: Mischaracterizing document.
5 Document speaks for itself.

6 THE WITNESS: It has to be the case that the
7 illumination area is electrically connected to the power
8 socket. That is clear from the language of the claim
9 that when the power socket on the one side of the body
10 is supplied with power, the fan and the illumination
11 area of the body are respectively driven into rotation
12 and illumination, and that couldn't be true if they
13 weren't electrically connected.

14 BY MS. QU:

15 **Q. An illumination area can just be a region that**
16 **is lit up as you stated in your district court**
17 **declaration; correct?**

18 MR. CHEN: Mischaracterizing testimony.

19 THE WITNESS: In the context of the '336
20 patent, the illumination area that are shown light up
21 when power is supplied to the power socket as described
22 in the claim term, as described in claim one. The
23 illumination area of the body, the fan in the
24 illumination area of the body are respectively driven
25 into rotation and illumination.

1 BY MS. QU:

2 Q. You defined it, the term illumination area, as
3 a region that is lit up in your declaration; correct?

4 MR. CHEN: Objection. Mischaracterizing
5 document. Mischaracterizing testimony.

6 THE WITNESS: Well, it's an area that will be
7 lit up when energized with power. And it has to be
8 connected, electrically connected to the power socket.
9 So you know, you have to read the patent, the claim
10 holistically.

11 BY MS. QU:

12 Q. If an illumination area could be lit up by a
13 separate light source, then illumination area itself
14 wouldn't necessarily be required to be connected to the
15 power socket; correct?

16 MR. CHEN: Incomplete hypothetical.
17 Mischaracterizing document.

18 THE WITNESS: Well, I'm not prepared to opine
19 on configurations that are outside the scope of the
20 patent. I haven't thought about all permutations of,
21 you know, other things that people might do.

22 BY MS. QU:

23 Q. You're unable to answer this question?

24 MR. CHEN: Mischaracterizing testimony.
25 Argumentative.

1 THE WITNESS: I would characterize it as not
2 prepared to answer that kind of question because it is
3 so broad and not something that I have considered in my
4 analysis.

5 BY MS. QU:

6 Q. Just to confirm, your district court
7 declaration does not use the words provide or emit in
8 your definition of illumination area; correct?

9 MR. CHEN: Asked and answered. Document speaks
10 for itself.

11 BY MS. QU:

12 Q. Or the word generate?

13 MR. CHEN: Compound.

14 THE WITNESS: You know, I'd have to do a search
15 on the document to confirm or deny that. You could do
16 it just as well as I could.

17 BY MS. QU:

18 Q. So your opinions on the term illumination area,
19 that's in paragraph 36 and 37 of Exhibit 1028, can you
20 read that?

21 MR. CHEN: Document speaks for itself.

22 THE WITNESS: Okay. Your question?

23 BY MS. QU:

24 Q. You still stand by your opinions here provided
25 in these two paragraphs?

1 MR. CHEN: Asked and answered. Document speaks
2 for itself.

3 THE WITNESS: I do.

4 BY MS. QU:

5 Q. Does this document speak for itself?

6 A. I think it does.

7 Q. Okay. Let's turn to your latest declaration in
8 this IPR proceeding, which is Exhibit 2006.

9 A. Okay.

10 Q. Can you turn to page 20?

11 A. Okay.

12 Q. There is an annotated figure there. Do you see
13 it?

14 A. Yes.

15 Q. That's an annotated version of Figure 1 from
16 the '336 patent; correct?

17 A. Yes. It is.

18 Q. Did you create those annotations?

19 A. Some of them. Some of them were prepared
20 according to my directions.

21 Q. And this annotated version of Figure 1, does
22 that reflect your opinions accurately?

23 A. Yes.

24 Q. In this figure, there's a label one side of the
25 body in red. Do you see that?

1 A. Yes.

2 **Q. And that label refers to what's highlighted in**
3 **red in this figure; correct?**

4 MR. CHEN: Vague and ambiguous.

5 THE WITNESS: Well, the red is intended to
6 display the one side of the body as understood under the
7 terms of the patent.

8 BY MS. QU:

9 **Q. Does the red highlighting represent the full**
10 **extent of that particular one side of the body in your**
11 **opinion?**

12 MR. CHEN: Form. Document speaks for itself.

13 THE WITNESS: Well, it's -- it's intended to
14 display what I understood to be one side of the body. I
15 can't guarantee that every bit of shading is -- I mean
16 it looks roughly like what one side of the body is as I
17 interpret the patent.

18 BY MS. QU:

19 **Q. So when the terms refer to one side of the**
20 **body, is it in your opinion that it refers only to**
21 **what's highlighted in red in this figure?**

22 MR. CHEN: Form. Asked and answered.

23 THE WITNESS: Well, there's a piece of the
24 engaging block eight that isn't perfectly shaded. I
25 would still consider it to be part of that side.

1 BY MS. QU:

2 Q. Any other portion that you think is not
3 captured by the red highlighting that should be deemed
4 as one side of the body?

5 MR. CHEN: Document speaks for itself.

6 THE WITNESS: I think the figure is a
7 reasonably accurate portrayal of it. So.

8 BY MS. QU:

9 Q. Just to be clear, in your opinion, anything
10 located inward of that red highlighted portion that's
11 toward the internal fan body would not be on that
12 particular one side of the body; correct?

13 A. No. I don't agree --

14 MR. CHEN: Incomplete hypothetical.

15 THE WITNESS: -- with that.

16 MR. CHEN: Vague and ambiguous.

17 BY MS. QU:

18 Q. So again, what else should be considered on
19 this particular one side of body besides what's being
20 highlighted in red here?

21 MR. CHEN: Again, asked and answered.

22 THE WITNESS: So what's shaded in red I deem to
23 be part of one side of the body. And the first
24 connector and power socket, for example, are part of
25 that one side of the body in the context of this patent.

1 BY MS. QU:

2 Q. And anything located internal to the red
3 shading is not on that one side of the body; correct?

4 MR. CHEN: Asked and answered.

5 Mischaracterizing testimony.

6 THE WITNESS: I already said I don't agree with
7 that.

8 BY MS. QU:

9 Q. Dr. Tuckerman, I don't understand. So if the
10 red shading captures reasonably accurately what you
11 believe to be that one side of the body, then why -- why
12 didn't you agree?

13 MR. CHEN: Form.

14 THE WITNESS: Well, this is two dimensional
15 shading in a two dimensional figure representing a three
16 dimensional product.

17 BY MS. QU:

18 Q. So again, what else should be shaded here to be
19 on that one side of the body?

20 MR. CHEN: Form. Incomplete hypothetical.

21 THE WITNESS: Well, the power socket is clearly
22 recessed in the figure. And the power socket in its
23 entirety should be deemed part of that one side of the
24 body, but you know, because of the angle of the figure
25 and all that, I can't show all that -- all that shading.

1 BY MS. QU:

2 Q. Anything else?

3 MR. CHEN: Asked and answered.

4 THE WITNESS: Well, things like the first
5 connector probably has little recesses in it, and it's
6 not clear from the picture if it's all shaded or not
7 because it has a black line around it and stuff like
8 that. But the first connector should be deemed on one
9 side of the body.

10 BY MS. QU:

11 Q. So a portion that projects inward from what's
12 shaded in red in this figure should also be considered
13 part of that one side of the body; correct?

14 MR. CHEN: Incomplete hypothetical. Asked and
15 answered. Mischaracterizing testimony.

16 THE WITNESS: So I'm not making general
17 statements about all possibilities. I'm specifically
18 referring to these -- the patent and how a POSITA would
19 read it. And I would certainly say that anything --
20 that the power socket and first connector, both to the
21 extent that they have parts that project inward and it's
22 clear the power socket certainly does, should be
23 considered part of that one side of the body. That's
24 all I think that needs to be considered when construing
25 the patent and this figure.

1 BY MS. QU:

2 Q. So something located within the fan's
3 component, placed inside the fan body that also projects
4 inward from the red shaded portion in this figure,
5 should that also be considered to be on that one side of
6 the body?

7 MR. CHEN: Vague and ambiguous. Incomplete
8 hypothetical.

9 THE WITNESS: I'd have to consider something --
10 I'd have to -- you would have to be more specific. I
11 mean, there's an infinity of possible somethings. I'm
12 really just saying that the power socket and the first
13 connector are clearly on one side of the body as I -- as
14 a POSITA would read the patent.

15 BY MS. QU:

16 Q. Can a component that is entirely internal to
17 the fan body be considered to be on that one side of the
18 body?

19 MR. CHEN: Incomplete hypothetical. Vague and
20 ambiguous.

21 THE WITNESS: I think it could be depending on
22 the specifics.

23 BY MS. QU:

24 Q. When would you consider a component that is
25 entirely internal to the fan body to be on that one side

1 **of the body?**

2 MR. CHEN: Vague and ambiguous. Lack of
3 foundation.

4 THE WITNESS: I can't answer that without a --
5 getting very specific about what we're talking about.

6 BY MS. QU:

7 **Q. Well, you just answered that they could be**
8 **considered to be on that one side of the body?**

9 A. By that, I mean I don't rule it out. It -- as
10 I -- the way I read the patent, I can't categorically
11 rule out the possibility.

12 **Q. In your opinion, is side of the body related to**
13 **the rotational axis of the fan?**

14 MR. CHEN: Lack of foundation.

15 THE WITNESS: I think that's A-X-I-S. Well,
16 what I would say is that the sides are evident to a
17 POSITA from the figures. I don't totally understand the
18 question I guess. Sides of the body specifically is
19 what I'm talking about.

20 BY MS. QU:

21 **Q. Does sides of the body change if one rotates or**
22 **flips the fan device?**

23 MR. CHEN: Vague and ambiguous. Incomplete
24 hypothetical.

25 THE WITNESS: In the figures in the patent, I

1 would say flipping the fan upside down would not change
2 what are the sides of the body.

3 BY MS. QU:

4 Q. Can we turn to Exhibit 1027? If you look at
5 the second figure.

6 A. Yes.

7 Q. What are the sides of the body in this figure?

8 MR. CHEN: Incomplete hypothetical.

9 THE WITNESS: Well, the patent as written and
10 as would be understood by a POSITA, deals with
11 illumination areas that are at the top of the body,
12 which is a face where the fan is, where you're looking
13 at the fan. Okay. Head on. That's the configuration
14 that I considered in my analysis, and I did not consider
15 a case where the illumination area or the alleged
16 illumination area is as depicted in your figure. And so
17 I'm not prepared today to opine at all on that question.

