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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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QUASAR SCIENCE LLC,
Petitioner,

v.

COLT INTERNATIONAL CLOTHING, INC. D/B/A COLT LED,
Patent Owner

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IPR2023-00613 (Patent 10,411,582 B1)
IPR2023-00614 (Patent 10,566,895 B1)

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Record of Oral Hearing
Held: July 16, 2024

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Before GEORGIANNA W. BRADEN, ZHENYU YANG, and ROBERT J. WEINSCHENK, *Administrative Patent Judges*.

APPEARANCES:

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The above-entitled matter came on for hearing on July 16, 2024, commencing at 1:00 p.m., via video teleconference.

1 P R O C E E D I N G S
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4 JUDGE WEINSCHENK: Good afternoon, everyone. This is an
5 oral hearing in IPR2023-613 and 614, Quasar Science vs. Colt International
6 Clothing. I'm Judge Weinschenk. With me today are Judge Braden and
7 Judge Yang. Let's start with some appearances. Who do we have on behalf
8 of Petitioner?
9 MR. WARD: Good afternoon, Judge Braden, Judge Yang, and
10 Judge Weinschenk. This is Trenton Ward appearing on behalf of Petitioner,
11 Quasar Science. And, Your Honors, I'm joined this afternoon by my
12 colleagues, Heath Briggs, and David Magee.
13 JUDGE WEINSCHENK: All right, great. And will you be doing
14 the presenting for Petitioner, Mr. Ward?
15 MR. WARD: I will. And, Judge Weinschenk, I just wanted to
16 make sure, is my audio loud and clear?
17 JUDGE WEINSCHENK: Yeah, we've got you.
18 MR. WARD: Excellent. Thank you.
19 JUDGE WEINSCHENK: All right. And who do we have on
20 behalf of Patent Owner?
21 MR. HOFFMAN: Good morning, Your Honors. This is David
22 Hoffman on behalf of Patent Owner, Colt. I know that Colt's principal, Mr.
23 Macias, is on the, I believe, the public line.
24 JUDGE WEINSCHENK: Okay, great. All right, just a few
25 preliminary matters here before we get started. As always, our primary

1 concern is your right to be heard. So, if at any time you experience any
2 technical difficulties, please let us know. You can try to let the judges know,
3 or if for some reason you cannot communicate with us, please reach out to
4 the team member who provided you the connection information, and they
5 should be able to help you get that sorted out.
6 Please try to remember to mute your mic when you're not speaking
7 so that we don't have any background noise when others are presenting. It's
8 also helpful if you can try to reintroduce yourself each time you start
9 speaking again, just so that the court reporter has a clear record. We do have
10 the entire record. We have all the exhibits, papers, and demonstratives. It is
11 helpful, though, if you can tell us either paper number or exhibit number and
12 then give us a page number when you're referring to specific evidence.
13 There is a public line for the hearing today. I believe there is still
14 some confidential information that's under seal in this case. If at any time
15 you believe you're going to reference something that is confidential and
16 under seal, please let us know beforehand and we can close down that public
17 line at least temporarily to accommodate for that.
18 Per our order, each side will have 60 minutes to present their case.
19 Petitioner can reserve some time for rebuttal and Patent Owner for sur-
20 rebuttal. I will endeavor to give you guys a five minute warning when your
21 time's up. Sometimes if we're in the middle of questioning, I lose track of
22 that, but I'll do my best to get you at least some warning before your time is
23 up. With that, any questions before we get started, Mr. Ward?
24 MR. WARD: No questions for Petitioner.
25 JUDGE WEINSCHENK: Any questions for you, Mr. Hoffman?
26 MR. HOFFMAN: No questions, Your Honor.

1 JUDGE WEINSCHENK: All righty. Well, with that, Mr. Ward,
2 you can begin when you're ready. Just let me know how much time you'd
3 like to reserve for rebuttal, if any.
4 MR. WARD: Thank you, Your Honors. Trenton Ward, on behalf
5 of Petitioner, and I'd like to reserve 20 minutes for rebuttal, Your Honors.
6 JUDGE WEINSCHENK: Okay. Great. You can get started
7 whenever you're ready.
8 MR. WARD: Thank you, Your Honors. I want to turn to slide 2
9 of Petitioner's demonstratives, and I want to first address at the outset here
10 the 611 case. Our understanding is that the Patent Owner has requested
11 adverse judgment in the 611 case, challenging the '224 Patent, and Your
12 Honors have granted that request. The case is now terminated, so we will
13 not be addressing the 611 IPR today.
14 So, my understanding is the only cases we're addressing today is
15 the 613 IPR and the 614 IPR. And, Your Honors, I would suggest that
16 there's limited issues to be addressed in these remaining two IPRs, because
17 this is a rare case in which the Patent Owner has conceded that all elements
18 of Independent Claim 1 were known. Patent Owner states at the first
19 sentence in their reply brief that the individual elements of Claim 1 were
20 known. The Patent Owner's contention, Your Honors, is that the 1000
21 lumen limitation in Independent Claim 1 is not taught by the prior art.
22 Specifically, it's not taught in view of unclaimed limitations regarding lumen
23 loss and thermal loss. And I imagine we're going to spend a lot of time this
24 afternoon talking about those two points, lumen loss and thermal loss. But
25 what I want to identify for Your Honors at the outset is that lumen loss and
26 thermal loss are not recited in the challenged claims. And Patent Owner's

1 arguments can perhaps best be summarized by stating that these arguments
2 are not commensurate with the scope of their claims.
3 One housekeeping note, Your Honors, before I dive into the
4 arguments themselves is with respect to my demonstrative slides, I've given
5 you citations to the record. And unless otherwise noted, I'm citing you to the
6 613 IPR. And as Your Honors are aware, these IPRs are very related. The
7 '582 Patent and the '895 Patent are related Patents, specifications are very
8 similar, and the claims are very similar. The IPRs, accordingly, are also
9 very similar. The grounds in each IPR are identical. So, I'll be referring
10 primarily to the 613 case this afternoon, Your Honors, but our comments
11 apply equally to the 614 IPR as well.
12 So, moving on to --
13 JUDGE WEINSCHENK: Mr. Ward, this is Judge Weinschenk.
14 Can I ask you a question here before we get too far into the issues --
15 MR. WARD: Sure.
16 JUDGE WEINSCHENK: -- that Patent Owner raised? In our
17 institution decision, there were two grounds that you proposed in your
18 petition. We addressed them in our institution decision. There was the first
19 ground where the first reference was Kit. And I believe in our decision, we
20 said that Petitioner had not shown sufficiently that Kit or the other
21 references taught the first LEDs that emitted cool white light and the second
22 LEDs that emitted warm white light. I didn't see anywhere in your reply
23 brief that you addressed that. Is Petitioner contesting that finding that we
24 made in our institution decision, or is that something that's not an issue any
25 longer?
26 MR. WARD: We would contest that finding, Your Honors.

1 Petitioner's proposition is that Ground 1 teaches the challenged claims. But
2 we've seen your decision on institution and with respect to Ground 1, at least
3 for purposes of efficiency this afternoon, we are going to rest on our papers
4 with respect to Ground 1 and focus on Ground 2.
5 JUDGE WEINSCHENK: And when you say rest on your -- at
6 least with respect to the issue I'm talking about the first and second LEDs,
7 you don't have anything beyond your petition, right? There's nothing in your
8 reply on that issue?
9 MR. WARD: Nothing that adds to what's set forth in the petition
10 and the supporting declaration.
11 JUDGE WEINSCHENK: Okay, thank you.
12 MR. WARD: Certainly. So, on slide 3 of Petitioner's
13 demonstratives, I give you, Your Honors, the four topics that I'd like to
14 address at the outset today. It's my roadmap for Petitioner's discussion. Of
15 the four points, the first point I want to address is the 1000 Lumen limitation
16 and the fact that Petitioner established the obviousness of the challenged
17 claims, including this 1000 Lumen limitation.
18 The second point are the alleged thermal issues, not recited in the
19 challenged claims and not discussed in the '582 Patent. Third point I want
20 to talk about is our motivation for the combination, the rationale associated
21 with our proposed combination, and then finally the secondary
22 considerations alleged secondary consideration (INDISCERNIBLE) which
23 is insufficient and unpersuasive.
24 So, moving on to slide 5, and on slides 5 and 6 what I attempted to
25 do was reproduce Claim 1, it was rather difficult because it's a long claim.
26 But you can see on slide 6 I have provided in highlight yellow the limitation

1 that Patent Owner contests and it's Claimed 1(j). I'm going to read it for
2 Your Honors. It states wherein the light emitted from the LED light system
3 is at least 1000 lumens when the first LEDs are lit and at least 1000 lumens
4 when the second LEDs are lit. Specifically, Patent Owner contests this
5 claim limitation stating that it is not taught by the prior art combination
6 proposed by Petitioner.
7 And moving on to my slide 7, it's important that Patent Owner
8 doesn't argue that the 1000 lumen limitation doesn't exist in the prior art. In
9 fact, they concede that. They concede that the prior art taught LED tubes
10 with 1000 lumen outputs. What they do contest, however, Your Honors, is
11 that the Petitioner failed to account for known losses in LEDs in determining
12 the light system output. Mr. Holmes provided a proposed combination with
13 respect to Ground 2 in the 613 IPR and the 614 IPR and the lumen output
14 that would be associated with that proposed combination. And Patent
15 Owner chose not to cross-examine Mr. Holmes on his testimony there. And
16 they did not allege that his calculations that were provided are inaccurate.
17 Patent Owner simply alleged that Mr. Holmes failed to account for certain
18 known losses. And it's significant, Your Honors, that they described these
19 as known losses, because Patent Owner concedes that the lumen losses and
20 indeed the thermal losses as well were known to those of skill in the art.
21 And it's Patent Owner's contention that Petitioner failed to correctly account
22 for these losses.
23 Moving to slide 8 of the demonstratives. I give the list there in the
24 first bullet point of the possible lumen losses that Patent Owner identifies.
25 They give a long list. It includes diffusion losses, CRI losses, color
26 rendering indexes, what CRI stands for, color rendering index losses, green

1 index rating losses, color temperature losses, thermal droop losses, current
2 droop losses, and driver circuitry losses. Yet, Your Honors, not a single one
3 of these on this very long list is addressed or even accounted for in the '582
4 Patent or the '895 Patent. And Patent Owner and its expert Dr. Allen
5 concede that these were known losses. Dr. Allen even describes these as
6 inherent to LED design. Dr. Allen's declaration appears at Exhibit 2080 in
7 the record, and at paragraph 18 he says this, he says the Holmes Declaration,
8 as well as the references, failed to address well-known lumen reducing
9 penalties and going from a proposed LED lumen per watt to a luminaire
10 lumen output. So, Dr. Allen --
11 JUDGE WEINSCHENK: Mr. Ward?
12 MR. WARD: Yes.
13 JUDGE WEINSCHENK: This is Judge Weinschenk. I mean I
14 think the issue here is a little more than just accounting for known losses.
15 And you rely, as I understand Ground 2 on the reference, I'll call it Hasnain,
16 I'm not exactly sure how to pronounce it.
17 MR. WARD: Sounds good to me.
18 JUDGE WEINSCHENK: Hasnain's teaching that LEDs, you
19 know, generate 70 to 100 lumens per watt. And I think Patent Owner's point
20 is that's all well and good, but we don't know, for example, what the CRI of
21 those LEDs were, what the green to magenta deviation was for those LEDs,
22 whether they had a diffusion cover or not. And those things can all affect
23 the lumen output, as is known. So, then how do we figure out what Hasnain
24 actually teaches if we don't know, you know, whether it also meets the other
25 limitations of the claim that require a cover and a certain CRI and a certain
26 green, magenta ratio? Because that could certainly affect that output. I

