Trials@uspto.gov
571-272-7822

Paper 21
Date: May 31, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner

v.

IMMERVISION, INC.,
Patent Owner.

IPR2023-00472
Patent 10,795,120 B2

Record of Oral Hearing
Held Virtually: May 3, 2024

Before KRISTINA M. KALAN, JOHN D. HAMANN, and STEPHEN E. BELISLE, *Administrative Patent Judges*.

APPEARANCES:

ON BEHALF OF THE PETITIONER:

DAVID HOLT, ESQUIRE
KARL RENNER, ESQUIRE
Fish & Richardson
1000 Maine Avenue, SW
Suite 1000
Washington, D.C. 20024

ON BEHALF OF THE PATENT OWNER:

STEPHEN E. MURRAY, ESQUIRE
Panitch Schwarze Belisario & Nadel, LLP
Two Commerce Square
2001 Market Street, Suite 2800
Philadelphia, PA 19103

The above-entitled matter came on for hearing on Friday, May 3, 2024, commencing at 1:00 p.m., via video teleconference.

P R O C E E D I N G S

- - - - -

JUDGE KALAN: Good morning. Good afternoon. I'm Judge Kristina Kalan. And on the panel with me today are Judges John Hamann and Stephen Belisle. This is a final hearing by video in case number IPR 2023-00472. This IPR concerns US patent number 10,795,120 B2. At this time, I'd like counsel to introduce themselves and their colleagues for the record, starting with council for Petitioner. Is counsel for Petitioner on the line?

MR. MURRAY: This is counsel for Patent Owner. I believe that is them under the fish-PTAB video feed.

MR. HOLT: Sorry, we were having audio problems and did not hear anything up to this point.

JUDGE KALAN: The gist of the introduction was that this is a final hearing in IPR 2023-00472 concerning patent number 10,795,120 B2. And I was asking for introductions from counsel. If you would like to begin introducing yourself and your colleagues for the record, please.

MR. HOLT: Yes, Your Honor. And apologies for that problem there, but it seems to be all fixed. I am David Holt and I'm joined by my colleague Karl Renner. On behalf of Petitioner Apple.

JUDGE KALAN: Thank you. And will you be presenting all of Petitioner's arguments or sharing them with Mr. Renner?

MR. HOLT: It will be me, Your Honor.

JUDGE KALAN: Thank you. Patent Owner?

MR. MURRAY: Good afternoon, Your Honors. This is Stephen Murray of Panitch Schwarze on behalf of Patent Owner. And I may have one or two colleagues on the public line.

JUDGE KALAN: Thank you. But will you be presenting all of Patent Owner's arguments?

MR. MURRAY: I will be, yes.

JUDGE KALAN: Thank you. This hearing is open to the public. A full transcript of the hearing will be made part of the record. All of the judges on the panel have access to the complete record and to your demonstrative exhibits. When you refer to a demonstrative exhibit, we ask that you refer to the slide or page number for the record. And additionally, if you are able to mute yourself while you are not speaking, that assists in creating a clear record as well. We set forth in our hearing order that each party has 60 minutes to present arguments. Petitioner will proceed first and may reserve time for rebuttal. Would you like to reserve any time for rebuttal, Petitioner?

MR. HOLT: Yes, we would like to try to reserve 20 minutes, Your Honor.

JUDGE KALAN: Thank you. And Patent Owner, do you know at this time if you'd like to reserve some time for your surrebuttal?

MR. MURRAY: I would. I'd like to reserve ten minutes, if I may.

JUDGE KALAN: All right. Thank you. We are ready to begin at about three after the hour. Petitioner, you've indicated you'd like 40 minutes for your presentation in chief. And you may begin when you're ready.

MR. HOLT: Thank you, Your Honor. May it please the Board. I am David Holt and I am joined today by Karl Renner on behalf of Petitioner Apple. If you'll turn to slide two, you'll see we have several topics we're hoping to cover with Your Honors today. The petition presented three independent grounds based on three prior art references, Thibault,

Matsusaka and Kim. As Your Honors are aware, the briefing focused on a single claim limitation that we'll look at in more detail in a moment. We've referred to that as the compensate limitation in these slides. The parties dispute the scope of this limitation. However, as you'll see, the first two grounds of the petition based on Thibault and Matsusaka render claim one obvious and the compensate limitation obvious under either party's reading of the term. Only the third ground based on Kim, depends on the scope that Apple proposes. So we plan to save a deeper discussion of that claim construction debate and who's right or wrong until after our discussion of the first two grounds.

If we jump to slide four, we see independent claim one of the 120 patent. This is a claim to a miniature wide angle optical apparatus, and it has several limitations. However, as we see on slide five, only one of those limitations forms the basis of Patent Owners arguments. The remaining limitations are undisputedly taught in each of the prior art references. With respect to the limitation at issue, the claimed miniature wide angle optical apparatus comprises “a non-linear, targeted resolution”. What does that mean? Judges Hamann and Belisle heard a bit about this with respect to the ’990 patent for which we had a hearing last month, but I'd like to revisit it briefly here, just so we're all on the same page with respect to terminology and the technology. The field of view of a lens is the angular extent of light that can enter the lens at any given point on the lens's surface and be projected onto an image plane as an image. So if you consider the point at the center of the lens, a lens with 180 degree field of view will generally accept light from 90 degrees in each direction of the optical axis of the lens, which runs straight through the center of the lens. If you pretend the lens is

your eye and the field of view is everything you can see, 180 degree field of view would allow your eye to receive light from directly to your right at 90 degrees from the center all the way to your direct left at the opposite 90 degrees from center, and 90 plus 90 is 180 degrees, and that's your full field of view.

A lens with a linear, targeted resolution projects an image onto an image plane in which light from every portion of the field of view entering the lens gets an equal amount of the projected image. So if you broke the angular field of view of light into percentage portions, each portion would be an equal portion of the projected image. Any given 10 percent of the field of view would be getting an equal 10 percent of the projected image. A non-linear targeted resolution, as we see in claim one, creates at least one zone in an image captured and projected by the optical apparatus with a higher or lower object to image magnification compared to the linear targeted resolution we just discussed. So there will be at least one portion of the field of view that will get more or less real estate of the projected image than it otherwise would. Effectively, that portion of the field of view will either be magnified or compressed on the projected image. For example, if we again break up the field of view into percentage portions, a 10 percent portion or zone in the field of view may be expanded to get 20 percent of the real estate of the projected image, or it may be compressed and get 5 percent of the real estate of the projected image. To a person viewing the image projected by the lens, the image would look distorted and portions of it will look zoomed in or zoomed out. Any questions so far?

All right, as we see highlighted in yellow on slide five, claim one states that the lower or image object to imitate, I'm sorry, lower or higher

object to image magnification of the claim zone is, “used to compensate, at least in part, for a lower image quality due to at least one of a drop of relative illumination or a drop of MTF in a zone of the image”. At this stage in the proceeding, the parties dispute the scope of this yellow highlighted limitation. Turning to slide six, the compensate limitation is on the far left. Petitioner's position is that this compensate limitation is satisfied if the relevant feature of either figure six or figure seven is present in the resolution curve of an optical apparatus. For figure six, the relevant feature is that a zone with a higher object to image magnification is aligned with a drop in relative illumination, or MTF. For figure seven, the relevant feature is a “downward curve between the maximum 712 and a region near the edge of the field of view around position 714”. Consistent with the description in the 120 patent for figure seven. Patent Owners position is that the compensate limitation that we see at the far left is satisfied only if the relevant feature of figure six is present. Obviously, there is a debate about whose construction is right, but that debate only affects the third ground presented in the petition.

JUDGE KALAN: Can I ask you what the critical differences are, in a few words, between the claim construction you proposed in the petition and this claim construction in the middle column on your slide six?

MR. HOLT: Could you repeat the question? Your Honor, I'm not sure I quite understood that.

JUDGE KALAN: In the petition there was a relatively narrow and apparently slightly different construction proposed, in that we shouldn't give patentable weight to the used to compensate claim term. And here this middle column appears to present expanded or slightly different claim

construction. I'm wondering if you could highlight in your words what the -- excuse me -- the critical differences are between what you requested us to construe in the petition and what you are advocating for here.

MR. HOLT: Yes, Your Honor. Thank you. So, in the petition, the position that was originally presented and that Apple, frankly, still advocates, is that this claim limitation should not be given any patentable weight. But then, in mapping the prior art to the claim limitation, the petition specifically noted that if the claim limitation, the compensate limitation, was to be given patentable weight, it then applied the teachings of figure seven against that limitation. And so, through its mapping of figure seven to the claim limitation, the petition's position was it shouldn't be given patentable weight, but if it is given patentable weight, at least the teachings of figure seven should be incorporated into the scope of that claim limitation. And that's consistent with what you see here in the center of the slide six. We're noting here additionally that we accept Patent Owners position and that figure six and its teachings may also be relevant to the claim limitation, but consistent with the position we set forth in the petition when mapping prior art. It's our belief then at the petition stage and throughout this proceeding, that figure seven, if you are going to give weight to that limitation, should also in fact be part of that claim limitation scope. Does that make sense, Your Honor?

JUDGE KALAN: It does. My concern is that this is not a typical claim construction request, in that it goes a bit farther afield than what we are typically asked to do for claim construction. And I don't want to elevate form over substance here, but we were asked in the petition to not give this clause patentable weight, which is a little more typical when we're talking

about claim construction. This seems to go a bit far afield, and I'm a little unclear on what exactly you want us to construe, or do we? Are you asking us to take a more expansive approach and analyze this claim term vis-a-vis figure six and figure seven, and come up with some construction that you can point us to?

