

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOE TECHNOLOGY GROUP CO., LTD.,
Petitioner,

v.

OPTRONIC SCIENCES, LLC,
Patent Owner

IPR2024-01131
Patent 7,226,801 B2

Record of Oral Hearing
Held: November 20, 2025

Before THU A. DANG, BENJAMIN D. M. WOOD, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

IPR2024-01131
Patent 7,226,801 B2

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P R O C E E D I N G S

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JUDGE CHERRY: Please be seated. Good afternoon. I'm Judge Cherry, and also here are Judges Thu and Wood.

JUDGE DANG: Dang.

JUDGE CHERRY: Oh, Dang.

JUDGE DANG: It's okay.

JUDGE CHERRY: Sorry. It's been a long day already. We're here for IPR2024-1131 for U.S. Patent 7226801, BOE Technology Group Co., Ltd. is the Petitioner and Optronic Sciences, LLC is the Patent Owner. Will the parties please make their appearances?

MR. LONEY: Zachary Loney with DLA Piper on behalf of BOE Technology Group. With me are my colleagues, Brian Erickson and Alan Limbach.

JUDGE CHERRY: Thank you.

MR. CUMMINGS: Jefferson Cummings with Russ August & Kabat, representing Patent Owner, Optronic Sciences. With me is my colleague, Peter Tong.

JUDGE CHERRY: Welcome. As the Petitioner has the burden of proof in this proceeding, they will go first, followed by the Patent Owner. The Petitioner may reserve what -- time for rebuttal, and after the Patent Owner goes, the Petitioner may deliver its rebuttal. The Patent Owner may also reserve time for a surrebuttal and it will go after the Petitioner's rebuttal. We've allotted 45 minutes per side in this proceeding, so -- and Petitioner, because you get to go first, how much time do you want to reserve for

1 rebuttal?

2 MR. LONEY: I'll reserve 20 minutes for rebuttal

3 JUDGE CHERRY: Okay. Great. And you may begin whenever
4 you're ready.

5 MR. LONEY: If I may proceed, Your Honors?

6 JUDGE CHERRY: Yes.

7 MR. LONEY: Okay. May it please the Board. My name is
8 Zachary Loney. I'm representing BOE Technology Group today. I'd like to
9 talk about three specific topics regarding the '801 patent and its Petition
10 today. I'd like to start by discussing claim construction at issue in this
11 proceeding, followed by the Kwak reference and its related grounds, and
12 then ending with the Zhang reference and its related grounds.

13 So, if we move to Slide 3, we see the first term that was initially
14 disputed. That's the term "layer." Since the initial dispute with this term, the
15 parties have reached an agreement as to the meaning of this term. Petitioner
16 cited that agreement in its reply and subsequently, Patent Owner chose not to
17 address this term or its arguments related to this term in surrebuttal.

18 Moving on to Slide 4, the second term that was disputed is the term
19 "formed on." Again, this term has been construed in the related District
20 Court proceedings, and the Patent Owner has decided in surreply not to
21 (INAUDIBLE) term or its arguments related to this term. That leads us to a
22 third term on Slide 5 and that is the term "predetermined angle." Now, I
23 want to be very clear that at no point in this proceeding has Patent Owner
24 offered or proposed construction for the term "predetermined angle."

25 JUDGE WOOD: Mr. Loney, sorry to interrupt. I just want to go
26 back and just clarify the construction for "formed on." The District Court

1 has ruled that it means "formed directly on"?

2 MR. LONEY: I believe that is correct, yes.

3 JUDGE WOOD: Is that the construction that we should apply in
4 this case?

5 MR. LONEY: Petitioners haven't taken position on that in the
6 papers. I think we stand on our initial arguments, as to the meaning of the
7 term, and I believe -- my understanding is that those arguments remain
8 un rebutted in the surreply.

9 JUDGE WOOD: Okay, thank you.

10 MR. LONEY: Going back to the pre-determined angle. Sorry.
11 Again, so we don't have a proposed construction from Patent Owners
12 regarding this term. What we've had is a series of shifting interpretations
13 that they've offered in various manners, eliciting certain meanings that they
14 think may apply to the term. What that's done is that's prevented Petitioners
15 and this Board from conducting a proper claim construction analysis, and it's
16 denied us the ability to see what, if any, support they're relying on for these
17 interpretations.

18 Now, if you look at the left-hand side of the table on Slide 5, you'll
19 see that Petitioner, in fact, has offered a proposed construction. Their
20 proposed construction for predetermined angle is that it should be given its
21 plain and ordinary meaning, which is not limited to any particular angle or
22 range of angles. Now, if you look on the right-hand side of Slide 5, you'll
23 notice that there's a typo in that red box. That should read, "Patent Owner's
24 Interpretations" --

25 JUDGE WOOD: Yeah.

26 MR. LONEY: --just to be clear. So, we'll start walking through

1 those. So, first, Patent Owner has said that this term should be given its
2 plain and ordinary meaning. We're in agreement -- they're in agreement
3 with Petitioner so far. Next, they state that predetermined angle should not
4 be limited to any particular range of angles. Again, in agreement with
5 Petitioner, but they go on and add additional limitations. The next limitation
6 is a circular definition, whereby a predetermined angle would require a
7 predetermination of the angle, or an angle that is predetermined. This is not
8 a clarification to the meaning of the term. This adds nothing and should not
9 be included in any construction or definition of the term "predetermined
10 angle."

11 Last, we come to yet another limitation that they've sought to add,
12 and that is the concept or interpretation that if a designer merely uses a
13 selected technique for making an opening without caring what angle would
14 result, this would not be a predetermined angle. Now, we know this is
15 wrong for several reasons. First, there's no support in the intrinsic record for
16 this. Patent Owner hasn't cited to any support. The '801 patent specification
17 is silent as to the mental state of a designer or a person creating the claimed
18 device.

19 Further, the '801 patent has no specific teachings as to how the
20 angle is predetermined. It doesn't limit that aspect to any specific
21 methodology or manner. Third, we know that this is wrong because the '801
22 patent actually teaches using a known technique -- photolithography -- for
23 creating the predetermined angles. And we know that that's true because
24 Patent Owner's own expert has agreed that that's true.

25 If you look at Slide 8 on the left-hand side, we see that the expert
26 was asked whether, after reading the '801 patent, the use of photolithography

1 in that patent was sufficient to create predetermined angles in the patent. He
2 responded in the affirmative. On the right-hand side, you see two excerpts,
3 again, from his testimony, where he agrees that photolithography was a
4 known technique before the time of the '801 patent, and that specific types of
5 photolithography, including half-tone masks, which could be used to make
6 angled side walls, were also known prior to the '801 patent.

7 So, what we have here, Your Honors, is a situation in which one
8 side has offered a number of shifting positions, some of which are
9 contradictory to the evidence, some of which are circular, and then we have
10 Petitioner who has offered us a succinct and consistent construction for this
11 term throughout the proceeding. And that Petitioner's -- we believe that
12 Petitioner's construction should be accepted.

13 JUDGE WOOD: Mr. Loney?

14 MR. LONEY: Yes.

15 JUDGE WOOD: Is it Petitioner's view that the construction, or at
16 least how the term should be applied differently for Claim 9, which is an
17 apparatus claim, as opposed to Claim 1, which is a method claim?

18 MR. LONEY: I don't believe we have an opinion that those should
19 be applied differently.

20 JUDGE WOOD: The reason I ask is because your first ground is a
21 102 ground, specifically directed to Claim 9, which is the apparatus claim.

22 MR. LONEY: Mm-hm.

23 JUDGE WOOD: Not to Claim 1, whereas your second ground
24 encompasses both. The second ground being a 103 obviousness ground. So,
25 that suggested to me that Petitioner believed that there was some difference
26 of application of that term, or at least of some term, depending on whether

1 it's an apparatus claim versus a method claim.

2 MR. LONEY: No difference in the application of the term
3 between those two, or at least not for that reason.

4 JUDGE WOOD: Okay.

5 MR. LONEY: So, getting to your points, I think I'd like to move
6 on, and we'll discuss the Kwak Grounds. So, starting with the Kwak
7 reference itself --

8 JUDGE DANG: Actually, can I go --

9 MR. LONEY: Oh, please.

10 JUDGE DANG: -- come back to the -- I guess the expert
11 testimony concerning --

12 MR. LONEY: Yes.

13 JUDGE DANG: -- the predetermined angle. So, the method itself
14 could create the predetermined angle, but you still have to have a
15 predetermination first in order to have that angle. So, does the method itself
16 require certain predeterminations before you make the predetermined angle?