1 think that's not disputed. So, are we just speculating as to whether Hasnain
2 can actually reach 1000 lumens if it has all those other features?
3 MR. WARD: It's not speculation, Your Honors. It's the
4 combination of the teachings of the references. And if you turn to slide 10
5 of Patent Owner's demonstratives, you'll see reproduced there that quote
6 from Mr. Holmes's -- or he testified that a person of ordinary skill in the art
7 armed with the teachings of Hasnain would know that even assuming the
8 LED is capable of emitting 70 lumens per watt, an LED base lamp having
9 elongated 44 inch long and one inch wide circuit board would be able to
10 produce 1,540 lumens from just 22 watts and up to 3,080 lumens at 44 watts.
11 So, Judge Weinschenk, there's no contradiction, there's no argument by
12 Patent Owner that those would not have been achieved by the teachings of
13 the references that relied upon. What they simply say is that Mr. Holmes
14 failed to correctly account for what you're identifying, Judge Weinschenk,
15 which is losses that may have been associated with these lumens outputs.
16 JUDGE WEINSCHENK: Well, I think it's a little different, Mr.
17 Ward, in that I think you're taking another reference, right, I believe maybe
18 it was Ducharme or one of the other references in the combination that
19 teaches having a CRI of over 90 right, and that -- and I think we've seen
20 there's evidence in the record that as you increase the CRI it drops the
21 lumens per watt. So, we don't know what the CRI is in Hasnain when they
22 said 70 to 100. So, it can certainly affect these calculations if we were to
23 require a CRI of over 90 because we just don't know what it was in Hasnain.
24 We don't know what they were using.
25 MR. WARD: What Mr. Holmes, our expert, testifies to, Your
26 Honor, is that these are design specific considerations that one of ordinary

1 skill in the art and LED lighting design would take these into account for a
2 particular product's design. What we rely upon from the references is their
3 teachings with respect to the recited claim limitations. And I want to
4 identify specifically the teachings with respect to Ducharme regarding CRI
5 and regarding the green, magenta color deviations. Specifically, and if you
6 take a look at Ducharme's disclosures on this, it's Exhibit 1005 in column 4.
7 Ducharme talks about color temperature and/or CRI of light. It's critical to
8 creators of images such as photographers, film, and television producers. He
9 goes on to talk about the tenets of theatrical lighting design, that strong
10 green light on a human body tends to make the human look unnatural,
11 creepy, and often a little disgusting. So, what Ducharme is talking about is
12 the fact that for -- for a high quality LED light, a certain level of CRI is
13 required, a high level of CRI. Also, ensuring that you're counting for the
14 less than five points green, and less than five points magenta for color
15 compensation. So, Ducharme gives that teaching with respect to that desire
16 to provide that level of quality of LED light, and that in combination with
17 the additional teachings of the Hasnain reference, the Ianiro reference, and
18 the Katzir reference arrive at the proposed combination of a light that
19 provides that level quality of light CRI above 90 and less than five points G
20 or M. And, Your Honors, we're going to hear a lot today about what we
21 didn't significantly account for losses that may have been associated with
22 achieving this. But what we set for, you see it on the bottom of slide 10
23 there, is the percentages above the 1000 lumen threshold that Holmes's
24 proposed combinations arrive at. The first one, 1,540 lumens, is 54 percent
25 greater than the 1000 lumen threshold. The second output, 3,080 lumens is
26 208 percent greater than the claimed 1000 lumens. You're going to hear

1 from Patent Owner, I imagine a lot this afternoon about we needed to add
2 additional losses to these calculations, but at no point do they say that the
3 sum of those losses would be greater than say the 208 percent. Therefore,
4 the proposed combination exceeds the required lumen amount, even if you
5 assume all of these undisclosed, unsupported, lumen loss and thermal loss
6 considerations had to be accounted for.
7 JUDGE WEINSCHENK: Yeah, but there is some -- this is Judge
8 Weinschenk, sorry, there is some evidence at least that your 22 watt
9 calculation there could drop below 1000 lumens if we had accounted for
10 some of these other things like, if we assume that Hasnain had a CRI of 65
11 and you needed to get to 90, that might drop it low enough that their LEDs
12 wouldn't get 1000 lumens, right? That's possible.
13 MR. WARD: It is possible, and in the hands of one of ordinary
14 skill in the art, they would be designing their circuit with those known
15 losses, as Patent Owner describes, and their expert concedes known losses in
16 mind. If they would have designed a circuit with the output parameters in
17 mind and they would have set it up such that it met the desired parameters, if
18 the desired parameters --
19 JUDGE WEINSCHENK: Mr. Ward, isn't that kind of using
20 hindsight now? We're taking the limitations that are in the claim, a 1000
21 lumens and 90 CRI and GM of less than five and saying, well, someone
22 would know how to do this. We need to know that the references actually
23 taught those things and that it would come from the references, not that
24 someone would look at the claims and work backwards and be able to figure
25 it out. Those are different things, right?
26 MR. WARD: And that is exactly what the references teach, Your

1 Honors, and I would suggest that you take a look at the cited teachings from
2 the references, and the Hasnain teachings, for instance, is what for Ground 2
3 our expert, Mr. Holmes, based his proposal on, and his proposal looks at the
4 specific teachings from Hasnain, which talk about the lumen output being
5 somewhere between 70 and 100 lumens per watt. He used the lower of the
6 range. He didn't use the upper of the range. He used the 70 lumens per watt.
7 Hasnain also talks about the potential thermal dissipation that needs to be
8 considered in laying out the LED circuit. That's how Mr. Holmes arrived at
9 his calculation that's there on slide 10. And that quote, he says an LED base
10 lamp, having an elongated 44 inch long and one inch wide circuit board.
11 What he's doing there is he's making calculations based upon the form
12 factor, the T8 form factors, Your Honors may be aware, there's two form
13 factors that are discussed in the Patent, T8 and T12. T8 is a four foot long
14 bulb, you guys are probably familiar with, and the fluorescent version of it.
15 It's a four foot long bulb that's one inch wide. And what Mr. Holmes, one of
16 ordinary skill in the art, reading the disclosures in Hasnain has proposed is
17 that taking a look at that form factor for T8, allowing for four inches of that
18 to not be used by the LEDs, but 44 inches of the links to be used for the LED
19 array with the one inch wide circuit board, you would arrive at the lumen
20 output that he provided there. So, he's relying upon the teachings of
21 Ducharme, its motivation that I want a high CRI output, I want to account
22 for green and magenta, and that I want the lumens to be over a 1000 lumens.
23 And specifically, Your Honors, if you turn back to slide 9, a LED tube that
24 outputted greater than a 1000 lumens, this was not something novel. This
25 was something that was well-known in the art, and actually the Patent itself
26 establishes this because the '582 Patent identifies multiple examples of LED

1 tubes providing outputs in excess of a 1000 lumens. The first is in the top
2 bullet point in the '582 Patent background. They tell us about the Durosite
3 MT8 size LED tube that have an output of 1500 lumens at 17 watts. And
4 then in a screenshot from the provisional application that I set forth at the
5 bottom of slide 9 there, you see four different examples that are identified in
6 the provisional application for the '582 Patent that are Durosite devices that
7 were LED tubes that provided movement outputs in excess of 1000 lumens.
8 Moving to slide 11.
9 JUDGE WEINSCHENK: Mr. Ward, I want to pause there for a
10 second. This is Judge Weinschenk.
11 MR. WARD: Sure.
12 JUDGE WEINSCHENK: Again, those examples that output 1000
13 lumens, we don't know what the CRI was. We don't know what the green,
14 magenta color deviation was. We don't know whether they were bicolor.
15 We don't know what kind of diffusion cover they had. We don't know any
16 of that. So how do we know that you could achieve all these things that are
17 in the claim and still be over 1000 lumens based on those examples that
18 don't have a bunch of features that are claimed here?
19 MR. WARD: Well, we know it from the ground that was proposed
20 by Petitioner, Your Honor. The combination of the teaching of the prior art
21 that we've cited have each and every one of the limitations of the claims.
22 And at the end of the day, the Patent Owner has conceded that. They have
23 conceded that all of those limitations were known in the art. And when
24 those limitations are combined in accordance with the knowledge of one of
25 ordinary skill in the art, you arrive at a LED tube that has a greater than 1000
26 lumens output.

1 JUDGE WEINSCHENK: Okay. So once again, just to clarify one
2 point, I mean, do you dispute that things like the CRI and green, magenta
3 color deviation can affect the lumen output of an LED, that they do have
4 some impact on it, right?
5 MR. WARD: Yeah, we do not dispute that, Judge Weinschenk.
6 But as we've set forth repeatedly in the record, and the Patent Owner
7 concedes, those were known concerns, those were known issues for an LED
8 light designer. You understand that when you're trying to match certain
9 specifications, certain output parameters, you have to design your LED
10 circuit appropriately.
11 JUDGE WEINSCHENK: Okay. I understand. I just want to ask
12 you one question while we're on this slide 10 of your 44 watt proposal. Is
13 there any evidence in the record that it was, you know, that there were LEDs
14 that could handle 44 watts? Is that common at the time?
15 MR. WARD: Yeah, there is evidence in the record. Actually, the
16 '582 Patent itself, Claim 12 recites a 42 watt output to the LED circuit. But
17 there are discussions in the references with respect to that increased wattage
18 will lead to increased LED light output. That's a sort of a fundamental
19 principle that's appreciated by those of skill in this area, that an
20 understanding if you apply more watts, you're going to get more light output.
21 JUDGE WEINSCHENK: Yeah, but I guess I think Patent Owner's
22 point here is that 44 watts is pretty extreme at the time, that there weren't a
23 lot of 44 watt LED bulbs out there. Is that, you know, is there any evidence
24 that they're wrong about that, that that was a common thing that you would
25 just go and, you know, apply that much power to an LED at the time without
26 burning it out?

1 MR. WARD: I'd have to go back and look at the record on that
2 particular point, Judge Weinschenk, and I'm happy to do that on -- on
3 rebuttal. But, you know, applying an increased wattage to achieve a greater
4 light output was a well-known premise in the field.
5 JUDGE WEINSCHENK: Okay.
6 MR. WARD: So, moving to slide 11. Slide 11, essentially what
7 we hear from Patent Owner are these arguments amount to is an attempt to
8 differentiate the prior art based upon undisclosed and unclaimed limitations.
9 And the first bullet point on slide 11 gives you the argument that Patent
10 Owner made in their sur-reply in which they say that merely because the
11 '582 Patent does not mention losses does not mean Petitioner can ignore
12 them. So, you know, once again, there is no disclosure in the '582 Patent
13 specification or the '895 Patent specification with respect to potential lumen
14 losses. No teachings about how one might overcome these, how one might
15 address them, or the level to which they might be incurred with the circuits
16 that were disclosed. And Patent Owner alleges that we didn't properly
17 address those losses. Even though they didn't disclose anything in the Patent
18 with respect to them, they're saying that we inappropriately didn't address
19 them in our proposed combinations. But as I mentioned earlier, we don't
20 ignore the losses. We rely upon the knowledge of one of ordinary skill in
21 the art to account for those losses. Because the Patent Owner concedes that
22 these losses are dependent upon each particular device, each particular LED
23 product. They're dependent upon the LED component specifications.
24 They're dependent upon the amount of power that you're using to drive the
25 circuit, the LED P and junction temperature, and other factors. So, the
26 Patent Owner concedes that these are design specific considerations, and

1 because they were well known to those of skill in the art, they would have
2 been considered in arriving at the particular desired LED lighting device.
3 On slide 12, Mr. Holmes testified that achieving the desired lumen
4 output is a mere design consideration and can be achieved by selecting the
5 right type of LEDs and the number of LEDs and applying appropriate power
6 to the device. Dr. Allen said that we should have used a 35 percent
7 reduction with respect to the lumen losses. That number comes from a
8 combination of, he said, it would be a 15 percent loss for GM and then a 20
9 percent loss for CRI above 90, a combination of those being 35 percent.
10 Even if you assume that that's accurate, which we contend it is not, our
11 proposed combinations still have an output of greater than 1,000 lumens
12 with a 35 percent reduction.
13 I want to move to slide 14 and identify specifically this Newman v.
14 Quigg case, which I think is instructive, Your Honors. I had not read this
15 case since law school. You guys may remember this case from law school.
16 It's the perpetual motion case. And the top bullet point on slide 14 is Patent
17 Owner's citation to it. Patent Owner said in their sur-reply brief, that's the
18 first time they cited this case, they said that the inventors need not know or
19 set forth how or why the invention works, which we would agree is accurate,
20 but it's an incomplete quote. And the complete quote, I think is helpful to
21 Your Honors in this matter. The Newman case was a case in which the
22 Federal Circuit affirmed the unpatentability determination by the lower court
23 as the claimed device was akin to a perpetual motion machine and the
24 inventor failed to satisfy 101 and 112. I give you the full quote from the
25 Federal Circuit's decision there at the bottom of 14, which includes the
26 partial quote that the Patent Owner gave you. The Federal Circuit said,