MR. HOLT: Well, our position, really, Your Honor, ultimately, is that for the purposes of this proceeding, the law doesn't require you to come to an exact claim construction. Your Honors, actually noted in your institution decision at page ten that claim terms need only be construed to the extent necessary to resolve the controversy. So here, while it may not be possible, and in fact, Apple, in its district court briefings that we submitted here with respect to claim construction, notes why coming up with an absolute claim construction here, a precise technical definition of these terms is very difficult, if not impossible. But what we know is that to the extent that these claim terms have meaning, they should find that meaning in the specification. And it's our position that that meaning should at least encompass what's in figure six, the relevant feature of figure six, and the relevant feature of figure seven.

Your Honors, when you said in the institution decision that you need only construe to the extent necessary to resolve the dispute, you cited two cases, *Realtime Data* and *Vivid Tech*. And *Vivid Tech* actually cites another case, *EMI Group North America*. And I have a quote from that case. It's 157 F.3d 887 at 895. It says, upon review of the expert testimony, the arguments, and the application of each claim step to the intel process, we conclude that it is irrelevant whether the district court achieved a technologically perfect definition, because there is no dispute that the

corresponding step of the intel process is within the literal scope of clause D, however, the side edge is defined.

And so, what the Federal Circuit is saying there is that Your Honors don't actually need to come with a traditional, exactly worded claim construction to ultimately resolve the dispute. You simply have to understand what the parties are arguing about with respect to that scope and then make a determination with respect to that dispute.

JUDGE KALAN: And that's what I was trying to get at. It seems like the EMI case might inform what you're asking us to do, which is look at your arguments in the context of this construction-like passage in the middle column of your slide six, rather than engage in formal claim construction. I just wanted to be clear on that.

MR. HOLT: That's correct, Your Honor. You're absolutely correct.

JUDGE HAMANN: All right, counsel, this is Judge Hamann. I'm just trying to understand better Petitioner's proposed construction, and I'm a little troubled by the phrase relevant feature. That sort of can be unbounded, potentially. Now, I recognize you have parentheticals listed. So is that the full scope of the relevant feature? I mean, can we, to the extent we believe there's some construction that's needed and it's appropriate to approach it in the direction the parties advocate, can we limit the relevant features to exactly what's in the parentheticals, for example? Or how should we approach that if we're troubled by the phrase relevant feature?

MR. HOLT: Yes, Your Honor, understood. I'll note again, figuring out exactly what is or is not the absolute outer scope of this, we don't think is necessary with respect to the first two grounds, because they kind of cover everything that could possibly be within that most inner scope that the

patent, it teaches itself. But it may help to actually turn perhaps to some of the teachings of the 120 patent. To dive into this a little bit more in order to address Your Honor's question. If you, for instance, turn to slide 53, we see an excerpt with respect to figure six. Actually, let's start, if you wouldn't mind, please, with figure with slide 52. And once I get through the next couple of slides, I think I will have answered your question here, Your Honor, about what the relevant feature is and why it's relevant. But again, if I haven't hit it at that point, I'll turn back, and we can revisit to make sure I am hitting your question here.

But what we see here on slide 52 is the purported invention of the 120 patent. And what it basically says is that standard wide angle lenses that effectively had the linear targeted resolution that's talked about in the claim language, generally observed a drop, a continuous drop in both relative illumination and MTF, as you went from the center of the field of view to the farthest extent of the field of view, the outer edge. And so, what they were seeking to do was they were seeking to disclose at least two methods of improving this continuous drop in either relative illumination and or MTF as you go from the center to the edge of the field of view. On slide 53, we see one of those two methods of dealing with this problem, and this is with respect to figure six. And so, figure six teaches that you can use the resolution curve that we see in the upper left, and you can create zones, and specifically a zone with higher resolution. That'll be the zone out towards the edge of the field of view, where the resolution is the highest. And what this passage says is that by having more imaging pixels in this zone, this compensates for the lower image quality in this zone, either due to the lower relative illumination or the lower MTF. The final resulting image can then

be processed to create a resulting image with constant image quality across the whole field of view. So what you have here is a specific teaching that if you align that zone of higher magnification out at the edge of the lens where you would have a drop off in MTF or relative illumination, you can utilize those additional pixels out towards the edge of the field of view that you get through your zone to actually process the image and create a resulting image with better image quality. So that's one way to deal with the problem that we see in the prior art.

If you go to slide 55, there's another method that the 120 patent talks about for actually dealing with the problem we see, and it's a more direct route. We look at figure six, we see that they're using pixels and then taking it into processing to get a better image quality. It's kind of an indirect route. The lens isn't itself creating a better image quality, it's doing so by creating more pixels available in that zone that then you can utilize in post processing to make for better image quality. In slide 55, though, we see with respect to figure seven a more direct route of actually correcting for the problem identified in the background section. And this talks about utilizing this curvature that the petition focused on. Specifically a downward curve between a maximum 712 and a position 714 out toward the edge of the field of view, which allows the lens system to have a higher relative illumination value toward the edge of the field of view by having a lower object to image magnification ratio. So here we see a discussion of lower object to image to magnification. Whereas with respect to figure six, we were focusing on higher object to image magnification. And what that's doing is that you're redirecting the same quantity of light from an object to a smaller region in the image with more illumination.

And so, this is a more direct route taught by the 120 patent for solving the problem of the drop off in image quality through relative illumination and or MTF towards the edge of the field of view. You're actually utilizing these zones in the lens to more directly impact image quality. And in this case relative illumination by taking the light that normally would be spread to more pixels and concentrating it into fewer pixels and thus increasing relative illumination. And so, when we say relevant feature, what we're talking about is with respect to figure six, locating that zone, that higher object to image magnification zone, with respect to where you have a drop off in image quality in relative illumination or MTE, and then that allows you in post processing to improve your image quality. Alternatively, the relevant feature in figure seven for dealing with the issue identified in the 120 patent is this downward slope between a maximum in the resolution curve and the edge of the field of view at 714. This drop off in the resolution concentrates more light in that area and that's what your, that is your lower object to image magnification ratio that's in the claims. And that lower object to image magnification ratio out near the edge of the field of view achieves the benefit of directly increasing the relative illumination and again solving the problem of the 120 patent. That's why we focused on these specific features and the teachings of the 120 patent with respect to them as being relevant to solving this very problem identified in the 120 patent, which is compensating for the lower image quality.

JUDGE KALAN: Is the post processing step in relation to the figure six embodiment mandatory or optional?

MR. HOLT: It is not claimed, so it wouldn't necessarily be within the scope of the claims. But Dr. Kessler testified in his reply declaration that the

only way you would actually be able to improve image quality, at least MTF and relative illumination, is via this post processing. That's exactly what figure six teaches. It says the final resulting image can then be processed to create a resulting image with constant image quality across the whole field of view. If you don't do that post processing, you're not actually getting a better image quality with the lens under figure six.

JUDGE KALAN: So figure six'ss lenses don't get you all the way there. But in figure seven, there's no mention in your excerpt here of any post processing step. Is that required or contemplated by the patent?

MR. HOLT: No, Your Honor. There's no teaching that we see or there's been any testimony of any teaching that the lens, if you're utilizing it with respect to figure seven and where it locates its zones, that you would need to do post processing to improve that image quality over what you might have seen in the lenses described in the background section.

JUDGE HAMANN: Counsel, this is Judge Hamann again, and I appreciate you taking us through the figures, but I'm trying to understand again, I just think the turn of phrase relevant feature of a figure is problematic potentially for construction. So is it acceptable, again, assuming we give it, we view it as it should have patentable weight to basically say having your first parenthetical or having your second parenthetical without reference to the relevant features of the particular figures?

MR. HOLT: That's correct, Your Honor. It's if the prior art or whatever were to, if you were construing this claim term and you're trying to figure out what at the very least is something inside of it. In light of what we've learned from the 120 patent and the prosecution history, it would be that specific parenthetical feature talked about with respect to figure six, or

that specific feature in the parenthetical with respect to figure seven. So exactly as you said, Your Honor, that's an appropriate way of wording it.

JUDGE HAMANN: Thank you.

MR. HOLT: I will, since we're talking about it very briefly, want to turn to slide 57, and just simply note that if we go back to the prosecution history, which is what the relevant rule in 37, I believe it's CFR 100(b), says we should look at the prosecution history. And of course, that was just applying the Phillips standard, which says that while the words of the claim are generally given their ordinary and customary meaning, a claim term is ready not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. So we're supposed to look at the specification as we just did, and then the prosecution history as we're about to do. When you look at this prosecution history, what you see is that the Patent Owner amended this compensate limitation to clarify that it covers zones of both lower and higher object to image magnification. And when it did, that amendment to cover both lower and higher, it explained that support for this clarification came from both figures six and seven.

So the Patent Owner called out the paragraph of the specification describing the direct approach in figure seven of improving image quality by increasing relative illumination through that downward slope between 712 and 714 when it was amending this claim term to have the scope that it had. And so we think, reviewing the prosecution history, POSITA clearly would have understood the Patent Owner to be attempting to cover both figures six and seven in its claim language. So to the extent that the claim language left the POSITA with any questions, a POSITA turning to the prosecution

history would rightly arrive at Petitioner's construction. This is the notice they would have had in light of the full scope of the specification and the prosecution history. And we think that Patent Owners should be held to this public notice. Any questions about that?

