

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WESTERN DIGITAL TECHNOLOGIES, INC.
Petitioner,

v.

LONGITUDE LICENSING LTD.
Patent Owner.

IPR2023-01230
Patent 9,207,701 B2

Record of Oral Hearing
Held: October 24, 2024

Before: RICHARD M. LEBOVITZ, DAVID C. MCKONE, and
KEVIN C. TROCK, *Administrative Patent Judges*.

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The above-entitled matter came on for hearing on October 24, 2024,
commencing at 1:00 p.m., via video teleconference.

P R O C E E D I N G S

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JUDGE LEBOVITZ: So, we are here for IPR1230, and we have both parties here. Let me see. We have Judge McKone and Judge Trock on the panel and myself. And according to the hearing order, each party gets 45 minutes. It will begin with the Petitioner going first, then the Patent Owner. Petitioner can reserve time for rebuttal. So, let us know, you know, when you begin. And the Patent Owner can reserve time for sur-rebuttal. So, we have four times that the parties will be going. And the Petitioner, Ms. Shi, I don't know if I'm saying that correctly, but you certified that you're a LEAP practitioner. So, you get, if you need 15 more minutes, but although you have 45, so that might be sufficient, so you don't need to fill the time up. But again, if you need more time, let us know, you'll have it.

And then if you could, when you begin if you could introduce yourself, who you represent? And then let us know upfront how much time Petitioner that you want to reserve for rebuttal. And then when it's your time Patent Owner, how much time you want to reserve for the sur-reply. You know, are there any other questions or something that I missed? Or is it clear how we're going to go? Okay. And I'm going to set my timer and give me one -- and then, okay, one sec. Okay. Now, I guess Petitioner, that's Ms. Shi. Am I saying your name correctly?

MS. SHI: Yes, you're saying it's correctly. Thank you.

JUDGE LEBOVITZ: Okay. Yeah. Remember that we are familiar with the case. We've gone over it. So, you might want to dispense with the background. And I kind of noticed that slide 12 is getting at kind of

1 the heart of it, where you start talking about the motivation. And just to set
2 things up for you, we understand that the first ground is based on taking
3 Zhang's Figure 4 and taking the two power supplies from it and connecting
4 them to Javanifard's Figure 1 and 3, which are charge pumps. And Figures 1
5 and 3 have a single voltage supply, whereas you're now going to remove that
6 single and put Zhang's on to have two. So, the issue, as we understood it,
7 because we've obviously prepared, is what's the reason to replace the fixed
8 stage pump of Zhang with the multiple stage charge pump of Javanifard.
9 And I would suggest for our, you know, just getting right into it, because we
10 already -- we've looked at the background, we know what Zhang teaches
11 alone, we know what Javanifard teaches alone, and we're very interested in
12 what reasoning that you have.

13 And then I'll just say one more thing, that in your petition you had
14 three different reasons. Analogous art, disadvantages, and the third one
15 being things that you can just combine things, you can combine these
16 circuits together. And also upfront, there was a fourth one, where I think
17 this one might also be very important, and this is maybe where our decision
18 to institute was going, but you don't need to dwell on what we said on the
19 decision to institute, because we have new evidence before us.

20 But upfront, you said, I think it was on Pet. 19 through 20, that the
21 skilled worker would be motivated to apply Javanifard to Zhang, because of
22 the ability to get different outputs, and also the same output. So, with me
23 prefacing that, that's kind of where our mind is wanting to know give us
24 more of your understanding of the reason to combine.

25 MS. SHI: Understood. Thank you. Thank you for the guidance.

1 JUDGE LEBOVITZ: So, go ahead.

2 MR. O'DELL: All right. Well, let me start. I'm the lead counsel,
3 David O'Dell, and today with me is Hong Shi, who is a part of the LEAP
4 program. Thank you for that program, by the way. We don't expect for her
5 to need the extra 15 minutes, but we are thankful that it's an option.

6 I had previously planned to spend 15 minutes setting up the first
7 few slides, but I am hearing now that you're on top of it.

8 JUDGE LEBOVITZ: Yep.

9 MR. O'DELL: So, I would like to spend maybe two minutes to
10 maybe highlight some points that I think would be pre-rebuttal to some of
11 the Patent Owner's arguments. And I will make this much briefer than I
12 originally planned in light of your point. And then Ms. Shi will pick up
13 right at where the meat of the discussion is, which is the reasons to combine.

14 So, I'm going -- so, very briefly, turning to slide 2, Claim 1 has --
15 we all know Claim 1 has basically two concepts going on here, selecting
16 between two input power supplies and a configurable booster stage.

17 JUDGE LEBOVITZ: Mr. O'Dell, how much time are you
18 reserving?

19 MR. O'DELL: Thank you. We plan to take 30 minutes for the
20 initial discussion here, and so we would be reserving 15 minutes or 30
21 minutes, given the extra 15 minutes that Ms. Shi is allotted. So, 30 minutes
22 up front, 15 minutes or 30 minutes for the rebuttal if that extra 15 minutes is
23 required, which, again, we don't anticipate. But I learned from yesterday
24 sometimes things go a little longer than I planned. Okay? All right.

25 I'm going to move -- turning to slide 5. I'm sorry, slide 4. So, in

1 Zhang, I wanted to be clear that Zhang has an output as voltage selector
2 circuit up front in a fixed booster circuitry 100, and a single output voltage
3 VOUT. That VOUT can be moved -- can be boosted to different levels.
4 And I don't believe the parties are in disagreement here. And in fact, I have
5 a quote from the Patent Owner that a POSITA would readily recognize that
6 Zhang does encompass generating multiple voltages by changing this
7 feedback signal VREF, that it'll be one voltage at a time, of course. It's just
8 one output then.

9 JUDGE LEBOVITZ: Well, that was mentioned at least in a
10 footnote. And it may have been mentioned, I think it was mentioned in a
11 footnote at one point. That was the footnote on PET, on your petition 14,
12 footnote 5. And I think you may have made a similar statement elsewhere in
13 maybe one of the replies. But there's no indication of how you would do
14 that. It just said you could change VREF, but there's no explanation on how
15 it would be done. I'm just pointing this out to you.

16 MR. O'DELL: Okay. Well, thank you for that. We'll get to that
17 when we discuss V8, Figure 8 from Zhang, but let's move on from that. But
18 just rest assured that a POSITA would know that this output voltage, VOUT
19 could be set to different levels.

20 Turning to slide 5, and again, I'm trying to -- I know you said to
21 move past this, but Javanifard can also produce -- produces a single output
22 voltage VOUT, but can also be at different voltages.

23 Turning to slide 6, Javanifard actually has a table, and I'm -- I
24 believe now that there's no misunderstanding going on here, that depending
25 on the number of pump stages that you have switched on, Javanifard can

1 have two pump stages going for VOUT, as shown in row one of Table 1. If
2 we slip to slide 7, Javanifard can also have two pump stages going to
3 VOUT, but can have a parallel path of two output stages going also to
4 VOUT.

5 JUDGE LEBOVITZ: I want to point out something to you, Mr.
6 O'Dell, and what you're describing here, we know, so you can skip over it,
7 and that's that the circuit can be used in series and/or in parallel. Right? The
8 problem that I found was that nowhere do you say that in the petition. The
9 only place you kind of allude to it is that point where you say that you can
10 have different voltages or same voltages, you know. So, you mention it in
11 that one paragraph in several different times, but it really bothered me that
12 this is one of the advantages of Javanifard, and it really bothered me that that
13 never appeared in the petition, but I believe that it did appear in your reply to
14 the Patent Owner, but you can't make new arguments in the reply to the
15 Patent Owner. Oh, incidentally, please identify yourself when you begin
16 talking, and this is Judge Lebovitz talking, just for the court reporter.

17 MR. O'DELL: Okay. Thank you. Again, this is David O'Dell,
18 and we have some pages from the petition identified here, and I will let Ms.
19 Shi talk about that further when she discusses this.

20 So, since you know the different rows of Table 1, I think this ends
21 my anticipated portion of this presentation, and so let's move to the grounds.
22 Here we have the grounds. And so, here are Grounds 1 through 4, and Ms.
23 Shi is going to take over from here.

24 MS. SHI: Good afternoon. I'm Hong Shi, co-counsel for
25 Petitioner. So, as shown in this table, I will just quickly go through this

1 table of slide 10, which the petition presented four grounds for all the claims.
2 And all the four grounds were instituted for trial, but the Patent Owner does
3 not contest any specific limitations. Or they also do not contest Grounds 3
4 or 4. So, the only remaining issues in this case are the motivations to
5 combine. Our main case will focus on the reasons to combine for Ground 1,
6 but I'm also happy to answer any questions related to Ground 2.

7 So, I will skip slide 11, which provides an overview of how the
8 combination works. So, we can go back to, as David mentioned in the
9 introduction, and as Your Honor asked, if Zhang by using a fixed charge
10 pump can already accommodate multiple inputs and potentially also multiple
11 outputs by using the VREF signal. By the way, we can come back to this
12 later. In our background, we explained how the VREF works. It's the well-
13 known technique of using a reference signal to regulate the VOUT within
14 the boost that can be provided by the charge pump.

15 But that's not disputed that Zhang, by using a fixed charge pump,
16 actually can accommodate multiple inputs and potentially multiple outputs.
17 So, if Zhang can already achieve that, why would a POSITA want to modify
18 Zhang with Javanifard's variable charge pump? And the petition has
19 provided many reasons for this proposed modification for Ground 1.

20 Turning to slide 12, here listed on slide 12 are all the reasons we
21 explained in the petition. I understand, Your Honor, you mentioned that
22 some of them are not -- you couldn't find them in the petition. We have
23 included the citations to the petition at pages 20 through 21 why we have
24 listed five separate reasons.