1 while it is not a requirement of Patentability that inventor correctly set forth
2 or even know how or why the invention works, neither is the Patent
3 applicant relieved of the requirement of teaching how to achieve the claim
4 result even if the theory of operation is not correctly explained or even
5 understood. So, Petitioner would agree the inventor doesn't necessarily
6 have to know how or why the invention works, but there is a requirement
7 that they must teach how to achieve the claimed results. And the -- the
8 lumen losses that are alleged by Patent Owner as being significant here,
9 there's no disclosure on it, and there's certainly no disclosure if a problem
10 was solved as to how to overcome these lumen losses in the specifications of
11 the Patents.
12 So, now I want to move on to the -- the second issue that I'd like to
13 address here in my opening remarks, and that's the thermal issues. Slide 16
14 for Petitioner's demonstratives. Patent Owner has spent a significant amount
15 of time on this in its briefing and in the evidence submitted, lots of
16 declarations submitted with respect to these alleged thermal issues, Your
17 Honors. But like the lumen loss issues, there's no disclosure in either of the
18 Patents with respect to the thermal issues. I asked their declarant, Patent
19 Owner's declarant, Mr. Fisher, about this during his deposition. And I
20 reproduced the question and answer at the bottom of 16 there. I said, so
21 would you agree that the '582 Patent does not provide any disclosure about
22 overcoming thermal issues? And his answer was, I would agree and I was
23 wrong. So, Patent Owner's own expert agreeing there's no disclosure about
24 these alleged thermal issues.
25 Slide 17 for the Petitioner. As confirmed by Patent Owner's
26 declarants and Mr. Holmes, these thermal concerns were well known to a

1 person of ordinary skill in the art. And Dr. Allen testified about this at page
2 11 of his declaration, oh, I'm sorry, Exhibit 1039 at page 90, Patent Owner's
3 expert, Dr. Allen said, I'm confident that a person of ordinary skill in the art
4 would understand that since this inventor has achieved it, and he has told us
5 that the method that he used to achieve it was selecting high performance
6 LEDs, providing an aluminum housing and solving thermal issues, I would
7 have a high confidence that I could reproduce the result. So, Patent Owner's
8 expert summarizes what he understands to be the creation here, which was
9 selecting high performance LEDs and providing an aluminum housing to
10 address the thermal concerns. Aluminum housing, well known in the art,
11 we've got a citation for that.
12 On slide 18, there's a discussion of this selection of high
13 performance LEDs. And I think this is really important, Your Honors,
14 because at the end of the day, we had a chance to cross-examine Mr. Macias.
15 This is, you know, a rare case where we had a chance to cross-examine the
16 sole inventor for all of the Patents at issue. And we specifically asked him
17 about the process, about his process of creating this product. And what he
18 kept coming back to was this idea of selecting high performance LEDs.
19 Now, of course, the selection of LEDs is not a limitation that's recited in the
20 claim. There's no particular guidance in the Patent itself about selecting
21 high performance LEDs. But in our questioning during the deposition, we
22 asked Mr. Macias about these alleged problems, the alleged thermal issues,
23 about how he may or may not have overcome those. And his answer was
24 this, Your Honors. His answer was that he kept going back to the
25 manufacturer in China and asking for what he calls better components. It's
26 at page 238 of his deposition transcript. That's Exhibit 1047. I would

1 suggest to Your Honors that you take a look at that testimony starting at
2 page 238. And what you'll see there is you will see Mr. Macias describing
3 his efforts. He describes his efforts to obtain better components. And he
4 goes back, in his words, he goes back to China many times to ask for these
5 better components. And at page 246 of the deposition, he says this, he says,
6 I solved the problems by getting better components from the manufacturers
7 in China. And quote, I would pay more money to improve the product, to
8 improve the drivers, to improve the chips. So, what Mr. Macias testified to
9 is that he continually went back to the Chinese manufacturer and asked for
10 better components. He had to pay more money for those better components,
11 but he continued to ask for better components. And eventually, he was
12 given components that met the specifications that are recited in claims, the
13 parameters of the desired device. But there was --
14 JUDGE BRADEN: Counselor, --
15 MR. WARD: Yes.
16 JUDGE BRADEN: This is Judge Braden. Was it not true, though,
17 that he was also saying that he needed better components that had higher
18 tolerances to be able to deal with the thermal concerns in the lighting
19 system, that they needed the better quality phosphorus, they needed the
20 higher quality circuit boards to be able to account for those high thermal
21 issues?
22 MR. WARD: Judge Braden, we asked that question during his
23 deposition, and I'll recommend that you take a look at his responses there.
24 But he did not provide any response about ways in which perhaps the
25 components were improved or modifications that were made to the
26 components, or perhaps, let's say, modifications that were made to the

1 circuits that were driving the components. His answer was simply that he
2 asked for better components until he got them. And there's no disclosure in
3 the Patents about any issues that were solved or overcome. And there's no
4 recitation in the claims about what those problem solving solutions would
5 have been. At the end of the day, Mr. Macias tells us that he simply asked
6 for better components until he got them.
7 I want to move on to --
8 JUDGE BRADEN: Thank you, counselor.
9 MR. WARD: I want to move on to slide 20, and this is my third
10 point, is the motivation with respect to our proposed combination.
11 JUDGE WEINSCHENK: Mr. Ward?
12 MR. WARD: Go ahead, Judge Weinschenk.
13 JUDGE WEINSCHENK: Yeah. Before you move on, I do want
14 to ask you a question about this thermal issue. In your petition, you relied
15 on a teaching from Hasnain that talked about that it has been determined
16 experimentally that if the LEDs are spaced apart along the length of the heat
17 dissipating structure between 0.5 and 1 watt of heat per square inch of
18 surface area can be dissipated without raising the temperature more than 30
19 degrees Celsius above ambient. I believe you rely on that to get to your
20 calculation of applying 44 watts. Is that correct?
21 MR. WARD: Yes, Judge Weinschenk. That is the teaching that
22 Mr. Holmes relied upon in his proposed combination. The Hasnain
23 reference says this at column 4. It says that the LED would generate about
24 one watt a second of heat per each inch along the light source. And so, as I
25 talked about earlier, Mr. Holmes is looking at a T8 form factor bulb, which
26 is 48 inches long. He's accounting for 44 of those inches to be dedicated to

1 the LED array. And so, that's how he arrives at the 44 watts. That you
2 wouldn't need additional heat dissipation elements if you had sufficient
3 space for one watt per second of heat per inch along the light source.
4 Hasnain also discloses and Mr. Holmes cite to the fact that you could add
5 additional heat dissipation elements to the PCB board. You could have, let's
6 say, a more compact array of LEDs that you could have, perhaps even more
7 wattage applied to the LEDs. But in accordance with the teachings from
8 Hasnain, you could drive the LEDs up to that wattage without having
9 additional heat dissipation elements.
10 JUDGE WEINSCHENK: Okay. I guess my question for you is,
11 do you know whether that number that they got to this, you know, up to one
12 watt second of heat for each inch. Is that -- was that tested with a cover on it
13 or without a cover on it? I know that Hasnain teaches a cover elsewhere, but
14 I guess does, you know, would adding a cover impact those calculations?
15 Would they change it in some ways such that we couldn't rely on this 44
16 watt calculation?
17 MR. WARD: Judge Weinschenk, what we would say, and we
18 would point you to Mr. Holmes' testimony on this, and it's actually
19 addressed as well in his supplemental declaration, which is Exhibit 1049,
20 that there is possible considerations that would have needed to be made for a
21 diffusion cover. And those considerations may have changed the way in
22 which the spacing of the layout of the LED components or perhaps the
23 wattage that's applied to drive those LED components. But those would
24 have been accounted for. Those were known to a person of ordinary skill in
25 the art. And if they were designing an LED light device with the cover, that
26 that would have been accounted for in their design. And by no stretch do we

1 see that that accounting for, let's say that cover, for instance, would have
2 reduced it such that it would have been below the 1000 lumen requirement.
3 JUDGE WEINSCHENK: Well, I guess my question is more along
4 the lines of, you know, if you were still trying to apply 44 watts to get those
5 1000 lumens and you put a cover on it, would there be concerns about then
6 overheating if these calculations were done without a cover and then we
7 apply a cover and we're still applying 44 watts, would there be concerns
8 about overheating that? Even if you still got 1000 lumens, you might then
9 overheat the LEDs.
10 MR. WARD: Judge Weinschenk, I'll suggest you take a look at
11 the supplemental declaration from Mr. Holmes on this point, and it's
12 paragraphs 22 to 27 where he addresses some of these concerns. But
13 essentially thermal issues were well known, they are part of the LED design.
14 So, of course it would have been known that if you're adding a cover you're
15 reducing potential heat dissipation and that would have to be accounted for.
16 For instance, in the Ducharme reference there's disclosure of providing holes
17 in the cover to allow for heat dissipation. So, and creating the proposed
18 combination, one of ordinary skill in the art would have come into that
19 process with a thought in mind of I need to make sure that there's sufficient
20 heat dissipation. And so, just like where Hasnain says well you can drive
21 the LEDs at this amount if you had one per square inch. If you have higher
22 than that, then you're going to need additional heat dissipation elements.
23 And those additional heat dissipation elements are known and they're in fact
24 taught in the references that we cite, the aluminum housing, holes in the
25 cover, et cetera. Okay?
26 JUDGE WEINSCHENK: You have about three minutes

1 remaining in your primary argument. If I can suggest you maybe move over
2 to the objective indicia issues.
3 MR. WARD: Yes.
4 JUDGE WEINSCHENK: Is that where you were headed?
5 MR. WARD: Yep. Thank you Your Honor. And I'll move to
6 slide 23 with respect to the alleged secondary considerations. And what I've
7 done on slide 23, Your Honors, I've given you a screenshot of a brochure for
8 Colt's product. This is essentially marketing materials that would appear in
9 the Wamco lighting catalog. This is a well-distributed catalog in the
10 lighting space. And this is Colt LED tubes being advertised. And what we
11 see here in the product description are the features associated with Colt's
12 bicolor LED tube. It advertises it as having no pulse width modulation,
13 power running through a semiconductor controlled rectifier, constant
14 voltage, and dimmable to one percent. None of these features, Your Honors,
15 are recited in the claims. You see a similar recitation in the next slide on
16 slide 24. It's an additional marketing material. And in that recitation, you
17 see the similar features of dimmable to one percent, flicker free, constant
18 voltage, no pulse width modulation. It does identify a Patent there. It's the
19 '642 Patent. It's not an issue in any of these IPRs. But regardless, the other
20 features that are recited in this list and are identified as Colt LED Tube
21 Benefits, have not and are not recited in the claims. That's important, Your
22 Honors, because of what's on the next slide, slide 25. It's the Federal
23 Circuit's instructions to us in the Fox Factory case. In the Fox Factory case,
24 the Federal Circuit held that the Board erroneously presumed a nexus when
25 there are one or more features not claimed by the Patent that materially
26 impact the functionality of the commercial products. Take a look at how

