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

ARRI AG,	Case IPR2022-00099
Petitioner,	Patent 10,845,044
	Case IPR2021-01497
	Patent 10,197,258
V.	
	Case IPR2021-01496
	Patent 10,197,257
ROTOLIGHT, LIMITED,	Case IPR2021-01498
Patent Owner.	Patent 10,203,101

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ORAL, VIDEOCONFERENCED AND VIDEOTAPED DEPOSITION OF
ERIC BRETSCHNEIDER, PhD
AUGUST 17, 2022
(Reported remotely.)

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ORAL, VIDEOCONFERENCED AND VIDEOTAPED DEPOSITION OF ERIC BRETSCHNEIDER, PhD, produced as a witness at the instance of the Petitioner Arnold & Richter Cine Technik GmbH & Co. Betriebs KG, taken in the above-styled and -numbered cause on the 17th day of August, 2022, A.D., beginning at 8:05 a.m. CDT to 5:02 p.m., before Kelly Hassell, RPR, CLR, CSR, in and for the State of Texas, located in Flower Mound, Texas, in accordance with the Federal Rules of Civil Procedure and the agreement hereinafter set forth.

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P R O C E E D I N G S

THE VIDEOGRAPHER: We are now on the record. This is Video Number 1 in the video-recorded deposition of Dr. Eric Bretschneider, taken in the following matters, ARRI AG, Petitioner, V. Rotolight, Limited, Patent Owner, with the following case IPRs and patent numbers: First one, Case IPR2021-01496 for Patent Number 10,197,257; IPR Number IPR2022-00099 for Patent 10,845,044; IPR2021-01497 for Patent Number 10,197,258; and, finally, IPR2021-01498 for Patent 10,203,101. This is pending before the United States Patent and Trademark Office, before the Patent Trial and Appeal Board.

This deposition is being conducted by Zoom video remote conferencing on August 17th, 2022. The time on the video screen is 8:05 a.m. Central Daylight Time. My name is Daniel Holmstock. I'm the legal videographer and digital exhibit technician from Digital Evidence Group. Our court reporter today is Kelly Hassell, also in association with Digital Evidence Group.

And unless an objection is stated to the following agreement, all parties to this deposition are appearing remotely and have agreed to the witness being

sworn in remotely.

Will the -- will counsel present please identify themselves and whom they represent, followed by the court reporter administering the oath.

MR. RAFFETTO: Yep. This is Joe Raffetto, from Hogan Lovells, on behalf of ARRI, Petitioner. And with me is Scott Hughes.

MR. CANNON: This is Bryan Cannon on behalf of patent owner, Rotolight. And with me is Alison McCarthy and Dustin Ferzacca. We're from the law firm Troutman Pepper. And I'm also here on behalf of the witness.

THE COURT REPORTER: Okay. I'm Kelly Hassell, Certified Shorthand Reporter, located in Dallas, Texas. The witness is located in Flower Mound, Texas.

Could you raise your right hand, please.

(The witness was duly sworn.)

THE COURT REPORTER: Thank you.

You may proceed.

ERIC BRETSCHNEIDER, PhD,

having been first duly cautioned and sworn to testify the truth, the whole truth and nothing but the truth,

testified on his oath as follows:

DIRECT EXAMINATION

BY MR. RAFFETTO:

Q Good morning, Dr. Bretschneider.

A Good morning.

Q Can you please state your full name and address for the record.

A Eric Colin Bretschneider, 2709 Northview Court, Flower Mound, Texas, 75022.

Q And have you been de- -- deposed before?

A Yes, I have.

Q How many times?

A I'm not sure the total number of times.

Q Can you ballpark it?

A North of 40.

Q Okay. A lot of times, fair to say?

A Yes.

Q Yeah.

A Yes.

Q And have you ever testified at trial?

A Yes, I have.

Q So it seems like you're familiar with this

process, but I'll just go over some of the ground rules as a refresher.

So, of course, I'll be asking the questions here. The court reporter will be transcribing my questions and your answers. You must answer the questions truthfully, under oath and penalty of perjury, as if you're in court. Your counsel may object, but you need to answer the questions unless specifically instructed not to.

Does that make sense?

A Yes.

Q And with Zoom, sometimes it's difficult, but we should, of course, avoid talking over each other. If you don't understand a question, please ask. And if you don't ask me for clarification, I'll -- I'll understand that you understood the question.

Does that make sense?

A Yes.

Q And we need audible answers, so please don't nod. We need the court reporter to -- to be able to transcribe everything. Is that fair?

A Understood.

Q And you said you testified at trial. How many times have you testified at trial before?

A It was four or five cases. And one of them, there were two separate hearings in front of the judge.

Q Okay. Have you ever had your testimony excluded for any reason?