25 JUDGE LEBOVITZ: This is Judge Lebovitz. We understand that.

1 In terms of the area reduction, well, one of the issues that we had was when
2 you, and Patent Owner was raising this, is when you were looking at area
3 reduction, performance, and power flexibility, it almost seemed to be stated
4 in Javanifard with respect to the prior art. And Patent Owner was
5 complaining that the prior art was not Zhang type of device, right? Because
6 I think in Javanifard, I think in that part where they were talking about the
7 disadvantages, I think they were always talking about a circuit with one
8 power supply, but Zhang has two power supplies. So, Patent Owner was
9 complaining about that. And then an additional complaint, not complaint,
10 but an additional issue that we had was, where's the evidence for area
11 reduction?

12 Now, with power efficiency, I think you brought in another
13 reference. I can't remember the name of it right now, but why don't you
14 address that disadvantage issue? I mean, the area reduction, the power
15 efficiency and the flexibility seemed to be with respect to this prior art where
16 they had only one power source. So, it's not Zhang.

17 MS. SHI: I see. So, that's actually Patent Owner's
18 misrepresentation of Javanifard's description of what fixed charge pumps
19 disadvantage is.

20 So, let's start from -- I plan to go over each of these reasons one by
21 one. Maybe we can still follow that outline because --

22 JUDGE LEBOVITZ: Yes.

23 MS. SHI: Okay. So, I will first talk about the first reason. And
24 the first reason is that the variable charge pump actually can provide a larger
25 range of output voltages. And this comes from the basic operation of a

1 charge pump. So, in a charge pump, we have one or more stages connected
2 in series. And that number of the stages connected in series would
3 determine how much the input can be boosted to provide the output. So,
4 each stage actually -- essentially acts as a multiplier for its input, which
5 comes from the output of the previous stage. And Javanifard explains that
6 because it can configure the number of series connected in series in the
7 charge pump, based on different design needs, based on different inputs,
8 requirements, different output requirements, it can provide a much larger
9 range of voltage boost based on the design need.

10 JUDGE LEBOVITZ: Yeah, Ms. Shi, one second.

11 JUDGE MCKONE: Let me see if I understand your argument.
12 This is Judge McKone. So, you're arguing that the charge pump in
13 Javanifard has a larger range of output voltages and a larger range of input
14 voltages than the charge pump in Zhang. Is that correct?

15 MS. SHI: Correct. Than a fixed charge pump, as described in
16 Zhang.

17 JUDGE MCKONE: And what is your evidence of this? Do we
18 have any evidence of what --

19 MS. SHI: What is my evidence --

20 JUDGE MCKONE: Yeah. Do we have any evidence of what
21 Zhang's output voltage range and input voltage range is and what
22 Javanifard's ranges might be? Do we have any evidence?

23 MS. SHI: The evidence is shown on the screen [Exhibit 1003,
24 Stiegler Decl., paragraph 36]. This is the foundation of how a charge pump
25 operates. So, we have cited the references to explain that by connecting

1 more stages in series, it can provide a higher voltage boost.

2 JUDGE MCKONE: Now, we're looking at the -- so what's on the
3 screen is Exhibit 1003, paragraph 36. Is that, that's your expert's testimony?

4 MS. SHI: Correct.

5 JUDGE MCKONE: Okay. Does your expert rely on any evidence
6 or do we -- do we know what evidence your expert's relying on to reach this
7 conclusion?

8 MS. SHI: Yes. So, that's -- the expert is citing Exhibit 1016,
9 Daga. It describes a single stage charge pump in Figures 2A through 2B.
10 And page 4 describing end stage charge pumps using cascading basic stages
11 of Figure 2B, which is connecting more charge pumps in series.

12 JUDGE MCKONE: Okay. But this doesn't seem to be any kind of
13 comparison of the voltage range between Zhang's charge pump and
14 Javanifard's.

15 MS. SHI: So, Javanifard talks about variable charge pumps, and
16 maybe I can bring to slide -- jump to slide 24. So, this is from the basic
17 teaching that different numbers of stages impact the performance of the
18 charge pump. So, there's no dispute -- sorry.

19 JUDGE MCKONE: This looks like something that was introduced
20 with the reply, right? Is that correct? So, this wasn't in the petition?

21 MS. SHI: Correct.

22 JUDGE MCKONE: Okay. This is directed to efficiency, not
23 output range, and input range. Correct?

24 MS. SHI: So, this also covers the output range. So, because
25 performance is related to input range and output range. So, all these benefits

1 are related, they are -- they do not depend upon each other but they're related
2 to each other. When we're talking about the -- go ahead.

3 JUDGE LEBOVITZ: This is Judge Lebovitz. I just want to
4 interrupt for one second. Javanifard, I can't remember if it's on column 3 or
5 where it is. But Javanifard does have a discussion of if you put more in
6 series, you get a higher voltage. And it also talks about if you put them in
7 parallel, I believe this is true, because if you put them in parallel that you
8 don't get a change in voltage but you get a change in current. So, there is a
9 discussion of that in Javanifard of putting that more in connecting -- I think
10 the line from the -- it was connecting more in series. I think they actually
11 had that in Javanifard and they were referring to the table here.

12 MS. SHI: That's correct.

13 JUDGE LEBOVITZ: And that's in your original petition?

14 MS. SHI: It is.

15 JUDGE LEBOVITZ: Okay.

16 JUDGE MCKONE: Now -- this is Judge McKone -- for Zhang,
17 that's just an example that's shown in Zhang's write-up of its charge pump.
18 It's not limited to the number of stages in its charge pump. So, if we wanted
19 a larger output range or a larger input range in Zhang, we could just add
20 more stages here, right? And for that in that dot, dot, dot, that's represented
21 [Ex. 1005, Zhang, Fig. 4], we could do the things we wanted.

22 MS. SHI: You're absolutely right. So, the number of stages here
23 in Zhang will be determined based on the design need. So, it is called a
24 fixed pump because once the designer has determined the number of charge
25 pumps, that number is fixed. Javanifard, on the other hand, can use the

1 switch to change the number of the stages. So, here in Javanifard, once it's
2 set, I say this is a 10 stage charge pump, then that number remains the same.
3 When you change -- switch to different input voltages or when you use the
4 feedback loop using a VREF here to adjust the -- using the oscillator to
5 adjust the VL, that number remains the same. That number remains the
6 same regardless of what your input is, regardless of what your output is.

7 JUDGE LEBOVITZ: This is Judge Lebovitz. I'm just -- I want to
8 ask again, what is the reason that stated in your petition for putting -- for
9 using Javanifard's multi-stage pump in place of Zhang's fixed stage? So,
10 that is number one and two, or number one at least, that by putting them in
11 paragraph -- you're citing paragraph 36 and petition 20 as supporting that
12 reasoning, right? And that -- can you go to paragraph 36 again, please? And
13 also, when you're talking, if you could, when you're looking at an exhibit, if
14 you could identify the exhibit number and, you know, Exhibit 10[0]3 and
15 paragraph 36 [of Exhibit 1003, Stiegler Decl.]. So, someone reading it will
16 know what we're looking at, right? So, this is Stiegler, Exhibit 10[0]3. And,
17 oh, here it is, connecting more in series. And that -- he doesn't reference
18 Javanifard, but I think Javanifard does have some disclosure on that. So --

19 MS. SHI: Correct.

20 JUDGE LEBOVITZ: -- ss that a -- is that one of your -- is that
21 advantage not in Zhang?

22 MS. SHI: So, you're correct that ability of being able to connect
23 different number of stages in series is not in Zhang. So, let me use one --
24 can I use one simplified example to illustrate the advantage of Javanifard
25 over Zhang?

1 So, let's use a simplified example where each stage doubles its
2 input voltage. So, in other words each stage has a multiply factor of two.
3 So, in Javanifard, if we have a 1 volt input and we want a 2 volts output, we
4 configure the pump to use a single stage to double it. If we need now a 4
5 volts output we configure the pump to connect two stages in series so that
6 the second stage would double the output of the first stage to reach 4 volts
7 and so on. For 8 volts output we can configure the pump to add a third stage
8 in series such that the third stage doubles the output again to 8 volts. And
9 so, by using a variable charge pump we can easily configure the pump after
10 it has been manufactured, after it has been manufactured, using control
11 signals and switches to adjust the voltage output by adding --

12 JUDGE MCKONE: Now, I'm going to interrupt. I'm sorry, this is
13 Judge McKone. Have you made that argument before that the issue is
14 whether it's adjustable after manufacturing? And if so, could you please
15 point that out to us?

16 MS. SHI: After manufacturing, that's actually discussed in
17 Javanifard itself, which we cited in the petition. That's column 1 of
18 Javanifard. So, in Javanifard's background of the invention, which is cited
19 in the petition, it explains how many different operations may require
20 different voltages, different outputs based on different inputs after
21 manufacturing during operation. So, an example used, and we repeatedly
22 cited it in the petition, is a flash memory. So, a flash memory has a --

23 JUDGE MCKONE: And where's the after manufacturing? Just --
24 I know there's a lot here, so.

25 MS. SHI: Sure. So, in the petition, we have explained that the

1 functions can be adjusted for a flash memory when it's operating. That's
2 after manufacturing.

3 JUDGE MCKONE: Okay. Can you show what I'm supposed to
4 be looking at? Where you made the argument?

5 MS. SHI: So, oh, let me share my screen. Sorry. Here?

6 JUDGE MCKONE: I note that in Zhang you can adjust the output
7 after manufacturing by adjusting the reference (CROSSTALK) --

8 MS. SHI: Exactly.

9 JUDGE MCKONE: So, I don't know that that's a distinction over,
10 you know, over Javanifard.

11 MS. SHI: So, in Javanifard, we described Javanifard describing
12 how a flash memory, for example, we talked about embodiments.
13 Javanifard's embodiment of Figure 1, which explains how you have different
14 configurations by choosing different -- controlling the different switches,
15 and all these control signals are operated after manufacturing.