18 BY MS. QU:

19 Q. So you're saying it could be different based on
20 this rotation?

21 MR. CHEN: Mischaracterizing testimony.
22 Incomplete hypothetical.

23 THE WITNESS: I'm not saying that. I'm saying
24 that it is outside the scope of configurations that I
25 considered when reading this patent. And so I'm not

1 prepared to offer an opinion on it.

2 BY MS. QU:

3 Q. Do you mean rotation of the fan is outside the
4 scope of this patent? And you cannot offer any opinion
5 in that situation?

6 MR. CHEN: Mischaracterizing testimony. Vague
7 and ambiguous. Argumentative.

8 THE WITNESS: I'll stipulate that when the
9 power socket is supplied with power, the fan rotates
10 under the -- under the claimed embodiments, claim
11 language.

12 BY MS. QU:

13 Q. Dr. Tuckerman, I'm not asking you about the
14 rotation of the fan blades. I'm asking if the fan body
15 rotates and is placed differently as in the second
16 figure of Exhibit 1027, you are not able to answer my
17 question what the sides of the body are?

18 MR. CHEN: Incomplete hypothetical.
19 Mischaracterizing testimony.

20 THE WITNESS: Well, okay. You're talking about
21 rotating the whole body of the fan, rotating the
22 prospective view of things. That -- certainly in the
23 embodiments illustrated in the '336 patent, rotating the
24 entire fan body doesn't change how you would map the
25 claims to, for example, the figures shown in the '336

1 patent.

2 But my issue here is that your consideration --
3 you're showing an alleged illumination area in a
4 configuration entirely different from what's shown in
5 the figures. And I don't want to say one way or another
6 how, without more study, how and if the patent would
7 read on that. I'm not saying -- so it's not a question
8 I'm prepared to answer today, because it was outside the
9 scope of configurations that I considered.

10 BY MS. QU:

11 Q. Are you saying that sides of the body is
12 defined based on where or which way the fan is blowing?

13 MR. CHEN: Mischaracterizing testimony.
14 Incomplete hypothetical. Lack of foundation.

15 THE WITNESS: So I'm not saying that. I'm
16 saying that in the context of the patent, you can look
17 at it and a POSITA would understand what -- that there
18 are these four sides, one of which has a power socket
19 and a first connector, another side which has a second
20 connector.

21 And an illumination area that is at top of the
22 body, and therefore a POSITA would understand that that
23 top surface, where you would be looking directly at the
24 fan if you use the right perspective, is the top of the
25 body for the purpose of understanding the patent and how

1 it applies to the preferred embodiments. And it's not
2 specific about which way the fan is blowing by the way.
3 It could be blowing toward you or away from you
4 depending on how the system is designed.

5 BY MS. QU:

6 Q. So here in the second figure of Exhibit 1027,
7 we have an illumination area depicted on the highlighted
8 portions that gives your perspective to look at the fan
9 device, and you still can't tell me what the sides of
10 the body are?

11 MR. CHEN: Incomplete hypothetical. Asked and
12 answered.

13 THE WITNESS: Well, as I've said repeatedly I
14 think, that's not a configuration that I considered in
15 my analysis of this patent, and so I'm not prepared to
16 opine on that issue today. You know, because I haven't
17 thought it through.

18 BY MS. QU:

19 Q. So you have limited your analysis of the
20 analysis to what's depicted in the figures; correct?

21 MR. CHEN: Mischaracterizing testimony. Lack
22 of foundation.

23 THE WITNESS: No. No. That's not the case. I
24 have not limited it to the figures.

25 ///

1 BY MS. QU:

2 Q. But you are not able to answer my question with
3 regard to this annotated version of the figures?

4 MR. CHEN: Mischaracterizing testimony.

5 BY MS. QU:

6 Q. In Exhibit 1027?

7 MR. CHEN: Mischaracterizing testimony. Asked
8 and answered.

9 THE WITNESS: As I've said, I'm not prepared
10 today to opine on that configuration because it wasn't a
11 case that I took time to -- that I thought about. But I
12 won't rule it out that the patent could read on it, but
13 I couldn't say one way or the other without some study.

14 BY MS. QU:

15 Q. Let's turn back to the annotated figure on
16 page 20 of your declaration, Exhibit 2006.

17 A. Okay.

18 Q. One could consider element number five to be on
19 the left side and element number four to be on the right
20 side; correct?

21 MR. CHEN: Mischaracterizing document.
22 Document speaks for itself.

23 MR. WEBER: Mr. Chen, can you stop coaching the
24 witness.

25 THE WITNESS: Well, I wasn't even listening to

1 him. It's completely incorrect.

2 BY MS. QU:

3 **Q. Why not?**

4 A. Because what's the question again? No, they're
5 on the same side of the body. I mean, it's as plain as
6 day to a POSITA.

7 MR. CHEN: Mr. Weber, I disagree with your
8 question. I did not coach the witness. I merely gave
9 my objections.

10 MR. WEBER: I disagree. We are talking about
11 his annotations on a report and his understanding and
12 why he did them. The document does not speak for
13 itself, and we are here to question Dr. Tuckerman on his
14 opinions and the basis for them. Telling the witness
15 that it mischaracterizes a document by the question is
16 coaching the witness.

17 MR. CHEN: Well, I disagree.

18 BY MS. QU:

19 **Q. Can you explain why it's plain that these two**
20 **elements are on the same side?**

21 MR. CHEN: Form.

22 THE WITNESS: Well, you have figures, multiple
23 figures in the patent displaying -- that are indicated
24 as preferred embodiments, and the claim language
25 specifies that a power socket and the first connector

1 are on one side of the body. So that means they're on
2 the same side.

3 And so it -- I mean it's almost tautological
4 that -- that that is all one side, because that's how
5 the preferred embodiments are displayed. And they're
6 specified in the claim language as being on the same
7 side. So it -- it defines it in those figures as being
8 one side. So I -- I can't see how this is possibly in
9 dispute.

10 BY MS. QU:

11 **Q. So your interpretation of one side is based on**
12 **where the connectors and the power socket are; correct?**

13 MR. CHEN: Mischaracterizing testimony.

14 THE WITNESS: Well, this is a figure from the
15 patent, and what I'm saying is that the meaning of sides
16 of the body are clear to a POSITA in the context of this
17 patent as there being four sides here, and one of the
18 sides having a power socket and a first connector and
19 another side of the body having a second connector. And
20 so I mean, to me this has been annotated. I've
21 annotated it correctly in the context of the patent, and
22 indisputably frankly.

23 MS. QU: Let's have a lunch break and go off
24 the record.

25 (Recess.)

1 MS. QU: So turn back to the annotated figure
2 on page 20 here.

3 THE WITNESS: Okay.

4 BY MS. QU:

5 Q. I take it that the green highlighted portion
6 represents what you consider to be another side of the
7 body; correct?

8 MR. CHEN: Asked and answered. Document speaks
9 for itself.

10 THE WITNESS: That is correct.

11 BY MS. QU:

12 Q. And I take it that similarly you don't rule out
13 the possibility of something, some component projecting
14 inward from the green shaded portion to be on that
15 another side of the body; correct?

16 MR. CHEN: Mischaracterizing testimony.

17 THE WITNESS: I don't rule it out.

18 BY MS. QU:

19 Q. And similarly, you don't rule out the
20 possibility of some component entirely internal to the
21 fan body to be on that another side of the body;
22 correct?

23 MR. CHEN: Mischaracterizing testimony.

24 THE WITNESS: I'd have to see context, but I
25 don't rule it out.

1 BY MS. QU:

2 Q. And there's a label in the same figure top of
3 the body, do you see that? Sorry. Illumination area
4 three. Do you see that?

5 A. Yes.

6 Q. And that label refers to the two strips
7 highlighted in dark blue; correct?

8 MR. CHEN: Document speaks for itself.

9 THE WITNESS: Illumination area three is two
10 bands that are shaded in dark blue.

11 BY MS. QU:

12 Q. And you also have a label top of the body that
13 refers to the cyan shaded portion in this figure;
14 correct?

15 MR. CHEN: Same objection.

16 THE WITNESS: Well, the -- the cyan shaded area
17 is intended to convey the top of the body. It certainly
18 includes the darker shaded illumination areas.

19 BY MS. QU:

20 Q. And similarly, you don't rule out the
21 possibility of some component projecting inward from
22 this cyan shaded portion to be at top of the body;
23 correct?

24 MR. CHEN: Mischaracterizing testimony.

25 THE WITNESS: Well, I haven't thought it

1 through, but have no reason to rule that out as a
2 possibility.

3 BY MS. QU:

4 Q. Do you rule out the possibility of some
5 component entirely inside the fan body to be at top of
6 the body in the context of '336 patent?

7 A. No. I don't rule it out.

8 Q. Now, the two bands you highlighted in dark blue
9 representing illumination area three, those two bands
10 are recessed and located beneath the topmost surface of
11 the body; correct?

12 MR. CHEN: Document speaks for itself.

13 THE WITNESS: Well, the patent doesn't say that
14 specifically. They are clear -- as a POSITA would read
15 this, they are defined as being part of the top of the
16 body.

17 BY MS. QU:

18 Q. You're not answering my question. So reading,
19 viewing this figure here, the two bands that you
20 highlighted in dark blue as the illumination area, are
21 they recessed and located beneath the topmost surface of
22 the fan body?

23 MR. CHEN: The document speaks for itself.

24 THE WITNESS: Well, they are -- to be clear,
25 the top of the body is not like a zero thickness

1 surface. The illumination areas as a POSITA would
2 understand it are -- are shown and defined, are deemed
3 part of the top of the body. They have some three
4 dimensional character to them because they are physical
5 structures, but under how a POSITA would read this
6 patent, they would be considered top of the body
7 irrespective of some three dimensional character to
8 them.

9 BY MS. QU:

10 **Q. Yeah. I want to ask about the three**
11 **dimensional characteristics of the two bands as depicted**
12 **in the figure. So they appear to slope downward from**
13 **the uppermost surface of the body; correct?**

14 MR. CHEN: Document speaks for itself.

15 THE WITNESS: They might. It's not entirely
16 clear to me from the figures. Three bands. That may be
17 a miss -- okay. I think she said two bands. Yeah.