Okay, so I want to backtrack a bit here and note again that, frankly, under the discussion of the claim construction that we just had, whether you include this alignment of the high resolution zone with a drop in MTF or relative illumination, and you limit it just to that, or you, in fact, encompass the full teachings of the 120 patent and what the prosecution history tells us, and have figure seven as well, which is that downward slope from a maximum that ultimately results in the increase in relative illumination under either of those approaches, the Thibault ground and the Matsusaka ground render the claim and that limitation obvious. And ultimately the real time case and the *Vivid Tech* case, the *EMI* case, that were all highlighted correctly by Your Honors in the institution decision allow us to just note that effectively, and we don't really have to engage deeply with that claim construction if we don't want to. That's not a requirement. It would have us investing time and resources into a dispute that ultimately isn't needing to be resolved in order to determine whether these claims are unpatentable.

JUDGE KALAN: Can I ask on your slide two, you frame your arguments as obviousness arguments. What's the status of your anticipation arguments that were presented in the petition?

MR. HOLT: We believe that, frankly, all of these claims, or at least claim one in this particular limitation, are directly taught in all of the references. I believe, at least with respect to certain of the dependent claims, there were various obviousness arguments there. Those obviously still

stand, though they aren't challenged. You know, anticipation is at the heart of obviousness, and so our point is that it is taught, and therefore at least this limitation is anticipated. But even if it weren't anticipated, a POSITA would have understood that this limitation was taught in the prior art and would have found it obvious in light of those teachings.

JUDGE KALAN: Thank you.

MR. HOLT: So if we'll go to ground one and this is slide eight, Thibault is a prior art publication that was authored by four of the six inventors of the 120 patent and published in a prominent optical society's digital library one year and six months before the earliest purported priority date of the 120 patent. Thibault was never disclosed to or considered by the examiner during original prosecution of the 120 patent. As we'll see, the Thibault reference unquestionably discloses the claimed invention of the 120 patent, regardless of the construction of the claims that we just discussed. Frankly, when we saw the disclosure in Thibault, and specifically with respect to its 3.8 millimeter lens embodiment, we assumed we must be misunderstanding its status as prior art. But as exhibit 1009 clearly demonstrates, Thibault is indeed 102(b) prior art, and that status has not been challenged in this proceeding.

On slide nine, we see figure one of the 120 patent at left and figure five of Thibault on the right. As you can see, the lens groupings and individual structures are very similar at the level at which the claims are set forth. These two disclosures are the same. Given these clear and undeniable similarities, it's perhaps unsurprising why we saw only a single procedural argument with respect to Thibault in the POR. Slide eleven is an excerpt of the POR and this summarizes the argument the Patent Owner made. The

petition allegedly did not identify the magnification zones of Thibault. However, this argument is categorically false and is disproved in several places throughout the petition. For example, slide twelve is an excerpt from a section of the petition where it maps Thibault to the relevant claim feature, which was labeled 1E. Here at the top of the slide, we see that the claim limitation is included, and it falls under the analysis of the claim section and the paragraph from that section states a direct quote from Thibault that says, "targeted distortion is used to increase the number of pixels in the zone of interest". In other words, without any need for graphs or charts.

The inventors of the 120 patent and the authors of this paper were describing that the lens and Thibault reference includes the claimed zones. Not stopping there, though, the petition went on to explain where in the field of view this zone is located. First, the petition utilized the surfacic resolution plot which we see at the right, and this shows the resolution for at least a portion of the field of view at the entire range of angles for that field of view. We often talk about the field of view from a lateral perspective, say 90 degrees to the left and right of the optical axis as we did earlier. We do this because it's an easy way to depict the field of view on a two dimensional diagram that you might see in a textbook. However, in real life, the field of view is a cone. For any given entry point of light on the lens you're going to actually have a cone of light coming into each of those points on the lens. The surfacic resolution plot at right shows the resolution curve for each of those possible angles of the cone through which light enters a point on the surface of the lens. What we see in the plot is that the resolution starts at its lowest level around 7.6 pixels per degree. In the center, which is green. The resolution steadily increases to a maximum of twelve pixels per degree

where we see the magenta and then drops back a bit toward the edge of the field of view where the color drops back to purple.

As we see in the excerpt at the left, the petition identified the purple and magenta portions of the surfacic resolution plot as some of the zones with higher resolution per the claim language. Notably, the legend of the surfacic resolution plot shows those zones to correspond to resolutions ranging from twelve pixels per degree to 10.911 pixels per degree. So through the surfacic resolution plot the petition identified a zone where the resolution curve ranges from about twelve to about 10.9 pixels per degree.

JUDGE KALAN: Can I ask about Patent Owner's argument that the units are actually pixels per degree squared? Does that make a difference?

MR. HOLT: It does not make a difference. Your Honor, if you turn to slide 40. Let's see, I'm sorry, 66, you'll see the surfacic resolution plot on the left and you'll see the linear resolution plot on the right. What you see here is that the linear resolution plot goes from just below eight, so about seven point something up to twelve and then comes back down from there. And that aligns with the numbers that you actually see in the legend. For the surfacic resolution plot, you see that the green there in the center is matched up. If you kind of look over to where that little rectangle is in white in the legend, goes to about six point or 7.692. Excuse me. And that's about where you see that linear resolution curve hit the y axis. And again, it goes up to twelve, just as the magenta goes up to twelve. So these numbers align perfectly. The reason that they talk about degrees squared there, and this was an issue that came up late in the sur reply. None of the experts have talked about this, but the reason for that, again, as I was just describing, is the surfacic resolution plot is for a cone and it's for an area of degrees. It's

not for any one of the various possible kind of cross sections of that cone. The linear plot to the right is for just one of basically a one dimensional cross section from the center to the edge of the field of view. And so you're seeing the resolution for that particular cross section and it's one dimensional. So it's degrees, not degrees squared. This plot is for the entire area.

If you jump back to slide 64, this is actually consistent with what you see in the other embodiment of Thibault. Your Honors put this set of images in the institution decision and I think it actually pretty well addresses this point. This particular surfacic resolution plot, unlike the one for the 3.8 millimeter lens that we looked at, shows differences depending on where you are around that cone of the field of view. And if you take different cross sectional angles of that field of view from the center to the edge, you'll get different linear plots. So what we see at the top is that if you take one of the axis of that, which the horizontal axis, for instance, will be the red line. So going from the center to the edge, you get the red linear distribution plot on the top. If you go from the center to the top, so objects you'd see at the top of your field of view, from the center of your field of view, the linear distribution curve actually looks different. And so, the surfacic resolution plot actually gives you more information. It shows what it looks like around that whole cone, no matter what angle you're looking at, whereas the linear resolution plot really is only taking one of those individual cross sectional angles and showing you what exactly the resolution is doing across the whole field of view. Does that make sense, Your Honor?

JUDGE KALAN: Yes. Thanks.

MR. HOLT: Okay, so if we go back to slide 13, we wanted to note that the petition also looked at figures eleven and six to further illustrate why a zone of increased magnification is located in Thibault's 3.8 millimeter lens. Thibault's figure eleven shows a picture taken with the lens, and it depicts a testing strip with alternating black and white rectangles. In the real world, each of the black rectangles is of equal size, and they are evenly spaced from one another. The nonlinear resolution of Thibault's lens causes some of the black rectangles to appear larger where there is a zone of higher object to image magnification, and other black rectangles to appear smaller where there is a zone of lower object to image magnification.

The petition described this and noted that there is clearly a zone of higher object to image magnification around 60 degrees, where the black rectangles are particularly wide, and that this aligns with the linear resolution plot from the other portion of figure six of Thibault, which we talked about earlier. So it's clear from this portion of the petition that there was not only a quotation from Thibault that specifically talks about the claimed zone being present in this lens and therefore meeting that claim language outright, but moreover, a review of the data provided by Thibault with respect to that lens, and an identification within that data where the zone of higher resolution object to image magnification exists. Any questions about that? Your Honors?

Okay, what we see on slide 16, though, is that this identification in the petition that we've now walked through is consistent with Dr. Lebby's horizontal line, which we see here on slide 16. In his reply declaration, Apple's expert, Dr. Kessler, inserted Dr. Lebby's horizontal line into Thibault's figure six and confirmed that the horizontal line is consistent with

his earlier analysis that a zone of higher object to image magnification is located around the magenta portion of the surfacic resolution plot, which is around 60 degrees of the field of view.

JUDGE KALAN: So that line didn't come out of nowhere. It came from Dr. Kessler's interpretation of Dr. Lebby's testimony?

MR. HOLT: Yes, Your Honor, that's correct. Dr. Lebby was suggesting, and the POR was suggesting that you need this line to be able to identify the zones of higher object to image magnification. And what Dr. Kessler did in his reply declaration in direct response to that, was showing that that line actually aligns with and is corresponding to the very zones he pointed to in the petition without this line, you actually don't need this line. And that's actually consistent, when you think about it, with the disclosure of the 120 patent. You don't see this horizontal line in any of the resolution plots of the 120 patent. It was added by Dr. Lebby in the POR to try to attempt to show that there was some sort of missing data in the petition. But if the patent itself didn't require this line to teach and demonstrate these zones talked about in the claim, why then would the petition need this line to identify those same zones? It shouldn't need that. And it did more than enough, based on the teachings of the 120 patent, to identify those zones in the first instance without the line. But Dr. Kessler again goes a step further in the reply and responds by noting that if you do put in the proper horizontal red line, you identify the same zone he pointed to in the petition.