1 Colt is advertising, how Patent Owner is advertising their product, and these
2 unclaimed features are what it is touting as the benefits of its product. Mr.
3 Holmes testified that these would material impact the functionality of the
4 product, and his testimony is unrebutted. There's no rebuttal to the fact that
5 these are features that would have been important to someone evaluating
6 whether or not to purchase the bicolor LED II, and these features are not co-
7 extensive with the claims.
8 I just want to make sure that there are any questions on that before
9 I move to copying.
10 JUDGE WEINSCHENK: No, I did want to ask you about
11 something else. Maybe we can come back to copying. It did seem like
12 there was some evidence in the record from Patent Owner here that, you
13 know, other companies in this field, at least maybe if they didn't fail to do
14 this, were at least skeptical of whether putting these LEDs with these
15 requirements of the claims into a tube would work, because they seem to
16 take different approaches, put them in panels or something like that. So, I'm
17 curious what your response is to the fact that there seems to be at least some
18 degree of skepticism and that no one else did this exact thing before. They
19 didn't put the bicolor LEDs with these requirements into a tube, they did it in
20 a panel instead.
21 MR. WARD: Yes, and it's some surprising testimony on that
22 Judge Weinschenk, and it was Patent Owners declarant, Mr. Baxter, that
23 testified with respect to a flat panel product. So, Kevin Baxter was an
24 employee at a different company called Light Panels. And in the time
25 period prior to the filing of the challenged Patents, Light Panels was
26 producing a flat panel bicolor lighting device, an LED bicolor lighting

1 device. And Mr. Baxter stated that he thought there would be problems with
2 a bicolor LED tube. But he also stated, which I was surprised to read in the
3 Patent Owner's declaration, he stated that he could have produced the
4 product, that it would have been known to create a bicolor LED tube at the
5 time. But there was an expectation that there may be problems associated
6 with that tube. But when I asked him at his deposition, I asked Mr. Baxter,
7 and in fact, many of Patent Owner's declarants about this at deposition as to
8 whether or not there was any evidence of people trying it and failing, people
9 actually attempting to create the product and having it fail because of the
10 alleged thermal issues or limit issues. There's no evidence in the record,
11 Your Honor, with respect to that, with respect to devices that simply didn't
12 work in the ways that the Patent Owner alleges that they wouldn't work.
13 So, I just want to, if I could, just finish on copying and I'll rest at
14 my opening remarks there. With respect to copying, and this is set forth on
15 slide 26, there's no credible evidence in the record, Your Honors, with
16 respect to copying. Patent Owner relies upon the declaration of Mr. Zhang,
17 and he relies upon deposition testimony from Mr. Zhang, and neither of
18 these documents are reliable because, Your Honor, they're directly
19 contradictory. In the declaration, which was signed in 2018, Mr. Zhang
20 stated that he met with Mr. Ray Gonzales, received samples of Colt's
21 product, and was told to copy them. But then two months later, in a
22 deposition, Mr. Zhang said something directly contradictory. He testified
23 that he'd never met Mr. Gonzales. So, the testimony from Mr. Zhang is
24 entirely unreliable. We provided you with a declaration from Mr. Ray
25 Gonzales, as to this point, it's Exhibit 1059. And Mr. Gonzales, in his
26 declaration, tells you that he never met Mr. Zhang and he never asked him to

1 duplicate the Colt bicolor tube. It's unrefuted. We submitted that
2 declaration from Mr. Gonzales, Patent Owner had the opportunity to depose
3 them if they wish they chose not to. We were, however, denied that
4 opportunity. We wanted to depose Mr. Zhang. We wanted to get the bottom
5 of this allegation about Mr. Gonzales providing tubes to Mr. Zhang. But we
6 were not given that opportunity. And likely we weren't given that
7 opportunity because currently the inventor, Mr. Macias, is in litigation with
8 Mr. Zhang with respect to alleged nonpayment by Mr. Macias.
9 JUDGE WEINSCHENK: Mr. Ward, I believe Patent Owner
10 argues that, well, even if there were some inconsistencies or contradictions
11 about his meetings with, I believe the name was Mr. Gonzales, that he
12 doesn't contradict his testimony about meeting with, I think the name was
13 Andy Lau, and that he asked him to copy it, or how do you respond to that
14 there's at least some consistency on that aspect of his testimony?
15 MR. WARD: We respond, Your Honor, by saying that there's no
16 evidence in the record that supports it. The only evidence in the record, in
17 fact, the only evidence that's cited to with respect to Mr. Lau is from that of
18 the inventor, Mr. Macias, and that of Mr. Zhang. And Mr. Zhang's
19 testimony, as we've indicated, can't be relied upon. We don't have any
20 testimony in the record from Mr. Lau. I'm not sure who Mr. Lau is, what his
21 role may or may not have been. But at the end of the day, there is no
22 credible, reliable evidence in the record upon which this panel can rely as
23 evidence of copy. They alleged that Mr. Gonzales took the tubes, took the
24 Colt tubes to China, and gave them to Mr. Zhang. And Mr. Gonzales says
25 on the record that he didn't ever meet with Mr. Zhang, and that he never
26 gave him the tubes. And that's the only unrebutted evidence about the

1 exchange of the tubes to Mr. Zhang.

2 JUDGE WEINSCHENK: Okay.

3 MR. WARD: Thank you, Your Honors.

4 JUDGE WEINSCHENK: Anything else, Mr. Ward?

5 MR. WARD: Nope, I'll reserve the rest of my time.

6 JUDGE WEINSCHENK: Okay. All right. Just so you know, you
7 have about 15 minutes remaining for rebuttal.

8 MR. WARD: Thank you, Your Honors.

9 JUDGE WEINSCHENK: All right. Mr. Hoffman, before you
10 begin, let me know how much time you'd like to reserve for sur-rebuttal.
11 Think you might be muted, Mr. Hoffman. Still not hearing you. There's a
12 mute button at the bottom of your screen.

13 MR. HOFFMAN: Excuse me. I should be good now. Thank you.
14 I tried to use the space bar, sorry. Okay. Good afternoon, again, Your
15 Honors. This is David Hoffman. I'd like to reserve 10 minutes for rebuttal
16 and I will be using the same convention with respect to the 613 IPR and just
17 refer to the 614 IPR where it's materially different and I need to do so.

18 JUDGE WEINSCHENK: All right. Sounds good, Mr. Hoffman.
19 You can begin whenever you're ready.

20 MR. HOFFMAN: Oh, okay. Let me get my PowerPoint up for
21 myself. Here we go. Okay. So, let's go to slide 2 and very quickly, I'm sure
22 Your Honors get the problem. Fluorescent tubes for 25 years had been
23 changed out because they were only one color temperature. There were a
24 number of employees who had to do this full-time, and that's in Mr. Silva's
25 declaration.

26 Now, let's go to slide 3, and we see that there was an LED tube

1 made by Mac Tech in the film TV industry, and it was also mono color so
2 you had to do the same thing, you had to change it out. It was also known to
3 have too much green even though it did market that it had lower zero green,
4 and that's in Mr. Silva's declaration again at paragraph 8, Exhibit 2066. And
5 it was only 10 watts and that's from Mr. Fisher's deposition, Exhibit 1043,
6 page 113, lines 21 to 25. And so, the one industry tube that was mono color,
7 it was only 10 watts. Okay.
8 Let's go to slide 4. Petitioner went through the claim elements. I
9 like to group them in three groups. The bicolor elements, 1b through d, so
10 our warm white, our cool white in 1b, our warm white in 1c, and our
11 circuitry to switch between the two and 1d. And then on slide 5, we have
12 our form factor elements, our housing, our cover, and in 1f that our housing
13 and cover together have the linear form factor.
14 And then in slide 6, we have our light quality elements, emitted
15 light quality. And I think as Your Honors have gleaned, this is with respect
16 to what comes out of the luminaire, not just the LEDs. So, as it says, the
17 light emitted from the LED light system. And here we're going to get at
18 least a 1000 lumens from both sets of LEDs, individually from the sets of
19 LEDs. We're also going to have the five points or less than five points of
20 green, magenta deviation and our CRI greater than 90. So, these things are
21 in combination and have to be addressed in combination as Your Honors
22 have gleaned.
23 What I'm going to go through today is Petitioner fails to show the
24 1000 lumens, particularly for a bicolor with all the elements of Claim 1.
25 And that based on thermal concerns, a POSITA would not design beyond
26 recommended thermal limits. And so, would not go anywhere near the

1 claimed invention. And then even if for some reason, those reasons fail to
2 show non-obviousness and were no reasonable expectation of success, we've
3 got unappetizing trade-offs, which are a lot like the henny-penny situation.
4 And then secondary considerations, I'll focus mainly on copying and nexus.
5 The others are all important, but I think those are where the Board
6 seems most interested. And last, dependent claims where we specifically
7 indicate 42 plus watts are applied over four times what was in Mac Tech.
8 Let's go to slide 8, and we're going to start with Petitioner's failure
9 to show 1000 lumens. I think the Board gets that the difference between
10 LPW lumens per watt of an LED times the wattage input, and that's only
11 part of the equation if you're going to have the combination of Claim 1 you
12 are going to, unless you know what the LED specs are, you're going to suffer
13 the lumen losses and you're going to suffer, or you're going to have a
14 speculative combination that Petitioner has.
15 JUDGE WEINSCHENK: Mr. Hoffman?
16 MR. HOFFMAN: Yes.
17 JUDGE WEINSCHENK: This is Judge Weinschenk. As we've
18 talked a lot with Petitioner's counsel, we have this teaching in Hasnain that,
19 you know, white light sources were known, you know, to generate 70 to 100
20 lumens per watt. And I think you've argued that, you know, that may vary
21 depending on some other features of the LEDs. But there is some evidence
22 in the record, for example, there's a spec sheet, and I think it's Exhibit 1062,
23 and you refer to this in your sur-reply. And it looks to me like on that spec
24 sheet, and you've even referenced this in your reply, that that range of 70 to
25 100 seems pretty consistent with what was known at the time, you know, it
26 seemed like maybe the lowest lumens per watt was 63 for one of the LEDs

1 you mentioned, but that's not drastically lower than, you know, 70 to 100,
2 and certainly wouldn't put the calculation much, you know, much lower by
3 dropping a 63 lumens per watt instead of 70. That seems to be from a
4 manufacturer, you know, with a 90 plus CRI. So, it seems like Hasnain's
5 teachings are pretty consistent with the LEDs you could have purchased at
6 the time. Is there some reason that we can't rely on that number that Hasnain
7 has when it's consistent with, you know, what was out there?
8 MR. HOFFMAN: Yes, Your Honor, this is David Hoffman. Let's
9 go to slide 13. And if we look at that spec sheet, which was submitted by
10 Petitioner in its reply, and we look at the cool white, which is 5,000K. So,
11 I've got the arrow there for that. And then you look at the 100 lumens per
12 watt on the top line, you only have a CRI of 65. So, we can't use that and
13 make the combination of Claim 1. Now, if we look at 90, we have 75
14 lumens per watt. We still are not the warm white because warm white also
15 suffers a significant loss. So, let's go to slide 14 and look at the same part of
16 Exhibit 162, page 1, and the chart at 90 CRI warm white, 3000 Kelvin, we
17 are at 63 lumens per watt. So, the -- and at this number, we still do not know
18 what is the green bias. And we haven't experienced any of the 33 percent
19 minimum lumen losses we're going to have just by virtue of putting this in a
20 luminaire.
21 So, let's go to slide, I believe it's 15. Here's the calculation using
22 that 63 lumens per watt and the 22 watts that Petitioner has proposed. And
23 we're going to have a total pre-loss lumens of 1,386, 22 times 63. Then
24 we're going to apply the green bias penalty of 15 percent from Dr. Allen's
25 declaration.
26 JUDGE WEINSCHENK: And I want to pause you for a second,

1 Mr. Hoffman. This is Judge Weinschenk. I had a question about this
2 because Petitioner said you came up with this 15 percent based on, I believe,
3 needing to use some filters. And I think their point was LEDs don't really
4 need these filters. They're just made already to have this sort of, you know,
5 green, magenta color deviation. So, do we really need that additional
6 penalty when that's kind of something that's already, LEDs were just kind of
7 known to have at the time?
8 MR. HOFFMAN: We do, Your Honor. And the reason is that the
9 amount that's coming out of the LED is without the right green bias. So,
10 what Dr. Allen is basically saying in his declaration is to move from that
11 green bias, which is way too high, and get to the appropriate claimed green
12 bias. It is the equivalent effect of putting a filter on it. If you recall from Dr.
13 Allen's declaration, there are phosphors that are on the LED and it's the
14 quality and amount of phosphor that affects the light output. So, what Dr.
15 Allen is essentially saying is this filter is equivalent to that. I'm not sure he
16 says it exactly that well, but that's what jumps out at me about it. And the --
17 JUDGE BRADEN: Counselor, this is Judge Braden. Could you
18 point to somewhere in the '582 Patent where it discusses either the use or the
19 non-use of these filters in order to be able to calculate that 1000 lumen that's
20 required in the challenged claim?
21 MR. HOFFMAN: No, I could not point to anywhere in the '582
22 with respect to that. What I can say is that the '582 doesn't calculate losses,
23 and there's a good reason for that. The '582 is based on using LEDs that
24 meet the specs of Mr. Macias that he wanted for the '582 claims. So, when
25 an -- having a diffusion cover, putting it in a luminaire with a diffusion
26 cover, and so forth. And so, the lumens that come out are already from the