18 BY MS. QU:

19 **Q. The two bands as depicted in this figure appear**
20 **slanted and not facing straight up; correct?**

21 MR. CHEN: Document speaks for itself.

22 THE WITNESS: That could be the case. It --
23 without a full 3D CAD model, I couldn't swear one way or
24 another to exactly how they are oriented.

25 ///

1 BY MS. QU:

2 Q. It could partially be facing the sides;
3 correct?

4 MR. CHEN: Incomplete hypothetical. Document
5 speaks for itself.

6 THE WITNESS: I don't know if they are or not.
7 The important thing to me in understanding the patent as
8 a POSITA would read it is that they are -- the
9 structures are located at the top of the body.

10 BY MS. QU:

11 Q. As depicted in the figure of the patent, they
12 are partially facing the sides; correct?

13 MR. CHEN: Same objections.

14 THE WITNESS: I don't know that. I could
15 interpret the perspective drawings in different ways.

16 BY MS. QU:

17 Q. And you could interpret this to be slope -- to
18 be sloped downward, though; correct?

19 A. I'm not sure.

20 MS. QU: Can we mark as Exhibit 1029?
21 (Petitioners' Exhibit 1029 was marked
22 for identification by the court
23 reporter.)

24 BY MS. QU:

25 Q. Dr. Tuckerman, I'm handing you what's been

1 marked as Exhibit 1029, which is a print out of page 20
2 of your latest declaration in this IPR proceeding.

3 A. Okay.

4 Q. Help me understand which two sides the
5 illumination area is located on in this figure. Can you
6 please use the yellow marker to mark what you believe to
7 be the two sides where the illumination area is located?

8 A. Okay. So to be clear, as I have said before,
9 there's -- side is used in two different contexts. Side
10 of the body and side of the fan. The -- you read the
11 claim. The illumination area, you have an illumination
12 area on at least -- at least two sides of the fan at top
13 of the body. Okay.

14 So we're talking about referencing it to --
15 referencing them to the fan. And I will point out it
16 says at least two sides. So the -- what I'm
17 highlighting here, I'm highlighting the illumination
18 areas themselves. And they are on at least two sides of
19 the fan. It's the same highlighting as the blue cyan.
20 They are on at least two sides of the fan.

21 Q. Does the yellow highlighting that you just made
22 capture the full extent of what you consider to be sides
23 of the fan in this patent?

24 MR. CHEN: Incomplete hypothetical. Document
25 speaks for itself.

1 THE WITNESS: Well, sides of the fan mean
2 something different from sides of the body. The --
3 because the fan is circular, there's not necessarily a
4 limit to how many sides a fan could have. The -- so all
5 I'm saying is that those illumination areas are on at
6 least two sides of the fan.

7 BY MS. QU:

8 Q. Just to confirm, your yellow highlighting is
9 coexistent -- coextensive with the dark cyan shaded
10 region? In other words, the same as the illumination
11 area three?

12 A. Yes. That's how I highlighted it.

13 Q. One could move an illumination area to other
14 regions of a fan body; correct?

15 MR. CHEN: Incomplete hypothetical. Vague and
16 ambiguous. Lack of foundation.

17 THE WITNESS: You'd have to show me specifics.

18 BY MS. QU:

19 Q. Sure. Why don't we look at the second figure
20 of Exhibit 1027. A POSITA would know how to place
21 illumination areas where -- in regions highlighted in
22 yellow in this figure; correct?

23 MR. CHEN: Document speaks for itself.
24 Incomplete hypothetical.

25 THE WITNESS: I don't know that a POSITA would

1 know that. As I said, that is not a configuration that
2 I've considered in my analysis of the patent, nor to my
3 knowledge encountered in looking at relevant prior art.
4 So I really couldn't say.

5 BY MS. QU:

6 Q. You have no knowledge whether a POSITA would
7 know how to place an illumination area where marked in
8 yellow in this figure?

9 MR. CHEN: Mischaracterizing testimony.
10 Argumentative.

11 THE WITNESS: I mean I could speculate that
12 it -- a POSITA may be able to provide light sources
13 there.

14 BY MS. QU:

15 Q. So in this figure, what would be the two sides
16 of the fan?

17 A. Well, as I've said --

18 MR. CHEN: Incomplete hypothetical.

19 THE WITNESS: As I've said before, I have not
20 analyzed this configuration in the context of the patent
21 and the claims, and so I'm not prepared to opine on how
22 it would read on that configuration. Certainly not
23 prepared today to do so.

24 BY MS. QU:

25 Q. You are not able to provide any opinion if the

1 illumination area is placed anywhere else?

2 MR. CHEN: Mischaracterizing testimony.

3 Incomplete hypothetical. Asked and answered.

4 THE WITNESS: I would be able to provide an
5 opinion, but I'm not prepared to provide such today
6 because I haven't thought it through.

7 BY MS. QU:

8 Q. Does this fan body have two sides of the fan in
9 this figure?

10 MR. CHEN: Incomplete hypothetical.

11 THE WITNESS: So as I've said, I cannot opine
12 today on whether or not this falls under the scope of
13 the '336 patent or not. That would be -- that would
14 take time to determine. And so if, you know, once we
15 get outside the scope of what I've considered as being
16 clearly in the scope of the patent, I can't make
17 off-the-cuff assertions about anything because I'm not
18 certain whether the patent applies or not without more
19 thought.

20 MS. QU: Mark here a document that's being
21 submitted in this IPR as Exhibit 1012.

22 (Petitioners' Exhibit 1012 was marked
23 for identification by the court
24 reporter.)

25 ///

1 BY MS. QU:

2 Q. Do you recognize this document?

3 A. I do.

4 Q. This is one of the prior references you
5 reviewed; right?

6 A. I opine on it.

7 Q. Okay. So I'll refer to this exhibit as Lai
8 going forward.

9 A. Okay.

10 Q. Can you turn to Figure 3?

11 A. Okay.

12 Q. Do you see two fan units in this figure?

13 A. At least two, yes.

14 Q. Okay. And they're both marked ten there;
15 right?

16 A. They are. They call them LED fans rather than
17 fan units, but yes.

18 Q. The two LED fan units ten are identical;
19 correct?

20 MR. CHEN: Document speaks for itself.

21 THE WITNESS: I don't see that word used. They
22 are referred to as -- they are all referred to as LED
23 fans, but it doesn't specifically call them out as being
24 identical.

25 ///

1 BY MS. QU:

2 Q. Do you see any reason that would make you think
3 that the two fans number ten here are different?

4 MR. CHEN: Document speaks for itself.

5 THE WITNESS: Well, I don't completely rule it
6 out, that possibility, because for example in Figure 5,
7 there is some slight differences in the electrical
8 connections, for example.

9 BY MS. QU:

10 Q. What differences do you believe there are in
11 the connectors of the two fans in Figure 5?

12 MR. CHEN: Lack of foundation. Document speaks
13 for itself.

14 THE WITNESS: Well, in both Figure 4 and
15 Figure 5, there is a motor control identified as 15.
16 And in the left -- in fan one they have a connection to
17 a -- a connection that I can't really read because of
18 the type is so bad. It might say tack, I'm not sure,
19 that the first fan uses, whereas in the second fan in
20 both figures it's open circuit. So that is a
21 difference.

22 BY MS. QU:

23 Q. Other than whether the connection stays open or
24 not, they have the same lines; right, for the
25 connectors?

1 MR. CHEN: Document speaks for itself. Lack of
2 foundation.

3 THE WITNESS: Well, there's also differences
4 between Figure 6 and Figure 4 and 5 as to how
5 connections work. So there is certainly evidence that
6 he's talking about several different electrical
7 configurations of the fans in this one patent
8 application.

9 BY MS. QU:

10 Q. And in each embodiment, the connected fans have
11 the same structure; correct?

12 MR. CHEN: Same objections.

13 THE WITNESS: I don't know that to be true,
14 since it's not called out in the patent to my knowledge.
15 Patent application, rather.

16 BY MS. QU:

17 Q. What is structurally different between fan one
18 and fan two in Figure 5, which are both labeled with the
19 same element numbers?

20 MR. CHEN: Same objections.

21 THE WITNESS: Well, when you use the term
22 structurally, I'm not quite sure what you mean. I mean
23 these are circuit diagrams. I mean structurally can
24 refer to physical structure. So it's -- it's kind of a
25 vague question you've made.

1 BY MS. QU:

2 Q. Are you saying that the two fans with the same
3 element, labeled with the same element numbers can be
4 structurally different physically or electrically, in
5 any perspective?

6 MR. CHEN: Compound. Vague and ambiguous.
7 Mischaracterizing testimony.

8 THE WITNESS: Well, certainly they could be
9 structurally different physically, because we are
10 looking at a circuit diagram here which provides no
11 information on physical structure. And electrically
12 from the circuit, as I said there's a connection to the
13 motor control that's not used on the second fan that is
14 used on the first fan. So there's some functional
15 difference in the electronics of the two fans. I don't
16 know if you would call that, consider that structural or
17 not.

18 BY MS. QU:

19 Q. Setting aside the open connection, the circuits
20 are labeled with the same numbers?

21 A. Was that a question?

22 Q. Yeah. The circuits are labeled with the same
23 numbers and the fans are labeled with the same element
24 numbers; correct?

25 MR. CHEN: Document speaks for itself.

1 THE WITNESS: They appear to be. Which figure
2 were you talking about, just to be clear?

3 MR. WEBER: The same one we have been talking
4 about the whole time.

5 THE WITNESS: Which one?

6 MR. WEBER: Figure 5.

7 THE WITNESS: Figure 5.

8 MS. QU: Figure 5, setting aside the open
9 connection, the circuits are the same between fan one
10 and fan two in this Figure 5; correct?

11 MR. CHEN: Same objections.

12 THE WITNESS: The circuit elements are --
13 appear to be labeled the same, yes.

14 MR. WEBER: That's not the question.

15 BY MS. QU:

16 Q. And setting aside open connection, the fan one
17 and fan two in Figure 5 appear to have the same lines
18 for signals; correct?