A I did in one matter. It was a peculiar situation because the defendant didn't want me to testify on a subject I hadn't offered an opinion on.

Q Okay. What was the name of that matter; do you recall?

A That was Everlight versus Nichia.

Q Okay. Now, you understand that you're being deposed today in connection with declarations you submitted in four IPR proceedings related to Rotolight patents?

A Yes.

Q And these IPRs and declarations relate to four different Rotolight patents; is that fair?

A Yes.

Q One declaration is for U.S. Patent Number 10,197,257, right?

A Yes.

Q And if I refer to this as the '257 patent, will you understand that?

A Yes.

Q And another declaration is for U.S. Patent Number 10,197,258, right?

A Yes.

Q And if I refer to this as the '258 patent, will you understand that?

A Yes.

Q And another declaration is for U.S. Patent Number 10,203,101, right?

A That's correct.

Q And if I refer to this as the '101 patent, will you understand what I mean?

A Yes.

Q And the last declaration is for U.S. Patent Number 10,854,044, right?

A No. It's Patent Number 10,845,044.

Q Ah, thank you.

And you understand, if I refer to this as the '044 patent, will you -- will you understand that?

A Yes.

Q Okay. And you're retained by Rotolight, Limited, correct?

A Yes.

Q Is it okay if I refer to them as Rotolight?

A I'm fine with that.

Q And you understand that they're the Patent Owner in these proceedings, correct?

A Yes.

Q Have you ever worked for Rotolight before these IPR proceedings?

A No, I have not.

Q Not in any capacity?

A No. No capacity.

Q When were you retained by Rotolight?

A I'd have to look at the agreement. It was the end of last year or beginning of this year. I think it was sometime last year.

Q Okay. And so outside of these IPRs, you haven't been in -- strike that.

Outside of these IPRs, have you been engaged by Rotolight on any other matt- -- matters or

disputes?

A No, I haven't.

Q And you understand that the petition -- the petitions here were filed by my client, ARRI, right?

A Yes.

Q And before becoming involved in these IPRs, had you ever heard of ARRI?

A No.

Q Before becoming involved in the -- these IPRs, had you ever heard of Rotolight?

A Not that I can recall.

Q Okay. What did you do to prepare for your deposition today?

A I reviewed the patents, my declarations and the prior art that was cited.

Q And when you say -- you said you reviewed your declarations; is that right?

A Yes.

Q Did you review any other declarations?

A No, I did not.

Q Okay. Did you meet with anyone to prepare for your deposition?

A Yes.

Q Who did you meet with?

A Mr. Cannon and Mr. Ferzacca.

Q When did you meet with them?

A Yesterday.

Q How long did you meet with them yesterday?

A I believe it was about six hours.

Q Did you meet with them prior to yesterday in preparation for your deposition?

A No.

Q And so you mentioned you reviewed patents, the -- the challenged patents to your declarations, and the prior art. How did you determine which materials to review in preparing for your deposition?

A They're the materials that were related to my declarations.

Q After preparing for your deposition and reviewing your declarations again, are there any opinions in your declarations that you wish to change?

A No.

Q Okay. And as we talked about earlier and as you heard from the read-on, you're aware that you're

being deposed with respect to all four declarations that you submitted, right, across four different IPRs?

A Yes.

Q And let's focus on the first patent and declaration, the '257 patent. How many hours would you say you spent preparing and drafting your declaration relating to the '257 patent?

A Probably on the order of 20 or 30. It's been awhile.

Q On just the '257 patent declaration?

A Yes.

Q Okay. And let me take a step back for a second.

Dr. Bretschneider, do you have any materials in the room with you today?

A I do. I have three binders that were prepared for me by counsel that have the patents, my declarations and some of the prior art that was cited in my reports. They're clean copies without highlights.

Q Are these all documents of record in the IPR proceedings?

A Yes, they are.

Q And are these printouts of the original documents, or have you added any notes or markings to them?

A No notes or markings.

Q Do you have anything open on your computer, other than this Zoom?

A I have antivirus software running, and I have the box folder open where I was told exhibits would be uploaded.

Q Okay. Do you have any chat applications open?

A Only the Zoom.

Q Do you have any e-mail applications open?

A No.

Q Do you have any documents open?

A No. Just the -- the Zoom and the box folder.

Q And you don't have any websites open, correct?

A No.

Q Okay. So back to the '257 patent declaration, did you write your declaration?

A There are sections on legal standards that were prepared by counsel. Other than that, the writing was mine. There was some editing, some discussion back and

forth with counsel.

Q So you physically sat at a computer and typed your declaration?

A Yes.

Q Do you have any staff that work with you for matters such as this?

A No.

Q Did you do the first draft of your '257 patent declaration?