16 MR. O'DELL: Don't forget to cite the paper that you have up on
17 the screen.

18 MS. SHI: Oh, sorry. So, this is petition number -- petition as page
19 12. We talked about embodiment 2, for example. This is an implementation
20 of Javanifard's variable charge pumps. It uses two variable charge pumps.
21 And this configuration is performed -- I'm at petition number 14. This is
22 performed after manufacturing as well.

23 JUDGE MCKONE: Is this an argument that you made? Because
24 we're restricted, and it's not just our rules. The Federal Circuit has said we
25 can't consider arguments raised for the first time during a hearing. And if

1 this is a new argument, then you can't pursue it. I don't want to waste
2 everybody's time keeping going back and forth on this if this isn't an
3 argument that's been made. I mean if you have better arguments that you
4 want to press, please do, but.

5 MS. SHI: So, providing a larger range of voltage, output voltages,
6 after manufacturing, we are talking about these benefits are provided by
7 dynamically configuring the switches using control signals. So yes, we have
8 explained that these configurations are performed after the circuit. These --

9 JUDGE MCKONE: But I think you've also admitted that Zhang
10 teaches the same thing, that you can adjust voltages, you know, after you've
11 manufactured the circuit. That's what that VREF signal is.

12 MS. SHI: You're right.

13 JUDGE MCKONE: Your co-counsel has already conceded that
14 point.

15 MS. SHI: Yes, exactly. And that's correct. But Zhang uses VREF
16 to adjust the VOUT. So, it cannot adjust the number of the stages as I just
17 described. For example, when we need 2 volts, we change the pump to use
18 one stage. When we need 4 volts output, we change the stage to two stages.

19 JUDGE LEBOVITZ: This is Judge Lebovitz. And I think what
20 Judge McKone is getting at is, well, I don't want to put words in his mouth
21 either. But my question is, it looks like you can use Javanifard to change the
22 voltage by using series. So, that's one way of doing it. But you could also
23 change the voltage in Zhang by changing the VREF. And you've admitted
24 that, right?

25 MS. SHI: Correct.

1 JUDGE LEBOVITZ: So, that means the so-called advantage that
2 you're citing for Javanifard seems to be something that you could do with
3 Zhang. So, why would you use -- so I think this is the question we have.
4 Why put on Zhang, excuse me, why replace Zhang's fixed stage pump with a
5 multi-stage adjustable pump when it does the same thing?

6 MS. SHI: Sure.

7 JUDGE LEBOVITZ: And then the -- okay. So, is there anything
8 you want to add to that? That's our question.

9 MS. SHI: Sure.

10 JUDGE LEBOVITZ: That's an important question here.

11 MS. SHI: Of course. So, I guess we can start with one pretty
12 obvious example. If Zhang -- if Zhang's fixed charge pump has a small
13 number of charge pump stages, then, for example, it has one or two stages,
14 then it probably won't be able to have the required boost capacity, for
15 example, to boost it to have a multiplier of 100. So, I think your question
16 becomes, why don't we use, for example, a 10-stage -- start with a -- in
17 Zhang, start with 10-stage charge pump? And then we use VREF to regulate
18 it such that it can provide a voltage boost, for example, using a 10-stage to
19 provide a voltage boost of one volt, or use the same fixed number of charge
20 pump, 10 stages, to provide a boost of 100 volts. What's wrong with that?
21 Is that your question?

22 So, this approach would be very impractical because using a 10-
23 stage pump to achieve a very small boost, like 1 volt boost, would be highly
24 inefficient and result in significant power loss.

25 JUDGE LEBOVITZ: Ms. Shi, just to point out, we've gone 30

1 minutes now. So, you have an extra 15. You can put it on now or you can
2 put it on later. And what would you like to do?

3 MS. SHI: I will put it on now. I will continue to explain.

4 JUDGE LEBOVITZ: Okay.

5 MS. SHI: So, here, for example --

6 JUDGE MCKONE: So, it sounds like what you're saying is you
7 feel there's a trade-off. If you want larger output range, you have to, with
8 Zhang, you have to tolerate larger area of the chip. Is that essentially what
9 you're saying?

10 MS. SHI: A large area and also large power loss, low efficiency.

11 JUDGE MCKONE: Okay. Do we have any evidence that would
12 help us understand what the magnitude of any of this is?

13 MS. SHI: Of course. So, this slide trending 4 actually provides
14 some of the comparison of the power efficiency curves. So, to the right,
15 here is the definition of what is power charge pump efficiency. You
16 probably already know this, but that's basically the ratio of the output power
17 over the input power. This is current -- output current multiplied by output
18 voltage. This is input power multiplied by input voltage. So, that's the ratio.
19 That's the pump efficiency, what we talked about. And to the left --

20 JUDGE LEBOVITZ: Okay, one sec. This is exhibit 1026,
21 Palumbo. Just you want to say that so someone can follow in the record.

22 MS. SHI: Yes.

23 JUDGE LEBOVITZ: Is this a new argument, new evidence?
24 Well, I mean, it's not -- you did talk about charge pump efficiency, but is this
25 new evidence that we can still consider?

1 MS. SHI: Yes. Our pump efficiency argument is cited actually --
2 first cited in the petition at page 20, which is discussed in Javanifard itself.
3 Javanifard said, fixed charge pump would sacrifice the performance as one
4 power supply for the other power supply. And --

5 JUDGE MCKONE: Let me ask, is this evidence that is being used
6 to support what was in the petition, or to respond to what was in the Patent
7 Owner response?

8 MS. SHI: So, this is in the petition. So, it's as a petition page
9 number 20.

10 JUDGE MCKONE: Right. Then I would ask you, why wasn't
11 Exhibit 1026 included with the petition, discussed in the petition, opined on
12 by your expert at the stage of the petition, if this is really just in support of
13 what was in the petition and not responsive?

14 MS. SHI: It is also the new exhibit is responsive to Patent Owner's
15 argument because Patent Owner failed to recognize what we explained in the
16 petition at page 20, and cite -- explicitly cited Javanifard itself at column 1,
17 line 66 through column 2, line 2. So, here Javanifard said, another
18 advantage of the fixed method typically sacrifices performance at one power
19 supply to accommodate another. So, use an example. In Zhang, because
20 we're using a fixed pump, if during the design we chose an optimal number
21 of stages, let's say 10, to achieve optimal performance for a first power
22 supply voltage, then when we switch to the second power supply, the
23 performance for the second power supply voltage would be sacrificed
24 because that number was chosen to achieve optimal performance for the first
25 power supply. This won't be a problem for Javanifard. Javanifard actually

1 offers an advantage over this method because it now can choose the optimal
2 number of stages based on the selected power supply.

3 JUDGE LEBOVITZ: This is Judge Lebovitz. Going back to that
4 sentence that you just said, column 1, 66, column 2, line 2. I'm not sure if
5 that was in the petition or not, but that sentence, I just want to read it
6 because --

7 MS. SHI: Sure.

8 JUDGE LEBOVITZ: Okay. So, I'm reading from Javanifard,
9 column 1, line 66. Another disadvantage is that the fixed-stage method
10 typically sacrifices performance at one power supply voltage to
11 accommodate another power supply voltage. What does that mean? Does
12 that mean that they're talking actually about adding a second power supply,
13 as in Zhang? But if you do that, you have to sacrifice, what was it you're
14 sacrificing--

15 MS. SHI: Performance.

16 JUDGE LEBOVITZ: Yeah.

17 MS. SHI: Correct.

18 JUDGE LEBOVITZ: Was that cited in the petition?

19 MS. SHI: It is.

20 JUDGE LEBOVITZ: Could you show me where?

21 MS. SHI: Of course.

22 JUDGE LEBOVITZ: If you can't find it readily, you can --

23 MS. SHI: Yeah, I found it here, so let me just share the screen.

24 JUDGE LEBOVITZ: Yeah, I don't want to. So, we're looking at
25 the petition now. Okay.

1 MS. SHI: Yes, we're at petition page 20.

2 JUDGE LEBOVITZ: Okay. Got it. Thank you. Okay. Given
3 that you -- this is Judge Lebovitz again, Ms. Shi, given that you have seven
4 more minutes and you do have rebuttal, do you, I think that this is one of the
5 strong -- this is one of your strong arguments. Are there any other
6 arguments that you want to identify in the seven minutes that you think is a
7 strong argument?

8 MS. SHI: Yes. Sure. So, another -- advantage number 5, at which
9 actually is not disputed by Patent Owner, is the power current flexibility,
10 which we also explained in the petition as well. So, as David previously
11 mentioned, and as Your Honor you have mentioned, you understand how
12 Javanifard is not only about just the number connected in series, but also
13 how these stages can be coupled to also include -- to also how they can be
14 coupled to each other, for example, connected in series.

15 So, I'm showing Figure 3 of Javanifard just as an example to
16 illustrate this point. So, if I'm in a low power mode, for example, with a
17 small current requirement, I can configure this charge pump to have one
18 single path. And that has, for example, a lower level of current. So, when
19 my requirements of the current increases, I can add by turning on and off the
20 switches another path. And now I provide twice the current level. And then
21 if it further requires more current, I can adjust it to provide three times of the
22 current, and so on. So, the configuration opportunities are there. We
23 explain in the petition when it is -- we call x, y variable charge pump. There
24 are numerous different configurations that you can do by controlling these
25 switches using --

1 JUDGE LEBOVITZ: This is Judge Lebovitz again. This current
2 argument as I'm, I think as you were just saying, I didn't see current
3 argument in the original petition.

4 MS. SHI: Okay. It is in the petition also. Oh, sorry. Let me
5 share --

6 JUDGE LEBOVITZ: Yep.

7 MS. SHI: -- our petition. So, we're talking about power saving
8 modes and current requirements, providing flexibility with different power
9 saving modes and different current requirements. And that's also on page 20
10 [of the Petition], and also further repeated on page 21. Configurations based
11 on power saving mode and/or current requirements.