19 MR. CHEN: Document speaks for itself. Lack of
20 foundation.

21 THE WITNESS: Well, as best I can read it,
22 they -- they are similar.

23 BY MS. QU:

24 Q. So fan one and fan two in Figure 5 appear to
25 have the same connectors; correct?

1 A. Well --

2 MR. CHEN: Lack of foundation. Document speaks
3 for itself.

4 THE WITNESS: Yeah. I mean, I actually frankly
5 don't see connectors in Lai at all. He doesn't use the
6 term connectors, and if you look at his Figure 3, at
7 least I don't think he uses the term connectors. The --
8 if you look at Figure 3, you have a cable going in, and
9 it goes through what he describes as a window, and so
10 that's not as I read it a connector.

11 It -- my understanding of his patent is it goes
12 in somewhere and attaches by some means to -- internally
13 to a circuit, which is, you know, his Figure 2. And so
14 you know, connectors are not specifically called out in
15 Lai. Obviously electrical connections are made somehow
16 from the cable, you know, to -- to the fans. But that's
17 about all I can really say.

18 BY MS. QU:

19 **Q. The fans in Lai allow for electrical**
20 **connections; correct?**

21 MR. CHEN: Same objections.

22 THE WITNESS: To be operable, yes. They would
23 have to have electrical connections.

24 BY MS. QU:

25 **Q. Fan one and fan two in Figure 5, they have**

1 **lines for electrical signals; correct?**

2 A. They have lines reflecting electrical
3 connections. I would not call them generically signals.
4 Some of them are undoubtedly signals, but some of them
5 are power, and we -- in double E terminology, we don't
6 normally call power a signal.

7 **Q. So the fans in Figure 5 have lines for**
8 **electrical connection and power supply; correct?**

9 MR. CHEN: Same objections.

10 THE WITNESS: Well, they have -- they have
11 lines for connect -- for electrical connections, and
12 some of them are power and some of them are signal is
13 the way I would characterize it.

14 BY MS. QU:

15 **Q. And the two fans in Figure 5 have the same**
16 **lines; correct?**

17 A. Well.

18 MR. CHEN: Same objections.

19 THE WITNESS: I mean they have connections
20 on -- they have connections on both sides, and as I
21 pointed out not -- you know, one of them is not
22 apparently used on fan two.

23 BY MS. QU:

24 **Q. Yeah. Setting aside whether any line is used**
25 **or not, the two fans in Figure 5 have the same lines for**

1 **electrical signals and power; correct?**

2 MR. CHEN: Lack of foundation. Document speaks
3 for itself.

4 THE WITNESS: I'll put it this way. The
5 connections are labeled the same between the two fans.

6 BY MS. QU:

7 **Q. Can we turn to page 1 of the specification of**
8 **Lai?**

9 A. Okay.

10 **Q. If you look at paragraph 11, it goes to the**
11 **right hand column. And starting at the fifth line from**
12 **the top of the right hand column, do you see the**
13 **sentence:**

14 **"In addition, all the addressable**
15 **RGB LED 16 are controlled individually**
16 **by a controller 20 as shown in**
17 **Figure 3 to result in even more**
18 **complex and expressive lighting**
19 **effects through the change in output**
20 **signals."**

21 **Do you see that?**

22 A. I see that.

23 **Q. Do you understand what RGB LEDs are?**

24 A. Yes. I understand what they are.

25 **Q. And what are they?**

1 A. Stands for red green blue. So it's an LED that
2 can display any of those colors in potentially in any
3 mixture that you want.

4 **Q. Do you agree that RGB LEDs are typically used**
5 **to generate multicolor visual displays?**

6 MR. CHEN: Incomplete hypothetical.

7 THE WITNESS: I think she said multicolor
8 visual displays.

9 MS. QU: Yeah. Thanks for catching that.

10 THE WITNESS: Yeah. Well, that is a primary
11 way of -- that is a common way of creating displays.
12 Color displays.

13 BY MS. QU:

14 **Q. And Lai explicitly describes in the**
15 **specification using RGB LEDs and controlling them**
16 **individually to produce complex and expressive lighting**
17 **effects; correct?**

18 MR. CHEN: Document speaks for itself. Lack of
19 foundation.

20 THE WITNESS: Well, I mean I'll just read what
21 he says:

22 "All the addressable RGB LEDs 16
23 are controlled individually by a
24 controller 20 as shown in Figure 3 to
25 result in even more complex and

1 expressive lighting effects through
2 the change and output signals."

3 BY MS. QU:

4 **Q. And complex and expressive lighting effects are**
5 **expressive and meant to be visibly seen from the outside**
6 **of the fan; correct?**

7 MR. CHEN: Same objections.

8 THE WITNESS: They would -- that would make
9 sense.

10 BY MS. QU:

11 **Q. Are you aware of anything in Lai that says the**
12 **RGB LEDs are not visible from the outside of the fans?**

13 MR. CHEN: Lack of foundation. Document speaks
14 for itself.

15 THE WITNESS: Okay. We have to distinguish
16 between the LEDs themselves and the -- any illumination
17 that they create. Because as is clearly discussed in my
18 declaration, the -- I don't believe the configuration of
19 the LEDs were intended to be visible from the outside of
20 the fans.

21 I believe that they were intended to illuminate
22 the fan blades by, you know, so -- and I believe that's
23 how the lighting effect was intended to be created. But
24 not the LEDs by themselves being intended to be visible.

25 ///

1 BY MS. QU:

2 Q. What is your basis from Lai?

3 A. Well --

4 MR. CHEN: Same objections.

5 THE WITNESS: From -- from his Figure 3, you
6 can see he shows -- well, both Figure 2 and Figure 3
7 illustrate four LEDs there. In Figure 2 you see they
8 are kind of in four corners of the fan, and Figure 3 you
9 also see them in four corners of the fan. And they're
10 embedded in the side of the -- and here, so I'm using
11 side in yet a different context than sides elsewhere.

12 There's an -- there's a -- an annular ring
13 opening in which the fan blades rotate, and you can
14 clearly see the LEDs located about midway between -- you
15 know, midway in that annular ring. Not at an upper
16 surface, not at a lower surface, but right in the
17 middle. And they -- so to me, the -- and they're not --
18 they look embedded to me. They look like they're, you
19 know, when they're embedded in the side like that, LEDs
20 don't have typically a 180-degree viewing.

21 You know, they've got a beam, you don't really
22 see much of anything from the edge. And they may even
23 be recessed. It's very vague on these figures. But my
24 understanding is of how a POSITA would read Lai is that
25 he is intending to illuminate the fan blades as they

1 rotate by, and that would be what someone -- that would
2 create the visual effect. Long answer, I know.

3 BY MS. QU:

4 Q. You can see the RGB LEDs from this top view as
5 shown in Figure 2, and it is unobstructed in this
6 figure; correct?

7 MR. CHEN: Document speaks for itself. Lack of
8 foundation.

9 BY MS. QU:

10 Q. Oh, sorry. Figure 3.

11 A. Oh. Figure 3.

12 MR. CHEN: Compound. Vague and ambiguous.

13 BY MS. QU:

14 Q. I'll ask again. You can see the RGB LEDs from
15 this top view as shown in Figure 3, and they're
16 unobstructed in this figure; correct?

17 A. Incorrect. It's not a top view. It's almost
18 an edge on view.

19 Q. But you can still see it partially from the
20 top; correct?

21 MR. CHEN: Document speaks for itself. Lack of
22 foundation.

23 THE WITNESS: I don't agree.

24 BY MS. QU:

25 Q. You don't see the LED labeled element number 11

1 **there in this figure?**

2 A. I see it in Figure 3.

3 **Q. So from this view, they are visible and not**
4 **obstructed; correct?**

5 MR. CHEN: Asked and answered. Document speaks
6 for itself.

7 THE WITNESS: Well, first of all, I can't see
8 all four of them from this view. But secondly, as I
9 said, this view is almost edge on. And clearly the view
10 was perhaps part of the reason for showing an almost
11 edge on view is so that you could see the LED, even
12 though it is likely recessed so it doesn't hit the fan
13 blades. But from the top, I don't see any evidence that
14 you would see the LEDs.

15 BY MS. QU:

16 **Q. One could see illuminated fan blades from the**
17 **top view; correct?**

18 MR. CHEN: Document speaks for itself. Lack of
19 foundation.

20 THE WITNESS: I would presume so.

21 BY MS. QU:

22 **Q. Would a person of ordinary skill in the art**
23 **know how to move the LEDs to the upmost surface as shown**
24 **in this figure?**

25 MR. CHEN: Same objections. Incomplete

1 hypothetical.

2 THE WITNESS: Well, I don't -- first of all, I
3 don't see that someone would be motivated to do that,
4 because you then wouldn't get the illumination effect on
5 the fan blades that you get from placing it in the
6 middle of the annular surface. And if you -- so.

7 BY MS. QU:

8 Q. You're not answering my question. My question
9 was would a person of ordinary skill in the art know how
10 to move the LEDs to the upmost surface in this figure?

11 A. The upmost surface?

12 Q. Upmost?

13 A. Oh. Uppermost.

14 MR. CHEN: Vague and ambiguous.

15 THE WITNESS: Well, what do you mean by -- do
16 you mean on the top surface so that they were directly
17 facing you?

18 BY MS. QU:

19 Q. Sure. Would a person of ordinary skill in the
20 art know how to move the LEDs to the top surface of the
21 fans here?

22 MR. CHEN: Incomplete hypothetical.

23 THE WITNESS: If you moved those LEDs to the
24 stop -- top surface so they were facing you, you would
25 see four points of light, which is not a very

1 interesting effect. And so while technically a POSITA
2 might conceivably -- might be able to do that, they
3 would have no motivation to do so.

4 BY MS. QU:

5 **Q. But they would know how to do that?**

6 MR. CHEN: Asked and answered.

7 THE WITNESS: I don't know why they would do
8 that because it's not a useful configuration.

9 BY MS. QU:

10 **Q. You're not answering my question. My question**
11 **is whether a POSITA would know how to do that?**

12 MR. CHEN: Asked and answered.

13 MR. WEBER: It wasn't answered. You are under
14 legal obligation to answer the question, sir.

15 THE WITNESS: They would know how to put the
16 LEDs on the top surface, but would not be motivated to
17 do so because it's not a useful configuration.