A I think counsel may have done the first draft. There were a lot of discussions back and forth. The way I prefer to work is to establish an outline. Once an outline is -- once I have the outline, the writing's a lot easier. So developing that outline, there's some back-and-forth in that.

Q Okay. How many hours did you spend preparing and drafting your declaration for the '258 patent?

A It was about the same amount of time.

Q And how much time was that?

A Roughly, 20 to 30 hours. Again, it's been some time, so I'm -- I'm going from memory. Little bit of guesswork there.

Q And -- and how many hours did you spend preparing and drafting your '101 patent declaration?

A A similar amount of time.

Q And did you spend a similar amount of time on the '044 patent declaration?

A The '044 was a little bit more time because there were two declarations. There was one -- one from February. And I'm looking for the signature date on the other one. One from August.

Q Okay. In preparing your declarations, were there any materials that you would have liked to see but didn't have?

A No, not that I can recall.

Q And as you sit here now for your deposition, is there anything in your declarations that you'd like to correct or change?

A Reviewing them, there were a few typos. Nothing substantive.

Q Okay. So let's turn now to your -- your background. So you had a -- you went to Tulane University, correct?

A Yes.

Q And you received a bachelor's of science in chemical engineering from Tulane?

A It was a bachelor of science, engineering.

Q In chemical engineering?

A Yes.

Q And then you received your PhD in chemical engineering from the University of Florida?

A Yes.

Q So your degrees are both in -- in chemical engineering, correct?

A That's correct.

Q So you don't have a -- a bachelor's or a master's or a PhD in electrical engineering, correct?

A That's correct.

Q And in obtaining your degrees, you didn't take any coursework in cinematography, correct?

A No, I didn't.

Q And you didn't take any courses on entertainment lighting for TV or film, correct?

A Correct.

Q And you didn't take any courses on the use of lighting for special effects, correct?

A Correct.

Q And that's -- that's not something you would typically expect to see in chemical engineering courses; is that fair?

A In course --

MR. CANNON: Objection; form.

A In the formal courses, no, it's not what you would typically see.

Q (BY MR. RAFFETTO) And in your PhD, you focused on the development of LEDs; is that right?

A Yes. There was some work on tangentially-related class of devices called thinthalam electroluminescent devices. They're another form of solid-state lighting, primarily used for displays.

Q And you're mentioning that because that's something similar to an LED that can be used in lieu of an LED; is that right?

A In certain applications. I'm more mentioning it because you asked about my graduate research.

Q Mm-hmm.

A So I'm just trying to be complete on the topics I studied and researched.

Q Okay.

MR. RAFFETTO: Okay. I'd like to mark Tab -- what's -- what's noted as Tab A as Exhibit 1.

(Exhibit 1 marked.)

MR. RAFFETTO: If you could bring that up on the screen.

Q (BY MR. RAFFETTO) Dr. Bretschneider, do you recognize this as a copy of your CV?

A Yes.

Q And you submitted this CV with your declarations across all four IPRs; is that right?

A Yes.

Q And the information in this CV accurately reflects your education and work experience, right?

A It's a summary. It's highlights. Everything I've done would be quite a bit more pages.

Q Is there anything you'd like to change in this CV?

A My address has changed. Also had a -- two more patents issue since I submitted this.

Q And anything else you'd like to change?

A No.

Q So I'd like to trace your employment history now. Maybe we can start with your current position. So your current position is chief technology officer at a company called EB Designs & Technology, correct?

A Yes.

Q What does the "EB" in EB Designs & Technology stand for?

A Emily Bretschneider.

Q And who is Emily Bretschneider?

A My wife.

Q And this is a consulting company, correct?

A Yes.

Q How many employees work at EB Designs & Consulting [sic]?

A Just myself.

Q What type of work does this consulting company do?

A It's a variety of different topics. Some of it is serving as an expert witness. Other -- the other part of it is aiding in design and development of products and developing technology for companies. There are a number of companies in the LED and lighting field that either

they don't have the expertise in their incur- -- current employee base or they simply don't have the -- the bandwidth, the throughput. Some cases, it's specific knowledge developing tests for different processes, or they want to do something but they don't know how to do it.

Q And let's -- let's break that down a little bit.

On the topic of expert witness, what type of expert witness consulting do you -- do you do? Does your company do? Strike that.

What type of expert witness consulting does EB Designs & Technology do?

A Primarily, it's related to LEDs and lighting. I have done cases that deal with product liability.

Q And when you say, "primarily, it's related to LEDs and lighting," are you referring to a specific type of case, like a patent case, or something else?

A Those are patent cases. The product liability, safety aspects, those, obviously, aren't patent cases. It was -- those are more related to design and development or execution of a design for a product and

there was some safety incident.

Q And when you say that the consulting involves LEDs, what do you mean by "LEDs"?