1 appropriate green bias, the appropriate CRI, the appropriate warm or cool
2 temperature, with a diffusion cover, with an LED driver, and so forth,
3 experiencing all the appropriate losses. In addition, as the Newman v. Quigg
4 case said, the '582 does not have to explain exactly how the invention works
5 other than explaining -- other than providing enough that a POSITA could
6 put it together. That's an enablement requirement that Petitioner was
7 suggesting that Mr. Ward suggested, and enablement, as we all know, is not
8 part of an IPR. So, I hope that answers your question.
9 JUDGE BRADEN: So, a follow up on that, counselor. I do note
10 on example three of the '582, and this is column 11 starting on line 39, it
11 talks about creation of the LED lamps. I'm wondering if you could speak to
12 the creation of these LED lamps. And I know that you're talking about
13 enablement here, but I want to make sure I understand how somebody who's
14 reading the specification can make sure that they've got something within
15 the claims or not within the claims, based on this disclosure right here, and
16 why this doesn't meet, or why, how do I pronounce it, Hasnain, why that
17 would not meet the elements of the claims that require a 1000 lumen LED.
18 MR. HOFFMAN: Okay. I want to make sure I understand where
19 in the, in the '582 we're talking about?
20 JUDGE BRADEN: That is correct. Yes, it's column 11 starting at
21 line 39. It talks about an example here on how to create the LEDs that meet
22 the claim requirements.
23 MR. HOFFMAN: Ah, okay.
24 JUDGE BRADEN: And when I look at this and we're talking
25 about LEDs, you know, that have a specific type that are within a specific
26 range, this seems to match up with Hasnain. What am I missing?

1 MR. HOFFMAN: Okay. I can answer part of that first, and then
2 we'll switch to the Hasnain slides to answer the rest. So, with respect to the
3 paragraphs in the '582 Patent, if we look at line 41 of column 11, it says the
4 LEDs are tested to provide the desired light, e.g., with CRI of at least 90
5 percent purity. And we have to go to the provisional application which is
6 incorporated by reference and that is Exhibit 2123, and we have to look at
7 page 5 of the provisional I believe it's the eighth page of the PDF, and lines
8 4 through 6. And there it says because LED manufacturing quality varies
9 greatly LEDs are first tested and then placed in the array if they meet the
10 specifications sufficient to produce sufficient light, et cetera. So, I believe
11 from this we can glean that what Mr. Macias did was he ordered LEDs and
12 then because binning practices in 2013 did not allow for five steps of green
13 they were seven according to Dr. Allen, paragraph 73 I believe that is in his
14 Exhibit 2080. He went through them, individually tested them, and found
15 the appropriate ones. And I think that's maybe the secret sauce from an
16 enablement standpoint that maybe will hopefully help answer some of the
17 concerns.
18 Now, let's go to slide -- let's go to Hasnain here, and that's my first
19 slide on him is slide 20, and I want to answer the rest of your question,
20 Judge Braden. Hasnain is specifically open air for venting, no cover, no
21 housing. So, what he is doing is he -- we have Figures 2 and 3 here. There
22 is no cover, there is no housing. We can see it's just LEDs basically on a
23 board. And the excerpts of Hasnain, Exhibit 1008, column 3, lines 51 to 53,
24 and column 5, lines 65 to 67, talk about dissipating heat to the surrounding
25 air. And that's from the heat radiating surface of Hasnain.
26 Now, if we go to slide 21, we have Dr. Allen's excerpt from

1 Exhibit 1039, his deposition transcript, page 97, lines 4 through 19. Excuse
2 me. And we see there that Dr. Allen is saying these heat dissipating surfaces
3 of Hasnain, if you put them inside a covered luminaire with a housing,
4 you're not getting the heat out of the tube, so you're not doing anything.
5 They're rendered ineffective in effect. He calls them spreaders because
6 they're meant to spread the heat to the air, but you can't do that if you put it
7 in a housing. And so, now let's go --
8 JUDGE WEINSCHENK: Well, Mr. Hoffman, this is a Judge
9 Weinschenk. Before we move on from that, there are other portions of
10 Hasnain that specifically talk about having a cover and a housing, because,
11 for example, if you look at Hasnain, column 5, line 52, it says, in one aspect
12 of the present invention, the replacement LED light source has a plurality of
13 LEDs mounted on a heat dissipating substrate that has a width that is less
14 than or equal to the diameter of the fluorescent tube that the light source is
15 designed to replace. The substrates are metal clad printed circuit boards.
16 This sounds exactly like the housing in the '582 Patent, which can be a metal
17 housing that the LEDs are mounted on. And then in the next column,
18 column 6, at lines 48 to, say 54, I think, it talks about, you know, to give the
19 appearance of a fluorescent tube-like light source, you can place a, how does
20 it refer to, a cylindrical lens above the LEDs. So, we've got both a housing
21 substrate that the LEDs are mounted on and a cover, a lens cover over the
22 top to diffuse the light so it doesn't look like a single point of light. That
23 sounds pretty much to me like what the '582 is talking about doing, putting
24 the LEDs on an aluminum housing to dissipate the heat, and then putting it
25 in a tube that would fit in the old fluorescent structure. Is there something
26 I'm missing here?

1 MR. HOFFMAN: Yes, Your Honor. So, it could potentially be
2 interpreted that way, but I don't think that would be the right interpretation
3 because Hasnain's entire purpose is to keep heat down and to vent to air. In
4 addition, the cylindrical lens is a lens. It's not stated as a cover. So, if you
5 put this -- if you were to form the cylindrical lens as a cover, you would
6 thwart the airflow of Hasnain, at least on the top side, and that would make a
7 significant difference. He -- Hasnain -- nowhere is he saying I'm going to
8 completely cover the top of the LEDs. So, he has to have airflow, and so he
9 cannot, or we cannot use that in the combination of something as Ducharme.
10 In fact, Petitioner has not suggested using Hasnain's heat dissipating
11 structure as the housing. Petitioner has suggested using Ducharme Figure
12 5A as the housing, and that only has some air slots in it. And let me go to
13 help explain that slide 24. You can see the cover and what Petitioner would
14 consider the housing there, the bottom half. And that's going to completely
15 enclose whatever Hasnain has. And so, all you're going to have to get heat
16 out are these air slots. And Dr. Allen explained at his deposition that those,
17 in the excerpt there that I have from Exhibit 1039, page 107, lines 4 through
18 9, that air slots are ineffective by a magnitude of 10. They're ineffective
19 compared to good thermal management.
20 JUDGE WEINSCHENK: Well, Mr. Hoffman, this is Judge
21 Weinschenk. In addition to air slots, I mean, Hasnain teaches, as I just
22 discussed, this sort of metal substrate that you mount the LEDs on that can
23 dissipate heat. And I think Ducharme, as Petitioner has pointed out, also has
24 a metal or aluminum housing, something like that, that would, I think, act
25 similarly, as it would also dissipate heat, even if it's not a completely open
26 structure. So, I think Hasnain and Ducharme are consistently both have this

1 substrate that's part of the housing that the LEDs are mounted on that's
2 metal. Am I missing something there?
3 MR. HOFFMAN: Well, yes. So, Ducharme, let's go -- I mean,
4 Hasnain, let's go back to slide 20. He has the LEDs mounted on this item
5 structure 36. And when he is using a heat dissipating surface such as 47 in
6 Figure 3, he's basically attaching that to the heat dissipating surface 36. And
7 so, he's not going to get the heat out. This is a flat surface intended to be in
8 close proximity to the substrate 36. And again, this is all in open air. So,
9 this top and bottom are all open air. So, this is not going to work. A
10 POSITA is not going to think this is going to work in Ducharme's housing
11 and top, even if Ducharme has aluminum. There's no teaching as to how a
12 POSITA would properly incorporate this.
13 JUDGE BRADEN: But counselor, this is Judge Braden again.
14 The fact that Hasnain does disclose a cover, and it does disclose mounting it
15 on a heat dissipating element, I'm confused about why you argue that a
16 POSITA would not know to be able to use that and combine it with the
17 teachings of Ducharme.
18 MR. HOFFMAN: Well, we're going back to whether this alleged
19 cover of Hasnain is, in fact, a cover. It is a lens, and nowhere does Hasnain
20 say it is a cover or that it seals the top or covers. If we look at Figure 5, and
21 I realize Patent drawings are not necessarily to scale, but we don't see
22 anything on the sides of that cylindrical lens 61. We just see it mounted
23 above in this drawing, well above the LEDs. So, there's, again, because
24 Hasnain is open air is very important to Hasnain, and it would be
25 contradictory to Hasnain to use a cover as opposed to this lens.
26 Now, and we still, I'm not sure if I finished with respect to -- oh,

1 let me make sure I answered your question first. Your Honor, Judge Braden,
2 did I answer your question?
3 JUDGE BRADEN: I understand that there's a dispute about
4 whether the cylindrical lens 61 of Hasnain constitutes a cover, and I think I
5 understand your position, so thank you.
6 MR. HOFFMAN: Okay. And I would just add that it is obviously
7 Petitioner's burden to show that a POSITA would read it that way, and I
8 don't think Petitioner has met its burden on that, given what Hasnain shows.
9 JUDGE WEINSCHENK: So, I know we've jumped around a bit
10 and we started on the 1000 lumens and got to this thermal issue, but I know
11 you're trying to get back to that too, but I do want to ask you, does it seems
12 like a person of ordinary skill only needs to have a reasonable expectation
13 that this would work. They don't have to know for certainty. Don't we have
14 enough here in Hasnain that talks about heat dissipation and a cylindrical
15 lens that someone would at least expect that it would work? They're talking
16 about replacing fluorescent light tubes with LED tubes or with LED
17 structures and is there some reason we wouldn't at least have a reasonable
18 expectation that this thing would work without overheating, you know,
19 based on its teachings that there are ways to dissipate the heat?
20 MR. HOFFMAN: Well, that would be Dr. Allen's analysis that if
21 we do put a cover on and so assuming for purposes of argument that the lens
22 61 of Hasnain is seen by a POSITA as a cover and you were to put a cover
23 on Hasnain, or on Ducharme -- on Hasnain, then Dr. Allen does the thermal
24 analysis so, and -- and says we're going to be well overheated over what
25 (INDISCERNIBLE) recommends and what he would recommend. So, let's
26 go --

1 JUDGE WEINSCHENK: I guess before you do that, before we
2 get to Dr. Allen's testimony don't -- that wouldn't a person of skill in the art
3 look at this reference and this reference tells you that you can do .5 watt to 1
4 watt per square inch of the tube, and I've got heat dissipating structures that
5 are going to keep the heat out. So, even if you're right, even Dr. Allen's right
6 that ultimately this would fail, wouldn't someone looking at this reference
7 by, you know, in combination with the other references at least have a
8 reasonable expectation that it would work? And that's all we need. We
9 don't know these, you know, for certainty that you could do this if it fails, it
10 fails. But you just need a reasonable expectation based on the art we're
11 looking at. Why wouldn't they at least have that?
12 MR. HOFFMAN: I don't think they would have that because I
13 think they would read Hasnain as requiring open air, at least on the top,
14 unless you plaster the heat dissipating structure against a trophor wall -- the
15 trophor being the box that holds fluorescent lights typically. And Dr. Allen
16 says that wouldn't work either. And a POSITA to me would not think I can
17 put this heat dissipating structure inside a tube, and rather than trying to use
18 Hasnain as is. And again, Petitioner hasn't proposed Hasnain as is and
19 modifying Ducharme in that way. Petitioner has proposed using Ducharme
20 and taking things from Hasnain. And Petitioner made that very clear in its
21 reply.
22 JUDGE WEINSCHENK: Okay. Thank you.
23 MR. HOFFMAN: Okay. So, I think we get the lumens argument.
24 I have a lot on that, but if we go to slide 16, I'll just go through this very
25 quickly. Durosite is going to fail because at warm light it was, as Petitioner
26 says, 1,450 lumens. We don't know CRI GM, biased diffusion cover. We