JUDGE KALAN: Thank you. You have about 1 minute left of the original 40 minutes you'd requested.

MR. HOLT: Understood, Your Honor. Thank you. We may end up going over a little bit. Understood. But we'll try to continue through

relatively quickly. I want to note briefly before moving on, that Thibault also renders the claims obvious or anticipated this limitation anyway. Obvious or anticipated in light of Petitioner's broader construction. As I noted earlier, with respect to slide six, Apple asserts that the compensate limitation should read at least broadly enough to also encompass the downward slope of figure seven. As we were discussing, and we see on slide 22 that in his original analysis, Dr. Kessler identified a downward slope in Thibault's figure six that is consistent with the description of a feature in figure seven that the 120 patent explains will directly improve the relative illumination over what it otherwise would be. As we see on slide 23, the 120 patent notes that the downward slope between the maximum at 712 of figure seven and a region near the edge of the field of view around the position 714 will lead to the lens, “redirecting the same quantity of light from an object to a smaller region in the image with more illumination”.

Dr. Kessler explained that the downward curve in Thibault’s figure six will increase relative illumination for the same reasons. And neither the Patent Owner nor Dr. Lebby ever challenged this conclusion directly. There's no argument or evidence on this record that Thibault’s figure six would not benefit from the downward curve in the way described with respect to figure seven of the 120 patent. So that's Thibault. And Thibault, as a result, hits both possible claim interpretations provided by the parties here. That's as far as we would need to go. Thibault hits all of the challenged claims.

We, frankly, again, going back to something I said at the very beginning, looked at the Thibault disclosure and how it really completely aligned with the teachings of the 120 patent and certainly the scope of the

claims, and asked ourselves, how could it be that these claims even issued? And we assumed that there must be something here we were missing. But what we're seeing with respect to the arguments made, we weren't missing anything. It is in fact prior art. It does disclose everything. And that's enough to prove these claims unpatentable, no matter what construction is reached here. We have some arguments with respect to Matsusaka. Matsusaka renders the claims obvious under Petitioner's construction for the same reason we just discussed with Thibault. It shows a downward curve in the same relative position as is talked about in Thibault. And Dr. Kessler interpreted that resolution curve as inuring the same benefits that you would have gotten from the description of figure seven in the 120 patent. And that direct conclusion has never been challenged on the record here. There has been no argument or evidence that that downward sloping curve from the maximum to the edge of the field of view that we see in Matsusaka ultimately provides the benefits described in figure seven of increasing the relative illumination that you would have otherwise had.

But faced with Patent Owner’s new narrower construction, that says that the downward sloping curve of figure seven isn't relevant to the claim language and is not significant, Dr. Kessler and the Petitioner in the reply provided evidence to show that under Patent Owners narrower construction, Matsusaka also renders the claim obvious. And we see that on slide 30. What we see is that --

JUDGE KALAN: Just to clarify, the plot is run using the same or older data, or are these new tests run in response to Patent Owners allegedly new construction?

MR. HOLT: Yes, Your Honor, Dr. Kessler utilized the same model he created in the first instance with respect to the petition. That's correct.

JUDGE KALAN: Thank you.

MR. HOLT: And what we see on slide 30 is that based on Patent Owners new construction that focuses on figure six of the 120 patent, Dr. Kessler identified that the same zone of the lens that the petition originally identified does correspond to a marked drop in MTF. There is no dispute that these MTF curves that we see here show a drop that corresponds to the zone of higher object to image magnification in Matsusaka's lens, consistent with the Patent Owner's new construction. The only main argument is that the MTF data was entered late, which is not true. It was responsive to the new claim construction arguments, and there were a couple of additional arguments made about technical things in the sur reply. But those arguments are unsupported by the actual evidence. Neither of the experts actually address this. It's purely attorney argument, and when you look closely at the arguments being made, they don't stand up under their own logic.

I would like to briefly jump to slide 33 on the issue of lateness before I sit. We see here the two key Federal Circuit decisions, and I want to jump down specifically to *Axonics* and that quote that it says there is no rule, for example, requiring a petition to describe all possible or reasonable claim constructions and present invalidity theories under those constructions. We have continued to recognize that a Petitioner is entitled under the APA to respond to new claim construction arguments made by a Patent Owner. Axonics is directly on point for these facts. The reply introduced evidence through Matsusaka's MTF graphs that show that ground two based on Matsusaka still meets the claims under Patent Owner's narrowed

construction, and this should really end the inquiry. The Petition set forth the construction, which was that the compensate limitation should be given no patentable weight, and then the petition went further than the Federal Circuit concluded the rules required, by applying prior art under its alternative construction in the case that the limitation is given weight. So it actually applied art under two possible constructions, you'll find no authority cited by Patent Owner that additional burden should be placed on the petition.

The various cases that are cited in the POR and sur reply have to do with making your prima facie case in the first instance, setting aside whether the institution alone indicates the petition necessarily did that here Petitioner's position was, and continues to be, that if the Board construes the claims under Petitioner's alternative construction, the petition stands on its own and no further evidence required. It's only if the Board adopts Patent Owner's narrower view of the claims that Matsusaka's MTF graphs are necessary, and those graphs prove the second ground still renders the claims obvious. With that I see we're at 46 minutes, Your Honor, and we think that that covers the main issues here. Are there any questions you have before I cede the rest of my time or reserve I should say?

JUDGE KALAN: I see nothing from the panel at this point. I have 47 minutes, and you have 13 remaining for your rebuttal. Thank you. I will turn it over to Patent Owner. And you had requested 50 minutes for your argument. I will let you begin whenever you're ready.

MR. MURRAY: All right, thank you, Your Honor, and good afternoon. I want to touch on a couple things real quick. That was in Petitioner's argument and specifically addressing a couple of questions from

the panel, the first being when Dr. Kessler, when he ran his MTF data for Matsusaka, relatively when that would occur. If you look at our demonstrative slide seven, this is copied from paragraph 29 of Dr. Kessler's second declaration. You can see a date in the lower left hand corner. This was October 4th, 2023. This was about a week before Dr. Kessler was deposed and after our patent on a response had been filed. So while the model on which this was based may have been generated prior to the petition, this particular MTF data that he's relying upon was actually not made until October of last year, well after the Patent Owner was. I now want to turn to the issue counsel.

JUDGE BELISLE: Counsel, this is Judge Belisle. What is that graph in response to? Why was this graph introduced into the case?

MR. MURRAY: This graph was introduced because in our Patent Owner response, we pointed out a gap in the petition which says, claim one refers to a drop in MTF or a drop in relative illumination, and there was no MTF or relative illumination data produced at all for the Matsusaka reference in the petition. On its face, claim one is talking about a specific aspect of MTF or shorthanded as RI information, and none of that was produced with the petition. Dr. Kessler did not include MTF or RI data for this reference. And so when we when we called out that evidentiary gap, Petitioner, in response produced this evidence, which I can get to a little bit later on, but under our interpretation of the case law, that should not be permissible. It should be disregarded.

Okay, I'd like to turn to Thibault and the issue of the surfacic resolution, because the explanation that you got about the surface resolution image and its relationship to the resolution plot above, it was actually wrong.

As Your Honors have pointed out, and as we mentioned in the sur reply, the units for the surface resolution at the bottom of figure six and Thibault, which you can see, actually, I'll refer to Petitioners slide 66. So there you are correct. It's pixels per degree squared in the legend at the bottom right hand corner of that image. And the plot, which is to the right here, is pixels per degree. Now, what Petitioners counsel said during their argument was, well, what you see in the plot is actually a cross section going across the circular image. That is the surfacic resolution. But that's actually incorrect, and you can see that very easily.

If you were to line up the, the surfacic resolution with the linear plot above it, zero degrees on the surfacic plot would be right in the center of that green circle, right in the middle, and 90 degrees would be right at the very edge of the entire circle, right before you get into the surrounding black area. So if you look at the plot at about zero degrees, you're looking at a resolution somewhere below eight pixels per degree, and then you get to a maximum around 60 degrees, where you have a resolution of about twelve pixels per degree. And then you see at the edge at 90 degrees, you're back down to almost eight pixels per degree. Now, if what Petitioner said was correct, that it's just a cross section of the image, those values would be identical going across, but it's not. If you look at the edge of the surfacic resolution, which is where the 90 degrees would be, you are in that purple band, which is between values 10.9 and 11.4, whereas in the plot above, you're somewhere between eight and nine.

So right there you can tell that the numerical values are incorrect. And again, the units. And you can't glean from a bare visual observation of this chart where the different magnification zones would be. And Dr.

Kessler showed this flaw. If you look at their slide, Petitioner's slide twelve, for example, in the bottom left, they're quoting from the petition where he said zones of higher resolution, EG. Purple and magenta zones. So, looking again at the surfacic plot on the right hand side, there you have the magenta zone, which is that very wide magenta ring, and the surrounding inner and outer purple rings. But in his second declaration, and if you flip back to their slide 66, in their second declaration, he says only the magenta zone is the high resolution zone. So he couldn't even tell from just looking at the surfacic resolution what was high resolution and what was low resolution. And this is confirmed by when he finally added that red line on their slide 66 to the resolution plot. In Thibault's figure six, you see at the right-hand side, from about 80 to about 90 degrees, where that blue curve drops below the red line, which represents the linear targeted resolution recited in the claim. That's a low magnification zone. So he had no idea in the petition, which was which, just looking at the surfacic resolution curve.