A There are different aspects of lighting technology these days. Virtually everything has gone to LEDs. In some cases, the matters are related to the chip structure of an LED, the package structure of an LED. Those are component-level issues, if you will.

Then there's also fixture level. So it's not a matter that's specific to the construction of the LED chip or package, but its use of LED chips and packages and fixtures.

Q And when you refer to the chip structure and the package structure for the LED, are you referring to a driver for the LED, something that -- that drives the light?

A The driver would be a matter for a fixture, not for a package or a chip.

Q So when you refer to the chip strac- -- structure, package structure, what -- what do you mean by that?

A An LED chip is a sequence of semiconductor

layers that have different properties that are designed to emit light when you apply a forward bias. Various aspects of the structure relate to the color of light, to -- there's a lot of details to the efficiency. And it's one thing to make an LED. It's another to make an efficient LED. If LEDs weren't efficient, we probably wouldn't be here talking about them.

But they've -- the technology has progressed to the point that they are essentially the most efficient method of creating light for virtually every application.

So that's at the chip structure. Once you have a chip, because of the size, you -- they're very difficult to use. Glitter -- a piece of glitter would be a very large LED chip, to give you a sense of scale there.

So the chips have to be put into a package, something that will physically support the chip, that will protect it from the environment, that also allows for heat dissipation, heat created by the chip during operation, and also to make easy electrical contact.

Other aspects of the package deal with the light that comes out. LEDs emit basically a single color, but most applications want white light, so you have to incorporate phosphor materials so that you can create white light. So there's some optical considerations there as well.

You also want to shape the light. You don't necessarily want a big blob of light, if you will. In some cases, you want it focused and directed and very -- very specific angular distribution of light.

Q So what percentage of your consulting work comes from litigation consulting?

A It varies. Goes between 30 and 70 percent.

Q How about in 2022?

A I would say probably on the order of 70 percent.

Q And so would it be fair to say that 70 percent of your income comes from being an expert witness?

A So far this year, yes.

Q Now, before working at EB Designs & Technology, you held several other employment positions since getting your BS degree, correct?

A Yes.

Q And if we could actually start at the beginning of those and skip to Page 5 of your CV. If we look at the bottom, towards the bottom where it says "Shell Oil." So be- -- you were a process engineer at Shell Oil in 1989, correct?

A Yes. That was before I started graduate school.

Q And that work involved cleaning heat exchangers and crude oil systems, right?

A It was more on the scheduling. I wasn't actually the one doing the cleaning.

Q When you say "scheduling," do you mean scheduling the cleaning?

A It's a determination of maintenance. Oil industry -- an oil refinery is a -- they're in business to make money. There's a lot of cost and complexity, particularly with crude oil distillation.

In order to improve efficiency, you have to heat the crude oil, before it goes into the distillation column, to a fairly high temperature, 864 degrees Fahrenheit. For the unit I was working on, you

also have to cool and condense various product streams that come out. So what is used is called heat integration. You use the incoming cold, or cooler, crude oil to condense product. And then, finally, before it goes into the distillation column, it goes through a final furnace to get it to the -- the temperature.

So there's a complex interplay between all the operating parameters. And in an ideal world, your heat exchangers would work the same way every day, every month, every year, and you wouldn't have to worry about them.

The simple fact of the matter is, crude oil's a pretty dirty, messy material. So there's scale. There's deposits that build up on the heat exchangers. So from measurements and modeling, you deter- -- determine how the heat exchangers are performing. You know how they would perform if they were clean. And you do an economic calculation, what is the cost of the heat exchangers being dirty.

So you have to do a lot of calculations to determine when is the best time to take them out of service and clean them.

Q So your work at Shell Oil didn't involve LED technology, right?

A No, it was a thermal management and modeling and economic analysis.

Q And it didn't involve anything related to entertainment or cinematography lighting effects, correct?

A Correct.

Q And then from there, if we can move up to AT&T Bell Labs, if you can highlight that portion of your CV.

So you spent a year as a visiting researcher at Bell Labs in 1990, right?

A It was more four or five months.

Q Okay. And this was work with MOCVD/Mass spec systems, right?

A Yes.

Q What is MOCVD?

A It stands for metal organic chemical vapor deposition. It's the process that's used to deposit semiconductor layers for LEDs, among other structures.

Q And this didn't include any work in entertainment lighting, correct?

A Correct.

Q And this didn't include any work in lighting special effects, correct?

A Correct.

Q Now, if we move up to Emcore, next part of your CV, it looks like after you worked at Bell Labs, your next employment position was as a processor -- process engineer at Emcore Corporation starting in 1996; is that right?

A Yes.

Q What were you doing between 1990, when you left Bell Labs, until you started at Emcore?

A I was a graduate student.

Q Was that when you were getting your PhD?

A Yes.