18 BY MS. QU:

19 **Q. What experimentation would be required to move**
20 **the LEDs to the top surface of the fans?**

21 MR. CHEN: Incomplete hypothetical.

22 THE WITNESS: They have to look at the
23 feasibility of wiring it inside the, you know, inside
24 the fan. As I said, no POSITA would have actually done
25 that because it's not a useful configuration. It's not

1 a useful modification of Lai.

2 BY MS. QU:

3 Q. You're not answering my question. My question
4 is what experimentation would be required to move the
5 LEDs?

6 A. I can't say specifically without, you know,
7 knowing more about the fans in detail.

8 MR. WEBER: Any word on the sandwiches?

9 MR. CHEN: Yeah. It's here.

10 MR. WEBER: Should we take a 15 or 20?

11 MR. CHEN: Sure.

12 (Lunch recess.)

13 BY MS. QU:

14 Q. Dr. Tuckerman, can you take a look at page 24
15 of your declaration, Exhibit 2006?

16 A. Okay.

17 Q. And there is an annotated figure on top of this
18 page. Did you make the annotations?

19 A. Yes.

20 Q. Okay. And you see what's highlighted there,
21 the inward facing circular walls as it's labeled?

22 A. Yes.

23 Q. Do you agree that the yellow highlighted
24 portion would be visible from top view of the fan?

25 A. No. I don't agree with that.

1 **Q. Are you saying one could not see the yellow**
2 **highlighted portion from the top of the fan?**

3 A. Well, my interpretation of the figure is that
4 those are essentially vertical walls, that it's an
5 annular ring. So if you're looking straight on, the --
6 you know, I mean you would have -- certainly if you are
7 looking from infinity straight on, you would not see it
8 at all.

9 If you are close up to it, very close up to it,
10 then you could see, then you could see the wall. But
11 you know the further away you are from the fan, the less
12 you would see of it.

13 **Q. So if you are not perfectly straight on, say**
14 **you look at it at a 45-degree topside view, then you can**
15 **see the yellow highlighted portion here?**

16 MR. CHEN: Incomplete hypothetical.

17 THE WITNESS: Well, if you are talking like a
18 view in Figure 3, then clearly you can -- you can see it
19 at an angled view like that. A portion of it, any way.

20 BY MS. QU:

21 **Q. And you can see the LED 11 from this angle;**
22 **correct?**

23 A. You can see that discreet LED, yes.

24 **Q. And the yellow highlighted portion, it reaches**
25 **the top surface of the fan body; correct?**

1 MR. CHEN: Document speaks for itself.

2 THE WITNESS: It's a -- it certainly reaches
3 close to it.

4 BY MS. QU:

5 Q. Does it reach the top surface of the fan body?

6 A. I can't say for sure from the -- from this
7 figure.

8 Q. But you can say for sure that the LEDs are
9 recessed from this figure?

10 MR. CHEN: Mischaracterizing testimony.

11 THE WITNESS: So let me -- I inferred that they
12 are likely recessed in order to -- well, for one thing
13 because you have fan plates spinning and so you don't
14 want them to collide with the fan blades, and normally
15 in fan design, the blade edges are as close as
16 physically possible to that annular region. Otherwise,
17 you have, you know, inefficiency of the fan. So my
18 presumption is a POSITA trying to implement this would
19 recess the LEDs so the fans blades could not strike the
20 LED.

21 BY MS. QU:

22 Q. But you can say for sure that the LEDs in Lai
23 are recessed; correct?

24 A. Well, I can say for sure they have to be
25 recessed enough that they do not collide with the fan

1 blades. And generally, that would mean they would try
2 and recess them behind that vertical wall.

3 **Q. And you can say for sure that the LEDs are**
4 **entirely recessed; correct?**

5 MR. CHEN: Incomplete hypothetical. Document
6 speaks for itself.

7 THE WITNESS: As I said, they need to be
8 recessed for sure sufficiently so as not to interfere
9 with the fan blades.

10 BY MS. QU:

11 **Q. The patent of Lai does not describe the LEDs as**
12 **recessed; correct?**

13 MR. CHEN: Same objections.

14 THE WITNESS: It does not specify that
15 specifically, but a POSITA would understand the
16 necessity of the LEDs being kept clear of the fan
17 blades, which would be accomplished by recessing them.

18 BY MS. QU:

19 **Q. Do you know for sure that there is no gap**
20 **between the interior wall you highlighted in yellow and**
21 **the fan blades?**

22 MR. CHEN: Incomplete hypothetical.

23 THE WITNESS: Well, no engineer designs
24 something with no gap. There has to be tolerances. But
25 a POSITA would -- designing such a fan would and would

1 understand such a fan to have the gap as minimal as
2 possible, consistent with manufacturing tolerances.

3 BY MS. QU:

4 **Q. So you can tell us all this from Figure 3**
5 **without any written description in the patent, but you**
6 **can't tell us if the yellow portion goes to the top**
7 **surface?**

8 MR. CHEN: Compound. Vague and ambiguous.

9 THE WITNESS: Well, it's not a good enough
10 figure to tell. The yellow portion was my highlighting,
11 not intended to be precise, just intended to show that
12 I'm talking about that inner annular region.

13 BY MS. QU:

14 **Q. A connector can allow both power supply and**
15 **electrical signals; correct?**

16 MR. CHEN: Vague and ambiguous. Incomplete
17 hypothetical.

18 THE WITNESS: An electrical connector can
19 contain multiple connections and some can be power, some
20 can be signals. It depends on the design.

21 BY MS. QU:

22 **Q. Would a person of ordinary skill in the art**
23 **know how to separate the connections for power and**
24 **connections for electrical signals into separate**
25 **housings?**

1 MR. CHEN: Incomplete hypothetical. Vague and
2 ambiguous.

3 THE WITNESS: If there was motivation to do so.
4 I expect so.

5 BY MS. QU:

6 Q. How much experimentation would be required to
7 separate the connections into separate housings?

8 A. Again, we'd have to talk specifics.

9 MS. QU: Here please mark what's being
10 submitted in this IPR proceeding as Exhibit 1007.

11 (Petitioners' Exhibit 1007 was marked
12 for identification by the court
13 reporter.)

14 BY MS. QU:

15 Q. That's the translated -- translation of Tsuji,
16 also one of the prior references in this IPR?

17 A. Okay.

18 Q. You have reviewed and analyzed this document;
19 correct?

20 A. I have.

21 Q. I'll just go by Tsuji moving forward?

22 A. That's fine.

23 THE REPORTER: How do you spell Tsuji?

24 MS. QU: T-S-U-J-I.

25 THE REPORTER: Thank you.

1 BY MS. QU:

2 Q. Can you take a look at Figure 7, which is on
3 page 35?

4 A. Okay.

5 Q. Do you see a tube labeled CNB?

6 A. I see a something labeled CNB.

7 Q. And also a tube CNA?

8 A. I see something labeled as CNA.

9 Q. And do you also see a tube labeled CNC?

10 A. Well, you're calling them tubes. I just call
11 them structures for now. There's no -- tube is not a
12 word used anywhere in Tsuji to my knowledge.

13 Q. Okay.

14 A. But I see a structure labeled CNC.

15 Q. So structure CNA and CNB, they project inward
16 from the surface where CNC is located; correct?

17 MR. CHEN: Document speaks for itself.

18 THE WITNESS: Well, they're not on the same
19 surface at all.

20 BY MS. QU:

21 Q. That's not my question. The question is
22 whether structure --

23 A. Your question is malformed if -- when you
24 say --

25 Q. I'm happy to re-ask.

1 A. Okay. There's an assumption in your question
2 that isn't valid.

3 **Q. Sir, my question is structure CNA and CNB**
4 **project inward from the surface where CNC is located;**
5 **correct?**

6 A. Incorrect.

7 **Q. Why is that?**

8 A. Well, because they're on -- they project inward
9 from entirely different surfaces from the surface on
10 which CNC is located. There are three different
11 surfaces in this figure. The surface labeled front, the
12 surface labeled rear, and those are respectively the
13 surfaces within which CNA and CNB project inward. And
14 then there's a surface that isn't labeled, but you're
15 looking at this rectilinear object. So there's a
16 surface, I'll call it the one on the right, and that is
17 the surface from which CNC projects. So all different
18 surfaces.

19 **Q. You're saying CNA projects only from the front**
20 **surface and not from the right surface?**

21 A. Well, as I interpret the figures, CNA is
22 embedded in the front surface only, and CNB is embedded
23 in the rear surface only.

24 **Q. Would a person of ordinary skill in the art**
25 **know how to move these structures to other surfaces?**

1 MR. CHEN: Incomplete hypothetical.

2 THE WITNESS: You have to be more specific than
3 that. That's a -- I can't opine on whether a person of
4 ordinary skill in the art could make all possible
5 movements. Some may be possible, some may be not.

6 BY MS. QU:

7 Q. So it may be possible in some instances to move
8 the structure from where they are in this figure to
9 another surface; correct?

10 MR. CHEN: Incomplete hypothetical.
11 Mischaracterizing testimony.

12 THE WITNESS: Which -- could you be more
13 specific which structure in order to answer that I --
14 you need to be more specific.

15 BY MS. QU:

16 Q. Would a person of ordinary skill in the art
17 know how to move a connector from a surface to another?

18 A. It would --

19 MR. CHEN: Incomplete hypothetical.

20 THE WITNESS: It would entirely depend on the
21 specific situation, whether that was a possible thing to
22 do.

23 BY MS. QU:

24 Q. I'm asking you generally would a person of
25 ordinary skill in the art know how to move a connector

1 **from one surface of a fan to another surface?**

2 MR. CHEN: Incomplete hypothetical.

3 THE WITNESS: Like I said, I cannot answer that
4 question in general because it depends on the design of
5 the fan, what kind of relocation that you're talking
6 about, whether that would be feasible or not. So it
7 cannot be answered as a general matter. Details matter.

8 BY MS. QU:

9 **Q. So based on the design of Tsuji, would a person**
10 **of ordinary skill in the art know how to move a**
11 **connector on one surface of Tsuji to another?**

12 MR. CHEN: Incomplete hypothetical. Lack of
13 foundation.

14 THE WITNESS: Well, you'd need to be even more
15 specific again than that. Where do you want to move
16 them to? I cannot answer that in generality either.
17 There are some things that can be done and some things
18 that cannot be done.