12 JUDGE LEBOVITZ: That is kind of a terse argument there. I'm
13 not --because it just says current requirements, but --

14 MR. O'DELL: And page 78 as well.

15 JUDGE LEBOVITZ: Yeah, there was -- that paragraph I know
16 appeared in several places, but okay.

17 MS. SHI: Yes. And --

18 JUDGE LEBOVITZ: And maybe Patent Owner wants to
19 comment on that when we get to him. Okay. Thank you for pointing that
20 out.

21 MS. SHI: We explained in detail actually when describing how
22 Javanifard works. We talked about row one, row two, row three and we
23 further elaborated the same arguments in our reply.

24 So, while I'm here, I also want to repeat our area saving argument.
25 So, the area saving arguments we already explained here using Figure 3 [of

1 Ex. 1006, Javanifard] as an example, a flash memory can require, for
2 example, 5 volts for read, 9 or 12 volts for programming or erasing modes.
3 So, that's after manufacturing during operation that a flash memory may
4 have read operation, programming operation, erase operation at different
5 times. And it can be provided from a 3.3 volt input or 5 volt power supply.
6 So here, as shown in Figure 3 [of Ex. 1006, Javanifard] , using a single
7 variable charge pump, it was capable to supply multiple output voltages
8 from multiple input voltages during different operation modes.

9 JUDGE TROCK: Counsel, this is Judge Trock. I just wanted to
10 let everybody know that we've got multiple references here and they have
11 multiple figures, so when you say Figure 3 please identify which reference
12 you're referring to. If this is Javanifard Figure 3 please, because otherwise
13 the transcript is going to be very difficult for everybody to follow.

14 MS. SHI: Thank you. We are at slide 14 and we are referring to
15 Javanifard Figure 3.

16 JUDGE TROCK: I do not see slide 14 on the screen.

17 MS. SHI: Oh.

18 JUDGE LEBOVITZ: And this is Judge Lebovitz. You are pretty
19 much two more minutes and then you're out of time. And I guess my
20 question -- if you could put that slide up there I don't see it because I want to
21 see --

22 MS. SHI: You still don't see it? I just put it up.

23 JUDGE LEBOVITZ: It must be looking at something else.

24 JUDGE MCKONE: I see it. I think -- this is Judge McKone. I
25 see it. It's probably a delay.

1 JUDGE LEBOVITZ: Oh, I see it now. I see it now. Slide 14 of
2 your demonstrative. Well, I guess my question, it says where's the evidence
3 that you have area reduction? I mean I don't know how these things are
4 made so I don't know whether the different chart, you know, what kind of
5 space these things take up. I understand what you're saying, but where's the
6 evidence that you're actually saving area?

7 MS. SHI: So, the evidence actually it comes -- it's from Javanifard
8 itself. So, let me share Javanifard. This is Exhibit 1006 Javanifard. So,
9 Javanifard explains that if you're using a fixed -- if you're using fixed charge
10 pumps, and for example to provide multiple voltages during different
11 operation modes, for example for a flash memory, you would require. And
12 we also explained, you cannot -- it usually would not be practical to use a 10
13 stage pump to provide a 1 voltage boost. So --

14 JUDGE MCKONE: This is Judge McKone. I do want to take a
15 little bit of issue here with your characterization of Javanifard. Here it says,
16 it seems to be discussing replacement of a number of charge pump circuits,
17 not just one charge pump circuit -- or circuit. So, this looks like you're
18 taking, you're looking at two charge pump circuits and replacing it with one,
19 not replacing Javanifard or Zhang's one with a different one.

20 MS. SHI: Sure. But this is talking about using fixed charge
21 pumps, which is described in Zhang. So, if we're using fixed charge pumps,
22 to provide multiple output levels, then multiple fixed pumps, like those in
23 Zhang, would be needed. So, Zhang, its description is focused on providing
24 one output level as its output node. But a POSITA would have understood
25 that if we're using the fixed pumps as described in Zhang, to provide a

1 voltage to a flash memory, like what we are seeing here -- let me switch
2 back.

3 JUDGE LEBOVITZ: This is Judge Lebovitz, you're out of the 45-
4 minute time. You know, unless Judge McKone has another question on this
5 issue or if he's satisfied, then we're going to go on now to the Patent Owner.

6 And Patent Owner, if you could switch on, introduce yourself and
7 who you're representing, that would be good. And we can keep -- and
8 remember to identify the exhibits if you're showing your demonstratives and
9 identify yourself to the court reporter. Okay.

10 MR. MILKEY: Yes, Your Honor.

11 JUDGE LEBOVITZ: How much time are you going to reserve for
12 rebuttal?

13 MR. MILKEY: Eight minutes, Your Honor.

14 JUDGE LEBOVITZ: Okay. So, you've got 22, right? Oh, no, no,
15 no, no, no. It's 45, so you have 30, how many -- you want to reserve eight,
16 so that would be, okay, I got that, 32 -- 37.

17 MR. MILKEY: Yeah.

18 JUDGE LEBOVITZ: Testing my ability to do math on the fly.

19 MR. MILKEY: Yeah, absolutely, that's a (CROSSTALK) --

20 JUDGE LEBOVITZ: Without a calculator, I'm embarrassed.
21 Okay.

22 MR. MILKEY: Yeah, the ubiquity of calculators has really
23 changed my ability to do that kind of thing. So, thank you, Your Honor, and
24 I appreciate the opportunity to present today.

25 So, I'll say that before I get started, I'm going to be changing

1 course a bit from my planned presentation because the Petitioner's
2 presentation was a little bit different than what we had sort of expected
3 based on the reply. Before I get into sort of the heart of the argument, I want
4 to clarify a couple of things that the Petitioner talked about at the beginning.
5 The first is that if we look at their demonstrative slide 7, and again, by their
6 demonstrative, I'm referring to Exhibit 1032, there's a discussion of
7 Javanifard's variable stage charge pump, and specifically in this slide, they're
8 looking at the row two of Javanifard's Table 1. And this is the row where
9 switch 130 is off and switch 131 is on.

10 I just want to make clear that the petition never alleged that this
11 would have been used in the proposed combination. And even the reply sort
12 of -- there's sort of an attempt to say that this might have been used in certain
13 situations. But there's no actual discussion of when it would have been used,
14 such that the limitations of the claims would have been satisfied. And the
15 limitations I'm focused on here are actually limitations 1.3 and Claim 2, as
16 well as related limitations 10.5 and Claim 11. The reason we didn't discuss
17 10.5 and 11 in the briefing is because Petitioner just incorporates by
18 reference the 1.3 and Claim 2 arguments for those. So, those sort of rise and
19 fall together.

20 JUDGE LEBOVITZ: This is Judge Lebovitz. I want to just
21 interrupt for one second. I think what you're saying here is on page 120
22 [paragraph 120 of Ex. 1003, Stiegler Decl.], there was a paragraph where
23 they [Stiegler] do talk about you can get different outputs using different
24 voltages, and then they had those two sentences there that were the two
25 objects in Javanifard Exhibit -- in Javanifard I can't remember the exhibit

1 number. I think it's 105 [Ex. 1006]. But in detail, they always talked about
2 how you can get the same voltage. Is that kind of what you're getting at?
3 So, they never talked about putting things in -- they talked about, I think,
4 rows 1 and 3, where you can adjust it to get the same voltage where you
5 either use a high power supply or a low power supply of Zhang. Is that what
6 you're getting at?

7 MR. MILKEY: That's exactly right, Your Honor. In the actual
8 description of how their combination worked in the petition, they only talked
9 about switching between rows one and three of Javanifard's Table 1, and
10 they only talked about switching that based off of the changing input
11 voltage. And so, the result of that is that basically when you -- the petition's
12 theory, as it was explained in the petition, is that as you lower the input
13 voltage you would increase the boost so that the output voltage would stay
14 the same regardless of input voltage. And that's the only actual operation
15 that they discussed in the petition. And in fact, we even asked their expert to
16 identify, and this is Patent Owner's demonstrative at Exhibit 2006. Slide 3
17 there in the transcript, the deposition transcript, Exhibit 2004, essentially 25,
18 line -- pages 25, column -- line 1 through 28, line 9, there was sort of a
19 lengthy discussion of, you know, where in your declaration, Dr. Stiegler, do
20 you identify where there would be multiple different output voltages
21 provided? And their expert identified only three paragraphs, paragraphs
22 120, 122, and 134 of his declaration, and all of those paragraphs of his
23 declaration and only discuss providing, you know, switching between rows
24 one and three of Javanifard's Table 1, such that the output voltage would
25 remain the same. There's no discussion in the petition at all of how these

1 configurations would be adjusted to vary the output voltage. So, that I don't
2 need to go into too much detail I think on this but this is shown on our
3 demonstratives. It's at pages 4 through 6.

4 So, in the petition that they didn't explain how this would work to
5 satisfy -- to have multiple output voltages. They basically explained how
6 limitation 1.3 would be met by keeping the same voltage. And I'm looking
7 at Petitioner's demonstrative, it's slide 2 right now, and you can see that
8 limitation 1.3, it's the very last limitation here. It says changing the booster
9 circuitry from the first number of booster stages corresponding to selection
10 of the first input node to the second number of booster stages when the
11 second input node is selected. And the only way that they explain how this
12 is achieved is by keeping the output voltage the same and this is also
13 consistent with the Claim 2 analysis that they do. And so, I -- to sum this up
14 I take issue with the representation on slide 10 of their -- of Petitioner's
15 demonstrative that they say we do not contest specific limitations. We
16 actually, you know, under the theory that their output voltage would change,
17 which is a theory that was not actually explained in the petition in our view,
18 under their new reply theory that, oh, actually, for example, row two of
19 Javanifard's Table 1 would be used. They don't explain how that would be
20 used to satisfy limitations such as limitation 1.3 and Claim 2. There's just --
21 there's no explanation of how this limitations are met under their variable
22 output voltage theory.

23 JUDGE LEBOVITZ: This is Judge Lebovitz. I want to interrupt
24 one minute. In your -- looking at your slide, I think it was -- looking at
25 Patent Owner slide 3, what's the exhibit numbers is -- okay [Ex. 2006].