1 don't know any of that, so if we apply losses for that, we end up with only
2 754 lumens. Petitioner has said, well, then a POSITA would put more
3 wattage in, but that, you know, as we've said, will increase heat. And so, I'm
4 going to just for a moment.
5 JUDGE WEINSCHENK: Mr. Hoffman, --
6 MR. HOFFMAN: Yes.
7 JUDGE WEINSCHENK: -- can I ask you a question about the 40
8 -- this is Judge Weinschenk, a question about 44 watts?
9 MR. HOFFMAN: Yes.
10 JUDGE WEINSCHENK: I know you have a bunch of arguments
11 that 44 watts would create thermal issues, but I'm curious, just putting that
12 aside for the moment, I think Petitioner had some calculation that if you
13 applied 44 watts, you would get something like 3,000 lumens. I didn't see
14 any dispute from you. I don't think there's enough losses to bring that below.
15 If it was thermally possible, there's not enough losses to bring that below
16 1,000 lumens, right? You don't argue that?
17 MR. HOFFMAN: No, we are not disputing that, although I think
18 it would be very close, but we're not necessarily disputing that. We're just
19 disputing that a POSITA would not have applied, you know, 44 watts.
20 There's just no way they would do that to a covered housed luminaire. Let
21 me jump --
22 JUDGE WEINSCHENK: I guess that's sort of my question here
23 is, you know, was that just something that wasn't common at the time? I
24 asked Petitioner this because your claims require an embodiment that applies
25 42 watts. So, obviously the inventor thought that that was something worth
26 doing and it didn't cause a thermal issue for some reason. Is there some

1 evidence in the record that it was just that there was just no one would do
2 that at the time? I mean, it seems like Hasnain at least suggests that you
3 could because they say one watt per square inch and there's 44 square
4 inches. So, someone would at least looking in that think I can do it or at
5 least have a reasonable reason to try it. Is there some other contravening
6 reason that someone would know that that's going to fail?
7 MR. HOFFMAN: Well, other than what I've already argued, Your
8 Honor, which is, you know, Hasnain was open air. It's not going to apply to
9 a covered housed LED light like Ducharme. And in addition, there is a
10 reason for the film TV industry. The LEDs, let me see, I have a couple of
11 slides that I think are relevant here. So, let me go to slide, I believe it is 32.
12 Yes, 32. So, in slide 32, Exhibit 2080, Dr. Allen's declaration, paragraph 44,
13 he says at the end of paragraph 44, which I've highlighted, a POSITA would
14 certainly not want to go above the Cree Design Guide recommended PN
15 junction of 80 degrees C limit. And that takes us into the thermal analysis of
16 Dr. Allen. But Cree, Exhibit 2083, Cree's Design Guide, page 8 near the
17 bottom, talks about limiting to 80 degrees C. Now, this is an example, but
18 Dr. Allen confirms that that's where you'd want to stay. And if we look on
19 slide 32 at the chart on the right, that comes from Exhibit 2083. Again,
20 Cree's Design Guide, page 8 at the bottom. That shows that with adding
21 heat, when you're going from 25 degrees C junction temperature to 80
22 degrees C junction temperature, you experience 15 percent loss there. And
23 that 15 percent loss gets greater and greater as you put more heat in. So, and
24 you take the chance, which increases greatly as you put more heat in of
25 damaging these high-quality LEDs, which are everything in the film and TV
26 industry. And so, in your in your commercial home, in your home, or in

1 your office if you lose a couple of CRI or some green bias we don't really
2 care. But in filming if you lose some that's a big deal as -- as Petitioner has
3 even mentioned, things start to look bad, people, faces look bad.
4 So, let's go to slide 33 and we don't have to take Dr. Allen's word
5 for the damage that can occur, we can see that in the color shift report,
6 Exhibit 2086. It's four times more likely that you're going to have damage
7 going from just a junction temperature of 75 degrees to 85 degrees C and a
8 humidity of 75 percent to 85 percent. So, that's a relatively small change.
9 And what the color shift report says at the bottom of the excerpt is
10 chromaticity is going to shift in the warm light LED emission towards the
11 green spectral region, the bad light that we don't want. And so --
12 JUDGE BRADEN: But if -- this is Judge Braden. So, is that 80
13 degree temperature where you want the junction temperature kept, is that
14 specified in the '582 Patent, or is that something that would have been
15 known to a person of skill in the art at the critical time?
16 MR. HOFFMAN: We don't specify the junction temperature in the
17 '582. I do believe from the evidence we've provided that 80 degrees C
18 would have been known. In fact, in Hasnain, he's endeavoring to try to keep
19 the junction temperature to 70 degrees C.
20 JUDGE BRADEN: Thank you, counselor.
21 MR. HOFFMAN: Okay. And so, we see that even in Hasnain,
22 he's trying to keep it even below what (INDISCERNIBLE) said.
23 Let's go -- okay, let's go to slide 34. And here we talk about the
24 unappetizing trade-offs. This -- our situation, I believe, is very similar to
25 what was in the Henny Penny court case. The Board found the combination
26 would not have been obvious, and that a POSITA would not have done it

1 because of basically unappetizing combination or unappetizing trade-offs.
2 And here we have kind of a loop of a web of trade-offs. We have wanting
3 high lumen output, but we are shooting ourselves in the foot multiple times
4 by using really high quality LEDs. And so, what we have to do is, as Your
5 Honors have probably seen, is pump a lot more wattage into the device and
6 that is going to create a lot more heat. And that heat is going to cause
7 thermal droop and that droop increases linearly with the heat as shown in
8 that pre-graph. And so, we have this complex trade-off, and then if we put a
9 strong diffusion cover on there, we're going to trap more heat. We're going
10 to reduce the light output. So, we have this this loop of very difficult issues
11 and the one solution that we see for that in the entertainment industry and
12 Mac Tech is again just a single color and only 10 watts.
13 Now, I think we can get into a lot of discussion there, but I think
14 we briefed it pretty well. So, if Your Honors have any questions on that, I'd
15 be glad to address that. I don't hear anything. So, are you hearing me?
16 JUDGE WEINSCHENK: Nothing from me, Mr. Hoffman.
17 MR. HOFFMAN: Oh, okay. Okay. Okay. Sorry. I needed verbal
18 feedback. Sorry. So, --
19 JUDGE WEINSCHENK: Happy to provide it.
20 MR. HOFFMAN: Okay. So, let's go to secondary considerations,
21 I think, unless there are any other questions on the other aspects I've
22 covered. I think the one point I would add there actually is we can't just
23 magically get better LEDs. We're going to suffer lumen penalties as we get
24 better and better LEDs. And that, anyway, let's go to secondary
25 considerations.
26 So, that starts at slide 35. And Petitioner argued that Colt has not -

1 - does not have a Nexus for two reasons, I think. One is that we have some
2 things that Wamco, a third party has marketed that are not specifically in the
3 claims. And then we have, we have not tied the success to something novel
4 in the claims. Well, that second argument, the WBIP case, v. Kohler, that
5 clearly addresses that in our situation, both sides have said, yes, each
6 individual element was known, but not -- but we say not in combination.
7 And that was the situation the Federal Circuit faced there in the WBIP case
8 and said, you can have Nexus in that situation without tying to new
9 elements, particularly when the combination is of known elements. Now,
10 with respect to Wamco's marketing, Wamco, as Mr. Macias said in his
11 deposition transcript, Exhibit 1047, page 200, lines 1 through 10, Wamco
12 was an aerospace aircraft lighting company. And so, it is marketing
13 whatever it thinks is helpful to that industry, presumably. Colt's marketing,
14 as we can see on slide 35, Exhibit 2069 and Exhibit 2077 that I have put up
15 here, is directed to the low green bicolor tube, high CRI is in the specs on
16 Exhibit 2077, and that also talks about light output. So --
17 JUDGE WEINSCHENK: Mr. Hoffman?
18 MR. HOFFMAN: Yes.
19 JUDGE WEINSCHENK: This is Judge Weinschenk. Is this the
20 same product that is being marketed on -- and you're saying Colt's website as
21 well as this Wamco website? Is it the same product?
22 MR. HOFFMAN: I could not tell you for sure. I don't have reason
23 to believe one way or the other on that. But I would -- well, let me just say it
24 probably is or at least a closely related product, but I don't know for sure.
25 JUDGE WEINSCHENK: I guess my question is if this product
26 has features that are, you know, particularly appealing to the film industry

1 and then has other unclaimed features that are particularly appealing to what
2 did you say, the aerospace -- or a different industry?
3 MR. HOFFMAN: Right.
4 JUDGE WEINSCHENK: Wouldn't that seem to sort of defeat
5 your Nexus argument that there are features that would drive these sales, you
6 know, that are in a completely different field, and that your claims are just
7 directed to specific aspects of it that are particularly appealing to one
8 industry and not the product as a whole?
9 MR. HOFFMAN: I would just say that probably every claimed
10 combination is going to have something that might appeal to a different
11 industry, or many claimed combinations. But in -- and that some of the
12 things that are talked about in Wamco I think are just inherent to LEDs.
13 LEDs are dimmable, for example. So, I think it's truly directed at a different
14 market, and Colt, the bulk of Colt sales, there's about, I think, roughly $1
15 million in sales to Wamco that we've referred to. So, the bulk of sales have
16 been to, in the millions, have been to the film and TV industry. And that's
17 what's important. And so, I think that does provide Nexus here because
18 that's what's driving the sales.
19 JUDGE WEINSCHENK: What did you say you have about $3
20 million total in sales? Is that right? So, about $2 million to the film industry
21 and about $1 million to Wamco?
22 MR. HOFFMAN: I believe -- I have to -- well, I don't want to
23 misspeak, but I believe we had or may have had $3 million plus $1 million
24 to Wamco. No, no, I would say it is $2 million at least, and then 1 million to
25 Wamco. But we also have shown that we are entitled to Quasar sales, and
26 we've provided an estimate for those pre-2017, because we didn't have

1 numbers for those, of $3.6 million, based on Colt's competitive marketing.
2 It would be going up against Quasar in virtually every bid. And so, Colt
3 knew exactly, and Quasar presumably knew exactly what Colt was offering.
4 And Colt knew when it didn't get the bid and the salesperson told Colt, we
5 bought Quasar. So, we've, and Petitioner has not challenged any of that.
6 We also have a number of sales shown in the Exhibit 2093. And I'm not
7 going to open that up and I'm not going to discuss the numbers in it because
8 that's confidential. But the Board can look at that Exhibit 2093 and see
9 substantial sales of Quasar, particularly in the 614 IPR. There, the sales are
10 very substantial. And because there's a slight model change and the
11 switching in Claim 582 versus the Claim 1 in the '582 is slightly narrower
12 than the switching in the '895 and that model, bicolor model change that
13 Quasar made is covered by the '895. And we have not made an argument
14 that is covered by the '582. We have not made that argument here.
15 JUDGE WEINSCHENK: Mr. Hoffman, you have about five
16 minutes remaining in your primary argument.
17 MR. HOFFMAN: Okay. Now, and I just say Quasar markets the
18 same things to the film and TV industry that Colt does. We can see that in
19 Exhibit 2075. I'm going to skip over our other secondary considerations
20 except for copying. I think this is very important. Now, there are things that
21 Petitioner has said about Zhang's declaration versus his transcript and Mr.
22 Gonzales of Quasar addressing that specific that he never gave product to
23 Mr. Zhang, and he never instructed him to copy. But there's nothing
24 addressing Mr. Lau who also was with Quasar as the excerpts from Exhibit
25 2079 show and the declaration of Exhibit 2036 of Mr. Zhang. We, as the
26 Board knows, Mr. Zhang would have been additional discovery, so we were