Q And so you start --

A I --

Q Well, go ahead.

A Technically, I was still a graduate student for part of the time at Emcore. I did not defend my PhD dissertation until 1997.

Q And when did you start your PhD program?

A 1989.

Q And your work at Emcore also involved MOCVD systems, right?

A Yes.

Q And it didn't involve any entertainment or cinematic lighting effects, right?

A That's correct.

Q And it didn't involve generating any lighting special effects, correct?

A Correct.

Q And then continuing up the chain, after Emcore, you went to work for Uniroyal Optoelectronics; is that right? And this is kind of -- for the record, this is kind of split across a couple pages of the CV.

A Yes. It's -- characterizing it saying leaving Emcore isn't quite accurate, I would say. Emcore had been developing LED technology. MOCVD systems are very expensive pieces of capital hardware. Cost a few million dollars. People want to know they will actually work for their desired application. So the easiest way to sell an MOCVD system to an LED manufacturer is to prove that you can make good LEDs.

So Emcore had developed the ability, the technology, to produce good LEDs, and they decided to commercialize that. Instead of just training people, training their customers on how to do it, the idea was to go into manufacturing. So Uniroyal Optoelectronics was a joint venture between Emcore and Uniroyal Technology Corporation, so it was a -- a transfer. Yes, I moved from New Jersey to Florida. It wasn't necessarily leaving Emcore.

Q So you sort of transferred as part of a joint venture, is what you're saying?

A Yes, that's correct.

Q And at Uniroyal, you held several positions; is that right?

A Yes. It was a startup company. And in startups, you have to wear a lot of hats.

Q And if we look at sort of the bottom right corner of the screen here, which is Page 4 of your CV, we can see it says "staff engineer 1988 to 1999."

Do you see that?

A Yes.

Q What were -- what -- what did you do in your

role as a staff engineer?

A I was designing two-thirds of the facility, specifying the equipment, overseeing construction, getting the equipment installed and starting up the -- the plant.

Q And you -- when you refer to facility, what facility are you referring to?

A This was an LED production facility, so it was a -- a greenfield effort. We had a shell building. We had to build a clean room, the infrastructure for chemicals for the process, for waste. And we actually had to train engineers and start the plant running.

Q And this work didn't include any enter- -- any work in entertainment or cinematic lighting effects, correct?

A Correct.

Q And it didn't include any work involving generating lighting special effects, correct?

A Correct.

Q And then it looks like after your staff engineer, you moved to a new position or were assigned a new role as a senior epi scientist.

Do you see that?

A Yes. If you look at the dates, there's a lot of overlap in titles. I had several business cards.

Q Okay. And what did you do as a senior epi scientist?

A A lot of it was just troubleshooting the process, but also trying to improve the -- the hardware and the process, make things better.

Also did work -- you can see, served as primary technology liaison with customers and investor group -- investor -- in- -- sorry, investors and providing support to customers on package of fixture design and integration. At the time, 1999, LEDs were a new technology. If you were inside the field, there was a lot of optimism that we could do all kinds of lighting. Outside in those fields, there were questions. Some people said, yes, we see this will be a technology for the future, but we don't know anything about LEDs.

So that was my job there. I was actually tapped by the vice president of sales and marketing to work with our customers, develop relationships with customers and help them understand the technology and, if

necessary, help them develop technology, develop products.

Q And the beginning of your answer, you referred to troubleshooting the process and also trying to improve the hardware and process. By "process," did you mean the process to make LEDs?

A Yes.

Q And is it fair to say that your work as a senior epi scientist did not involve any entertainment or cinematic lighting effects? Is that fair?

A No, it's not.

Q No, it's not fair?

A No, it is not fair.

Q So your work as a senior epi scientist involved entertainment and cinematic lighting effects?

A That was a portion of it.

Q How so?

A We discussed the second bullet point, that providing support to the customers, package fixture design and integration. We had two product lines. We sold LED chips, which, as we discussed before, an LED chip has to be put into a package to really be useful.

Once you have a package, then you can put it into a -- a fixture. You can start designing a fixture to use it, and you have to worry about the integration and getting the application going.

So we had contacts ongoing in projects with Disney. It started out with lighting on Main Street in Disney. But Disney does a lot of theatrical production, so it migrated into that. So some of the lighting on the cruise ships, and also work with Disney MGM Studios. I understand it has a different name now, but I always think of it as Disney MGM Studios.

Q And you say you had contacts ongoing in projects with Disney. What exactly were you doing with Disney?

A Helping them design LED lighting fixtures for the lighting on Main Street. We had a sister company called Norlux Corporation. They had a -- their specialty was a -- a specific type of LED package, something called a COB package, which stands for chip on board. So these were relatively high-power output packages. You could get a lot of light, and you used multiple LED chips.