1 Looking there, you cite paragraphs 120, 122, and 134. I agree that those
2 paragraphs don't have different output in it. But I also note that I thought the
3 petition on page 20 talked about different voltages. And I have a note that it
4 referenced 90 to 96 of the -- 90 to 96 of Stiegler's declaration, which is
5 Exhibit 10[0]3, and I thought at least paragraphs 90, 91, and 93, I have a
6 note on this, so I'm not looking at it directly now, but paragraphs 91, 93 of
7 Exhibit 103, Stiegler's declaration, I believe he did talk a little about how
8 you could get increased voltage. So, if you have that, and you can put it up,
9 put up paragraph 90, yeah.

10 MR. MILKEY: So --

11 JUDGE LEBOVITZ: Okay. Well, yeah, look at paragraph 91 [of
12 Ex. 1003].

13 MR. MILKEY: Right, so paragraph 91 is --

14 JUDGE LEBOVITZ: And 95, and 93, let's see.

15 MR. MILKEY: Ninety, 91, I'm just orienting myself very quickly,
16 I'll come up.

17 JUDGE LEBOVITZ: Yeah. That can both accommodate, well,
18 maybe it's not explaining the mechanism here.

19 MR. MILKEY: Yeah, that's the issue that we have is that these are
20 sort of generic allegations of advantages, but without explaining how the
21 combination would actually operate in practice to achieve those advantages.
22 There's no explanation of how, for example, the switching of Javanifard's
23 Table 1 would actually be used to achieve any of these advantages. And
24 again, I do encourage you to look at the deposition testimony that we cited.
25 And you can see that -- I wanted to be sure that I was addressing everything

1 that he had in his [Stiegler] declaration on this point, and it was limited to
2 those paragraphs that only do talk about a constant output voltage. So, you
3 know, we understand that it's alleged that there is an advantage to multiple
4 output voltages. We just don't think that that advantage is applicable to the
5 way that the operation of the system was actually described in the petition.

6 And then, again, I want to make clear that the multiple output
7 voltage theory in the reply that was kind of a new theory in our view, we
8 don't think that -- and it's not even just that we don't think. There's no
9 explanation of how those multiple output voltages would be consistent with
10 the limitations such as 1.3 and Claim 2. So, we do take issue with that.

11 So, with that background, at a high level there are three main
12 problems with their theory. They're all dispositive and we'll go through
13 them in turn. The first problem is that the stated advantages that they say
14 haven't been shown to apply to their actual combination. You know, we
15 understand that they talk about advantages of Javanifard, but they don't
16 really explain how those advantages are advantages over Zhang in their
17 proposed combination.

18 The second problem is that they don't explain, as I mentioned, they
19 don't explain how the system would operate to achieve multiple output
20 voltages in the petition. And then in the reply, they don't actually explain
21 how the system would operate to produce multiple output voltages that
22 would meet limitations 1.3, Claim 2, and the related limitations 10.5, and
23 Claim 11.

24 JUDGE LEBOVITZ: Well, excuse me, Judge Lebovitz again.
25 They did have -- Petitioner did have figures, I believe, in their petition where

1 they do -- where I believe that they did show putting things in series. Yeah,
2 I mean, can we look at the petition?

3 MR. MILKEY: Yeah, I think I know the part that you're talking
4 about, so I'm going to try to pull that up. Is it --

5 JUDGE LEBOVITZ: Well, Table 1 of Javanifard -- yeah, go back,
6 go back. We're now looking on screen at the petition, and we're looking at
7 page 34 [of the Petition], and it does show [rows] 1 and 3 [of Table 1 of
8 Javanifard], but can you go back to 33? Was there -- yeah. So, that one
9 shows clearly they're [pump stages of Zhang] in series, correct?

10 MR. MILKEY: Correct.

11 JUDGE LEBOVITZ: And that would be -- that would be line 3,
12 row 3 of Table 1 of Javanifard. Do they anywhere show where you hook
13 them up in series, in parallel?

14 MR. MILKEY: I believe they show that you -- no, Your Honor.
15 The only parallel configuration is row two of Table 1 [of Javanifard]. And
16 all of the Table 1 annotations in the petition, and also all the text discussing
17 Table 1, says that in their combination you would switch between rows one
18 and row three of Table 1. But row two is the parallel configuration. So,
19 they -- I think they address it in passing that yes this is a configuration that
20 Javanifard teaches, but they never say that you would actually use this in
21 their combination of Zhang and Javanifard.

22 And then the final reason that their theory fails, and we'll get to
23 this if we have time, but they don't explain any reason to look at Zhang in
24 the first place is sort of the why you would use Zhang as the primary
25 reference. There is authority from the Board that you have to at least

1 provide some justification for reliance on a primary reference. And here,
2 you know, if you take a look at the petition, if you take a look at the reply,
3 all of these, you know, any evidence showing any sort of motivation to do
4 this stuff, all of that motivation really comes from Javanifard itself. And
5 there's -- we have expert testimony that was not rebutted by any evidence
6 that Javanifard itself provides all the advantages or the purported advantages
7 that combination has together.

8 JUDGE LEBOVITZ: Well, this is Judge Lebovitz, and I just
9 want -- and I'm sorry to interrupt, but I don't think that the motivation has to
10 even come from a reference. And if the motivation doesn't even have to
11 come from a reference, then it doesn't seem that there's a problem of it
12 coming from Javanifard or Zhang. Go ahead.

13 MR. MILKEY: That's correct, Your Honor. I completely agree
14 with that. The problem is that here the motivations are coming from
15 Javanifard. That is the stated motivation. And Javanifard -- they simply
16 haven't shown how the combination of Zhang with Javanifard accomplishes
17 anything more than Javanifard standing alone.

18 JUDGE LEBOVITZ: Okay. That seems to be to be a second
19 question, that they do provide a reason, but what your rebuttal seems to be is
20 that, well, what you're saying is the reason is actually something that you
21 could accomplish with Javanifard alone.

22 MR. MILKEY: Correct, Your Honor.

23 JUDGE LEBOVITZ: And then, now, there was one argument that
24 you made that in our discussions earlier when we conferenced this case
25 together you were talking about the control circuit being eliminated from

1 Zhang, and therefore the whole thing wouldn't work. But as we understood
2 it is you're taking just the two power supplies of Zhang and you're putting
3 those two on Javanifard's circuit. So, the circuit is -- works the way the
4 circuit works and it doesn't need the control mechanism of Zhang that under
5 I think it was 400 or whatever number it was in Zhang, Figure 4.

6 MR. MILKEY: Yes, Your Honor, thank you for raising that point.
7 And I think the point that we're making there is that if you eliminate that
8 control circuit from Zhang you need some control to adjust the output
9 voltage. And obviously Javanifard teaches that you do that with control
10 circuitry for Table 1, but they don't explain what the control logic would
11 actually be to generate multiple output voltages from Table 1. The only
12 control logic that they talk about in the petition is -- I want to -- yeah, so I'm
13 looking at page 40 of the petition right now.

14 And I like this annotation of Javanifard's Table 1 because it shows
15 that you're switching from row three to row one based off of the input
16 voltage. This is the control circuitry that they disclose for Table 1 is that
17 you would have logic to change from row three to row one based off of the
18 input voltage changing. But this doesn't -- this control circuitry doesn't
19 arrive at the multiple output voltages advantage that the Petitioner relies on
20 so heavily. So, you know, if you're going to change Zhang to incorporate
21 Javanifard's multi-stage charge pump, and if you're going to do so to
22 generate multiple output voltages, you have to have some control logic that
23 would actually generate multiple output voltages. And that's not something
24 that's been described in a way that would meet the claim limitations.

25 JUDGE MCKONE: But if you -- this is Judge McKone. Is there

1 any suggestion that that would be difficult? That seemed to be something
2 that an engineer could do or even an engineering student?

3 MR. MILKEY: It's -- there hasn't been actually any evidence that
4 that is something that would be done in a way that would be sensible. I don't
5 want to conflate motivation and reasonable expectation of success. So, I do
6 kind of want to talk --

7 JUDGE MCKONE: And also, I mean we're, you know, we're not
8 supposed to be evaluating this as a literal bodily incorporation swap. We're
9 supposed to be evaluating the teachings and if the teachings are such that,
10 you know, routine control circuitry that isn't complicated would be
11 understood, shouldn't we be in evaluating it as such?

12 MR. MILKEY: But, Your Honor, I agree with that. The issue is
13 that this isn't really -- I'm not talking so much about the circuitry being
14 complicated. I'm talking more about why you would design the logic in this
15 manner and, you know, why -- if we are to assume that the goal of the
16 system is not to provide a constant output voltage. And that's sort of the
17 assumption of certain teachings of Javanifard and certain teachings of Zhang
18 is that you're going to keep the output voltage constant. If that is not the
19 underlying assumption, then why are you going to switch from row three to
20 row one when the input power increases? There's no discussion of that in
21 the petition or the reply as to why you would maintain a constant output
22 voltage based off of the changing input voltage. You know, one way to do
23 it, and one I think sensible and probably more obvious way to do it is to
24 when you change the input voltage, the output voltage would change.
25 That's --

1 JUDGE LEBOVITZ: This is Judge Lebovitz. I'm a little confused
2 because they do talk about if you want to use a higher voltage, then you can
3 use one charge pump. And if you want to use a lower voltage, then you can
4 use two charge pumps in series. So, that's how they get the same voltage
5 output. So, I think that they tell --- and with respect to the control, I'm not
6 really sure why that's so much of an issue because that is actually what
7 Javanifard teaches. And maybe they don't tell you the mechanism, but I'm
8 not sure that we need to know the mechanism because Javanifard says that's
9 within the skill of the art to do that. And you do that with switches and
10 maybe it didn't give you all the background on the switches. Now, I agree
11 it's correct that they didn't have that discussion on how you get different
12 voltages. They didn't discuss that. But the same voltage, I don't see any
13 problem with that with what they laid out here, but the different voltages, if
14 you're objecting to that because of the lack of detail, then that might be true.
15 I'm not sure. I have to reevaluate it.