And another thing, another question that arose was where the red line came from. And Petitioner suggested that Dr. Kessler added this red line because Dr. Lebby, in his declaration for the Patent Owner response, talked about a red line. But if you look at Patent Owners demonstrative five, this is a reproduction of a plot from Dr. Kessler's original declaration for Matsusaka. And you will see there a red line representing the linear targeted resolution as called for enclave one. And the same thing, if you look at our slide six, there is a red line going across Kim's resolution plot. Both of these were generated out of a program called Zemax. Matsusaka and Kim did not actually include the resolution data in their disclosures. This had to be calculated. But in both instances you have the red line, and in both

instances, Dr. Kessler identified low and high magnification zones for Matsusaka and for Kim relative to a linear targeted resolution represented by that red line. But he did not do the same for Thibault until the reply. So, in fact, Dr. Kessler is the one who originally, in this proceeding, showed that a red line was necessary to determine whether a magnification zone existed or not.

JUDGE KALAN: And what are the reasons you can't -- we shouldn't make any leaps, but if the red line is a constant, is sort of presumed by these references, why is its absence, up until a later stage, fatal? If you could get into that a little more.

MR. MURRAY: Sure. So the reason you need it, as shown with Matsusaka and Kim, is you need to be able to identify where the magnification zones are so that you can then analyze how that is used to compensate for a drop in RI or MTF. In Thibault, you didn't have what you had was a surface resolution analysis. That was, first of all, it was, it turned out to be wrong, as Dr. Kessler himself proved in his second declaration. But second of all, they didn't actually use it. Thibault has a relative illumination curve in it. When they did their analysis on Thibault, they didn't use what they found in the surface resolution. They went to this downward slope theory that they have, which is their alternative construction, as we'll call it. So whatever they did with the surfacic resolution image in Thibault's figure six, they never ended up applying it when they were comparing it to Thibault's relative illumination later on.

JUDGE KALAN: Was the eventual placement of that red line incorrect or just belated?

MR. MURRAY: The -- we don't have evidence as to whether it's correct or not, but we do argue it's belated. And we would, we would argue that because Dr. Kessler, as shown both in the original declaration and his second declaration, that he doesn't understand what he's looking at with respect to what's in Thibault, that what he's done here is not credible and should therefore be given little weight in this proceeding. Does it answer your question, Your Honor?

JUDGE KALAN: Yes. Thank you.

JUDGE HAMANN: Counsel?

MR. MURRAY: Yes.

JUDGE HAMANN: This is Judge Hamann. And if this is not the appropriate place, I don't want to interrupt how you want to present, but I definitely want to talk about slide petition, slide six at some point that deals with the claim construction issues. I don't know if now is a good time or if you want to address that later, but that, I think is something.

MR. MURRAY: I was actually just about to get to that, Your Honor. So thank you for, thank you for sending me there. So with regards to the construction, I find it interesting that today Petitioner is saying you don't actually need to do any construction under this *EMI* case because the fact that this was alleged to be a claim construction issue was the very reason they said they should be allowed to present the reply evidence that we say should be disregarded. So we can, we could. Let's look at slide six. If you look at the first half of their construction before the or, it says pretty much the same thing that the Patent Owner's alleged construction in the right hand column. So they agree with the substance of Patent Owners position. Their construction, or whatever they want to call it, just says there is one other

alternative way to satisfy the claim language. Now, as I said earlier, what we argued in the briefing in the Patent Owner response specifically was that Petitioner didn't provide any evidence to meet what you see on the left hand side there. They either didn't identify the zone of lower or higher object to image magnification with respect to the linear targeted resolution as regards to Thibault, and they didn't, for Matsusaka or Kim, provide evidence of a drop of relative illumination or MTF.

We also argued that their figure seven analysis and this downward curve theory was improper. And in the reply, Petitioner said, well, you've introduced a new claim construction so we can now bring in this reply evidence. But what's the supposedly allegedly new construction? The Petitioner's argument, which was crystallized in their rebuttal to our sur reply, which was the two pages granted as a result of our introducing exhibit 2012. The argument there was they had no idea Patent Owner would seek to exclude the downward slope theory, the second half of their construction from meeting the claim. And I just want to be clear. We can, and we have had the argument about whether the downward slope analysis is proper to show unpatentability. We say it's not, Petitioner says they do, and portions of their reply, specifically section two, defend that position, and we don't have any issue that those arguments should be considered. But looking at their construction again, they always knew that the first half of it was a possible way to satisfy by the claim. Yet they completely ignored that, and in the petition leaned entirely into the second half of their construction.

So to simplify that, their construction from the beginning was the claim term can be satisfied by A or B, and they intentionally move forward with evidence for B only. They can't now, in their reply, bring forward

evidence to meet A when they knew that was a possibility all along. Bringing in that new evidence in the reply is an improper change in the theory from what was in the petition because it addresses a portion of their own claim construction they chose to initially ignore. And under the trial practice guide, and as found in similar cases, I'll cite specifically the *Ariosa* case. Petitioner can't be submitting new evidence and arguments to make the prima facie case after the petition has been filed. I would also argue that this is not a claim construction issue at all. The claims, again, explicitly call for a magnification zone, and that that zone is used to compensate for an RI or MTF drop that's there in plain English. You don't need a construction to recognize that claim. One discusses a zone of magnification relative to linear targeted resolution, so you should identify that as such if you're going to allege unpatentability and similarly no construction is necessary to understand the claim references details about RI or MTF, and specifically a drop.

So again, the analysis of the prior art should show a drop in either of these two lens characters. So whether it's a claim construction issue or not, we take the position that Petitioner was well aware of it based on their own construction shown on slide six, as well as additional documentation from the parallel litigation and from the explicit language of the claims themselves. I don't know if, Judge Hamann, you'd like me to specifically address any issue with respect to their claim construction language.

JUDGE HAMANN: I have a couple questions, if I could.

MR. MURRAY: Certainly.

JUDGE HAMANN: First, I want to start with, I'm looking at slide six and this is obviously a Petitioner slide and they've put forward, I believe

what they assert is Patent Owner's construction. Just preliminary, is that an accurate representation of what Patent Owner has contended?

MR. MURRAY: I certainly would not have worded it that way. If you'll notice, looking at their construction, and this is in the briefing, if you read the description with respect to figure six, compensate is recited several times. And with respect to figure seven, and specifically this downward curve issue, it's not cited. We -- the construction, they say on the right hand side, slide six, I think is missing some aspects to it. So I would hesitate to say, and this is the first time I've seen this presented in a paper, frankly. So I would hesitate off the cuff to be able to say this is accurate or not. What I can say is we disagree that the or what comes after the or in their construction should be there.

JUDGE HAMANN: Okay. Well, one of my concerns, and I raised it with Petitioner, is trying to construe something as relevant feature of the figure, even with reference to a figure I think may be problematic. So I'm sort of looking at a phrase that would characterize what the party's contend is, sort of the relevant feature of a figure in prose. And so obviously there's a parenthetical system approach that's presented here on slide six. I'm trying to understand what Patent Owner's position is how we should construe this to the extent we feel we need to without referencing a figure and instead putting any relevant feature in prose. And where would we find that in the record from Patent Owners perspective?

MR. MURRAY: Well, so from Patent Owner's perspective, you wouldn't have, you know, an express here as the exact wording for a construction. But I think in Patent Owner's response we had to address the issue of whether or not this claim term was entitled to patentable weight.

And in there we described the reasons it should be entitled to patentable weight and the consequences that result from it. And so, from that, I think you could glean what our position is. That is that when you're talking about a zone of higher or lower object to image magnification, it needs to be positioned in order, it needs to be positioned in relationship to a drop in MTF or relative illumination to be able to do the compensation, prove the image quality as is stated in the 120 patent.

JUDGE HAMANN: Okay. And thank you for that response. Would Patent Owner agree that whether should, whether a limitation should be given patentable weight is a claim construction issue itself?

MR. MURRAY: I believe that's a claim construction issue.

JUDGE HAMANN: Thank you.

MR. MURRAY: I don't know. I was going to basically skip over that since it's sort of been -- Petitioner didn't say much about it, and the post institution briefing wasn't much about it. But if any of Your Honors have questions about the patentable weight issue, I'd be happy to address it. Otherwise, I can move to other parts of the argument.

JUDGE HAMANN: You know, this is Judge Hamann. I wasn't meaning to -- I don't think we need to step through the arguments for whether it should have patentable weight or not, but I think whether something should have patentable weight is a claim construction issue itself. That's what I'm trying to -- I think Patent Owner agrees with that.

MR. MURRAY: Yes, I would agree with that.

JUDGE HAMANN: Thank you.

JUDGE BELISLE: Counsel, this is Judge Belisle. I just want to make sure I understand how you're reflecting back to us what happened

during the briefing. So looking at slide six, if I understood your argument, Petitioner proposed a construction that had A and B, figure six, and figure seven, but then only argued that figure seven was the basis for how it was achieving unpatentability. And then when patent order came in and said that, your view is the construction would only be A or figure six, and that Petitioner hadn't touched that in their briefing as to why that if that was the construction that that would, how that would render the claims unpatentable, and therefore everything they've added since then is sort of new to the case. Is that what I'm hearing?