19 BY MS. QU:

20 **Q. Would a person of ordinary skill in the art**
21 **know how to move the connector CNC as located in this**
22 **surface, on this surface on this figure to any other**
23 **surface of the fan body?**

24 MR. CHEN: Incomplete hypothetical. Document
25 speaks for itself.

1 THE WITNESS: I do not see how the patent would
2 work if that were done.

3 BY MS. QU:

4 **Q. What do you mean?**

5 A. The very nature of -- of the patent in its
6 description and how it works requires that the connector
7 be on that -- on a side that's adjacent to a fan that's
8 going to be connected to it. I mean, you could
9 conceivably flip around CNC and CND, you know, put
10 them -- put CNC where CND is and put CND where CNC is,
11 and put -- effectively switching male and female. That
12 could potentially be done. But that's the only obvious
13 thing I could think of you could do and still make the
14 patent work.

15 **Q. Can CNB be moved to the same surface as CNA?**

16 MR. CHEN: Incomplete hypothetical. Document
17 speaks for itself.

18 THE WITNESS: Let me just. I don't see that
19 it's precluded.

20 BY MS. QU:

21 **Q. And a person of ordinary skill in the art would**
22 **know how to do that?**

23 MR. CHEN: Lack of foundation.

24 THE WITNESS: Well, I don't know enough about
25 the design to see that -- whether there would be room.

1 The designer of this patent obviously had his
2 preferences for putting them where they are, CNA and
3 CNB. And you know, I don't know if the way the cabling
4 works and such in their invention, whether it would --
5 or also just how much room there was in the fan design,
6 whether it would -- or whether or not it would be
7 workable to make that change. You know, without
8 looking -- without a lot more detail about the design.
9 BY MS. QU:

10 Q. So you don't know if a person of ordinary skill
11 in the art could do -- could have done it?

12 MR. CHEN: Argumentative. Incomplete
13 hypothetical. Mischaracterizing testimony.

14 THE WITNESS: Well, as I said, it would depend
15 on the specifics of the design. That POSITA would have
16 to know every detail of this server design and to know
17 whether it would in fact be feasible to do so.

18 BY MS. QU:

19 Q. Sitting here today after your analysis of the
20 Tsuji patent, you are unable to answer whether a POSITA
21 would have known how to move CNA to the same surface as
22 CNB?

23 MR. CHEN: Mischaracterizing testimony.
24 Document speaks for itself.

25 THE WITNESS: Well, the problem is I don't have

1 all the information about the design. So it's
2 impossible to say for sure. I mean if -- let me put it
3 this way. If it turns out that it's technically
4 feasible to do so and doesn't, you know, interfere with
5 other aspects of the system design or you know, then if
6 it was technically feasible to do so, then I can say a
7 POSITA would have been able to do it. But the question
8 is is it technically feasible in this design, and that
9 cannot be answered without more information about the
10 design.

11 BY MS. QU:

12 Q. Can we go back to Exhibit 2006, your latest
13 declaration in this IPR proceeding?

14 A. Okay.

15 Q. Can we turn to appendix C?

16 A. Appendix which?

17 Q. Appendix C?

18 A. C. Okay.

19 Q. It's the last two pages?

20 A. Oh. All right.

21 Q. Of your declaration?

22 A. All right.

23 Q. What is this document?

24 A. Excuse me?

25 Q. What is this document? What is the content of

1 **this document?**

2 A. Well, as it is in a photo, a pair of photos
3 related to claim four.

4 **Q. What does that mean?**

5 A. Intended to be illustrative of a -- a fan pair
6 that is a potential embodiment of claim four.

7 **Q. Did you source the photos here in appendix C?**

8 A. I got the actual photos from counsel, although
9 I have seen these fans physically.

10 **Q. These -- the fan pair as shown in this photo,**
11 **you have physically examined them?**

12 A. I have seen them in the past, yes, physically.
13 Yeah.

14 **Q. Did you build those fan pairs?**

15 A. No. No. Those are someone's product.

16 **Q. Whose products are they?**

17 A. It's my understanding that they are a version
18 of Lian Li's product.

19 **Q. Do you know the product number?**

20 A. I do not.

21 **Q. Who provided you these products?**

22 A. Counsel.

23 **Q. And you have physically examined the two fans**
24 **as shown in the photos here?**

25 A. I have.

1 **Q. And it is your opinion that the fans as shown**
2 **in the photos are covered by claim four of '336 patent?**

3 MR. CHEN: Incomplete hypothetical. Lack of
4 foundation.

5 THE WITNESS: Well, I believe that they are.
6 The engagement mechanism is illustrative of what is
7 claimed by claim four.

8 BY MS. QU:

9 **Q. Other than the engagement elements, do the fans**
10 **implement any other elements of claim four?**

11 MR. CHEN: Calls for speculation. Lack of
12 foundation.

13 THE WITNESS: I did not consider that matter.
14 I simply asked for an example of -- a photo example of
15 the engage -- of how the engagement mechanism in claim
16 four would operate.

17 BY MS. QU:

18 **Q. So the fans may not be covered by claim four?**

19 MR. CHEN: Same objections.

20 THE WITNESS: Well, I didn't look at that in
21 detail. I mean the -- where did I refer to it in the
22 text. If I had -- if I had -- I could figure out
23 exactly where I said it, I referred to appendix C. Do
24 you know where I referred to appendix C.

25 ///

1 BY MS. QU:

2 Q. That is my next question actually.

3 Dr. Tuckerman, did you cite in any part of the
4 declaration to appendix C?

5 A. I'd have to perform a search for that. It's a
6 long document. Where is the discussion of claim four.
7 All right. So limitations of claim four.

8 MR. CHEN: Counsel, this is not a memory test.
9 Why don't you give doctor a document somehow.

10 THE WITNESS: Okay. Here we are. Page 62. I
11 have included a product related to claim four in
12 appendix C as demonstratives.

13 BY MS. QU:

14 Q. And the photos here are illustrative of claim
15 four; right?

16 MR. CHEN: Document speaks for itself.

17 THE WITNESS: It is intended as it says, it is
18 a photos of a product related to claim four. It is
19 intended to be demonstrative of the engagement mechanism
20 used in claim four.

21 BY MS. QU:

22 Q. And can you help me identify if there is an
23 illumination area on the fan body as shown in this
24 photo, if anywhere?

25 A. Well, I did not personally power up these fans,

1 but I see something that looks rather like the
2 illumination areas in the -- that are illustrated in the
3 patents preferred embodiments, you know, sort of this --
4 I don't know quite how you would call it, a sort of an
5 angled C shape structure in white.

6 **Q. And the angled C shape structures in white --**

7 A. More like a -- more -- I'd call it more like a
8 bracket, bracket shaped structure.

9 **Q. The bracket shaped structure in white you just**
10 **identified, they are sloping; correct?**

11 MR. CHEN: Document speaks for itself.
12 Incomplete hypothetical.

13 THE WITNESS: Well, it's a three dimensional
14 structure.

15 BY MS. QU:

16 **Q. Are they sloping or not?**

17 MR. CHEN: Same objections.

18 THE WITNESS: Well, I don't know exactly. I
19 mean sloping is not a precise term necessarily. It's
20 a -- it's a structure that's a three dimensional
21 structure on the fan body. You know, what would be
22 considered at the top of the body.

23 BY MS. QU:

24 **Q. Do they slope downward from the top surface or**
25 **not?**

1 MR. CHEN: Incomplete hypothetical. Document
2 speaks for itself.

3 THE WITNESS: Well, I haven't -- it's been a
4 long time since I've seen those fans. I did not examine
5 them with that question in mind. I merely was focused
6 on the engagement mechanism for this picture.

7 BY MS. QU:

8 Q. And looking at the pictures here, you can't
9 tell us whether they slope downward from the top surface
10 or not?

11 MR. CHEN: Mischaracterizing testimony.
12 Argumentative.

13 THE WITNESS: Well, what I'll say is they're
14 three dimensional structures. They're not flat, at
15 least as far as I can tell from the picture.

16 BY MS. QU:

17 Q. And a portion of the structure is below the
18 topmost surface; correct?

19 MR. CHEN: Document speaks for itself.
20 Incomplete hypothetical.

21 THE WITNESS: I don't know that, but you know,
22 I don't know that top surface is a phrase used in the
23 patent. It's a structure that's at the top of the body
24 as I would construe the '336 patent.

25 ///

1 BY MS. QU:

2 Q. You're not answering my question. A portion of
3 the structure is below the uppermost point of the top
4 surface; correct?

5 MR. CHEN: Same objections.

6 THE WITNESS: I can't tell that from those
7 photos.

8 BY MS. QU:

9 Q. But you can tell us that the structure is not
10 flat; correct?

11 A. It appears not to be because there's -- because
12 from this perspective I can see some vertical structure.

13 Q. And they're not sloping upward from the top
14 surface; correct?

15 MR. CHEN: Same objections.

16 THE WITNESS: I don't know that.

17 BY MS. QU:

18 Q. You have physically inspected those devices;
19 correct?

20 A. Like a year ago.

21 Q. And looking, just looking at the pictures here,
22 you can't tell us whether they're sloping downward or
23 upward?

24 A. I can't tell. It looks upward to me. I mean
25 it looks like there's upward structure, but I cannot

1 tell without, you know, looking at them again.

2 Q. So they have structure that moves up, that
3 slopes upward to touch the top surface; correct?

4 MR. CHEN: Same objections.

5 THE WITNESS: I wouldn't characterize it that
6 way.

7 BY MS. QU:

8 Q. How would you characterize it?

9 A. All I can say is that I see that it has some
10 three dimensionality of it, which is frankly a physical
11 requirement of any object, that there's no such thing as
12 a two dimensional object in --

13 MR. WEBER: All right. We are spinning our
14 wheels here and you are playing games. I'm gonna ask
15 that you produce this model to us because it's not clear
16 from the document. And Dr. Tuckerman is completely
17 unable apparently to tell us what he has reviewed or the
18 structure of it, and telling us you don't understand
19 slope or an angle is just not believable. So we request
20 the production of these models and then we can question
21 you more about it.

22 THE WITNESS: I don't have them.

23 MR. CHEN: We can meet and confer about it.

24 MR. WEBER: Okay. Let's meet and confer about
25 it and you know, move to strike all this stuff. Because

1 playing games about not knowing about it, if it's coming
2 up to the top surface or not is ridiculous and not
3 credible.