16 MR. MILKEY: Yeah, I think that your analysis is generally on
17 point, which is that, you know, they don't explain how you would get at
18 multiple output voltages. I think my point is that assuming that their
19 combination involves multiple output voltages, they don't explain how you
20 would have multiple output voltages in any way that would still be
21 consistent with the claim limitations.

22 JUDGE LEBOVITZ: Once again, they do have that statement in, I
23 think it might have been paragraph 36 of Exhibit 1003, Stiegler, about
24 connecting a whole bunch, you know, to get higher voltage by connecting
25 things in series.

1 MR. MILKEY: So, thank you for raising paragraph 36 of Exhibit
2 2003, and I do want to turn to that. So, I want to make clear where this is
3 coming from.

4 JUDGE LEBOVITZ: This isn't Stiegler that you're looking at.

5 MR. MILKEY: Oh.

6 JUDGE LEBOVITZ: This is Jacob.

7 MR. MILKEY: Right. So, let me find that. So yes, Stiegler, I
8 think is paragraph 36. So, paragraph 36 was cited by the petition at page 1.
9 And this is the only place the petition cites it. And I want to show you the
10 petition at page 1. Dr. Stiegler's declaration provides a background of the
11 relevant technology, including charge pumps and pump stages. And then
12 there's a citation to eight or so paragraphs of Stiegler, including paragraph
13 36. That's the only discussion of paragraph 36 of Stiegler in the petition.

14 And if we look at Exhibit 1003 at paragraph 36, I'm going to scroll
15 up a little bit, going to page 22 of his declaration, starting at paragraph 33.
16 This is just technical background and its charge pump system. And it's not
17 something that is actually specific to Javanifard or Zhang. And it's certainly
18 not specific to the proposed combination. There's no allegation in the
19 petition that this technical background section is how the proposed
20 combination specifically would have operated. So, you know, we don't
21 think it's proper for something in a technical background section that was
22 cited in passing with no real discussion in the petition at page 1 would
23 somehow be a description of how the proposed combination is alleged to
24 operate.

25 So, I want to briefly talk about their alleged advantages to -- and

1 I'm starting with slide 12 of Petitioner's demonstratives. I first want to note
2 that these -- the blue text that describes what these alleged advantages are,
3 most of these are gloss on their actual statements. For example, a larger
4 range of input voltages is a number, something that was alleged to be an
5 advantage. A larger range of output voltages is also -- I think it's closer to
6 what they alleged, but that's not specifically what they argued either. But I
7 do want to run through these, so if we go to slide 13, which talks about a
8 larger range of output voltages. Again, I think it's telling that the best
9 evidence that they have on this demonstrative for this actually showing how
10 their combination would have a larger range of output voltages and a larger
11 range of input voltages is, again, we just saw that this is paragraph 36 of
12 Exhibit 1003, which has nothing to do with their proposed combination. It's
13 a technical background section that was cited in passing in the petition. So,
14 if this is their best evidence of the advantage of a larger range of output
15 voltages and larger range of input voltages, this is not a theory that was
16 fairly set forth in the petition. This certainly doesn't explain how the
17 combination of Zhang and Javanifard would be configured to achieve this.

18 JUDGE LEBOVITZ: Can we go to -- since we're on this topic, the
19 petition had three reasons. One was the which -- one was that they're an
20 analogous prior art and we agree with you, that's not really a reason. The
21 second was the disadvantages. And the third, if you can go to that for a
22 minute, that was kind of you can put all these things together. Can you go to
23 that?

24 MR. MILKEY: Yes, Your Honor.

25 JUDGE LEBOVITZ: Because I want to -- we didn't bring this up,

1 but I think it might be on page --

2 MR. MILKEY: Yeah, this is, I think.

3 JUDGE LEBOVITZ: Okay. We're looking at the petition now,
4 right?

5 MR. MILKEY: Yes, this is --

6 JUDGE LEBOVITZ: Finally, finally. Yeah, can you read that
7 into the record where on the petition? Can you read that, finally, into the
8 first sentence?

9 MR. MILKEY: Yes, Your Honor. It says [from page 22 of the
10 Petition], finally, applying Javanifard's teachings in embodiments of Zhang
11 would have been no more than the combination of known elements.
12 According to known methods, e.g., incorporating a charge pump circuit
13 design in a multi-power source charge pump system, according to known IC
14 design, obvious to a POSITA.

15 JUDGE LEBOVITZ: Go ahead.

16 MR. MILKEY: And the issue with this is that, basically, if you
17 read that paragraph in its entirety, for example, the last sentence says,
18 techniques for designing, e.g., using IC design and simulation tools and
19 making an IC, including various components like charge pumps, were well
20 known. You know, this is basically saying that as long as you are
21 combining circuit elements, any circuit would have been obvious, because
22 you're just combining known elements, according to known IC design
23 techniques.

24 JUDGE LEBOVITZ: Well, we were discussing this, and I think it
25 was Judge McKone brought up, isn't this possibly just saying it would be

1 obvious to substitute a fixed for a charge -- a fixed for a multi-stage, because
2 they're both equivalent in the sense that, and Patent Owner -- Petitioner
3 admitted that, right? They're equivalent because you can change the voltage
4 using VREF n Zhang, which is fixed, or you can change it in Javanifard by
5 changing the, you know, by putting them in series or parallel. Isn't that sort
6 of just saying it's like the hammer and screwdriver kind of analogy that's
7 used when you talk about interchangeability kind of thing? They both
8 produce voltages at the end. So, isn't that finally just making that statement?
9 Or is -- or in that -- so, what do you think about that?

10 MR. MILKEY: So, I think that the -- I think that -- the issue I
11 have with that, and I do want to think more closely about that question, and I
12 don't know that I have an answer to that specific question at this point,
13 because that's not really something that is articulated here specifically. But I
14 do appreciate the question, and I would like to think more about that. But
15 the issue we have is that even if that is a known design technique to sort of
16 substitute a fixed stage charge pump circuit with a variable stage charge
17 pump circuit, they still don't explain why you would do it in the specific way
18 they're now alleging, which is that you would have multiple different output
19 voltages, but still satisfying the requirements of limitations 1.3 and Claim 2.

20 We think that their representation of the claim is drastically
21 oversimplified. The claim does not just say, have two different input
22 voltages in combination with a variable charge pump design. The claim
23 talks about doing that in conjunction with specific configurations that would
24 keep, for example, if we're talking about Claim 2 and Claim 11, that you
25 would want to keep the output voltage the same, even as the input voltage

1 changes. And doing that with a system that also varies the output voltage
2 isn't something that they've motivated or explained how that would be done.
3 So again, I think that this is more of an issue for experts to say whether this
4 is something that really would be, you know, whether substituting a fixed for
5 a variable stage charge pump circuit in this way would have been sort of
6 satisfying the *KSR* standard here.

7 JUDGE LEBOVITZ: So, you're -- this is Judge Lebovitz again.
8 So, your answer is twofold. One is you're saying that my argument or
9 someone's argument about interchangeability is not articulated here. And
10 then I think you're saying, even if it's articulated, there's no expert testimony
11 that would explain why you would substitute it for one for another kind of
12 like the screw/hammer thing, right? Is that what you said?

13 MR. MILKEY: Yes, that's right. And then there's a third point
14 where even if this were articulated and there were expert testimony
15 explaining that, there's still a problem because, again, the claim is more than
16 just you're substituting Zhang's fixed-stage output circuit with a variable-
17 stage output circuit. The claims talk about specific configurations that
18 would change the switching of, you know, if we talk about Javanifard's
19 Table 1, it basically says, you know, as the input voltage changes, you have
20 to change from Javanifard's row one to row three.

21 And that's not something that is discussed in the references as sort
22 of this is a known thing that you would just obviously do, especially if you
23 have a system that is designed to, as Petitioner now clearly alleges in the
24 reply, that you actually want to be changing the output voltage. It's not clear
25 to me why you would want to keep the output voltage the same as the input

1 voltage changes if the goal is to actually change the output voltage. So, I
2 think that that is probably the most significant issue with this.

3 But, you know, frankly, when I saw this paragraph on pages 22 to
4 23 of the petition, it's -- if you take it at face value, which, you know, it
5 really does seem to say that all circuit elements can be defined in -- can be
6 combined in any manner of ways because this is -- there are just known
7 methods of IC design. And I will note also that there is no supporting expert
8 declaration citation to this paragraph either on pages 22 to 23.

9 And so, going to the Petitioner's slide 14, which is area reduction,
10 the area reduction argument. This is -- this said differently framing that they
11 have here is first of all something completely new that they haven't ever
12 articulated in any brief, but I want to note that the evidence they rely on for
13 area reduction is from Javanifard, Exhibit 1006 at [column 1] 653 [51] to 60.
14 And I think that this really exemplifies why it's important to have some
15 articulation as to why the -- I think this really exemplifies I should say that
16 the hindsight nature of what the -- what Petitioner is doing here. If we look
17 at Exhibit 1006 at column 6, I've -- I'm showing this on the screen -- let me
18 zoom in a little bit. So, I'm showing this on the screen at, you can see at the
19 bottom right, the first underlining I have here is what they cited in their
20 demonstrative which says, the variable stage charge pump must be able to
21 generate approximately five volts, nine volts and 12 volts from either a 3.3
22 volt or 5-volt power supply.

23 And then what they didn't show you on their demonstrative is the
24 very next sentence of Javanifard makes clear that Figure 2 of Javanifard is
25 the way that you accomplish this goal. Figure 2 of Javanifard, it says, Figure

1 2 illustrates the power supply circuitry for accommodating a 5 volt, 9 volt
2 and a 12 volt voltage level from either a 3.3 volt or 5 volt power supply.
3 And so, if this is your goal, if this is what is motivating a POSITA to achieve
4 these things, it's inexplicable that Figure 2 is the one part of Javanifard that
5 they don't rely on at all in this combination.