MR. MURRAY: I think it's close. I'll try to rephrase it. So in the petition, what you see on slide six here, as I mentioned, is not explicitly drawn out, but I think what Petitioner has argued today is that this is the construction they were operating under, assuming that the claim term was to be given patentable weight, and that being A or B. In our Patent Owner response, we said B is not appropriate to satisfy this claim limitation. And we also argued that based on the claim language explicitly itself, there are certain pieces of evidence that you have not included despite their express recitation. And so the petition is therefore deficient on that basis. Now, whether you take that as not a claim construction issue and just words of the claim, or if you want to say, well, that's a claim construction issue, yes, we said you did nothing to satisfy part A of Petitioner's construction. And so then in the reply, to the extent Petitioner added anything to argue under their A portion of the construction, that the claims are met by the prior art is a change in theory, because their original theory was they went completely down the path of part B of their construction, the alternative language. And

so that's, that's what we're saying. I think we're, I think we're on the same page.

JUDGE BELISLE: I get it.

MR. MURRAY: Okay. And one other thing about that real quick, is we've also, it keeps coming down to, well, figure six or figure seven. We've never said figure seven in total is not part of the claim. What we've said is this business about the downward curve matching this particular claim limitation has anything to do with one. Figure seven is a much more complex resolution curve. That figure six is effectively a straight line. It has some differences in the slopes at various points, but it effectively goes from a low value to a high value. What you see in figure seven, it goes up and down and then comes back up again. And so, there may be aspects of figure seven that are relevant to the claim term, but what we're saying is this particular aspect of the downward curve, meaning that you're compensating for a drop in relative of elimination or MTF, is not, is not what is meant by the claim language.

And just to expand on that a little bit further, the Petitioner keeps making this argument that the text itself conflates the downward curve with the language. Sorry, just lost my spot here. But first of all, Petitioner themselves have proven that that's not true when the easiest place to see that is in our slide six, where you have Dr. Kessler's resolution plot for Kim reproduced. That blue curve you see on slide six has a downward slope the whole time. Yet Dr. Kessler himself has identified at least half of that curve, which lies above the red line and the linear targeted resolution as a high magnification zone. So just because you have a downward slope doesn't mean you have a low magnification zone. And that's consistent with the

claim language, because the claim itself defines the object to image magnification zone as being higher or lower relative to linear targeted resolution, not with respect to the slope and the language that they've pointed to.

This paragraph 41 that's highlighted in the prosecution history doesn't say that either, when you actually look at it. In total, I believe this is slide -- I think this is Petitioners slide 23 on the right hand side. It starts with highlighting the downward curve is between a maximum 712 and a region near the edge of the field of view around position 714. And then as you continue on, it says that the downward slope allows the lens to have an object to image magnification in that region, referring back to A region which is near 714. So what this sentence actually says is this downward slope must cross the linear resolution line at some point to give you a low magnification zone in the region near point 714. So the slope is helping you get to the desired result, but is not equivalent to the low magnification zone, which is consistent again with the rest of the disclosure, as well as Petitioner's own analysis of other references, including Matsusaka and Kim.

JUDGE KALAN: So in Kim, is that downward slope after an absolute maximum the entire plot, there is no up and down in Kim, there's just the --

MR. MURRAY: That is correct. That's correct. Kim goes from a maximum approximately 16 pixels per degree all the way, and it just looks all the way down to its edge, somewhere below eight, perhaps seven. I think I just want to touch on the Matsusaka MTF data to the extent that Your Honors are inclined to allow that in, even though it came in as part of the reply. I just wanted to point out a couple things that were in our briefing,

but I wanted to make sure that I hit them. The first thing, if you look at our slide five, which has the Matsusaka plot from Dr. Kessler, we pointed out in the Patent Owner response and in his deposition that his plot only goes to 100 degrees, despite the fact that the reference actually has a lot wider field of view than that. And in his deposition and in his second declaration, he tried to come back with that and say, well, I checked and it doesn't matter, but we're just supposed to take his word on that because he didn't fix the plots in his second declaration and he didn't cite any evidence to support his statement. He ended up leaving about four to five degrees off of the field of view. And you look at figure seven in our 120 patent on our slide three, you can see in the last five degrees, the resolution takes a significant upward turn. So there may be something going on there beyond 100 degrees in Matsusaka, but we don't know about it because Dr. Kessler stopped his plot short and he's the only one who knows what goes on afterward. And the other thing I wanted to point out was the, as we stated in the sur-reply. This plot was generated in the Zemax program using three wavelengths of light that are meant to simulate behavior over the entire visible spectrum. So what Dr. Kessler did was he took a red wavelength at one end, a yellow wavelength in the middle, and a blue wavelength at the other end of the visible spectrum, weighted them accordingly, and then Zemax put out this blue curve.

But when he went to the MTF, going back to our slide seven, he used a very specific wavelength. And under the date that I pointed out earlier of October 4th, you see this as data for 5876 μm. That is a yellow wavelength of light, 587 nm is the equivalent. So he plotted this MTF for a single wavelength, despite the fact that his resolution covers the whole visible

spectrum. And that's important because if you look at the exhibit 2008 that we submitted with our Patent Owner response on page 17 at figure 3.9, there are two MTF plots, one for white light and one for 470 nanometer light specific on wavelength, and there are distinct differences between the two. And there's other figure three, point ten on that same page shows differences between two individual wavelengths that are close together. And then on exhibit 2004, in figures four to six, there's a spread of MTFs that you can see presented for various wavelengths.

Now, Petitioner argued in the second declaration that Dr. Kessler picked this wavelength as he did, because the claim doesn't specify the conditions for MTF. It's true the practitioner is permitted to choose the desired criteria for the MTF they are trying to fix. But the problem is, if you're going to select 587 nm resolution data you're going to use to compensate for any drops you find there should match that you wouldn't, for example, do an MTF plot of 400 blue end of the visible spectrum, and then go and do your resolution plot at 700 nm, which is at the red end of the wavelength spectrum, to see if that will help you compensate for the MTF draw.

JUDGE KALAN: Where in your briefing is this reference to exhibit 2008? Or reliance on exhibit 2008?

MR. MURRAY: It should be. Give me one second. So this is, you can find this on page 19 of our sur reply. And so, for this reason, similar to the Thibault, Dr. Kessler has not done a credible job of analyzing the data or presenting the data in a way that a person of ordinary skill in the art would. And then I guess the last thing I want to touch on, because Petitioner keeps doing this as well. The claim says that you are compensating. Pull up the

claim. I don't want to speak out of turn. The claim says you are compensating for a lower image quality due to at least one of a drop of relative or a drop of MTF. Petitioner keeps saying that they are, that what's happening, for example, in figure seven description is compensating the RI of relative illumination. That's not what the claim says, and that's not what the patent is about. Image quality is a confluence of many different factors. Relative illumination and MTF are two of those factors. If one of those is poor, your image quality would be poor. So one of the points of this patent is when you have poor image quality due to, say, a bad MTF, what is something you can do to help improve the image quality? You can change the resolution. And when you change the resolution, you can help bring back some of that image quality you may have lost for an MTF drop. That's what the claim is saying. That's what the invention of 120 patents, and it's a little bit different. It's not nuanced. What Petitioner is saying, because they want this downward curve aspect to mean that that satisfies this limitation of the claim. That's because they're saying, well, it must be compensating for the relative illumination. The claim says we're compensating for a lost image quality due to poor relative illumination, not that we're compensating the relative illumination. So unless Your Honors have any other questions, I think I can pause for the time being.

JUDGE KALAN: Thank you. I don't see any additional questions from the panel at this time. You have about 26 minutes left for your sur rebuttal, if you choose to take that, and I will turn the floor back to Petitioner, who has 13 minutes on rebuttal.

MR. HOLT: Thank you, Your Honor. There are a few points I'd like to hit. I think one of the first things we heard my colleague talk about was

the Matsusaka's MTF data. And it was also one of the couple of last things we heard. The first thing we talked about was the date on the MTF data. That MTF data is described in paragraphs 30 and 31 of Dr. Kessler's reply declaration. He describes how he created those MTF curves. What he did was he took the model that existed when he prepared his original declaration, and he created those plots after seeing the Patent Owner's arguments. The reason that the date on those plots is what it is, is because he ran those plots specifically out of that original model on that date. So that data existed within the model, they are present within the lens. There's been no real argument here by either Patent Owner or its expert, Dr. Lebby, that the data within those lenses is some somehow wrong or wouldn't result in these particular curves under the conditions specified by Dr. Kessler.

So all of this is inherent to the actual lens itself described by Matsusaka. It was just in response to the allegation with respect to the claim construction being only those aspects of figure six, only A as we were talking about Judges Hamann and Belisle, you have A or B or only A as the is Patent Owners. It's only where we now took that construction of A or B and narrowed it to only A that then we look at that MTF data and we see that that narrower construction that's only A, only the figure six is in fact met by Matsusaka, as it is by Thibault.

JUDGE BELISLE: Counsel, this is Judge Belisle. So on that point where we're talking about only A, figure six, does the petition discuss unpatentability in the context of figure six?

MR. HOLT: The petition does what the rules and the *Axonics* decision tells it are appropriate at the petition phase. It sets forth a construction of no patentable weight, and then takes the idea of A or B as we

described figure six or figure seven, and applies art against that construction properly with respect to figure seven. If you show figure seven under that construction A or B, you meet the construction and *Axonics* tells us we don't then have to provide anything beyond an explanation of what the scope of the claim ought to be and then an application of art against that construction. It was only with the POR that we see a kind of cleaving off of an entire portion of the teachings of the 120 patent and an exclusive focus on figure six. And it's at that point that figure seven and it being rightly part of the scope, A or B, figure six or figure seven, you're cleaving that off that now we have this focus on figure six and we must show under that construction that we meet that claim construction, and we do. But the only reason that that's required is if you adopt this narrower view of the claim limitations and the description of the 120 patent and the prosecution history. It's only after you do all of that as patent and are encouraged in their POR that you then need to address this figure six. Does that make sense, Your Honor?