17 MR. LONEY: So, yeah. Our position is that without defining the
18 full scope of the term, that a predetermined angle allows for multiple
19 different ways of predetermining. There could be a mental state that Patent
20 Owner points to where somebody has something in mind and specifically
21 goes about trying to create that. There's another situation in which the '801
22 patent actually teaches, in which the known technique that can create known
23 results is used. It's similar to if you were baking a cake and you measure out
24 a cup of flour, versus somebody handing you the one cup scoop and you just
25 take the scoop. You get a -- like either way, you end up with one cup, one of
26 which is an affirmative mental state by the user. The second one is the

1 technique used.

2 JUDGE DANG: Right, but I guess -- I'm not -- the results, you
3 have the certain shape, but is it at the certain angle, and isn't that different? I
4 mean, even though the method would give you an angle, would they give
5 you the predetermined angle?

6 MR. LONEY: So, and we'll talk about this in Kwak a little bit,
7 that depending on what the reference is, including Kwak, there are teachings
8 that would require the angle that is desired to be within a certain range. The
9 '801 patent specifically doesn't require any one specific angle. The most
10 specific it ever gets is narrowing it down to a 10-degree range of angles,
11 where the predetermined -- as long as the predetermined angle is within that
12 10-degree range, that satisfies the claim.

13 JUDGE DANG: Okay, thank you.

14 MR. LONEY: So, moving on to the Kwak Grounds. Starting with
15 the Kwak reference itself, at an introductory level, Kwak does disclose
16 angled side walls within the apparatus. It discloses those angles for non-
17 vertical and consistently discloses the same type of angle through all of its
18 figures. And we know that Kwak describes and discloses an angle, because
19 Patent Owner has actually stated that. In Patent Owner's response at page
20 40, they state that Petitioner has indeed identified an angle, and take issue
21 only with whether that angle is a predetermined angle or not.

22 So, I'll move on to Slide 11. Kwak doesn't stop at those figures.
23 Kwak includes additional teachings that set parameters and criteria for what
24 type of angle is going to be used in any specific limitation. Specifically, if
25 you look at the text on the screen in center, it describes how "it is desirable
26 for the cross section of the via hole 811 to be smaller than that of the

1 corresponding penetration hole 301." What that means is that when
2 implementing the teachings of Kwak, someone would -- it would be a
3 requirement that they consider how those two interact, and angles of the via
4 hole -- those side wall angles -- are going to be constrained by the
5 parameters of the penetration.

6 And moving on, we know that in making those angles and making
7 those openings, a POSITA would look -- or sorry, let me stop -- step back a
8 second. We know, based on Patent Owner's expert, that certain angles are
9 desirable. So, despite what you just saw on Slide 10, showing the non-
10 vertical angles, Patent Owner's expert has at least agreed that vertical angles
11 or near vertical angles are desirable in Kwak. So, we know that even -- as
12 per their expert, certain angles are desirable. We also note, again, relying on
13 Patent Owner's expert, that someone creating those desired angles, would
14 look to known processes that are known to be suitable for creating those
15 types of openings. They're not going to look for new processes. They're
16 going to look for ones that have already been done, that are already known
17 to function and provide the results desired.

18 And lastly, we go back to the slide we saw earlier where Patent
19 Owner's expert has also agreed that photolithography, including half-tone
20 mask, is a known technique, known prior to the '801 patent, that is sufficient
21 and capable of creating those predetermined angles. And so, taking that
22 together both, from a 102 and a 103 perspective, Kwak both anticipates and
23 renders obvious the use of a predetermined angle in the via holes. If there's
24 no questions about Kwak, we'll move on to the Zhang reference and
25 grounds.

26 Speaking about the Zhang reference, I just want to clear up a

1 couple misconceptions that Patent Owner has offered regarding this
2 reference. Specifically, I'd like to point out that the Zhang reference actually
3 discloses two types of conventional LCD panels that existed in the prior art.
4 If you look at the right-hand side of Slide 21, you'll see that it refers to
5 Figure 1A and 1B as conventional LCD panels, and it refers to Figure 2A
6 and 2B as conventional reflective LCD panels or liquid crystal display
7 panels.

8 If you look on the left-hand side, you see that Petitioner -- or
9 Patent Owner treats these panels the same. It refers to Zhang's conventional
10 reflective LCDs of 1A, 2A, 2B. So, they don't make a distinction between
11 these. They treat them the same, but there is a difference, and we see that at
12 the bottom of the slide.

13 The Zhang reference specifically says that the difference between
14 the reflective liquid crystal display and the general liquid crystal display is
15 that the reflective liquid crystal display has an additional photoresist layer
16 225. So, we know that there are two types, and they differ because one has
17 an organic layer and one doesn't.

18 Now, moving on. Zhang teaches the same problem exists in both
19 of those conventional LCD panels. If you look at the highlighted portion at
20 the top in the middle of Slide 22, you see that it notices that "the bonding
21 strength of the assembled liquid crystal display panels 100, 200A and 200B
22 is insufficient." 100, 200A and 200B refers to the liquid crystal displays
23 from the conventional LCDs, as well as the conventional reflective LCDs.

24 Further down, if we go to the next paragraph that's also
25 highlighted, we see that the purported invention improvement on that -- on
26 those -- to fix that problem is the same for both of those types of panels. It's

1 increasing the contact area for the frame adhesive to allow the structure to
2 withstand greater impact and vibrations.

3 Now, Patent Owner has advanced this concept that the invention or
4 improvement of Zhang actually teaches doing away with the photoresist
5 layer all together. Not improving conventional reflective LCDs at all.

6 That's simply not true. When you look at the Zhang reference, the very first
7 example of the invention in Figure 3B, it has two layers -- a first covering
8 layer and a second covering layer. It does not limit that second covering
9 layer, which sits on top of the covering layer. It doesn't limit it to any
10 specific material. It doesn't limit it to any specific combination.

11 And as we can see looking at the bottom of Slide 23, the Zhang
12 reference actually explains that there are different layers that can be had. In
13 certain ones, there are -- there is a first metal layer, a dielectric layer, a
14 second metal layer, and then a protective layer. But if you look at the
15 highlighted text, in certain LCD panels, including reflective and semi-
16 transmissive semi-reflective TFT-LCD panels, they include the covering
17 layers, which may sometimes include an additional photoresist layer, or PL
18 layer, above the protective layer. So, what that's telling us is that the
19 invention, the improvement of Zhang, applies to both conventional LCDs, as
20 well as conventional reflective LCDs.

21 Now, I also want to make clear that this concept -- this discussion
22 of the conventional LCD panels, these are not separate embodiments, as
23 Patent Owner has described them. This is the prior art. This is what existed
24 at the time of Zhang and what Zhang teaches and seeks to improve upon.
25 Therefore, there's no necessity for a motivation to combine because Zhang
26 actually teaches improving those very devices. And so it's not a matter of

1 combining different embodiments. It's a matter of implementing the
2 teachings and improvements of Zhang and what existed.

3 Lastly, I have a slide just kind of showing the different variations
4 of Zhang. On the left-hand side, we see -- this is Slide 25. On the left-hand
5 side, we see a conventional LCD panel with the four layers and the purple
6 part being the adhesive. In the center, we see a conventional LCD, or a
7 reflective LCD panel. And this one is interesting because you see the
8 photoresist layer there in yellow, but you also see that the adhesive goes
9 through an opening and that organic layer then touches the layer underneath
10 it.

11 Now, the Zhang references teaches improving upon that opening.
12 It teaches that opening can go further, so that you can improve contact area
13 and improve the adhesion. It does not teach getting rid of that organic layer.
14 And that's all I have. I'll reserve the rest of my time, unless there's any
15 questions.

16 JUDGE CHERRY: Any questions? No?

17 JUDGE WOOD: No, thank you.

18 JUDGE CHERRY: You have about eight minutes, plus the 25, so
19 28. You have about 28 minutes remaining. How much would Patent Owner
20 like to reserve for rebuttal?

21 MR. CUMMINGS: Can I reserve 15 minutes? And I'm a LEAP
22 Practitioner.

23 JUDGE CHERRY: Okay, so you get an extra 15 minutes.

24 MR. CUMMINGS: Yes, please. Is there an issue with the color
25 on that?

26 JUDGE WOOD: Whoa.

1 MR. CUMMINGS: Wow.

2 JUDGE CHERRY: Plug it in all the way.

3 MR. CUMMINGS: All right. I would like to begin by giving an
4 overview of the technology of the '801 patent before addressing the state of
5 the art that the Petition relies on, as well as the grounds themselves. The
6 '801 patent is related to the bezels of displays, as you can see in the top right.
7 The modern bezels have very thin end portions, compared to the prior art
8 predecessors, which had very thick bezels. And the '801 patent is integral
9 and provides some of the technological improvements that allow for these
10 thin bezels through a combination of factors. For example, there's a
11 sawtooth pattern, which is shown in the bottom left that's looking at the
12 display. It's a sawtooth pattern that goes down the display.