So these were some of the first truly

high-brightness, high-luminous flux lighting sources. Norlux developed the light bulb for installation on Main Street. And then Disney was happy enough with that, they wanted to start using LEDs for their production lighting, their stage lighting, because there are a lot of advantages.

Now, you could efficiently produce colored light. You could get a lot of effects. As we discussed before, LEDs emit fairly pure colors of light, and you only create that light. What was done before, you would create white light. You would use a halogen incandescent discharge lamp, possibly, and you would produce this broadband white light, and then you would filter out what you didn't need. Any light you filter out is an inefficiency. It also results in heat production.

So there are a lot of gels that you would go through to create certain colors, certain effects. And they're basically a plastic material. It's really tough plastic. But they age over time, just from the heat and the exposure to light.

So with LEDs, you had a chance to do everything electronically. So instead of creating all

the wavelengths and throwing away what you don't want, you could just create what you wanted.

Q When you say that you were helping them design LED lighting fixtures, are you referring to the -- to the -- to the lights themselves?

A It started off with training them on the technology, on the capabilities, and then they had questions about, "Well, how do we actually use them? How do we incorporate them?"

I had a standard presentation I gave to dozens of people in the industry called Care and Feeding of LEDs, which would give them the -- the primary technical points, but it wasn't enough to allow someone to design a fixture. It would get them started in the right direction. So I spent a lot of time -- it was basically free technical support. I would help them with design of the fixture, getting a product, and it was a great lead into making sales of -- of product.

Q And by "product," you're referring to LEDs, so the -- the actual lights?

A Of -- product with respect to Uniroyal Optoelectronics was LED chips or LED packages. Through

Norlux, these chip on board packages.

Q And so it'd be sort of a light fixture?

A Our sales were components, but components go into a fixture. So if someone can't design a fixture, you can't make a sale. If you help them with the design of a fixture, it's a lot easier to make a sale. Because they have a fixture. They have a use for it. They know it'll work.

Q And this work that you've mentioned here for -- for Disney, this didn't involve, though, effects for TV or film, correct?

A It did. I mentioned they had their productions, the shows that they would have ongoing. But Disney MGM Studios was specifically for TV and film.

Q So your testimony now is that you were doing specific work for TV and film for Disney; is that right?

A No, it's not my testimony now. It is my testimony.

Q I'm sorry. Can you clarify your answer?

A You said "my testimony now." It's simple fact of my work history.

Q Okay. Outside of this work with Disney, is it

fair to say that your work as a senior epi scientist didn't involve any entertainment or cinematic lighting effects?

A Could you repeat the question, please?

Q Yeah. Outside of this work at -- with Disney that you've now testified about, is it fair to say that your work as a senior epi scientist didn't involve any entertainment or cinematic lighting effects?

A It's a little difficult for me to answer, because I had concurrent roles. Again, I had to wear a lot of hats, but in different aspects in terms of -- some of my other roles, it -- this interaction with customers was repeated.

As I said, you know, people were starting to get interested in LED technology. So part of it was as a senior epi scientist, but there were others because -- university contracts and government relations, I think, was one of my titles, director of that. And that was basically getting people to fund development work, so some paid technical consulting.

Q So your testimony is you're not sure whether your work involved or did not -- strike that.

So your testimony is that you're not sure whether your work as a senior epi scientist involved entertainment or cinematic lighting effects, above and beyond the Disney work that you've mentioned?

MR. CANNON: Objection; mischaracterizes.

A No, that's not it. There were other interactions in that field.

Q (BY MR. RAFFETTO) Okay. What other act- -- what other work, while you were at Uniroyal Optoelectronics, involved entertainment or cinematic lighting effects for TV or film?

A My other concurrent roles. Director of intellectual property, that was looking at where the technology could be beneficial. And also, that government contracts and university relations, those were the primary targets; but, again, companies would pay us to help them develop the technology.

Q What's an example of -- strike that.

While you were in this concurrent role of director of intellectual property, what's an example of work that you did in that role that involved entertainment or cinematic lighting effects for TV or

film?

A There were a few companies that were developing lighting fixtures specifically for the applications. As I said, traditionally, at the time, what you did is you created white light, and then you used different gels, different filters, to create different lighting effects, different colors.

And one of the things people had known about LED lighting for a while, if you use red, green and blue, similar to TVs at the time, you can make a -- a wide range of colors, and it would be useful for a display. You have some issues with color rendering if you only have three colors. So the perceived color of the light will be correct, but the rendering of colors in the environment when you light a scene might not be what you want.

So companies were looking at how can we make this better. One obvious way is you do red, green, blue and white, so now you have four color channels. A white LED was more efficient than the red, green and blue combined, but you can't change that color, so you would mix the lights.