4 MR. CHEN: Mr. Weber, you are not the attorney
5 taking the deposition. So please do not badger the
6 witness the way you just did. That was unprofessional
7 and impolite.

8 MR. WEBER: I'm not taking the deposition, but
9 I'm here on behalf of the petitioner, and I am here to
10 request the production of these models.

11 MR. CHEN: That is fine. We can meet and
12 confer about that.

13 MR. WEBER: Okay.

14 MR. CHEN: Yeah.

15 MS. QU: Can we take a break? Let's go off the
16 record.

17 (Recess.)

18 BY MS. QU:

19 Q. Dr. Tuckerman, if you can go to your latest
20 declaration in this IPR proceeding, paragraph 116?

21 A. Exhibit 2006?

22 Q. Yes. Paragraph 116. So you say there you have
23 read the patent owner's contingent motion to amend and
24 analyze?

25 A. You're saying 116?

1 Q. 116.

2 A. 116. Okay.

3 Q. You're saying there that you have read patent
4 owners' contingent motion to amend in its entirety, and
5 you also performed some analysis on some prior-art
6 references. Do you see that?

7 A. I see that.

8 Q. So your analysis involved Lai, Tsuji, Hasegawa
9 and Huang, those four prior-art references; correct?

10 A. Yes. That's what I say. Yeah.

11 Q. Did you review and analyze any other
12 publications of prior-art in reviewing and giving your
13 opinions on the patent owners' contingent motion to
14 amend?

15 A. I'm not getting it on the screen anymore.

16 MR. CHEN: Oh.

17 THE WITNESS: So if you could repeat the
18 question, please.

19 MR. CHEN: There you go.

20 THE WITNESS: I can't recall if I did or did
21 not.

22 BY MS. QU:

23 Q. Are you aware of any other prior art that would
24 disclose the proposed new claim six and claim seven?

25 A. That would disclose -- I guess that sounds kind

1 of like legal terminology. I'm not sure what you mean
2 by disclosing the proposed claims.

3 **Q. Dr. Tuckerman, are you saying you do not**
4 **understand and you do not know how to analyze if a prior**
5 **art reference disclosed a patent claim?**

6 MR. CHEN: Compound. Argumentative.

7 THE WITNESS: I guess it's my poor
8 understanding of legal language in disclose. To me, if
9 their claims are published, that's a disclosure of the
10 claims. There may be some other legal meaning, but I'm
11 not a patent lawyer. So you know, to me disclosed means
12 published.

13 BY MS. QU:

14 **Q. Well, you state in paragraph 116 that you're**
15 **offering the opinion that the proposed independent**
16 **claims 6 and 7 are both patentable over these prior art**
17 **references. Do you see that?**

18 A. I see that.

19 **Q. And what do you mean when you're saying the**
20 **claims are patentable over these prior references?**

21 A. That those prior art references do not
22 anticipate or render obvious I guess those -- those
23 claims.

24 **Q. Are there any other prior art references you're**
25 **aware of that's not listed in this IPR proceeding that**

1 in your opinion would render the new claims 6 and 7
2 unpatentable?

3 MR. CHEN: Calls for speculation.
4 Argumentative.

5 THE WITNESS: I'm not so aware.
6 BY MS. QU:

7 Q. Did you do any search for prior art in
8 analyzing whether claims 6 and 7 are patentable or not?

9 A. I was asked to analyze them in the context of
10 the listed prior art references, and I wasn't aware of
11 anything else that would make it unpatentable. But I
12 didn't -- I didn't do my own full search because that's
13 not what I'm claiming. I'm claiming I've analyzed
14 them -- well, I guess I'm saying I haven't -- I'm not
15 saying I've analyzed the claim, the new claims against
16 all possible prior art references. Certainly the ones
17 that are listed in -- listed in materials considered
18 were considered.

19 Q. Okay. Dr. Tuckerman, other than the claimed
20 construction in the board's institution decision, are
21 there any claim terms that you believe should be
22 construed in this IPR proceeding?

23 A. Well, I mean I'm not going to contradict the
24 board's decision. That's a matter of law as I
25 understand it.

1 Q. Are there any claim terms other than what's
2 been construed by the board that you believe require
3 construction in this IPR proceeding?

4 A. Well, that sounds like more of a -- a legal
5 question that's outside of my purview.

6 Q. Can you take a look at paragraph 38 of your
7 declaration, which is on page 22?

8 A. Oh. Paragraph 38.

9 Q. Paragraph 38.

10 A. Paragraph 38.

11 Q. There you state:

12 "I agree with the board and
13 believe the terms in the challenged
14 claims should have their plain meaning
15 from the viewpoint of a POSITA at the
16 time of the '336 patent's filing and
17 do not require an express
18 construction."

19 Do you stand by that statement?

20 A. I do.

21 Q. So help me understand what is the plain meaning
22 of side from the viewpoint of a POSITA?

23 MR. CHEN: Legal conclusion.

24 THE WITNESS: Well, first of all, are we
25 talking about side of the body or side of the fan?

1 BY MS. QU:

2 Q. I'm talking about the term side.

3 A. The term side per se.

4 Q. Yes.

5 A. Is not in my view, not -- what was the question
6 again? Plain meaning. Not answerable except in the
7 context of the patent and its claims, and specifically
8 whether we're talking about side of the body or side of
9 the fan.

10 Q. You're saying the term side does not have a
11 plain meaning from the viewpoint of a POSITA?

12 A. Not without context it does not. And I think
13 any POSITA would agree with that. There are two sides
14 to every story. That's -- that's an entirely different
15 meaning from side from my house has four sides, you
16 know. It just means different things depending on
17 context.

18 Q. Let me put up an example. So would you say
19 that my right eye and my left eye are on different sides
20 of my body?

21 MR. CHEN: Incomplete hypothetical.

22 THE WITNESS: Well, not necessarily. For
23 example, I could say they're both on the front side of
24 your body. As opposed to the rear side of your body.
25 Posterior and anterior in medical terminology.

1 BY MS. QU:

2 Q. And what does left and right mean?

3 MR. CHEN: Lack of foundation. Incomplete
4 hypothetical.

5 THE WITNESS: Well, to an eye doctor, it means
6 something.

7 BY MS. QU:

8 Q. What does it mean to an eye doctor?

9 A. They'll call it OD and OS and if -- I can't --
10 I can't answer in words without gesturing, but the eye
11 doctor has a definition of a left eye and a right eye.
12 But that's -- I'm having trouble with seeing your point.

13 Q. So back to my question, whether my right eye
14 and my left eye are on different side of my body. I
15 believe you testified not necessarily. So they could be
16 considered on the left side and right side of my body;
17 correct?

18 MR. CHEN: Mischaracterizing testimony.

19 THE WITNESS: That would be one interpretation
20 of side in that particular context.

21 MR. WEBER: Our understanding is Dr. Tuckerman
22 has a hard stop at four.

23 MR. CHEN: Yeah.

24 MR. WEBER: So we will -- under that
25 understanding we were told to plan for that. Then we

1 will have to end the questioning.

2 MR. CHEN: Yeah. Actually, yeah. Do you have
3 more questions anyway? I'm -- you know, we don't want
4 to cause a situation where you're just, you know, gonna
5 try to call Dr. Tuckerman back.

6 MR. WEBER: Right now, we don't.

7 MR. CHEN: You don't.

8 MR. WEBER: But like we said, you told us to
9 plan for that timeframe, so that's what we did.

10 MR. CHEN: Okay. Yeah. We were worried about
11 that. I guess we have made arrangements so that we can
12 do this a little bit longer because we actually have
13 redirect and you used up all the time so.

14 MR. WEBER: We weren't told that this was
15 different until the end of the depo.

16 MR. CHEN: Well, do you have more questions?

17 MR. WEBER: Like I said, at this point we
18 don't.

19 MR. CHEN: Okay.

20 MR. WEBER: But that's because we were told to
21 plan for that as a hard stop. I don't find it possible
22 that you now have redirect after telling us that that
23 was the timeframe.

24 MR. CHEN: Did you try to run out the clock so
25 that we can not have redirect?

1 MR. WEBER: No, of course not. We proceeded
2 very efficiently, much quicker than you did with
3 Dr. Wolfe I will point out.

4 MR. CHEN: Regardless, like I said, because I
5 didn't want to stop you and ask for reservation of time
6 to do redirect, we had no choice but to make
7 arrangement. We never represented that we will do no
8 redirect. So --

9 MR. WEBER: I believe you should have told us
10 earlier that you were going to reserve time so we could
11 work this out before 4:00 p.m. Do you have a lot of
12 questions?

13 MR. CHEN: No, not that many.

14 MR. WEBER: Okay. Then proceed and we might
15 have further questions.

16 MR. CHEN: Well, no. No. I need to -- I need
17 to talk to the witness. So. If you don't have any
18 questions, we should go off the record. I will talk to
19 the witness.

20 MR. WEBER: Okay. Yeah. We pass the witness
21 with the objection to this last minute time change.

22 MR. CHEN: Okay.

23 (Recess.)

24 MR. CHEN: So Mr. Weber, regarding your earlier
25 objection in terms of timing, I have a current response

1 to that. So note that we did say that we could start
2 the deposition at 8:00, but you chose to delay that by
3 one hour. And therefore, I don't think we can be blamed
4 for having time constraint. So.

5 MR. WEBER: I disagree. And 9:00 a.m. is when
6 business starts and when business starts for the court
7 reporter, and that's when we could make it happen. But
8 just go ahead and let's just get this done.

9 MR. CHEN: Ok. Thank you.

10 EXAMINATION

11 BY MR. CHEN:

12 Q. So Dr. Tuckerman, can you please turn to
13 page 20 of your declaration?

14 A. Exhibit 2006?

15 Q. Yeah. 2006.

16 A. Okay.

17 Q. Do you recall answering questions about this
18 figure that's annotated?

19 A. Yes.

20 Q. On page 20 of your declaration?

21 A. Yes. I recall answering questions.

22 Q. And did you recall testifying that in your
23 view, even if a structure is entirely internal to the
24 illumination fan body, you still would not exclude the
25 structure from being on the side of the body. Do you

1 **recall testifying to that effect?**

2 A. Right. I said that it would not necessarily be
3 excluded from -- from being on the side of the body.

4 **Q. Okay. So why?**

5 A. Well, in this picture, the power socket has --
6 clearly in the picture the electrical contacts are
7 entirely recessed, and yet I would view that those
8 structures, those contacts, as still being part of the
9 power socket and hence on part of the side of the body.