13 JUDGE WOOD: Counsel -- and I meant to ask Petitioner's
14 Counsel this, as well -- the sawtooth pattern refers to what you see in the top
15 view in Figure 1B?

16 MR. CUMMINGS: Correct, Your Honor.

17 JUDGE WOOD: It does not refer to the cross-sectional view, the
18 opening in the cross-sectional view shown in Figure 1C?

19 MR. CUMMINGS: Your Honor, the cross-sectional view shown
20 in Figure 2C is a cross section of the sawtooth pattern. It is a cross section
21 horizontal view, rather than a top-down view.

22 JUDGE WOOD: I understand that, but the sawtooth aspect is
23 discernible from the top down view?

24 MR. CUMMINGS: Correct, Your Honor.

25 JUDGE WOOD: It's that back-and-forth combination of
26 horizontal and vertical trenches?

1 MR. CUMMINGS: That's correct.

2 JUDGE WOOD: Okay. Is it correct to say that that term -- the
3 meaning of that term and whether or not it's taught in the art -- those are not
4 disputed issues?

5 MR. CUMMINGS: Your Honor, I don't believe that's a briefed
6 issue, no.

7 JUDGE WOOD: All right. Thank you.

8 MR. CUMMINGS: So, the combination that the '801 patent
9 teaches is the sawtooth pattern, an opening with a predetermined angle, and
10 a specific material layer structure in the sealant region of a display. Now,
11 one of the key insights the '801 patent had was using a predetermined angle
12 to reduce the voids or bubbles in the sealant region, and you can see, it
13 shows Figure 1C, voids or bubbles are formed during the application of
14 sealant 146, occurred due to an angle θ . And then it goes on and describes,
15 with a predetermined angle α , air exhausts easily via the tapered profile,
16 avoiding formation of voids or bubbles in the sealant.

17 None of the prior art the Petition identifies addresses this problem
18 at all. It was unrecognized and you'll see as we go through the grounds, it's
19 hindsight. The Petitioner bases their art on something similar to 1C.
20 Nothing teaches using a predetermined angle or anything about preventing
21 voids or bubbles in the sealant, and it certainly does not disclose using a
22 specific range of angles within the sealant region.

23 Now, the premise, as you heard, that there are known ways to
24 create a predetermined angle that's not new, and that was known in the
25 semiconductor context, but no one had thought to use it in the sealant region
26 to create a predetermined angle. You know, the dependent claim specified

1 less than 60 degrees, 20 to 30 degrees for reducing voids or bubbles in the
2 sealant.

3 Turning to Slide 5, the '801 patent describes certain
4 photolithography techniques for creating these predetermined angles, such as
5 a half-tone mask. In the highlighted portion, you see it discusses the half-
6 tone mask can comprise a gray-tone or slit-pattern mask. This is different
7 from simply creating a via, where the emphasis is only on the depth. It's not
8 on the side wall. The distinction is analogous to asking someone to dig a
9 hole that's six feet deep, or asking someone to dig a hole that's six feet deep
10 and has a 30-degree angle side wall.

11 JUDGE WOOD: Let me ask you the question that I asked Mr.
12 Loney. Claim 9 is an apparatus claim, which needs to be distinguished over
13 the art based on its structure. So, how can one look at an angle in an
14 apparatus and know whether it's predetermined or not?

15 MR. CUMMINGS: Your Honor, I think it comes down to the
16 formation of the angle and whether it's something that a person of skill in the
17 art would've considered to be predetermined. There are -- as Dr.
18 Bretschneider explains, and we'll get to a little later, a person of skill in the
19 art would not look at the side wall of the via. It's not something they would
20 ordinarily consider, it's not something they measured. That whole argument
21 is pure hindsight, whereas there are techniques like the half-tone mask that
22 the '801 patent describes that were used to create these tapered shapes.

23 JUDGE WOOD: But structurally, it would be identical, whether
24 it's predetermined or not?

25 MR. CUMMINGS: No, Your Honor. I don't think that's the case.
26 They're structurally different, especially for a claimed range, but for only the

1 predetermined angle, it wouldn't be predetermined if they simply
2 manufactured a via. Their only concern is depth and the contact area at the
3 bottom, it is not the particular angle of the side walls.

4 JUDGE WOOD: Well, that's -- you know, that doesn't go to the
5 structure. That goes to, as you say, the concern of the designer.
6 Structurally, you can't tell.

7 MR. CUMMINGS: Your Honor, the plain language of
8 predetermined requires that the suffix "pre" means it was determined before.
9 It's not the result -- an arbitrary angle that results from the process. There
10 was intent and design choice in the structure itself.

11 JUDGE WOOD: So, does it -- does the term turn it into a product
12 by process claim? You have to --

13 MR. CUMMINGS: Your Honor --

14 JUDGE WOOD: -- from a certain process?

15 MR. CUMMINGS: I don't think that's the case, Your Honor. I
16 think the distinction is whether there was an intent given or a specific angle
17 chosen. If there was a determination to use an angle in a structure, rather
18 than just focusing on the depth, I think that's where we're getting a little lost
19 in the weeds.

20 JUDGE WOOD: I guess if --

21 MR. CUMMINGS: The --

22 JUDGE WOOD: I mean, let me ask this question. Let's say you're
23 building a ramp, and you say that the ramp should be, you know, 50 meters
24 long and 10 meters high, and then that's going to result in a certain slope,
25 right? Is that angle then of the slope -- of the ramp -- is that predetermined?

26 MR. CUMMINGS: Your Honor, I think that can be considered

1 predetermined, but that's not what's going on in the prior art identified in the
2 Petition.

3 JUDGE WOOD: Okay.

4 MR. CUMMINGS: What's going on --

5 JUDGE WOOD: Okay, go ahead.

6 MR. CUMMINGS: What's going on there is the sole focus is the
7 depth. It is not the angle of the side walls.

8 JUDGE WOOD: But if -- let's say -- okay, so let's say we have a
9 depth of the via and then we have some surface area of the via, right? Some
10 cross-sectional area that we're trying to achieve as the designer, right? Is
11 that correct?

12 MR. CUMMINGS: Do you have the -- like the overall width of
13 the via?

14 JUDGE WOOD: The width and length of the via, you know --

15 MR. CUMMINGS: And the height, yeah.

16 JUDGE WOOD: And the height, right. So, you agree, though,
17 that a designer is trying to -- is going to try to have a certain width and
18 length of a via, right, from above? I'm not talking about the depth of the via
19 yet.

20 MR. CUMMINGS: Width -- yes, Your Honor. I believe that's
21 correct.

22 JUDGE WOOD: And you're going to agree that they're going to
23 have a certain depth that they're going to try to achieve, right?

24 MR. CUMMINGS: That's correct, Your Honor.

25 JUDGE WOOD: So, if I'm determining the -- those dimensions,
26 why am I not also determining kind of the slope of the size of the via?

1 MR. CUMMINGS: Because that's not a consideration. The
2 emphasis on depth and having sufficient contact area at the bottom, it's not
3 on creating the angle of the side wall. It's simply a by-product.

4 JUDGE WOOD: So -- but -- so you have to be specifically
5 designing the angle then?

6 MR. CUMMINGS: I think that's correct, Your Honor, and that
7 goes back to the distinction shown in Figure 1C versus 2C, where there
8 happens to be an angle, and that's the result of the inherent process versus
9 the predetermined angle α .

10 JUDGE WOOD: But if -- so if a designer was constructing this
11 and said, well I'm just trying to achieve a certain length of the sawtooth, a
12 certain, you know, depth of the sawtooth, and then that results in some angle
13 -- and I don't care about the angle. I'm just designing the length and the
14 width of it, then that wouldn't -- even if it had the same structure, it wouldn't
15 meet the claim?

16 MR. CUMMINGS: I think that's accurate, Your Honor. The
17 -- and this is even more true as we get into the dependent claims where the
18 ranges and angles that are claimed would not occur through just the normal
19 application of a via. It would be more of a special photolithography
20 technique that's used to actually create predetermined angles.