Then they started adding in different colors. For color rendering, if you add in an orangeish color, you can improve color rendering just even without white. You can add yellow, do even better. You can add cyan, do even better.

So the most complex fixture was a seven-channel light that I know came out on the market -- I think it was by 2006. Because I remember being at LightFair and a presentation on it. So we used blue, cyan, green, yellow, orange, red and white LEDs.

So it's fairly complex system, because that gives you -- with that many color channels, you have a lot of options when you go to a particular color point. You have the color temperature of light, which is nominally the -- the shade of white. If it's a yellowish white, that's a low color temperature. If it's a bluish white, that's a high color temperature. Neutral white, people talk about. The patents mention a -- a tungsten light or daylight white. Tungsten would be a warm white. Daylight would be a cool white.

So you have different ways to do it. And with that many channels, you have an option. I can go to

this color of light. I can do it at the highest efficiency, which isn't usually what you want to do for stage, theater and TV. The efficiency's not the problem. It's the effects you generate.

So I could have dozens of different ways to make a particular white light. But by changing the color rendering properties, I could emphasize different things. I could create effects that couldn't be created before, at least not easily created.

So one of the examples, which was a -- a really powerful demonstration, there was a watercolor painting that was on a white background. And the white point would stay constant. If you looked at the white part of the painting, you would see the same color. But by changing the content, at the same -- and even at the same intensity, you could emphasize different aspects, different portions, different features of the painting, and it looked like it was animated. So even though nothing was moving, you had all these special effects you could create that you couldn't create before.

Q And so you're saying that this work, in this answer that you just gave, was directed to lighting

effects for TV and film?

A Also for stage and theater.

Q What -- what company or companies was this work for?

A I don't recall. There were a few companies. This was over 15 years ago, almost 20 years ago.

Q Okay. How did you move from -- in -- a scientist in epitaxyal materials over to the director of intellectual property and university relations and government contracts?

MR. CANNON: Objection; form.

A The transfer to director of intellectual property, or that role, came about because, at the time in the LED industry, gallium nitride LEDs, efficient blue and green LEDs, was the new technology. There was one company that had led the charge into the field, if you will. They -- I'm trying to be polite on this. They would emphasize the fact that they had developed the technology and had a significant IP portfolio. The short summary is they said, "You can't make these LEDs without infringing on our patents."

So there were patent actions against all

of the LED -- major LED manufacturers. So one of the things for Uniroyal Optoelectronics to go forward was to work with counsel to develop opinions of noninfringement on key patents that had been asserted against other LED manufacturers. It was eight or ten patents.

The president of Uniroyal Technology Corporation had some questions at one point, and the attorneys said, "Ask Eric. He understands it better and can explain it better than we can."

Q (BY MR. RAFFETTO) What about the government contracting role? How did you come about into that role?

A That was the work with the customers. I was handpicked by the vice president of sales and marketing. To use his terminology, I was his technical guy who could speak English. I interacted well with customers and potential customers.

That also -- so we could get development money, we could get paid to help companies develop products and technology, we wanted to sell LEDs and packages. But at the time as well, starting in 2000, the Department of Energy had decided that LED technology was an important lighting technology. There was significant

potential to save energy. So they announced that over ten years they would be investing $50 million a year, so a total half-a-billion-dollar investment, in LED technology to accelerate the development of technology and push it into different market niches.

So when the government is saying, "We're giving out $50 million a year," everyone scrambles to try to get a piece of that. So that was the -- the government aspect. But then, some of the research, we had to involve universities. There's some special -- special capabilities they had.

Q And we have mentioned or I have mentioned the phrase "epi" a number of times. Does that stand for epitaxy?

A Yes, that's correct.

Q What is epi -- what is epitaxy?

A Epitaxy is a special class of materials deposition. It basically means you're growing a crystalline material on top of another crystalline material, and you're doing in it in a very precise manner so that you have high quality -- the films you deposit, the layers you deposit are a high crystalline quality.

That's the short summary.

Q And so does that relate to the formation of LEDs?

A Specifically to the semiconductor layers that make up the LED. I can -- I can show you a layer structure, and I can tell you the composition. But if it's not done just right, it's kind of like baking a cake.

If you bake a cake right, if you mix everything right, it's really good. If you mix the ingredients wrong, don't cook them at the right temperature, the right time, you're not going to get a good cake.

Q And your work for Uniroyal Optoelectronics, that ended about 20 years ago; is that right?

A Yes.

Q And after Uniroyal, you then moved to University of South Florida in 2003; is that right?

A Actually my next work was Beeman Lighting, University of South Florida, was a little bit after that.

MR. RAFFETTO: Can we actually highlight the Beeman and University of South Florida experience,

which you can see on -- for the record, on Page 3 of Dr. Bretschneider's CV.

Q (BY MR. RAFFETTO) So are you saying you went to Beeman before you went to University of South Florida?