JUDGE BELISLE: Yes.

MR. HOLT: So the petition and its proofs were sufficient with respect to the rules and the case laws we see. And that's why again, faced with the arguments being made by Patent Owner, Dr. Kessler comes back and looks at his original model, creates these plots, and presents those plots. We also heard some discussion about the wavelength of light. If you read the sur reply and the citation to evidence, what the sur reply appears to be saying is that the MTF data can change depending on the light you put through the model and consider with respect to that MTF data, we don't dispute that. What the claims don't require is a specific type of light to determine the MTF against which you're comparing the resolution curves.

The claims themselves simply say a zone of higher or lower object to image magnification as compared to a drop of MTF, in some context. The claims leave a scope that covers all the different contexts. There's nothing in these claims that specifically tell you to determine resolution under a specific set of conditions and compare it against MTF or relative illumination under a specific set of conditions. And again, Dr. Kessler talks about this in his reply declaration and says we're given this incredibly broad scope in the claims because this specification hasn't been given either the specification of the 120 patent or the claims. And so, he's provided the best data he can come to provide.

Again, in the sur-reply plot, you look at the arguments, the MTF data changes potentially based on the light wavelength that you choose to put through the model and analyze with those MTF graphs. There is no argument that the resolution curve changes. There is no allegation or evidence on this record that you would see a different location of the zones if you ran different light through the model. And that's important because if the resolution plot were to stay the same and the zones would be there regardless of what wavelength of light you decided to put through the model, then the MTF data that we see for a specific wavelength would still align with that resolution data that has been provided with the weighted average of light. And so, even under the allegations made in the sur reply, which are late and unsupported by expert testimony, Patent Owner did not choose to depose Dr. Kessler from his reply declaration, did not ask Your Honors to put in additional evidence from Dr. Lebby with their sur reply, even though they knew how to ask Your Honors to put in additional evidence in the sur reply, did none of these things instead put forward this attorney argument in

the sur reply at this late stage. If you take that on its face as true, you still don't have a fulsome argument that leads to the MTF curves being problematic for this analysis. And again, Dr. Kessler, who's an expert in this area, did this analysis and came to this conclusion. There's just no actual record evidence of a dispute to be had here with respect to that analysis.

There was again some discussion of the line with respect to Thibault's figure six. I want to be clear here. That red line is not evidence. It's not in Thibault. It's not in the 120 patents. The 120 patent presents these curves. The resolution curve without that linear resolution. That line is something that is simply used to describe what is seen to be present in all of these curves. Now that's been provided at various points for the various references here on this record in order to help with that explanation. But to be very clear, the actual part of the curvature of the resolution curve that Dr. Kessler has been looking at since the petition phase through his reply declaration is the same. It's the part of the resolution curve right around 60 degrees. I also want to be clear that the claims don't require that the zone of higher or lower object to image magnification be the absolute outer limits. You don't have to identify the whole thing. The claim state a zone of higher or lower object to image magnification is compared to a linear distribution around 60 degrees, which is the part that was explicitly identified in Dr. Kessler in his original declaration. Where you actually saw those black and white lines being wider in the view taken from that lens, you see magnification. That area is exactly where we see when you insert that red line in the reply that you get the same answer. It's around that maximum peak. It's always going to be around a maximum peak on the resolution curve. Because if you're at your peak resolution in non-linear and you have

to be able to come to a zero sum, that maximum peak will always be, as Dr. Kessler testified in his reply declaration, a zone of higher object to image magnification.

That identification has not changed. And the relative illumination plot from Thibault has been on this record since the start. It was included, it's figure seven. It was included in the analysis of this limitation. Now again, the discussion of it was primarily with a focus on the aspects of figure seven. But that data existed and could have and should have been analyzed from the start with respect to the identification that's always been there. And what we heard from my colleague is that somehow the surfacic resolution plot doesn't line up with the linear. And again, these arguments come in the sur reply. Dr. Lebby never tried to address this. He had the surfacic resolution plot, he had the linear distribution plot. He saw all of the identifications we saw on slides twelve through 14 from the petition never chose to argue that that identification around 60 degrees and consistent with the magenta and purple regions, was in fact a zone of higher object to image magnification. What we hear today in a sur reply --

JUDGE BELISLE: Counsel, this is Judge Belisle. Counsel I'm going to interrupt you right there.

MR. HOLT: Please.

JUDGE BELISLE: So putting aside the timing of these arguments, why doesn't the curve line up with the surface chart?

MR. HOLT: It does, Your Honor. It absolutely does. It goes from the center.

JUDGE BELISLE: Can you go to one of the illustrations and show us?

MR. HOLT: Yes, Your Honor, if you will, go to slide 66 at the center of the surfacic resolution plot, and we see this in the legend at the lower right of that plot. It starts in green at a number of about 7.692. That is equivalent to where we see the linear plot cross the y axis at zero degrees of the field of view. We then see it go to a maximum around twelve degrees in the magenta. That is where we see on the linear distribution plot at around 60 degrees. It's at twelve pixels per degree. Now this is where there is a slight not lining up. It drops the same way the linear distribution curve drops. But the surfacic resolution curve only shows it dropping to purple, which at its lowest would be 10.911. The linear distribution plot that we see goes all the way down. Instead of stopping at 10.911, it continues to fall until sometime around nine or maybe a little bit below nine. All that means is that the surfacic resolution plot on the left doesn't show the full field of view. It doesn't mean it doesn't line up with the linear distribution curve. It just means that it's not showing all of the data out to the full extent of the field of view, but the linear resolution plot does. And again, the numbers for magenta and purple go from twelve at their peak to down to 10.911, which is the zone of the surface resolution curve that Dr. Kessler identified in his original declaration. And those numbers twelve to 10.911, and those zones of purple and magenta align with the part of the linear resolution plot that's above the red linear resolution curve, the equivalent linear resolution curve talked about in the claims. So again, his identification of magenta and purple at the outset aligns with the data he then showed to explain that his original identification has been right all along. But if you don't feel comfortable with the fact that the surface resolution plot does not go to the edge of the field of view, the petition still looked at the linear distribution plot and we saw this

on slide I believe 13 and it compared that to that view of the various rectangles and it showed that around 60 degrees on the linear resolution plot you get a zone of higher image to object to image magnification. This is yes, slide 13. So even setting aside, the surface resolution plot, which we continue to believe is completely consistent with the linear resolution plot, you still have identification in the petition of exactly where it is. And again, I'll go back to the claim language in light of the specification. The claim language just simply says a zone of higher object to image magnification. And the specification itself simply shows the curve with no horizontal red line. We went a step further, beyond what even the specification seems to suggest is necessary to identify these claims as having been taught in the prior art and identify the specific position where you do see that maximum consistent with the description in the 120 patent. That's all that was necessary here, Your Honors.

JUDGE KALAN: Thank you, counsel. I have you at time plus a few minutes, approximately three minutes. I will check with the panel to see if there are any additional questions. I'm not seeing any. Thank you for your presentation. I'll turn it back to Patent Owner who has 26 minutes in sur rebuttal. And if you would like to take some extra time, we'll add that to the clock.

MR. MURRAY: I certainly hope I don't need all 26. All right, so I'm going to work a little bit backwards from my colleague's reply. Starting first, the argument about this surfacic resolution. He said that it still aligns, it's just that the surfacic resolution is not showing the full field of view. Again, that is completely wrong. If you look at slide 63, Petitioners demonstratives. They actually have highlighted there the caption beneath

Thibault's figure six, and it says indeed that the surfacic resolution shown is over the full circular panamorph image. So that circular panamorph image does indeed go all the way to the edge and fails to align with the linear plot, as we discussed earlier.

JUDGE KALAN: Did Dr. Lebby put in any of his own evidence to counter what Petitioner is saying here?

MR. MURRAY: What specifically?

JUDGE KALAN: Well, that was Petitioner's assertion, that Dr. Lebby didn't submit any thoughts of his own to interpret the surfacic plot as shown.

MR. MURRAY: Well, Dr. Lebby has evidence that Dr. Kessler did not do what is seen on the right hand side of slide 63. And certainly what Dr. Kessler did with the surfacic resolution and the black rectangles that were discussed, he didn't actually use them when looking at the relative elimination. What they did when they got to the relative elimination part of this claim was they went to the downward slope again. So putting aside that he incorrectly identified the high magnification zone in the surface resolution plot and the black rectangles, again, it's a zone. So to me, a zone would have boundaries which he hasn't identified. But Dr. Lebby certainly did point out that Dr. Kessler knew how to do the analysis of using that red line in the resolution plots. He did it. He did it for Matsusaka and Kim. And those didn't even have resolution plots to start with. He had to generate those out of the Zemax program and then on top of that provided an estimate of pixels. So then he could then place that red line. He had what he needed from Thibault and didn't do it. And when we talk about the 120 patent doesn't have the red lines either. It's clear that a person of ordinary skill in

the art doesn't need those red lines to understand the invention because Dr. Kessler himself in the original declaration of petition used those red lines for two of the references.