21 JUDGE WOOD: Okay.

22 JUDGE DANG: I have a question. So, the angle, is it at a
23 particular angle or is it a particular range of angles?

24 MR. CUMMINGS: I think the claim language is a predetermined
25 angle, Your Honor, and then the patent -- the dependent claim specified a
26 range of acceptable angles -- preferred angles. So, less than 60 degrees.

1 JUDGE DANG: So, if the, you know -- the process, it says, you're
2 going to have an angle, it just doesn't have a predetermined angle; is that
3 what you're saying? It does have an angle, just not predetermined, but if
4 you're predetermined to have an angle, isn't that a predetermined angle? I'm
5 sorry. Is that circular? What I'm trying to say is the word "predetermined
6 angle", it means that we're going to have an angle, okay? That's
7 predetermined that we will have an angle. Does it really require that you
8 have to have a particular 45 degrees, 46 degrees, whatever? It says that
9 you're predetermined to have an angle. Wouldn't that read on the claim that
10 says, you are going to have an angle, therefore, we are predetermined to
11 have an angle?

12 MR. CUMMINGS: I'm not sure that that's quite right, if I'm
13 understanding correctly. The -- as shown in Figure 1C, it will inherently
14 have an angle, but that doesn't mean that it's a predetermined angle.

15 JUDGE DANG: It inherently has an angle because it was
16 predetermined to have a process when you will have an angle.

17 MR. CUMMINGS: But if --

18 JUDGE DANG: But I mean, would it be ever going straight up
19 and down, not have an angle?

20 MR. CUMMINGS: I don't believe so. I don't know that there's
21 expert testimony in the case regarding whether it would ever be straight up
22 and down. Dr. Bretschneider explained that vias are generally steep
23 features, but that the angle is not something that a POSITA would consider.
24 It's simply the depth. It's not the angle of the side wall. The angles of a via
25 -- via side walls are not something that POSITAs measured. It's not
26 something they considered. They generally wanted it to have or be steep in

1 the same way that if I gave each of Your Honors a shovel and asked you to
2 dig a hole six feet deep, likely the features would be generally steep, but
3 there certainly would be no predetermined angle in which you, Judge Dang,
4 might have an 89 degree; you, Judge Cherry, might have an 83 degree; and
5 you, Judge Wood, might have a 79 degree side wall.

6 JUDGE DANG: Thank you.

7 MR. CUMMINGS: So, comparing the language of the claim
8 briefly to Figure 2C, the exemplary embodiment, we see the sealant region
9 shown in purple, that 246 is the sealant. There's an opening with the
10 predetermined angle shown in green, two substrates shown in green and red,
11 and that predetermined material layer shown in blue.

12 Turning to Slide 7, the District Court ordered -- or came out with
13 their Markman order previously, which the parties jointly filed as an exhibit,
14 and the plain and ordinary meaning of sawtooth pattern and predetermined
15 material layer applied, and as Your Honor noted earlier, "formed on" was
16 construed to mean formed in a manner directly touching the layer below.
17 And of note, the District Court found that the preamble was limited to a
18 sealant region pattern, and much of the art cited in the petition is unrelated to
19 sealant region patterns. Just showcasing the kind of hindsight that is relied
20 on to meet the language of the claims.

21 Now, addressing the claim construction issue present in the IPR,
22 we've touched on it previously and many of your questions were directed to
23 this. What Petitioner is trying to do is they're trying to read out the
24 predetermined language. It's -- the plain and ordinary meaning of
25 predetermined is determined before. It's not the by-product. It's not some
26 arbitrary result that you point to after the fact. It's something that's

1 determined before. Now, I'd like to talk about the Petition's state of the art
2 section.

3 JUDGE CHERRY: Could you go back?

4 MR. CUMMINGS: Yes, Your Honor.

5 JUDGE CHERRY: But you want us to read in a process
6 requirement?

7 MR. CUMMINGS: No, Your Honor. I think that's just an
8 example of how a predetermined angle would be created, unlike a via where
9 the emphasis is simply on the depth. There were photolithography
10 techniques that were known to create specific angles, so that's an example of
11 how a person of ordinary skill in the art would create a predetermined angle.

12 JUDGE CHERRY: So, what if I don't intend any angle but I use
13 that technique? Would it still be a predetermined angle?

14 MR. CUMMINGS: If you had made a predetermination of the
15 angle. Your Honor, my understanding is the photolithography technique
16 creates a taper.

17 JUDGE CHERRY: Okay.

18 MR. CUMMINGS: And you can select the -- I guess -- right
19 pattern to create the desired taper --

20 JUDGE CHERRY: Okay.

21 MR. CUMMINGS: -- rather than trying to create something that's
22 generally steep. Now, I'd like to turn to the Petition's state of the art section,
23 which is evidence of hindsight. It's just a scattershot collection of art that
24 refers to angles, but many of them are not combinable with the references in
25 the Petition and are completely unrelated to sealant regions.

26 None of these references give the insight that the '801 patent had,

1 which is using predetermined angles in the sealant section to prevent the
2 formation of voids or bubbles. The first reference -- the Shinego reference
3 -- turning to Slide 12, does not disclose creating an angled side wall in an
4 organic film. So, the etched solutions, the etchant methods that it talks
5 about, are not applicable to organic films. Next, Shinego -- the angles it
6 describes and discloses are not even in the sealant region. As shown here,
7 they're -- on Slide 13, they're in the dashed red boxes. Dr. Bretschneider
8 explains this in paragraphs 87 and 88 of his declaration.

9 The next reference, Yamazaki 496, again, is not in the sealant
10 region. The petition uses highly misleading annotations shown in the top
11 left of Slide 14. The yellow region is not discussed in Yamazaki 496.
12 Patent Owner provides the bottom right illustration with the yellow covering
13 where it should be, with respect to what is labeled 19. This is an insulation
14 layer with angles from 35 to 55 degrees, but it's completely unrelated to the
15 sealant region. It's for reflecting light, as noted in Figure 1A. You see light
16 reflected on the side surface, and that's a theme with a lot of these
17 references. For example, Shimada 722 also talks about using angled
18 reflectors for light control and has nothing to do with sealant. And again,
19 Shimada does not disclose creating angles in an organic material either.
20 Nothing about Shimada 722 gives the insight of using predetermined angles
21 in the sealant region to prevent voids or bubbles.

22 Shimada 376 is also directed towards controlling light and has
23 nothing to do with sealant. Kim 935, again, directed towards controlling
24 light, does not manage sealing anywhere. And finally, Tanaka is -- describes
25 a process that does not produce an undercut, so it's any angle between 90
26 and 180 degrees, as desirable. It does not discuss creating a predetermined

1 angle in the sealant region. And finally, Exhibit Miyoshi is --

2 JUDGE WOOD: Excuse me.

3 MR. CUMMINGS: Yes.

4 JUDGE WOOD: Tanaka does not -- you're saying that Tanaka
5 does not disclose the angle in the sealant region?

6 MR. CUMMINGS: Your Honor, it does not teach any specific
7 predetermined angle, that's correct.

8 JUDGE WOOD: But it is the angle between the sealant and the
9 material underneath the sealant?

10 MR. CUMMINGS: Your Honor --

11 JUDGE WOOD: Right?

12 MR. CUMMINGS: -- I believe that it is not a predetermined
13 angle.

14 JUDGE WOOD: Well, it advises an obtuse angle, which isn't a
15 specific value, but it is a predetermination affecting the angle.

16 MR. CUMMINGS: Of any possible range of angles between 90
17 and 180 degrees. I agree. Thank you, Your Honor. So, to summarize, the
18 state of the art is just to showcase that the hindsight relied on it in the
19 Petition. It ignores key concepts of the '801 patent, which is to combat the
20 peeling of sealant, uneven cell gaps, and the formation of voids in the sealant
21 region. There's no talk about the formation of voids in sealant or preventing
22 them with predetermined angles. It appears to be just a word search for
23 predetermined or angle, and yielded many results having to do with topics
24 completely different than organic layers in the context of the sealant region.
25 Unless there are any questions, I'll begin with the anticipation ground for
26 Kwak, Ground 1.

1 Turning to Slide 22, Kwak does not discuss angles at all in the
2 reference. What Kwak discusses is creating the depth of the via hole, as
3 shown in the bottom right-hand side of the slide. When the depth of via hole
4 811 is increased, an appropriate depth of the via hole should be determined.
5 Nowhere does Kwak describe angles. It's focused solely on the depth, and
6 this is consistent with the testimony of Dr. Bretschneider, where a POSITA
7 does not consider the angles of the side wall. It's not something they
8 measure, it's not something they care about. The sole focus is on the depth.