1 not obligated to produce him. As the Board knows, too, because Petitioner
2 mentioned it, we were in litigation with Mr. Zhang. It did ultimately get
3 settled, but that was more recent. And the inconsistency that Petitioner
4 raises, I think, is well overcome by all of the corroboration and not only that
5 Quasar tried to make a bicolor tube, but it couldn't, but also uncontroverted
6 evidence that Mr. Gonzales himself obtained samples of Colt's product in
7 2013 from Mr. --
8 JUDGE WEINSCHENK: Mr. Hoffman?
9 MR. HOFFMAN: Yes.
10 JUDGE WEINSCHENK: Mr. Hoffman, this is Judge
11 Weinschenk. Can I interrupt you for a second? We had some previous calls
12 about this declaration from Mr. Zhang and his availability for a deposition,
13 and I think there were some issues here. You seem to be saying that you
14 didn't have to make him available because it was additional discovery. We
15 actually never got to that because I believe there was either you were going
16 to withdraw this declaration or we were going to give it no weight because
17 you had told us that even if we granted additional discovery, he was in China
18 and he's unavailable. So, am I misremembering something here? What
19 happened with this declaration?
20 MR. HOFFMAN: I think Your Honor is remembering either most
21 of it. Maybe the relevant part was not in front of Your Honor, is that the
22 parties ultimately did not reach an agreement. The Petitioner thought it
23 better to put in Mr. Zhang's declaration because they considered it a way of
24 conflicting with the Zhang deposition transcript, presumably. So, we never
25 really reached an agreement on that. And so, I don't think one way or the
26 other that Patent Owners should be dinged on that. The Board is free to

1 decide how much weight, obviously, to give to Mr. Zhang's declaration, but
2 --
3 JUDGE WEINSCHENK: Is your previous representation that, you
4 know, he was not available for a deposition? Is that accurate, or is that not
5 accurate anymore?
6 MR. HOFFMAN: That is accurate. As best we knew, he was in
7 recent months in China very recently, and that's where he normally lives and
8 works. We had no information otherwise. We did try to contact him
9 through counsel in the case that we had, because Mr. Zhang, it was our
10 understanding, had left the company he was with. And so, his company
11 email did not work, or company contact information did not work. So, we
12 did try to contact him -- we got no response.
13 JUDGE WEINSCHENK: Okay. All right. Thank you.
14 MR. HOFFMAN: So, we have this uncontroverted evidence from
15 Mr. Silva, Exhibit 2066, that he -- paragraphs 15 through 18, that he gave
16 Mr. Gonzales examples. And we have photos of Colt's disassembled
17 product in the possession of Quasar's manufacturer. And that's Exhibit
18 2079, PDF 95, for example.
19 Let's go to slide 42. And we can see a blow up of that. And we
20 can see that the cover is off, the end cap is open, and the wires are pulled
21 out. So, we have, that's pretty good corroboration. And let's go to slide 43.
22 Even if individually, some or the Board considers all of our secondary
23 considerations in substantial under the Volvo Penta case, the Board has to
24 consider whether in the aggregated it has substantial weight as the Federal
25 Circuit said it can.
26 JUDGE WEINSCHENK: Mr. Hoffman, before we get there, I

1 want to ask you about some of these other factors, particularly the long felt
2 need. I looked at your evidence, you certainly have identified a problem in
3 that, you know, you had to run around and change all these fluorescent
4 bulbs. But I guess my question for it is, is there any evidence that folks were
5 clamoring for something different? Or were they just kind of happy to do
6 with things the way they were? I didn't see anything where anybody was
7 asking for an LED replacement. It just seemed like you had identified a
8 problem, but you don't have any testimony for people clamoring for
9 something different. At least I couldn't find anything.
10 MR. HOFFMAN: We don't have testimony clamoring for a
11 difference. What we do have is our evidence that in the marketplace, the
12 number of the lead companies went to bicolor, but didn't do it. They went to
13 bicolor roughly around that time, but they did it in panel form or other
14 forms. So, you know, I think it is a reasonable presumption that if the lead
15 companies cannot or do not do something that ended up selling in the
16 millions and ended up being very desirable, that there was a desire to do
17 something like it.
18 JUDGE WEINSCHENK: And I guess that was kind of my other
19 question on this sort of, you know, is there already a solution in that you
20 said, you know, there were folks who designed a panel form instead of a
21 tube form. So, it seemed like maybe if they had some concerns about the
22 tube working, they certainly found something else to solve this need. Was
23 there still really a need for the tube form that you came up with since there
24 was already a panel LED bicolor in the market?
25 MR. HOFFMAN: Well, I would say yes, because the shape of the
26 lighting is important. The tubes have more flexibility in terms of how you

1 can stack them and use them. As Mr. Silva had said, you can have 100 of
2 these tubes on set. And so, I do think there was a need. And there's no
3 evidence about how powerful these panel lights were or not. I grant you; we
4 are definitely not perfect in the long felt need, but I do think it is worth some
5 weight, particularly in the aggregate.
6 I do also want to point out very quickly, I probably have about a
7 minute left in my presentation. So, I want to point out very quickly that Mr.
8 Baxter's quote that the lights are not used very much in the industry. He left
9 the industry just months after Colt's product was introduced, and he's not a
10 commercial success witness for Patent Owner.
11 Let's go to slide 44. I want to just talk about our Dependent
12 Claims with 42 watts. The driver in these claims is configured to selectively
13 drive either the first or second LEDs with 42 watts. This, at the time, I
14 consider it to be extreme and unheard of. Other than Hasnain's coverless
15 product, which to me is a different animal, Durosite, which Petitioner
16 referred to as 17 watts. Katzir and his preferred embodiment, Exhibit 1006,
17 paragraph 26, was 14 watts. Mac Tech, again, the only one that we've talked
18 about that's in the industry, specifically for the industry, was only 10 watts.
19 And then last, I have a list of things that Mr. Macias did, and
20 important on that list is the individual testing, which we talked about. But
21 he did a number of things and invention does not have to come from a flash
22 of genius. It can come from anything else, hard work. I think there was
23 tremendous hard work here and I believe that's what the Patent laws are
24 intended to encourage, way beyond what a POSITA would do. If there are
25 no other questions, I'm done with this part.
26 JUDGE WEINSCHENK: Mr. Hoffman, I have one more question

1 for you that I forgot to ask at the beginning, and I'll ask it real quick now,
2 hopefully you can answer me. If you go back to your slide 15, I just want to
3 make sure I don't forget this. Let me know when you're there.
4 MR. HOFFMAN: Okay.
5 JUDGE WEINSCHENK: So, luminaire max efficiency 67 percent
6 number you came up with, I know there's some testimony from your
7 declarant Holmes on this. Was this -- is this supported by a document
8 elsewhere or is this just his testimony that like this was his experience that
9 when you put the LEDs into the light you just automatically lose somehow
10 33 percent?
11 MR. HOFFMAN: Well, his testimony in paragraph 78 -- so, I
12 don't think we have a document to that effect. His testimony in paragraph
13 78 was that if you have something with a cover, you're going to have a cover
14 loss, you're going to have a droop loss, you're going to have the LED driver
15 losses, the circuitry losses. And that, that was his experience and in working
16 on the award winning GE product at the time. And so, his GE product won
17 an award for its efficiency. So, that's why he's taking that as a benchmark
18 since it was award winning for efficiency.
19 JUDGE WEINSCHENK: Okay. And so, this basically factors in,
20 you know, everything except for CRI and the green bias penalty, all the
21 other stuff we talked about is sort of factored into this. Is that right?
22 MR. HOFFMAN: The warm color versus cool is not factored into
23 this.
24 JUDGE WEINSCHENK: Okay. Yeah.
25 MR. HOFFMAN: Yeah, anything non-CRI is factored in. But
26 again, if you get to really high temperatures, you start to get a lot more

1 droop. And so, you're going to have more than that 67 -- you're going to
2 have less than that 67 percent in efficiency, you're going to have
3 significantly less.
4 JUDGE WEINSCHENK: Okay. I understand.
5 MR. HOFFMAN: Okay.
6 JUDGE WEINSCHENK: All right. Thank you, Mr. Hoffman.
7 MR. HOFFMAN: You're welcome.
8 JUDGE WEINSCHENK: You had about five minutes remaining
9 for rebuttal when you'd asked for 10. I think we went five minutes into both
10 of your rebuttals and I know, Mr. Hoffman, you had asked for some
11 additional time. So, maybe if we restore everyone to their original rebuttal
12 time, Mr. Ward, that'll give you 20 minutes, and Mr. Hoffman, that'll give
13 you your 10 minutes. Does that sound satisfactory to everyone is how to
14 proceed here?
15 MR. WARD: Yes, Your Honor.
16 MR. HOFFMAN: Mr. Hoffman, yes, Your Honor.
17 JUDGE WEINSCHENK: Okay. Awesome. All right, Mr. Ward,
18 you've got 20 minutes whenever you're ready.
19 MR. WARD: Thank you, Judge Weinschenk, and I don't think I'll
20 need the full 20 minutes but let me address just a few points that were raised
21 by Mr. Hoffman. And I want to start with the secondary consideration point
22 regarding the allegation of copying. Judge Weinschenk, as you identified,
23 this was an issue that we brought up to Your Honors many weeks ago with
24 respect to the declaration of Mr. Zhang and the inability of Petitioner to
25 cross-examine Mr. Zhang with respect to that declaration. As Patent Owner
26 stated earlier, they were unable to provide Mr. Zhang for deposition. And

1 Patent Owner's allegation was that that declaration constituted additional
2 discovery because it wasn't for purposes of this proceeding. And, Your
3 Honors, if you take a look at the record here, the declaration is Exhibit 2036
4 and it was signed in August of 2018. And we commented on this in
5 Petitioner's reply at page 23, and we said this, we said it appears more than a
6 coincidence that the Zhang Declaration from August of 2018 coincided with
7 a $1 million order from Mr. Macias. So, at the time in which Mr. Zhang
8 signed this declaration, he was also signing a million dollar order that he had
9 received from Mr. Macias. And in that declaration, he states that he met
10 with Ray Gonzales, received samples, and was asked to copy those samples.
11 But yet a few months later under oath at a deposition, he says that he never
12 met Ray Gonzales.
13 And I want to address specifically this allegation that Patent Owner
14 raises with respect to another declarant, Fernando Silva. Fernando Silva was
15 the sales manager for the Set Lighting Department at Paramount Pictures.
16 The allegation by Patent Owner was that it was Mr. Silva that gave samples
17 of the Colt bicolor LED to Mr. Gonzales. And on that basis, then Patent
18 Owner makes the allegation that it was those samples that Mr. Gonzales then
19 provided to Mr. Zhang. But I would suggest to Your Honors that you take a
20 look at the cross-examination of Mr. Silva on this exactly. It's Exhibit 1045,
21 and it's at page 84 of that deposition transcript. And I asked Mr. Silva about
22 this, I asked him about exactly what happened. And he testified that he
23 distributed all of the samples that were given to him by Mr. Macias for the
24 bicolor to essentially potential customers, and Ray Gonzales was one of
25 those potential customers. Ray Gonzales was a lighting professional that
26 from time to time would be involved in shootings at Paramount Pictures.