JUDGE BELISLE: Counsel, Judge Belisle, again. Is it Patent Owner's position that Thibault doesn't have a zone of higher magnification revealed in the surface resolution chart?

MR. MURRAY: Our position is that you cannot tell from the surfacic resolution chart where the zones lower or higher magnification would be without doing further analysis. You can do it on the plot. Very simply, Dr. Lebby spells out two ways that you could do that. When you have a curve, and in fact Thibault has the data you need. It has the pixel size, it has all the other information, the image size that you need in order to make that calculation. But for the surfacic resolution, which is in pixels per degree squared, it would be a different calculation. As you can tell, the values differ and you would have to figure out where the linear targeted resolution should be relative to those various bands. And that's not clear and it hasn't been done.

JUDGE KALAN: There's no obligation for Dr. Lebby to do that. But if it were to be done, perhaps rephrasing Judge Belisle's argument here, would it undermine or counter Petitioner's position?

MR. MURRAY: What I would say is, if he did, if someone did that analysis, someone did what you would see -- and I don't remember if I covered this in my opening arguments, but looking at Petitioner's slide 63, their red line in the plot on the right hand side, it crosses the blue curve around 35 degrees, and then again at 80. So your zone of magnification, higher magnification, extends between 35 and 80 degrees of the future field

of view. It's about 45 degrees of field of view. It's roughly half. So if you were to try to figure that out from the surfacic resolution, you would have to. You would presumably come up with something that shows a similar span. But half of the field of view being a higher magnification zone, although I'm having trouble figuring out how that would look given that there's a purple band at the very outset edge of the circular image, which is still pretty high. So I'm not really sure how one would go about figuring out from this image where the higher and lower magnifications are.

JUDGE BELISLE: So I'm going to -- this is Judge Belisle. Let's just continue with this because I think it's important make this clear as to what the argument is. So Patent Owner does not argue that Thibault, or I should say perhaps doesn't argue either way whether Thibault shows a zone of higher magnification or not, but rather that Petitioner, with its expert, don't have a reliable or credible way of showing it or haven't provided a credible or reliable way of showing it.

MR. MURRAY: That's correct, Your Honor.

JUDGE BELISLE: So let me split that in half since I asked two things in one question. Does Patent Owner take a position as to whether Thibault has a zone of higher magnification disclosed in the reference?

MR. MURRAY: I don't think we take any, we don't take any issue with that. There is a zone of higher magnification. I mean, that's --

JUDGE BELISLE: So Patent Owner agrees Thibault teaches a zone of higher magnification?

MR. MURRAY: It would have a zone of higher magnification, yes.

JUDGE BELISLE: Okay, but Patent Owner's position here is that Petitioner has not reliably shown how that happened, how that is, how that it does have that zone.

MR. MURRAY: Where it is. Because where is important. It's important because the claim talks about compensating for a drop. So you need to know where it is. And Patent Owner has not credibly shown where that zone is.

JUDGE BELISLE: I understand.

JUDGE HAMANN: This is Judge Hamann. So you're referring back to the prose, the parentheticals, for example, that we looked at on slide six of Petitioner's that talk about the alignment of that zone. Is that right?

MR. MURRAY: Just looking at there is alignment there on slide six? Yes, I think that would be true.

JUDGE HAMANN: Thank you.

MR. MURRAY: Unless you have anything else on that, I just want to go back to the Matsusaka things that my colleague talked about at the beginning of his rebuttal period. He mentioned that the claims don't require a specific type of light and that this was the MTF data provided in the second declaration was the best Dr. Kessler would do. And he also talked about the date that was mentioned. You can see on our slide seven. We don't dispute that he may have gotten this data from his original model. But the date shows, and Petitioner's counsel has acknowledged that he didn't run this data on slide seven until after the Patent Owner response. Even though claim one talks about a drop in MTF and saying this is the best he could do. Certainly, one would expect if he could plot resolution over weighted wavelengths to account for the full visible spectrum, he could have done the

same for his MTF data for Matsusaka. And indeed the exhibit 2008 we talked about earlier shows you can get MTF data for multiple or one single wavelength.

And then on the *Axonics* case going to Petitioner, slide 33. What *Axonics* says is there's no rule that a petition must describe all possible or reasonable claim constructions and to present invalidity theories under those constructions, keyword being all. Here, Petitioner had a claim construction A or B, and willingly chose to ignore the first half. We don't think that falls under *Axonics*. In the *Axonics* case, what you had was a construction that no one had considered prior to the institution decision. And so, it was a brand new claim construction, and the court was wrestling with that issue. We don't think that applies in this instance, because Petitioner was aware, apparently from it having done its own construction as well as things going on in the parallel litigation, that this was a critical possibility, and it should have been addressed.

JUDGE HAMANN: Counsel, this is Judge Hamann, just trying to understand the argument that you just put forward. If petition put forward an A or B construction, wouldn't the Petitioner showing that the art taught just B teach the limitation?

MR. MURRAY: You could certainly do that, but at that point, you are choosing how to present your evidence, and if you have evidence that would meet A, I would certainly consider that should be put up front. You are choosing an invalidity theory at that point, and if that's to fail, you should not be able to change your theory mid proceeding.

JUDGE HAMANN: Well, wasn't Petitioner certainly when it put forward the B showing, basing that on its construction of A or B?

MR. MURRAY: Correct, correct. But they were, they were relying solely on B, which they can do. And as I said, we can have the argument whether that's proper or not. That's been thoroughly briefed, but their construction being A or B. If they choose to proceed solely on B, if B fails, they shouldn't be able to come forward and say, well, here's our evidence for A now, after our expert has already examined what they had. This isn't --

JUDGE HAMANN: But okay, I'm just trying to --

MR. MURRAY: Yeah, sure.

JUDGE HAMANN: Go ahead.

MR. MURRAY: No, what I was going to say is this is a different than if they had come forward with, say A or B and we came forward in our patent on response with a construction C, we would have no dispute likely that in their reply they could address construction C because that would be new to the proceedings. But they knew that it could be A or B, and by choosing to rely solely on A, they can't now go back after the majority of the evidence is in and say here's our evidence for A, effectively disadvantage -- putting Patent Owner at a disadvantage.

JUDGE KALAN: But you agree this is a claim construction issue and not, for example, a belated argument that doesn't necessarily have to do with claim construction?

MR. MURRAY: Well, I, we would take the position this is not claim construction. Our position is the terms were in the claim. The magnification zone with linear targeted resolution and the MTF and RI drops are in the claim, and they should have been there.

JUDGE KALAN: I heard you say a moment ago that it was a claim construction issue. I just wanted to get clarity.

MR. MURRAY: I apologize. I should have said if it's a claim construction issue, then our argument is their claim construction of A or B, and then choice of proceeding only on B should preclude late introduction of evidence with respect to A. If that's the claim construction issue. If it's not a claim construction issue, as we suggest, because the claim term, it's the claim terms themselves, tell you what you need to have, and that's not evidence that they put in, then it's not a claim construction issue. But the same result should apply. No introduction of late evidence. So I apologize if that was confusing.

JUDGE KALAN: So if it's not a claim construction issue, they're still relying on their *Apple* case, which permits introduction of new evidence if it's properly responsive. What cases or other authority are you relying on to counter that?

MR. MURRAY: So in the *Apple* case, the court was careful to point out that what Apple was doing there was they were not relying on any new evidence or unidentified portions of the prior art reference at issue. Here what's happening is they are, they're relying on evidence. Not only is it, it's not even in the references themselves. They had to do calculations and run models to get this new information. So not only are they pointing to unidentified portions of the references, they're pointing to brand new model outputs and calculations that you need to do outside of the reference. And we think this is closer to the *Ariosa* case cited in our briefing from the Fed Circuit, where the Board disregarded reply evidence, where it was relying on previously unidentified portions of a reference to make a meaningfully distinct contention. So unless Your Honors have any further questions.

JUDGE BELISLE: Counsel, Judge Belisle, if we were to move forward, you know, in a final decision with Petitioner's construction, and thus including the aspect of figure seven as part of the what could be included and meet the limitation, what does that do to the patentability defense from Patent Owner?

MR. MURRAY: Well, I think it comes down to, we've presented arguments that the downward curve issue does not meet this claim limitation. And so, I think if you were to adopt Patent Owner's construction, figure seven, we don't have any subset. Their argument comes down to figure seven has a downward slope. Thibault has a downward slope. Matsusaka has a downward slope. I mean, that's the extent of their argument. And we can't disagree that those references don't show a downward slope. So the question really is whether or not that is an appropriate way to treat this claim.

JUDGE BELISLE: Okay. Thank you.

MR. MURRAY: So unless there's any further questions, I cede the rest of my time.

JUDGE KALAN: Nothing from the panel. Thank you. You have plenty of time left. But I appreciate that both parties have made thorough presentations today. We'd like to thank you for your attendance and your responsiveness to our questions. This matter is now submitted to the Board for preparation of the final written decision, and we are adjourned.

(Whereupon, the proceedings at 2:58 p.m. were concluded.)

PETITIONER:

W. Karl Renner
David Holt
Jennifer Huang
Karan Jhurani
FISH & RICHARDSON P.C.
axf-ptab@fr.com
holt2@fr.com
jjh@fr.com
jhurani@fr.com

PATENT OWNER:

Stephen Murray
John Simmons
Dennis Butler
Keith Jones
PANITCH SCHWARZE
smurray@panitchlaw.com
jsimmons@panitchlaw.com
dbutler@panitchlaw.com
kjones@panitchlaw.com