9 And here we have some specific quotes from Dr. Bretschneider.
10 "The crux of the via is the depth, not a particular angle of the sidewall.
11 Unless there is a call to create a specific angle, the angle of the side wall is
12 simply a by-product and is not predetermined." The emphasis is on the
13 depth and diameter at the bottom. It is not the angle of the side wall.

14 JUDGE WOOD: It's my understanding that -- and I think you
15 may have reflected this earlier -- if you use photolithography, you will create
16 a taper. And if I understand the process correctly, the specific use of half-
17 tone masks is what results in the taper; is that correct?

18 MR. CUMMINGS: I believe so, Your Honor. My understanding
19 is that the half-tone mask is like a grayscale where more of the etchant
20 solution targets kind of at a gradient, as opposed to nearly generally steep.

21 JUDGE WOOD: So, if you change the half-tone mask gradient,
22 you would change the angle of the taper?

23 MR. CUMMINGS: I believe so, Your Honor. That's my
24 understanding.

25 JUDGE WOOD: So, someone has to choose the specific half-tone
26 mask that created the taper in Kwak?

1 MR. CUMMINGS: I believe that that's -- I don't know that that's
2 the case, Your Honor. The half-tone mask, I don't believe is the same
3 process used for a via. I believe there's a different photolithography
4 technique. It's not a gradient pattern. It's a -- just a pattern. Does that make
5 sense, Your Honor?

6 JUDGE WOOD: So, if you do not use the half-tone mask, you
7 still will get the taper?

8 MR. CUMMINGS: Not one that's predetermined. It would be a
9 by-product, and I believe vary from application to application, and that's my
10 understanding, Your Honor. It would result in something that's generally
11 steep, but the emphasis there is on depth, not on any particular angle of the
12 side wall.

13 JUDGE WOOD: Thank you.

14 MR. CUMMINGS: Thank you, Your Honor. So, to summarize,
15 Kwak's 102 theory just fails as a matter of law. There's no disclosure of a
16 predetermined angle. What the petition has done is it has gone into Kwak,
17 annotated Kwak with an angle, and then called it a predetermined angle.
18 And the MPEP is clear that when the reference does not disclose that the
19 drawings are to scale, and is silent as to dimensions, arguments that are
20 based on the measurement of the drawing are of little value. This is not
21 sufficient for a 102 theory.

22 JUDGE CHERRY: But aren't we also, Counsel, to, you know -- to
23 interpret the drawings as a person of ordinary skill would? And I mean, it
24 seems pretty clear that there's a less -- you know, less than -- I guess it
25 depends how you measure it -- greater than 90-degree angle there. Can't we
26 still derive that from the drawing, that there is a non-straight up and down

1 angle?

2 MR. CUMMINGS: Your Honor, I think what a person of ordinary
3 skill in the art would see, which is supported by the testimony of Dr.
4 Bretschneider, is that's a via. I don't think they would consider the angle of
5 the side wall. They would read the teachings of Kwak, see that it describes a
6 via, see again that Kwak describes the depth of the via and adjusting the
7 depth to increase the overall contact area, but it's silent, as to the angle of the
8 side wall.

9 JUDGE CHERRY: But it does talk about the area at the bottom
10 and the area at the top?

11 MR. CUMMINGS: I believe it talks about the contact area at the
12 bottom. I don't believe it talks about the area at the top. Unless Your
13 Honors have further questions, I'd like to discuss the 103 Ground. Turning
14 to Slide 27, the Petition states one of skill would have understood that the
15 angles disclosed by Kwak would have been created using known techniques
16 resulting in corresponding predetermined angles. Now, again, Kwak does
17 not discuss or disclose angles anywhere in its text. The Petition is relying on
18 hindsight. Going back -- taking a step back, the '801 patent had the insight
19 to predetermine the angles of these in the sealant region to prevent voids or
20 bubbles. Now, the known techniques that we have been discussing
21 throughout the state of the art section aren't related to organic materials that
22 are not in the sealant region.

23 JUDGE CHERRY: Except Tanaka, which we agreed before, right,
24 that it was in the sealant region?

25 MR. CUMMINGS: I believe that's correct, Your Honor.

26 JUDGE CHERRY: Thank you.

1 MR. CUMMINGS: Now, Kwak is focused on increasing contact
2 area, and this was the understanding in the art prior to the '801 patent. There
3 is no reason to make a predetermined angle, much less one that's 60 degrees
4 or 20 to 30 degrees, because that would actually decrease the overall contact
5 area. And Dr. Bretschneider explained this in his declaration and walked
6 through the geometric principle, but the fact of the matter is that decreasing
7 the angle of a via sidewall reduces the overall contact area, which is one of
8 the key insights that the '801 patent had. It strikes a balance between the
9 contact area and reducing voids in the sealant. And this is reflected through
10 his declaration. It's the motivation they state in the petition. It's the
11 teachings of Kwak to improve the overall contact area. It's not -- a person of
12 skill in the art wouldn't have thought to reduce the overall contact area to
13 prevent voids from forming in the sealant.

14 Now, briefly addressing the remaining grounds of Kwak, turning
15 to 31, Vaganov is for wafer-to-wafer bonding. It doesn't discuss LCD or
16 liquid crystal displays at all. And as Dr. Bretschneider explains, this is a
17 different problem than an LCD panel assembly. Not only that, but Vaganov
18 is a different feel that talks about single crystal materials, and those have
19 unique properties that make the etchants that apply there not generally
20 applicable. So, it couldn't be combined with Kwak. And Dr. Bretschneider
21 explains that in length, both in his declaration and in his deposition. These
22 types of etchants do not significantly attack organic films and are not
23 compatible with such materials. And at deposition, the anisotropic etchants
24 also wouldn't work for organic materials because they're just too difficult to
25 control. And again, nothing about Vaganov teaches preventing voids in the
26 sealant.

1 Now, Kwak and Kim, the same thing. Kim is unrelated to sealing
2 LCDs. What Kim is related to is the formation of electrodes, so it teaches
3 that tapering contact holes to smoothly guide the profile of subsidiary pads
4 and pixel electrodes to be formed later. It does not teach reducing Kwak's
5 via to 60 degrees or to 20 to 30 degrees. There's no applicability. There's no
6 reason a POSITA would've done that because that would reduce the overall
7 contact area.

8 Turning to Ground 5, which is Kwak and Yamazaki, beginning on
9 Slide 39, Yamazaki discloses tapering for ion implantation of the planarizing
10 film. In fact, it explicitly says when it's not being doped or the inert element
11 is being added by some of (INAUDIBLE) is not being doped, the
12 planarizing film doesn't need to be tapered. It is unconcerned with
13 increasing contact area or forming -- preventing the formation of voids. It
14 teaches using an angle, having a tapered shape for ion implantation. It's not
15 -- it provides no motivation to reduce the angle of Kwak to any particular
16 angle, to use a particular angle in general whenever ion implantation is not
17 being used.

18 Now, I'd like to talk about Ground 6, and you've heard from
19 Petitioner what their theory is, but I'd like to discuss more about what Zhang
20 teaches. Turning to Slide 42. Zhang discusses the problems in the
21 conventional LCDs -- the conventional reflective LCDs. It shows -- Figure
22 2B is a sideview of another conventional reflective crystal display panel, but
23 the bonding strength is insufficient. The panels are prone to developing
24 cracks at the contact interface, and what does Zhang do? It proposes a
25 solution. A groove or opening in an inorganic layer. This is the only
26 teaching of Zhang's improvement. It describes an embodiment 300. So, the

1 figure shown here is Figure 3B, and unlike the previous figure, Figure 2B,
2 the yellow layer does not show an organic layer. It's an inorganic layer,
3 explicitly. It's silicon dioxide or silicon nitride.

4 Now, what the Petition has done is it has mixed elements of the
5 conventional LCDs described in the Figure 2B with the embodiment
6 disclosed in Zhang's invention. The -- in other words, reach back and pull
7 the organic layer from Figure 2B into Figure 3, and that's clear throughout
8 the Petition. Here, we have claim element 9pre, 9A, and 9B. And all of
9 these elements, they start with the liquid crystal display panel 300. In other
10 words, Zhang's embodiment 300 that has an inorganic layer. There's no
11 organic layer in these embodiments that they map in claim element 9pre, 9A,
12 or 9B. But when they get to element 9C, they say that 225B would be in the
13 embodiment three, but they kind of switch.