1 So, Fernando Silva included him in his samples distribution. And so,
2 Fernando Silva testified that he distributed all 60 of the samples that he
3 received and one of those individuals that he distributed them to was Mr.
4 Gonzales. But importantly, Your Honors, Mr. Silva also testified that he
5 received very few of the samples back as you could imagine and understand
6 this is the role of a salesperson. He provides the samples that he's given with
7 the hopes that it will generate interest. He did that here and distributed the
8 60 sample tubes and many of those Mr. Silva testified that he did not receive
9 back. So, there -- the testimony that Mr. Gonzales gave samples to Mr.
10 Zhang stands entirely upon Mr. Zhang's declaration, and it is contradicted by
11 his own testimony. And we weren't given the capability to cross-examine
12 him on any of that testimony, Your Honor, but most certainly the declaration
13 that was submitted by Mr. Zhang. And we would suggest to Your Honors
14 that that evidence simply cannot be relied upon in this proceeding.
15 I want to touch on just a few other of the secondary consideration
16 points, and I'll summarize by saying, Your Honors, that the evidence that's
17 submitted by a Patent Owner with respect to secondary considerations is
18 insufficient on each point. He talked about -- Mr. Hoffman talked about
19 sales data, the sales data that's in the record. Your Honors, although there's
20 sales data in the record, there's no allegations, evidence, or argument
21 otherwise as to the market share associated with that sales data. And as
22 Your Honors know, Federal Circuit case law is clear. Sales data alone is
23 insufficient. You have to have a comparison point. You need to know what
24 those sales numbers look like with respect to the overall market share, and
25 Patent Owner has failed to meet its burden to show that.
26 In addition, they failed to establish that the sales were the direct

1 result of the unique characteristics of the claimed invention. The Federal
2 Circuit's decision in the (INDISCERNIBLE) case tells us if the commercial
3 success is due to an unclaimed feature of the device or if the feature that
4 creates a commercial success was known in the prior art, the success is not
5 pertinent. And Patent Owner fails, Your Honors, to establish that the sales
6 were the direct results of the unique characteristics of the claimed invention.
7 So, we would suggest that the secondary consideration evidence that has
8 been submitted by Patent Owner is insufficient for Your Honors to rely
9 upon.
10 I want to talk about the secret sauce that Mr. Hoffman says was the
11 presumably the alleged invention by Mr. Macias. And he said that the secret
12 sauce was testing the LEDs individually. And presumably that was testing
13 that Mr. Macias would have done in an open air environment, testing that
14 would have occurred perhaps on a lab bench. And it sounds as if the testing
15 that Mr. Hoffman alleges Mr. Macias would have done would have been
16 incredibly similar to that what was disclosed in the Hasnain reference. And
17 in addition to that, as Judge Weinschenk you pointed out, the Hasnain
18 reference has specific disclosure about emulating the product for which it
19 was intended to replace, emulating the form factor of the fluorescent tube,
20 including a cover for the fluorescent tube. So, we would suggest that in
21 view of the teachings of Hasnain and the other cited references, that it would
22 have been obvious for one of ordinary skill in the art to arrive at the claimed
23 invention. And for Your Honors to find in favor of Patent Owner in these
24 cases, you essentially would need to find that these undisclosed, unclaimed,
25 lumen loss and thermal loss limitations talk away from that proposed
26 combination. And there's been a significant amount of discussion today,

1 Your Honors, about things that have no disclosure in the Patents themselves.
2 There's nothing in the Patents with respect to lumen losses and thermal
3 losses. In fact, the word thermal doesn't appear in the Patent at all. The
4 word heat doesn't appear in the Patent at all. What Patent Owner relies upon
5 is the knowledge of one of ordinary skill in the art.
6 And I want to address, I think I --
7 JUDGE WEINSCHENK: Mr. Ward?
8 MR. WARD: -- would like to close, but -- sorry, Judge
9 Weinschenk.
10 JUDGE WEINSCHENK: I just have one question about this.
11 There was an argument by Patent Owner that, you know, you relied on
12 Hasnain's heat dissipating features, you know, if needed. And Mr. Hoffman
13 said, well, there's no real explanation in the record as to how that would be
14 incorporated. If you got Ducharme's housing and cover, how would you
15 even use the heat dissipating structure in there? And I'm curious, is there
16 any evidence in the record as to how, you know, you would use that when
17 you're relying on the Ducharme for the housing and the cover?
18 MR. WARD: There's -- the evidence in the record is specifically
19 to Ducharme's teaching with respect to an aluminum housing and heat
20 dissipation. But as well, Mr. Holmes identifies that one could look to the
21 additional teachings in Hasnain and the other references with respect to heat
22 dissipation techniques. As I mentioned in my opening remarks, Hasnain's
23 disclosure that's specifically relied upon by Mr. Holmes is disclosure with
24 respect to the lumens per watt, assuming that there's no additional heat
25 dissipation required. And then Hasnain gives the additional disclosure about
26 ways in which you might accommodate for additional heat dissipation. But -

1 -

2 JUDGE WEINSCHENK: I guess the question is, is that something
3 that could be used with Ducharme or how do we know that? If you needed
4 it, could it actually be incorporated into the tube of Ducharme?

5 MR. WARD: Well, how one would know is that as all parties
6 agree here that the thermal loss issues would have been known to one of
7 ordinary skill in the art and a designer in this art sitting down, looking to
8 design to meet specific characteristics would have arranged the LED circuit
9 to properly accommodate for thermal losses. As Hasnain talks about, the
10 teaching in Hasnain that there's one watt per second of each for the LEDs,
11 for each inch along the light source. So, if you're placing the LEDs closer,
12 right, if they're within the tighter mapping in the array, then one of ordinary
13 skill in the art would know that they would need perhaps additional heat
14 dissipation features to accommodate for those such as the
15 (INDISCERNIBLE) taught in Ducharme, aluminum housing, slots in the
16 cover themselves that allowed additional heat dissipation, et cetera.

17 JUDGE WEINSCHENK: Okay. Thank you.

18 MR. WARD: So, I want to, unless Your Honors have any other
19 questions, I just want to conclude with what I think is an important
20 concession by the Patent Owner and it appears at page, I'm sorry, slide 45 of
21 Patent Owner's demonstratives. And this goes back to a point that I had
22 discussed earlier, but on slide 45 the Patent Owner identifies what it believes
23 to be the solutions that were achieved by Mr. Macias, the invention of
24 challenged Patents. And I want to go through those solutions. The first is he
25 got an LED driver to push the chips. Mr. Macias, when we cross-examined
26 him during his deposition, stated that he -- it was one of the components that

1 he sourced was an LED driver to push the chips. There's no disclosure in the
2 Patent and Mr. Macias could cite to nothing during his deposition as to
3 changes that were made to the LED drivers, technical improvements that
4 were made, et cetera. Applied 42 watts. There's no disclosure that applying
5 42 watts was unknown. Experienced barrels of failure, including thermal
6 failures. So, as we examined Mr. Macias during his deposition, he states
7 that when he kept going back to the Chinese manufacturer of the LED
8 components, he was testing devices and that resulted in these barrels of
9 failures. But the barrels of failures didn't result in anything that was
10 disclosed in the Patent, any innovation, modifications, improvements or
11 otherwise. As Mr. Macias said during his deposition, he just kept going
12 back asking for better components. As you see there, he made many trips to
13 China. And we have a hard time seeing how these many trips to China led
14 to a solution which provides a claim limitation that differentiates over the
15 prior art that's been cited in our proposed combinations.
16 So, Your Honors, in view of Patent Owner's concessions with
17 respect to the lack of innovation here, the lack of any disclosure about
18 improvements over what existed in the prior art, we would suggest to you
19 that these claims are obvious in view of the proposed combinations in the
20 petition.
21 JUDGE WEINSCHENK: All right. Thank you, Mr. Ward.
22 MR. WARD: Any questions, Your Honor?
23 JUDGE WEINSCHENK: Nothing for me. Anything from Judge
24 Braden, Judge Yang. All right. Thank you, Mr. Ward.
25 MR. WARD: Thank you.
26 JUDGE WEINSCHENK: All right. Mr. Hoffman, you can begin

1 your sur-rebuttal.

2 MR. HOFFMAN: Okay. Thank you, Your Honors. With regard
3 to market share, just very quickly, the product, the bicolor tube was the only
4 bicolor tube. And there's nothing in any -- Petitioner hasn't cited any law
5 that says Patent Owner has to have had a formal study. We have a
6 declaration testimony from Mr. Csernecky, Exhibit 2041, and in that he
7 discusses that he, in the last two to three years, almost all of the productions
8 he's worked on have used either the Quasar bicolor or Colt bicolor. And
9 then we have testimony from Mr. Wonderlick, Exhibit 2067, where he, in
10 the year since 2013 introduction of the Colt bicolor, 90 percent of the
11 productions at Paramount use Colt's bicolor. So, we think this, although not
12 a formal market study, certainly provides some good indication that there is
13 significant presence.

14 With regard to Hasnain, again, it's simply open air. A POSITA
15 would not use it because a POSITA would not see it as likely to succeed.
16 And a POSITA would be very concerned about the thermal issues Dr. Allen
17 has raised and about the 80 degrees C and the potential damage to the LEDs
18 in the film TV industry. Hasnain is not about film TV, so if there is a little
19 bit of damage, it's collateral damage and it's not a problem.

20 With respect to how the supposed concession of Patent Owner in
21 the slide 45, it says some things Macias did. It didn't say those are claimed
22 things, those are inventions. It's just some things he did in producing the
23 invention. And of note is that he used 576 LEDs. This very large number
24 helped keep down the current droop that Dr. Allen talks about in his
25 declaration. There is a loss of output, of lumen output from current droop.
26 Petitioner said, well, just double Durosites, 300. But if you've got a board

1 layout of 300 and you're going to bicolor, and there's -- you would just
2 simply switch out, use the same board layout, just simply switch out, some
3 for warm light and some for cool light.
4 Petitioner also mentions the air slots of Ducharme, but there are no
5 calculations as to whether or not those would be sufficient in any regard to
6 provide sufficient cooling. Petitioner is using -- I submit a lot of hindsight
7 when it is talking about '582, what it shows or what it doesn't show, and
8 talking about enablement issues that are not relevant in a IPR proceeding.
9 And so, I don't think they should be considered.
10 With respect to Mr. Zhang's declaration, the reason Patent Owner
11 was willing to go without it is that we have the Zhang deposition transcript.
12 So, even if the declaration is given little or no weight, the transcript still is
13 there. It is a deposition transcript that was taken under oath. Quasar had
14 counsel there who asked questions. And so, we believe that is -- should be
15 given significant weight, particularly given the photographic confirmation.
16 Whether or not with respect to Quasar obtaining samples, Mr. Gonzales has
17 obtained samples from Mr. Silva, whether or not they were returned or Mr.
18 Silva gave away them all or it doesn't matter, that's our evidence of how
19 Quasar obtained the product. And again, they're the visual photographs
20 showing the product within the possession of the manufacturer of Quasar.
21 And I'm not sure if I need to address anything else, so let me ask if
22 there are any questions.
23 JUDGE WEINSCHENK: Doesn't look like there's any other
24 questions from the panel, Mr. Hoffman.
25 MR. HOFFMAN: Okay. Thank you, Your Honors.
26 JUDGE WEINSCHENK: All right. Well, thank you both for your

1 presentations today. We certainly appreciate all the efforts that went into
2 preparing for this. It's very helpful to us and thank you for entertaining all of
3 your questions. I'll pause for a second. Is there a court reporter on the line?
4 Do you have any questions about spellings?
5 COURT REPORTER: Yes, I do. I don't know if you want me to
6 get it on record or off record, Judge.
7 JUDGE WEINSCHENK: Yeah, we'll go off the record. The
8 Judges will leave, and I'll ask at least Mr. Ward and Mr. Hoffman if you
9 could stay on the line for a few minutes here and answer any questions that a
10 court reporter might have about spellings. Is that all right?
11 MR. WARD: Certainly.
12 MR. HOFFMAN: Yes, Your Honor.
13 JUDGE WEINSCHENK: All right. Before we adjourn, any other
14 issues, questions, concerns, anything you need to know about this case, Mr.
15 Ward?
16 MR. WARD: Not from Petitioner. Thank you, Your Honors, for
17 your time.
18 JUDGE WEINSCHENK: Mr. Hoffman, anything from you?
19 MR. HOFFMAN: I just forgot to mention that 576 LEDs is
20 disclosed in the '582 Patent and the '895. Okay.
21 JUDGE WEINSCHENK: All right. With that, thank you again.
22 As I mentioned, we appreciate it. We are adjourned and off the record. And
23 court reporter, I have counsel who will stay in line for you. Have a good
24 afternoon, everyone.
25 MR. WARD: Thank you so much.
26 MR. HOFFMAN: Thank you, Your Honors. Bye-bye.

1 (Whereupon the above-entitled matter went off the record at 3:06

2 p.m.)

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