6 There's no Figure 2 as part of the Zhang-Javanifard combination,
7 and they never explained why they're not just using Javanifard's Figure 2,
8 which would be, you know -- frankly, I've never been involved in a case
9 before where the secondary reference relied upon, where there's undisputed
10 expert testimony, that the secondary reference already accomplishes all of
11 the alleged advantages of the combination. And that's what we have here,
12 and I think that the demonstrative on Petitioner's slide 14, and if you actually
13 look at what Javanifard teaches, really drives that home.

14 And I want to briefly look at Patent Owner's demonstrative slide
15 20, which is citing to Exhibit 2003 Patent Owner's expert declaration at
16 paragraph 106. So here, Patent Owner's expert is asking the question what
17 does Javanifard lack that Zhang's inputs switch 200 provides? And this is
18 something that is never answered. Javanifard alone, and specifically Figure
19 2, has all the advantages that the Petitioner alleges would have applied to the
20 combination, and this is --

21 JUDGE LEBOVITZ: It looks like you're out of time, Mr. Milkey.
22 So, I'll give you a minute more because I'm sorry, I was so involved in
23 listening and reading I didn't look at the timer.

24 MR. MILKEY: No, I appreciate that. And then I just briefly want
25 to look at the performance improvement with high power efficiency. So, I

1 think that Your Honors made clear that, you know, when Javanifard is
2 talking about the disadvantages of the prior art, Javanifard is talking about --
3 this is Javanifard at column 1, lines 48 through 51 is talking about there's a
4 plurality, or it says a number of charge pump circuits each having a fixed
5 number of stages. So, this is talking about, you know, multiple charge pump
6 circuits have problems with power efficiency. We have expert testimony
7 Exhibit 2003, paragraph 78, saying Zhang is extremely efficient. They don't
8 provide any expert testimony in response to that, and they don't really talk
9 about and don't provide any evidence of the relative efficiency of Zhang
10 with Javanifard with any, you know, looking at the actual design of Zhang
11 versus just some generic discussion of a design that is not Zhang, which is
12 what Javanifard provides. They do not explain why Zhang suffers from
13 these problems. And I just want to briefly --

14 JUDGE LEBOVITZ: I think we're kind of out of time and we
15 understand your point here.

16 MR. MILKEY: Yep. And so anyway, this is Exhibit 2003 at
17 paragraph 78 where Patent Owner's expert says, nowhere does Dr. Stiegler
18 describe how the design is applied to Zhang. So, thank you, Your Honors.

19 JUDGE LEBOVITZ: Yeah. Okay. So, we're going to go on to
20 the Petitioner, and you get your extra 15 minutes. Is that, Ms. Shi, is that
21 correct?

22 MS. SHI: Yes.

23 JUDGE LEBOVITZ: Yeah.

24 MS. SHI: So, I would like to start --

25 JUDGE LEBOVITZ: Go ahead.

1 MS. SHI: -- from slide 15 of Petitioner's slide. So, this is one
2 modification that we discussed in detail at the opening in the petition on
3 page 20 citing Javanifard itself. This is further expanded in the reply that
4 Javanifard's configurable system has improved efficiency, even for
5 introducing a single output voltage. So, also before I dive into the details, I
6 want to caution the Board that sometimes the Patent Owner imports the
7 word only into Petitioner's combination. So, for example, we explain that
8 Javanifard provides an output voltage.

9 And, for example, during read mode, it is 5 volt. And during that
10 read mode, we will keep it at 5 volt, regardless of which input voltage it is.
11 It might switch from 5 -- the input might switch from 5 to 3.3, but because
12 we are at the read mode, there is a need to keep the output voltage at 5 for
13 read. But when the flash memory goes into programming mode or erase
14 mode, there would be the need to move it to 12 volts. And then at that time,
15 during that erase mode, we keep it at 12 volts. So, that's one clarification.
16 We never -- the motivation is never keep the output node at one single fixed
17 constant. It is one constant output for one operation mode. And the benefit
18 is that it can operate in multiple operation modes to provide multiple output
19 voltages from multiple input voltages.

20 So anyway, I will now go back to the power efficiency that we
21 explained. This is first explained in the petition and then we expanded in
22 our reply, in response to Patent Owner's arguments that Zhang is already
23 efficient because it's fast. So, they never addressed the issue of power
24 efficiency, which is well-known in the art measured by the ratio of output
25 power over input power. So, this is the figure, the Y-axis is the power

1 efficiency, the X-axis is the multiplier ratio of the VOUT over V-input. So,
2 here --

3 JUDGE MCKONE: No, if you're saying that they couldn't have
4 addressed this, or if they didn't address this, the Petitioner didn't address this,
5 this is an exhibit that was put in with your reply, correct?

6 MS. SHI: Correct, yes.

7 JUDGE MCKONE: Now, so Petitioner -- or Patent Owner doesn't
8 have another opportunity to introduce evidence. Do they? I mean under our
9 rules?

10 MS. SHI: So, we explained the performance issue as discussed
11 before. We introduced that exact --

12 JUDGE LEBOVITZ: Can I interrupt one sec on that point?
13 Because I thought you said Patent Owner -- excuse me, Petitioner said
14 Zhang is already efficient.

15 MS. SHI: Oh, sorry.

16 JUDGE LEBOVITZ: And they got that from the declaration by
17 Jacobs, 20 -- Jacob, [Ex.] 2003. That declaration, I think, was part of the
18 original petition. Isn't that true?

19 MS. SHI: No, actually, that's Patent Owner's declaration, sorry.

20 JUDGE LEBOVITZ: Oh, that's Patent Owner's declaration.
21 Okay.

22 MS. SHI: Yeah. So, we -- this is, Your Honor, we first explained
23 the efficiency issue here in petition 20, page 20, citing exactly what
24 Javanifard quoted as the disadvantage of the fixed-stage method. We further
25 elaborated --

1 JUDGE MCKONE: So, let me make sure I'm clear, and this is
2 Judge McKone. The only evidence that you cited to support the efficiency
3 argument in the petition was Javanifard. Is that correct?

4 MS. SHI: Yes. We cited to Javanifard as the disadvantage of the
5 fixed-stage. So, Javanifard --

6 JUDGE MCKONE: Or you didn't cite to any other evidence of
7 efficiency in the petition, correct? Just so I'm clear.

8 MS. SHI: We cited to the expert's declaration.

9 JUDGE MCKONE: And the expert didn't cite to any other
10 evidence that we should be considering in the opening declaration. Is that
11 correct?

12 MS. SHI: Expert cited to Javanifard. And, oh, I will, if we -- you
13 allow me to take one second. So, Your Honor, we actually -- there's a
14 reference K-A-N-G we used as a secondary reference for Grounds 3 and 4.
15 Actually, the title was charge pump circuits with low area and high power
16 efficiency.

17 JUDGE MCKONE: Now, is this an argument you made in the
18 petition for the combination that we're talking about now? Not the next
19 combination, but I thought we were talking about Zhang and Javanifard.
20 Did you use Kang as a reason to combine or evidence of efficiency in the
21 ground Zhang plus Javanifard?

22 MS. SHI: It is not initially explicitly cited, but elaborated in our
23 reply and cited in our reply.

24 JUDGE MCKONE: So, but it wasn't raised in the petition,
25 correct?

1 MS. SHI: It was not cited in that section.

2 JUDGE MCKONE: Okay.

3 MS. SHI: So, we further explain what this disadvantage is going
4 to slide 24. And here -- and we explain why the number of the stages
5 impacts the critical performance factors.

6 JUDGE MCKONE: I have a feeling that you're looking at
7 something on the screen. It's no longer projected. So, if you could, please --

8 MR. O'DELL: You're not sharing your presentation.

9 MS. SHI: Okay, sorry. So, now we're looking at slide 24 of the
10 slides, of Petitioner slides. So, I know we have been coming back to this
11 slide a couple of times. So, the Y-axis is the efficiency. The X-axis is the
12 multiplier factor. So, we can see now I'm highlighting in green, yes, you can
13 use a 10-stage charge pump. But if you want to achieve a three-multiplier
14 factor using a 10-stage, it has a very low efficiency, 0.2. The peak, it goes
15 out of the picture. It's optimal for multiplier factor greater than 6. So, for a
16 multiplier factor of 3, I would like to have N-3. However, if I'm using a
17 fixed charge pump and I choose N equal 3 for my 3 multiplier factor, if I
18 want 6 multiplier factor, I cannot use that three stage pump anymore. I need
19 another fixed pump, maybe with more stages. And that's where area saving
20 also comes in as well. So, even --

21 JUDGE MCKONE: I have a question for you. Did you submit an
22 expert declaration along with the reply that might explain this Palumbo
23 reference? Or did I (CROSSTALK) --

24 MS. SHI: No, this is from the Palumbo reference itself.

25 JUDGE MCKONE: Okay. So, we don't have any expert

1 testimony that discusses this reference and whether or not it would be
2 applicable to Zhang and Javanifard, correct?

3 MS. SHI: It doesn't come with a supplemental expert declaration.
4 You are correct.

5 JUDGE MCKONE: Okay.

6 MS. SHI: And then, to --

7 JUDGE LEBOVITZ: Judge Lebovitz. Is this new evidence? I
8 know we were talking about that. Is this new evidence?

9 MS. SHI: Yes.

10 JUDGE LEBOVITZ: I mean, do we -- are we able to consider
11 this?

12 MS. SHI: Yes, because this is proper response.

13 JUDGE MCKONE: The question I've got, and I'm sorry to
14 interrupt you, this is Judge McKone, what is this responsive to specifically
15 in the Patent Owner response?