14 They don't explain why it would be there. They start over. They
15 start from the Figure 2B that's prior art and attempt to have a theory resulting
16 in an organic layer in the embodiment disclosed in Zhang, and that's not a
17 coherent theory. Either the Petition has failed to sufficiently address why a
18 person of skill in the art would swap Zhang's inorganic layer that's disclosed
19 in their embodiment 300 with the conventional organic layer, or it has not
20 explained why a person of skill in the art would start with the prior art
21 disclosed in Zhang and then end with a different embodiment. It's not
22 present in the Petition, it's not a coherent theory.

23 And in fact, there's good reason that a person of skill in the art
24 would not return to using an organic material. It's uncontradicted in the
25 record that the organic material is a weaker material, it's less sturdy, it's not
26 as ideal for adhesion. You can see Dr. Bretschneider declares that a person

1 of skill in the art would have understood the difference in the material
2 properties between an organic layer and an inorganic layer that makes an
3 organic material more desirable for adhesion. But simply, a person of skill
4 in the art understood that organic layers are soft and squishy, and inorganic
5 layers are hard and durable. And adhesive applied to a hard layer is more
6 durable than it is applied to a soft and squishy layer.

7 And this is, in fact, supported in the Kwak reference in Ground 1,
8 which talks about an inorganic layer compensating for the weaknesses of an
9 organic layer. Put plainly, the Petitioner has not alleged a coherent theory
10 for Zhang. They're reached across prior art, pulled it in, selectively mapped
11 without sufficient rationale. So, there's no legally coherent theory with
12 respect to Zhang. Do Your Honors have any questions before I turn to the
13 remaining grounds?

14 Well, the remaining grounds failed to cure Zhang's lack of an
15 organic layer, first and foremost. And then the same thing applies. Vaganov
16 is not combinable. Vaganov relates to single crystal materials, which have
17 unique properties, and the etchants described there for creating angles are
18 not generally applicable. Ground 8, Zhang and Yamazaki -- I'm on Slide 55
19 -- the same problem there. Yamazaki's tapering is only for ion implantation.
20 We discussed this previously. Zhang is not concerned with that. A person
21 of skill in the art would have to take the tapering of Yamazaki, which is for
22 ion implantation, and modify it with Zhang. Unless Your Honors have any
23 questions, that's all I have at this time.

24 JUDGE CHERRY: I don't have any questions. Thank you very
25 much. You have five minutes, in addition to your 15. So, you have 20
26 minutes remaining.

1 MR. CUMMINGS: Thank you, Your Honors.

2 JUDGE CHERRY: Great. Thank you very much.

3 MR. LONEY: If I may proceed?

4 JUDGE CHERRY: Sure. You have 20 minutes remaining.

5 MR. LONEY: Thank you, Your Honors. As I did before, I'd like
6 to start with claim construction. Throughout the entire presentation I just
7 heard, I did not hear Patent Owner offer a proposed construction for the term
8 predetermined angle. Again, we've got bullet points, we've got excerpts, but
9 we don't have what they contend the proper construction to be. I'd also like
10 to point out that their arguments and discussions of a District Court claim
11 construction order are entirely new arguments. They did not cite that
12 document in any of the papers, discuss it in any of their papers, and it also
13 leaves out the Court's construction of the term "layer", which Petitioner
14 actually did cite to and discuss in its papers. Bear with me.

15 JUDGE WOOD: Before you go on, I just want to take care of one
16 --

17 MR. LONEY: Yes.

18 JUDGE WOOD: -- sort of a housekeeping issue. Miyoshi. Not in
19 the record?

20 MR. LONEY: Not in the record.

21 JUDGE WOOD: So --

22 MR. LONEY: That's a typo.

23 JUDGE WOOD: Thank you.

24 MR. LONEY: Easy question. Thank you. I appreciate that. All
25 right. So, I'm trying to walk through these one by one. Starting with Slide 3
26 of Patent Owner's slide deck, they said a lot about the purported advantages

1 of the '801 patent, of removing voids, avoiding bubbles, things like that.
2 The problem there is that those are not claimed features. Those are not
3 requirements of the claims and they're not necessary to anticipate or
4 invalidate the claims. Also, oddly enough, they talked about thin bezels, but
5 the '801 patent actually teaches widening the sealant area by doing a
6 sawtooth pattern instead of a straight line. So, that argument also falls flat
7 simply because the '801 patent actually contradicts it.

8 Going to the next slide -- again, this is going back to the purported
9 advantages -- I'd like to point out in the upper left-hand corner, Slide 4 that
10 they have. If you see when it's talking about avoiding voids and bubbles,
11 that's when the angle exceeds 60 degrees. When an angle exceeds 60
12 degrees, bubbles or voids might be introduced. What that means is that the
13 independent claims of the '801 patent, they don't require this limitation.
14 They don't require an angle less than 60 degrees. So, it's plain on its face
15 that the independent claims at least do not support this argument that there's
16 any benefit from an angle.

17 JUDGE WOOD: Mr. Loney?

18 MR. LONEY: Yes, please.

19 JUDGE WOOD: Does Petitioner dispute the testimony of Patent
20 Owner's expert that if you decrease the angle, you decrease the contact area
21 between the adhesive and the substrate?

22 MR. LONEY: Yes, and I'll get to that in a bit, but we believe that
23 Dr. Bretschneider's analysis is incomplete, and therefore, incorrect. I think
24 Your Honor has kind of touched on it -- touched on the idea that in all of
25 these situations, a person of skill in the art would not simply create random
26 angles when looking at prior art that we have been discussing. They would

1 understand. They would seek to control the methodologies that they're
2 using. They would look to prior art references for techniques for how to do
3 that. As Your Honor mentioned and we'll talk about soon when we get to
4 Kwak, Kwak actually describes the width, the height, the depth of those
5 vias, as well as the constraints on those vias, as well as the constraints on
6 those vias that are placed by other parts of the structure.

7 JUDGE WOOD: Does Kwak describe the method used to create
8 the vias?

9 MR. LONEY: It does not describe any specific method. Just that
10 there are criteria and (INDISCERNIBLE) that would control.

11 JUDGE WOOD: Thank you.

12 MR. LONEY: So, I want to step through some of the other
13 allegations. When it gets to the state of the art, a very high level, Patent
14 Owner seems to have a misunderstanding as to why these references were
15 identified. It points to whether the references refer to a sealant region in
16 some instances, refer to LCDs in some instances, and other criteria that kind
17 of picks and chooses on why different pieces of the state of the art may not
18 apply. But in the Petition as discussed, and in our reply, these references are
19 relied on by the simple fact that it's known in the art that there were
20 techniques that would create known angles and organic layers. That's all.
21 It's a very limited use of information and that's all they're being relied on. I
22 don't think that Patent Owner has actually articulated that they disagree that
23 that aspect is not analogous to the patent. Instead, they point to something
24 outside of that use as rendering that teaching on analogous.

25 The Shinego reference is particularly egregious in how they
26 describe it. This is from Patent Owner's response. You see that they pointed

1 to the opening mark as 41 in the center, kind of there at the bottom, with the
2 box around it. And that's where they were discussing how Shinego doesn't
3 talk about having an opening in the sealant region. Well, the problem there
4 is that it actually does. In our reply, we address this specifically, and what
5 we pointed to is Shinego actually talks about the opening 42, which you'll
6 see at the bottom of that purple, which represents the sealant. So, Shinego
7 talks about an opening at 42 at a 45 degrees angle in the sealant region.
8 Patent Owner did not rebut that argument in surreply and I haven't heard
9 them rebut it now.

10 Patent Owner also talked about the Yamazaki reference, which I'll
11 go to next. Let me see if I can get you a better -- a clearer picture of this
12 one. So, this is interesting because they point -- the portion highlighted
13 shows a sealant region on the left-hand side marked in purple, and an
14 insulated layer marked in yellow, and they argue that we don't know what
15 that insulating layer is. We actually do.

16 If you look at the far-right side, you see the same sealant, marked
17 with the vertical hashing on the far-right side of this diagram, and that layer
18 below it, which has the notation of 914 is the insulation layer. That layer
19 extends across from right to left, all the way across, and that is the same
20 layer that we see the openings in on the left-hand side. So, Yamazaki also
21 teaches having angled openings in the sealant region to increase sealant.