10 MR. CHEN: Okay. I would like to introduce
11 Exhibit 2018.

12 (Patent Owners' Exhibit 2018 was
13 marked for identification by the
14 court reporter.)

15 BY MR. CHEN:

16 **Q. Dr. Tuckerman, do you see Exhibit 2018?**

17 A. I do.

18 **Q. What is Exhibit 2018?**

19 A. It's a close up of the power socket area.
20 Appears to be just a blow up of my annotated figure that
21 we just talked about.

22 **Q. So can you use this black pen to clearly circle**
23 **the portion of the power socket for that you consider to**
24 **be completely internal to the illumination fan body?**

25 A. Okay. It's -- this isn't -- there it goes.

1 It's not writing very well in this ink. But.

2 **Q. Oh, okay. Let me give you a different pen.**

3 A. Yeah. I think that got it. Let me try this
4 one. It's a little better. So the circled area is
5 certainly part of the power socket and would be
6 construed as on that one side of the body.

7 **Q. So on page 20 of your declaration, which is**
8 **Exhibit 2006, is the identified one side of the body**
9 **flat?**

10 A. No. It has protrusions and crevices.

11 **Q. Is the another side of the body flat?**

12 A. No. It's not. It's not perfectly flat.

13 **Q. Is the top of the body flat?**

14 A. No.

15 **Q. Can you go to Exhibit 1001? That's the patent.**

16 A. Oh. The patent. Sure.

17 **Q. Can you please take a look at claim one?**

18 A. Okay.

19 **Q. Do you see any limitation that require one side**
20 **of the body to be flat?**

21 A. No. There's no such limitation.

22 **Q. Do you see any limitation that require the**
23 **another side of the body to be flat?**

24 A. No. There is no such limitation.

25 **Q. Do you see anything in claim one that requires**

1 the top of the body to be flat?

2 A. No. There is no such limitation.

3 Q. Please also look at claims 2, 3, 4 and 5. Do
4 you see any limitation that requires the side of the
5 body to be flat?

6 A. No. There are no such limitations. In fact,
7 they can't be when there's grooves, right.

8 Q. In your opinion, for a power socket to be
9 considered on a side of the body of the illumination
10 fan, is it important to have an opening exposed on that
11 side of the body?

12 A. Yes.

13 Q. Why?

14 A. So that it could be connected to a power cable
15 if desired.

16 Q. For a connector to be considered to be on a
17 side of the body of the illumination fan, is it
18 important for the connector to have a surface or opening
19 exposed on the side?

20 A. It must --

21 Q. Of the body?

22 A. It must have either an exposed surface or an
23 opening exposed on the side.

24 Q. Why?

25 A. Otherwise you it wouldn't make an electrical

1 connection to anything.

2 Q. So let me introduce this as Exhibit 2019.

3 MS. QU: Objection. Outside the scope of my
4 cross.

5 (Patent Owners' Exhibit 2019 was
6 marked for identification by the
7 court reporter.)

8 BY MR. CHEN:

9 Q. Dr. Tuckerman, again, do you recall testifying
10 to -- strike that.

11 Dr. Tuckerman, do you recall answering
12 questions from counsel regarding components that are
13 internal to a fan body and whether that can be
14 considered to be on the side of the body?

15 A. The --

16 MS. QU: Objection. Form.

17 THE WITNESS: Which counsel?

18 MR. CHEN: Opposing counsel.

19 THE WITNESS: Opposing counsel. Yes. I recall
20 answering such questions.

21 BY MR. CHEN:

22 Q. Okay. So can you please turn to page 55 of
23 Exhibit 2019?

24 A. Okay.

25 Q. Do you recall in your declaration you stated

1 **that element 111 is behind --**

2 MS. QU: Object to form.

3 MR. CHEN: The body?

4 BY MR. CHEN:

5 **Q. Let me restate the question. Dr. Tuckerman, do**
6 **you recall in your declaration that you stated element**
7 **111 is behind a side of the body of the fan?**

8 MS. QU: Objection. Outside the scope of my
9 cross.

10 THE WITNESS: I do recall stating such.

11 MR. CHEN: It is not outside of your scope
12 because you were talking about elements that are
13 internal to the fan's body.

14 MR. WEBER: We did not bring up this connector
15 and it is outside the scope. We disagree. This is new
16 stuff. It won't be tolerated much given the time
17 constraints.

18 MR. CHEN: Okay. Then we disagree. But that's
19 fine. I won't ask questions about that figure. So this
20 is -- let's mark this as Exhibit 2020.

21 (Patent Owners' Exhibit 2020 was
22 marked for identification by the
23 court reporter.)

24 BY MR. CHEN:

25 **Q. Dr. Tuckerman, can you take a look at**

1 **Exhibit 2020?**

2 A. What specifically?

3 **Q. Do you recognize it?**

4 MS. QU: Can we get a copy?

5 MR. CHEN: Oh, sure. Sorry.

6 THE WITNESS: So it's a declaration of mine,
7 signed on page 69 by me, dated December 17th, 2024.

8 MS. QU: Objection. Outside the scope of my
9 cross.

10 MR. CHEN: Introduce Exhibit 2021.
11 (Patent Owners' Exhibit 2021 was
12 marked for identification by the
13 court reporter.)

14 BY MR. CHEN:

15 **Q. Can you please take a look at Exhibit 2021?**

16 A. Okay. So it's --

17 MS. QU: Objection. Outside the scope of my
18 cross.

19 BY MR. CHEN:

20 **Q. So what is Exhibit 2021?**

21 A. Well, it kind of looks the same as the other
22 one. It's the same.

23 **Q. Can you turn to --**

24 A. It's the same declaration.

25 **Q. Page 31?**

1 A. 31. Okay. All right.

2 Q. Both exhibits. Do you see any difference?

3 A. Oh, yes. The Exhibit 2021 is -- has the color
4 whereas for whatever reason 2020 is all in black and
5 white.

6 Q. Can you review these documents to confirm
7 they're identical except one is in color, which is 2021,
8 and the other one is black and white, which is 2020.

9 A. Yeah. They appear to be identical documents
10 with the exception that one was printed in black and
11 white and the other has the proper color.

12 MR. CHEN: Could you hold on just one second?
13 I will be right back.

14 BY MR. CHEN:

15 Q. Could you turn to Exhibit 2018?

16 A. Oh, okay. Thank you.

17 Q. Do you recall testifying that you circled
18 structures that are considered entirely internal to the
19 illumination fan body?

20 A. Yes.

21 Q. So given that earlier the pen wasn't working so
22 well, I'm giving you the Sharpie to make the circle
23 clearer?

24 A. Okay. Better? Okay.

25 Q. Dr. Tuckerman, on Exhibit 2018, what are the

1 structures that you just circled in black?

2 A. I understand them to be electrical contacts.

3 Q. Electrical contacts of what?

4 A. Of the power socket.

5 Q. Where are they located relative to the body of
6 the illumination fan?

7 A. Well, they're recessed somewhat.

8 Q. Would you consider them to be completely
9 internal to the body of the illumination fan?

10 A. Yes. They're -- I would consider them to be
11 internal.

12 MR. CHEN: Thank you. I have no further
13 questions.

14 MS. QU: No recross from petitioners.

15 MR. CHEN: Okay. Thank you. That concludes
16 the deposition.

17 MR. WEBER: Yeah. I think we are concluded and
18 done. We'll take a rough. I don't know if our
19 assistant discussed this with you.

20 (Whereupon the deposition was
21 adjourned at 4:42 p.m.)

22

23

24

25

David B. Tuckerman, Ph.D.

1 STATE OF CALIFORNIA)
2 COUNTY OF ALAMEDA) ss.
3

4 I, ANDREA M. AQUINO, CSR No. 14484, a Certified
5 Shorthand Reporter, in and for the County of Alameda,
6 State of California, do hereby certify;

7 That prior to being examined, DAVID B.
8 TUCKERMAN, Ph.D., was by me duly sworn to testify the
9 truth, the whole truth, and nothing but the truth; that
10 said deposition was taken before me and by me at the
11 time and place herein set forth, and is a full, true and
12 correct transcript of my shorthand notes so taken;

13 That before completion of the deposition,
14 review of the transcript [X] was [] was not requested.
15 If requested, any changes made by the deponent (and
16 provided to the reporter) during the period allowed are
17 appended hereto.

18 I further certify that I am neither counsel for
19 nor related to any party to said action, nor in any way
20 interested in the outcome thereof.

21 IN WITNESS WHEREOF, I hereunto subscribe my
22 name this 29th day of July, 2025.

23 
24

25 Certified Shorthand Reporter in and
For the County of Alameda,
State of California

DECLARATION UNDER PENALTY OF PERJURY

Case Name: Thermaltake Technology Co.
vs. Lian Li Industrial Co.

Date of Deposition: 07/15/2025

Job No.: 10168053

I, DAVID B. TUCKERMAN, PH.D., hereby certify
under penalty of perjury under the laws of the State of
_____ that the foregoing is true and correct.

Executed this _____ day of
_____, 2025, at _____.

DAVID B. TUCKERMAN, PH.D.

NOTARIZATION (If Required)

State of _____

County of _____

Subscribed and sworn to (or affirmed) before me on
this _____ day of _____, 20____,
by _____, proved to me on the
basis of satisfactory evidence to be the person
who appeared before me.

Signature: _____ (Seal)

1	DEPOSITION ERRATA SHEET
2	Case Name: Thermaltake Technology Co.
3	vs. Lian Li Industrial Co.
4	Name of Witness: David B. Tuckerman, Ph.D.
5	Date of Deposition: 07/15/2025
6	Job No.: 10168053
7	Reason Codes: 1. To clarify the record.
8	2. To conform to the facts.
9	3. To correct transcription errors.
10	Page _____ Line _____ Reason _____
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22 _____ Subject to the above changes, I certify that the
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transcript is true and correct.

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DAVID B. TUCKERMAN, PH.D.

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