16 MS. SHI: It's responding to their arguments that Zhang itself is
17 efficient. And the Federal Circuit case law specifically provides that a reply
18 is proper if it's responsive and simply expands on previously raised
19 arguments. So, we --

20 JUDGE LEBOVITZ: And you're trying to say -- this is Judge
21 Lebovitz. You're trying to say that statement is incorrect because as you add
22 the -- why is that -- how does it respond? Can you put that in words for me?
23 Is this trying to show that adding the stages in series in Zhang would not
24 make it more efficient? It would make it less efficient? Is that what you're
25 arguing here?

1 MS. SHI: So, Zhang has the problem that's identified by
2 Javanifard, which is that it will sacrifice performance at one power supply to
3 accommodate another. So, using a specific example, Zhang, for example,
4 has a 10-stage charge pump, for example. And we chose the 10-stage so that
5 it's optimal for providing a 10 multiplier. But when we are choosing another
6 power supply input such that the boost is only 3 multiplier factors, then it
7 would no longer be optimal because it's designed to be more optimal for
8 providing a higher voltage boost.

9 JUDGE LEBOVITZ: You have two more minutes, by the way, a
10 little -- two more minutes, and some seconds.

11 MS. SHI: Sure. So, this is the power efficiency argument. And
12 next, I would like also address the arguments that about reasonable
13 expectation of success. Again, we first explained in the petition citing in the
14 reasons to combine section citing to the expert's declaration, and we further
15 properly expanded that argument in our reply, and here we have included
16 some of the examples. This is slide 23 of Petitioner's slides. So, first
17 Javanifard Figure 2 itself illustrated that applying multi -- input voltage
18 selector with variable charge pumps. That's well-known in the art. And
19 then we also included additional reference I would like to share. This is
20 Exhibit to the 1027 TI guide. This is on page 3. So, this actually illustrates
21 how a designer can choose different power switches and couple it with
22 different charge pumps to provide different voltages here. And actually, we
23 explained in our reply that TI further provides --

24 JUDGE LEBOVITZ: Which argument is this responsive to
25 because this is new evidence.

1 MS. SHI: This is responsive to Patent Owner's arguments that
2 there is no reasonable success. No reasonable expectation of success. And
3 TI guide actually explicitly explained there are all kinds of simulation tools
4 available that can help novice engineers to design charge pumps.

5 JUDGE MCKONE: And this all is another exhibit that we don't
6 have any expert testimony that helps us understand. Is that correct?

7 MS. SHI: This doesn't come with expert testimony. You're
8 correct.

9 JUDGE MCKONE: Okay.

10 JUDGE LEBOVITZ: And the time is out. So, if you have a one
11 or two more sentences, but I think there's -- you can wrap it up now if you
12 don't mind.

13 MS. SHI: Sure. So, what I would like to say my last argument
14 regarding actually Ground 2, I promised to cover it a little bit. So, Patent
15 Owner argued that Figure 2 --

16 JUDGE LEBOVITZ: But we're -- the time is you've gotten the 15
17 minutes. So, I think it's clear on the record.

18 MS. SHI: Okay. So, I just want to say Figure 2 we have explained
19 in detail in the brief, Figure 2 of Javanifard is not -- is a very specific
20 implementation. And for example, it uses at least two variable charge
21 pumps, which takes more space. So, it is -- would not be ideal for all kinds
22 of applications. And Patent Owner's expert himself admits they're under-
23 designed, over-designed issues. Using Figure 2 for some simpler
24 applications would be over-design and would not be applicable to many
25 applications.

1 So that wraps up my presentation.

2 JUDGE LEBOVITZ: Okay. Thank you very much.

3 MS. SHI: Thank you for the extra time. Appreciate it.

4 JUDGE LEBOVITZ: Okay. And now the Petitioner, excuse me,
5 the Patent Owner, right, we are on the Patent Owner, has reserved something
6 like seven minutes, I think, or was it eight minutes, seven, eight?

7 MR. MILKEY: We can do seven. I think I overstayed myself a
8 bit on the theories.

9 JUDGE LEBOVITZ: All right, go ahead. I'll set the timer. Go.

10 MR. MILKEY: All right, thank you. So, I just want to briefly
11 respond on Ground 2. You can look at Ground 2, but the area reduction
12 theory is a completely new theory that wasn't articulated in the petition. And
13 there's no expert testimony saying the area reduction. And I think there's a
14 footnote in the reply essentially saying these are the advantages of making
15 this modification to Javanifard's Figure 2, and it's all just attorney argument
16 that's not supported by evidence. And obviously, we didn't have a chance to
17 provide evidence in response to that.

18 I do think that this is a case where the theories have shifted a great
19 deal, even from -- certainly from the petition to the reply, but also from the,
20 even the reply to the hearing a bit. And I think that, you know, ultimately,
21 this is I think a strong indication that when the petition itself is unable to,
22 you know, in conjunction with an expert is unable to provide a coherent
23 motivation to modify references to achieve the claimed invention, when
24 even the petition and the expert with the benefit of hindsight. And in fact,
25 the Petitioner's expert admitted that, you know, he used the claims as a

1 roadmap to kind of map out how he was going to combine the prior art to
2 achieve the invention. This expert, he has more than ordinary skill in the art,
3 was unable to articulate a motivation that, or a coherent theory really that
4 achieves all of the limitations of the claim while being motivated. You
5 know, when even an expert is unable to do that with the benefit of hindsight,
6 we certainly don't think that a POSITA, without the benefit of hindsight,
7 would have been motivated to make these modifications. This is something
8 that really is far outside the wheelhouse of what is contemplated with the
9 law and this is exactly the type of hindsight that the case law uniformly
10 teaches that courts and panels need to be on guard against.

11 But I also want to talk briefly about the performance improvement,
12 and I'm going to share -- actually, in the interest of time if -- I'm looking at
13 Petitioner's slide 15, advantage of performance improvement with high
14 power efficiency. And, oh, I think I have it. So, I'm showing slide 15 right
15 now and you can see that this says that this is a quote from the petition at the
16 bottom, it says another disadvantage is that the fixed stage method typically
17 sacrifices performance at one power supply voltage to accommodate another
18 supply voltage. Again, this is talking about prior art fixed stage designs.
19 Zhang didn't even exist at that time. Zhang has additional circuitry, it has
20 control circuitry, it has things that make it efficient. We have expert
21 testimony saying that Zhang was efficient.

22 And we have expert testimony saying that, from our experts,
23 saying that their expert never explained how this specific disadvantage was
24 applicable to Zhang. It's their burden to explain how this advantage would
25 have resulted in the proposed combination. And I'll also note that this

1 advantage of sacrificing performance at one power supply voltage to
2 accommodate another power supply voltage, that's not really a disadvantage
3 in Zhang at all. You know, that's just not something that's been shown to
4 exist.

5 And this also -- I want to touch a little bit on the read and write
6 modes -- or read and erase modes that counsel was discussing. This is
7 actually a theory, you know, she said that you would maybe keep the read
8 mode the same as the input voltage varied. I searched, and there was no
9 discussion of how a read or erase mode would actually work in the proposed
10 combination, even in the reply. So, this is a completely new argument that
11 you would vary the input voltage during a specific read mode or a specific
12 erase mode. You know, even if there was discussion of how read and erase
13 modes would work in the combination, there's certainly no discussion of
14 why the input voltage would vary during those modes. You would think that
15 if you're in the middle of a particular mode, you probably wouldn't be
16 varying the input voltage during that mode. So, there's no explanation of
17 why you would practice the claim method or have a system configured to
18 have the input voltage vary while maintaining a constant output voltage with
19 those modes. So, we really do think that --

20 JUDGE LEBOVITZ: This is the timer. You have one and a half
21 minutes.

22 MR. MILKEY: Okay. Thank you. And so, ultimately, you know,
23 we think that the proposed combination is not motivated. There have been a
24 lot of attempts to sort of justify motivation and shifting theories, and we
25 don't think that there's a motivation. But even if these references were

1 motivated to be combined in some way, for example, because the output
2 voltage would vary, which is something already, as Petitioner conceded, is
3 already something that Zhang includes. Even there, there's no explanation
4 of how limitations 1.3 and Claim 2 and the related limitations of 10.5 and
5 Claim 11 would be satisfied.

6 So, you know, two endpoints. One, no motivation. Two, even
7 under the sort of shifted theory of the reply, which attempts to explain a little
8 bit how the output voltages would change, they don't -- Petitioner never
9 explains how the output voltages would change that's in any way consistent
10 with the claim limitations.

11 So, unless Your Honors have any more questions, I'll conclude my
12 presentation.

13 JUDGE LEBOVITZ: What limitation were you referring to just
14 now? Did you say 1 point what?

15 MR. MILKEY: Yeah, it's -- I'll show you the petition. This is the
16 listing of challenged claims. This is petition at --

17 JUDGE LEBOVITZ: I think it's 1.3.

18 MR. MILKEY: Yeah, 1.3 and Claim 2.

19 JUDGE LEBOVITZ: Okay.

20 MR. MILKEY: And then just for the record, also 10.5 and Claim
21 11.

22 JUDGE LEBOVITZ: Okay. Do any of the panel members have
23 any additional questions for the Patent Owner, Judge Trock, or Judge
24 McKone?

25 JUDGE MCKONE: Nothing from me.

1 JUDGE LEBOVITZ: Okay. Then I think, thank you both for
2 participating, and thank you, Ms. Shi, for, you know, giving -- being a LEAP
3 practitioner here. We're always happy to get people, you know, getting
4 more experience and getting a little more time to do it. So, we appreciate
5 that. And Mr. O'Dell, we appreciate you, and Mr. Miley, how do you say
6 your last name? Miley.

7 MR. MILKEY: Milkey. Thank you, Your Honor.

8 JUDGE LEBOVITZ: Milkey. Milkey, sorry. All right. Anyway,
9 the case is submitted, and maybe if the court -- we're ending the transcript.

10 (Whereupon the above-entitled matter went off the record at 2:54
11 p.m.)

IPR2023-01230
Patent 9,207,701 B2

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