22 So again, I want to touch on this slide very briefly for two key
23 reasons. Patent Owner's Slide Number 20. First, again, they're relying on
24 claimed benefits that are not -- well, sorry -- alleged benefits that are not in
25 the claims. Not required by the claims, do not need to be shown in the
26 claims. They also have the language at the bottom which attempts to bring

1 in that improper new argument that I mentioned earlier about the District
2 Court's claim construction, where they pointed to the District Court talking
3 about the preamble in the sealant region. Again, that's a new argument
4 they've never raised before. They didn't ask for that term to be construed.
5 But here on Slide 20, we see that they had it bolded, and throughout their
6 presentation, they relied on that limitation -- attempted implementation -- to
7 try to exclude certain pieces of prior art. So, any questions on that, I'll
8 -- without any questions on that, I'll move on to Kwak.

9 Slide 22, Patent Owner did discuss that. It was interesting because
10 I pointed out in my opening presentation that Patent Owner actually agrees.
11 They admit that Kwak discusses and discloses an angle. It's in Patent
12 Owner's response at page 40, and I can pull that up, as well, so that we can
13 see that together. So, here we see the same figure that we saw before pulled
14 from the Petition, and then directly below that, the first line, we see Patent
15 Owner state that the Petitioner has indeed identified an angle. The only
16 thing that they take issue with is whether that disclosure is predetermined.
17 So, this argument of Kwak not disclosing angles, they've already admitted
18 that it does.

19 I'd like to take a look at Kwak real quick because I'd like to go
20 back to what Your Honors were talking about in the idea of digging holes
21 and whether they would be -- have specific angles or not. We're not just
22 digging random holes in these items. These are controlled openings that are
23 put there for a purpose. And Kwak teaches a variety of parameters that
24 control how they work. So, right here on Figure 2A in Kwak, we see on the
25 lower left-hand corner, the small little via openings and penetration holes in
26 the side of the sealant region there, and those go all the way around the

1 figure.

2 We also see, if we continue on, that Kwak teaches that those via
3 holes, they're not just holes. They're trenches. They have widths and
4 heights. They have a variety of different shapes, different dimensions, all of
5 which would create parameters that control how those openings are created
6 and the angles that those openings would have. Again, in each of these same
7 situations, you see that dotted line surrounding the via hole. That dotted line
8 is the penetration hole that the via hole must fit inside. And so, continuing
9 on there is the sawtooth pattern that we mentioned in Kwak.

10 I'd also like to very briefly discuss the MPEP, which was raised,
11 because Your Honors also touched on this and it was a good point. Patent
12 Owner relies on the first part of MPEP § 2125(II), but the second part of that
13 paragraph, which I've highlighted there, and which quotes In re Wright, says
14 that the description of the article picture can be relied on in combination
15 with the drawings for what they would reasonably teach to one of skill in
16 the art. That's exactly what Kwak does. Kwak teaches consistent angle
17 openings, it teaches width, heights, other parameters that would control that
18 opening. And so, Petitioner is not saying that the -- there are specific
19 measurements taken from those figures of Kwak. They're not proportional,
20 but they do -- they can't be relied on for the teachings that they would give to
21 one of skill in the art.

22 All right. My apologies for jumping around a little bit, but I find
23 that the actual evidence can be much better to understand. I'd like to move
24 on to Patent Owner's allegations that there's hindsight in this analysis. First
25 of all, as you see in the green language on their Slide 27, it says Kwak does
26 not discuss angles anywhere. We already talked about that. They admitted

1 that it does. Petitioners pointed to angles, but again, below that, it talks
2 about known techniques, and you see it says they're not related to organic
3 materials and they're not in the sealant region.

4 Well, Your Honors pointed out that Tanaka is in the sealant region,
5 and just earlier, we showed you that Yamazaki and Shinego are also in the
6 sealant region. They all teach creating openings in organic layers in the
7 sealant region and would be part of that known art. This term also ignores
8 the fact that there are other references not discussed prior to this, including
9 the Vaganov, the Kim, and the Yamazaki references that are parts of the
10 other grounds. Those also teach creating predetermined angles and organic
11 layers.

12 JUDGE WOOD: What about the fact that Vaganov relates to
13 wafer-to-wafer adhesion as opposed to the adhesion to an organic material,
14 as is relevant here?

15 MR. LONEY: So, Yaganov is a very interesting reference. It
16 teaches a wide variety of techniques and angles. It does teach certain
17 techniques that would be wafer-to-wafer specific. It also teaches
18 photolithography techniques for making openings in organic layers. Patent
19 Owner's expert acknowledged that during his deposition and it's cited in our
20 reply, but Vaganov teaches increasing sealant by increasing contact area,
21 and one of the methods it teaches that you can do that, even in wafer-to-
22 wafer bonding, is photolithography if there's no organic layer at issue.

23 I'd like to talk briefly about Dr. Bretschneider's analysis here. At a
24 very high level, this analysis he's done starts at the wrong point. It assumes
25 that Kwak's vias have already been created. That's not the case. Kwak
26 teaches creating those vias to increase contact area. That would mean that

1 those vias or at least part of those vias don't exist before implementing
2 Kwak. What he's done here is he said, would you take -- after you've done
3 that, after you've increased the surface area, would you try to increase it in a
4 different way. That's not the teaching of Kwak and it's not how Kwak would
5 be combined with these known techniques.

6 If someone would look at the teachings of Kwak, understand that
7 Kwak teaches increasing that contact area, that service area, and then look to
8 known techniques on how it would do that. There's a variety of reasons why
9 they might choose an angled sidewall that's not vertical or mostly vertical,
10 beyond just the width of the sealant region. Some of those concepts are
11 taught in Vaganov, which teaches balancing the horizontal and vertical, or
12 sheer and tensile forces, depending on how those different substrates are
13 being put together.

14 I'd like to point out Yamazaki real quick. This one, Patent Owner
15 was slightly misleading when they talked about Yamazaki. Yamazaki does
16 not teach that the tapered side wall is only in situations where there is
17 doping. If you look at the second quote at the bottom on the right-hand side
18 of Slide 39, you see that it says, however, when the inert element is added by
19 using plasma treatment or oblique doping, a side surface of the high
20 thermostability planarizing film can be modified without forming the edge
21 portion to have a tapered shape. That simply means that it's a design choice.
22 You can have the tapered shape or not. It's not dependent on the doping
23 aspect.

24 I am going to move on to the Zhang reference, unless there's any
25 other questions from Your Honors. I want to speak to this very briefly,
26 simply because there's a misconception by Patent Owner that somehow, the

1 invention or the improvement of Zhang removes the organic layer, and that's
2 in part based on the fact that it says typically this combination of second
3 covering layer and first covering layer include four layers -- an electric layer
4 -- or a metal layer, a dielectric layer, a second metal layer, and a protective
5 layer. That's typically.

6 But it also says -- Zhang also says in the prior art when it's talking
7 about those conventional things that it's improving on -- that those set of
8 layers typically include the same four layers -- metal, dielectric, second
9 metal, and protective. But in reflective LCDs, they also include a fifth layer
10 -- the photoresist layer. And so it's not fair to point to this improvement of
11 Zhang and say that it does away with that, that it teaches only the four layers
12 when Zhang's background teaches that both of those LCDs -- one with four
13 layers, one with five layers -- were available and were being improved upon.

14 I also want to move down to Slide 51. Actually, I'll stop at 50 just
15 to kind of set the landscape, but this is where Patent Owner was saying that
16 it's indisputable that organic material is weaker and therefore, you wouldn't
17 have used it in the Zhang implementations. And then they point to -- on
18 Slide 51, they point to Kwak to show that Kwak agrees that organic layers
19 are less strong. Well, what Kwak actually teaches is having both. We have
20 an organic layer on the top, there is an opening through that organic layer,
21 and the sealant goes through that opening and touches a layer underneath.
22 That's an improvement on applying the sealant directly to the top of the
23 organic layer, rather than getting rid of that organic layer. And so, Patent
24 Owner's description of the Zhang reference, particularly in light of the Kwak
25 reference, is misplaced.

26 Again, I just want to reiterate -- and this is going back to both, the

1 Kwak and the Zhang references -- is that the predetermined angle, at least
2 for the independent claims, does not have any specific range. Ninety
3 degrees can be a predetermined angle, and in fact, would be in some certain
4 circumstances. Patent Owner's expert stated that in his belief, in Kwak, you
5 would try to have as vertical of a sidewall as possible. That would be
6 predetermined. That would be desirable.

7 Something that the person doing that implementation would seek
8 out, but they also teach the parameters that I mentioned -- height, width,
9 depth. All of those parameters would lead the angle that results from that
10 creation to be predetermined. As Your Honors mentioned, if you know
11 those measurements, you know the angles that are going to result from that.
12 It's mathematically certain. I think that's everything I have, unless Your
13 Honors have any more questions.

14 JUDGE CHERRY: No, thank you very much.

15 MR. CUMMINGS: So, there are a couple points I'd like to make,
16 and the first thing I'd like to address is the predetermined angle. It's not that
17 Patent Owner has not provided a construction. Our position is that the term
18 should be afforded its plain and ordinary meaning, which is a predetermined
19 angle is an angle that is determined before. The suffix "pre" means before
20 determined. It is determined before. It is not something that is arbitrarily
21 identified afterwards, and that, I guess, bleeds into the problem with Kwak.
22 Petitioner was saying that we agree that Kwak discloses it, but that's not the
23 case. We disagree. What we stated was Petitioner has identified an angle.
24 They went back and pointed at an angle and called it a predetermined angle.
25 That is not what a predetermined angle is.

26 JUDGE CHERRY: But you agree that there is an angle there?

1 MR. CUMMINGS: The figure seemingly shows an angle, yes.

2 JUDGE CHERRY: Okay.

3 JUDGE WOOD: What about Zhang? Would you agree that those
4 figures depict an angle?

5 MR. CUMMINGS: Your Honor, I believe the Petition has
6 annotated Zhang to have an angle, and that's something to include in the
7 Petition, which the Wi-Fi is being spotty, otherwise I would pull it up. And
8 I think the more fundamental problem with Zhang is that they have failed to
9 put forth a coherent theory. They reach back and pull in various layers and
10 start from one place, and then say they should've started from the other, and
11 they just have not presented a coherent theory.

12 JUDGE CHERRY: Do you dispute their -- the way I understand
13 their contention is that there's this, you know -- there are two types of
14 displays disclosed in Zhang, and one -- at least one of those would have an
15 organic layer in it. Do you agree with that? And they seem to say that this
16 invention applies to both kinds. Do you agree that it applies to both kinds?

17 MR. CUMMINGS: I agree that Zhang teaches conventional LCDs
18 and then describes an improvement, and the improvement is described with
19 only an inorganic layer. They cite to the improvement and then pull in the
20 organic layer when it's convenient. They've not identified a reason that a
21 person of skill in the art would do so.

22 JUDGE CHERRY: But I -- the way I understand their contention
23 is they're saying that the improvement applies to -- they say applies -- it
24 seems like Zhang seems to say that it applies to all three configurations; is
25 that fair?

26 MR. CUMMINGS: I think that's the case, Your Honor. It

1 describes the three prior art conventional LCDs --

2 JUDGE CHERRY: Uh-huh.

3 MR. CUMMINGS: -- that have insufficient bonding strength.

4 JUDGE CHERRY: Mm-hm.

5 MR. CUMMINGS: And then it proposes a teaching in its
6 embodiment labeled 300 --

7 JUDGE CHERRY: Mm-hm.

8 MR. CUMMINGS: -- that does not have the inorganic layer.

9 JUDGE CHERRY: But it seemed to say that that applies back to
10 those -- to 100 and 200, right? That you can implement this technique into
11 100 and 200; is that fair or do you disagree with that?

12 MR. CUMMINGS: I think our position is that a person starting
13 with 100 or 200 would end with 300.

14 JUDGE CHERRY: Okay.

15 MR. CUMMINGS: And they've not identified any reason -- and
16 they actually start with the 300 embodiment. Their theory is based on the
17 300 embodiment and then when they realize that they needed an organic
18 layer, they went back and grabbed an organic layer from the prior art
19 embodiments, which is not sufficient as a matter of law that this -- the
20 Abiomed case cited on Slide 44 of Patent Owner's slides shows Petitioner
21 has failed to establish sufficiently that the features of those different
22 embodiments are interchangeable or provide sufficient rationale to combine
23 the teachings of those different embodiments. That's the case here.

24 They started with the embodiment 300 where there's no organic
25 layer, and then said, you use the organic layer from the prior art. They did
26 not start -- their Petition is not saying you start with this prior art

1 embodiment and then you make some, but not all of the changes. The
2 Petition's theory is starting with the embodiment 300 of Zhang, you go back
3 and you grab this organic layer from the prior art that had insufficient
4 bonding strength, because that's not a sufficient legal theory. And I think
5 that's the biggest problem with the Kwak references. And then with respect
6 to the Yamazaki reference --

7 JUDGE WOOD: You meant the Zhang reference, right?

8 MR. CUMMINGS: Yes, Your Honor.

9 JUDGE WOOD: Okay.

10 MR. CUMMINGS: Thank you for clarifying, yes.

11 JUDGE WOOD: Just making sure.

12 MR. CUMMINGS: And with respect to the Yamazaki reference,
13 they implied that it would still have have a tapered shape, but I emphasized
14 the highlighted portion here. The planarizing film 16 is formed to have a
15 tapered shape, so as to be doped. The only reason Yamazaki discloses
16 having this tapered shape is for doping, and then it goes on and explicitly
17 says in the event that it's doped some other way, that ion implantation is
18 achieved some other way. You don't need that tapered shape. So, it's pretty
19 clear that the taper is there so as to be doped. It is not applicable to either
20 Zhang or Kwak. And unless Your Honors have any other questions, I'll
21 yield the rest of my time.

22 JUDGE CHERRY: We have no other questions. Thank you.

23 MR. CUMMINGS: Thank you.

24 JUDGE CHERRY: Thank you very much.

25 MR. LONEY: Thank you, Your Honors.

26 JUDGE CHERRY: All right. With that, the case is submitted;

1 however, we do have some outstanding matters to discuss. In particular, we
2 have the Patent Owner's request, which I think also applies to this case
3 -- right, Mr. Tong -- to -- for an additional submission regarding real party in
4 interest. The panel has discussed that, and we do think that at this time,
5 additional briefing would be helpful given the recent guidance, the change in
6 guidance from the Director regarding real party in interest. And in an effort
7 to make sure that we address that at this stage and create a full record, we
8 believe that an additional briefing would be helpful. Mr. Tong, I understand
9 you want to submit a three-page brief in each of the proceedings?

10 MR. TONG: That's right, Your Honor.

11 JUDGE CHERRY: Okay. So -- and what additional -- you want
12 to submit additional evidence, too?

13 MR. TONG: That's right, Your Honor. We need the evidence of
14 that interest.

15 JUDGE CHERRY: Okay. And what evidence? Can you just kind
16 of give me an idea of what evidence you want to submit?

17 MR. TONG: Yeah, I think there are congressional statements,
18 some financial records, that type of thing.

19 JUDGE CHERRY: Oh, okay, okay.

20 MR. TONG: It's not expert evidence, if that's what you're --

21 JUDGE CHERRY: All right. And do we allow -- yes, you'll be
22 able to submit a three-page submission and this evidence. When do you
23 want to submit it?

24 MR. TONG: I think in, like, about a week. We may not need --

25 JUDGE CHERRY: Thanksgiving?

26 MR. TONG: -- that long.

1 JUDGE CHERRY: A week is Thanksgiving.

2 MR. TONG: We can do it by -- before Thanksgiving, because it's
3 going to essentially be a copy, paste of our records.

4 JUDGE CHERRY: Okay. So, on November 26th, on Wednesday,
5 you'll submit this submission. Petitioner, how long would you -- how long
6 would it take you to respond, and how long of a response do you want, and
7 do you wish to submit additional evidence with your response?

8 MR. ERICKSON: Your Honor, Brian Erickson for Petitioner. We
9 have absolutely no idea what they're going to submit. This has not been
10 disclosed or conferred on by the parties, other than what they just
11 represented to the Board today. So, given that it's over the Thanksgiving
12 holiday and the pretrial conference and the underlying litigation is on
13 Monday after the Thanksgiving holiday, that puts us in a bit of a bind, so I
14 don't know whether we'll need evidence or not.

15 My paramount concern is keeping the Board on schedule, given
16 this late request. So, I think what would make sense, if it makes sense to the
17 Board, is we schedule a three-page response with the opportunity to submit
18 evidence. How about if December 5th would work for the Board, and the
19 Board thinks it can keep its final decision on track? And if they submit
20 some surprising evidence, if we think we need more time, we'll reach out to
21 the Board by email.

22 JUDGE CHERRY: Yeah, that -- yes, that's fine with us. So, a
23 three-page response with the opportunity to submit additional evidence on
24 the 5th of December.

25 MR. ERICKSON: Thank you, Your Honor.

26 JUDGE CHERRY: Great. All right. With that, thank you very

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1 much. We appreciate the parties getting (INAUDIBLE) with their
2 presentations and this case is adjourned.

3 (Whereupon, the above-entitled matter went off the record at 2:03
4 p.m.)

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