A Yes.

Q Did you work for both entities at the same time?

A Yes.

Q And your CV says with respect to Beeman that you were the director of solid state lighting engineering, correct?

A Yes.

Q What is solid state lighting?

A Basically LED lighting.

Q And your CV says that you developed landscape lighting in this role; is that right?

A Yes.

Q And is this referring to, for example, lighting of trees, bushes, other ornamental landscape features?

A Yes.

Q And that's similar to the -- to the type of lighting that you might have done on Disney Main Street;

is that right?

A It was a little different because since it was based on red, green and blue LEDs, we could do color-changing effects. So for the president of the company, his favorite thing was to say, you can use the lighting for any holiday, you can change it to match the holiday. So you can do red, you can could green, you can do blue. You can do any color. You could do white.

So the fixtures were actually programmable so we could change the color of the light or we could cycle through different colors of light. We had different effects we could create.

Q And it says that you developed this landscape lighting to have minimal environmental impact. Do you see that?

A That -- I see that. That wasn't actually our original goal. That was more, I'll say a beneficial side effect.

This was in Florida. Florida has an enormous number of sea turtle nesting activity. So one of the concerns, sea turtles are an endangered species. If you affect the health, or worst case kill one, it's a

significant fine. And one of the biggest issues for the hatchlings is white light will attract them at night.

There was one condo association, they -- on the East Coast of Florida, they left an outdoor light on one night and it drew hatchlings from three different nests, so well over 100 sea turtles were killed because of that incident. That was a very expensive night of lighting. With the red setting on the lights, turns out it's -- we couldn't say the sea turtles couldn't see the lights, but it didn't have an effect on their behavior.

So it was more the fact that we could do this color changing. And actually some of the sea turtle groups said, hey, I think your red lights have a really big potential benefit for the industry. So we did some testing, and it turned out they were right and we got lucky with the product.

Q So -- so is it fair to say that the lighting that you were working on at Beeman was designed to make landscapes look nice?

A That was the intent, and some aspects in terms of the control, it was similar to stage and theater. But yes, it's to -- to make it look nice and to offer special

effects.

Q And at Beeman you didn't work on LED lighting systems for the film or TV industry; is that fair?

A That's correct.

Q And you mentioned that you worked at the University of South Florida at the same time; is that right?

A Yes.

Q What did you do for -- for University of South Florida?

A I was an intellectual property manager. Their -- as with most universities, they have fairly extensive IP portfolios. So they would divide them up. I had certain departments I was assigned to. I would talk to the faculty, what they're doing, identify opportunities to file IP. When there was existing IP, it would be trying to find a good field, a good application for that.

Q And in your description of your work for South Florida, you note a number of key portfolio items. Do you see that?

A Yes.

Q And those items include anticancer compounds, synthesis and application technology and spectral analysis of biological materials. Do you see that?

A Yes.

Q And you don't list here any -- any items related to lighting systems for the TV and film industry, right?

A Correct.

Q And you don't list in your description of your work for South Florida any work involving LED lighting systems for the TV or film industry; is that correct?

A That's correct.

Q Okay. Let's move to -- up in time to your next job at Toyoda-Gosei --

A "Gosei."

Q -- Gosei, thank you, in North America, in Troy, Michigan. What does Toyoda-Gosei do?

A Primarily they're an automotive supply company. Toyoda-Gosei, the corporate parent in Japan was actually the company that first commercialized gallium nitride LEDs, blue LEDs. There's another company that's better known for it.

There's some irony. Toyoda-Gosei developed the LEDs because of their background. They are actually a part of the Toyota Motor Group. When you translate the canje for Toyota, you have a choice whether you a use a T or a D. The more formal is the D. Marketing for the automotive said use a T, it will go over better.

I will just say it worked for them. It was a peculiar thing. Well, we have a choice on spelling and spelling can make a difference, I guess, on acceptance of brands. But as an automotive supply company, they were focused on automotive applications. Whereas, Nichia, which is the better-known company that launched gallium nitride LEDs, they were only looking at it as LEDs. They had a broader vision, so they were more successful.

Q And what was your role at Toyoda-Gosei?

A Formally I was a sales manager, but I also served as technical support for the western hemisphere, which when you work for a Japanese company, basically means everything outside of Japan.

Q And what did you do in your role as a sales

manager?

A Worked with customers to get sales of LED chips and packages.

Q And what did you do in your role as a -- in your technical support role?

A Trained companies on use and incorporation of LEDs, chips into packages, packages into products. I was actually recruited. The former vice president of sales and marketing for Uniroyal Optoelectronics was working at Toyoda-Gosei. He told senior management, we have a good product. I can't explain why it's a better product. This guy Eric Bretschneider can, and we need to hire him. He will help us increase sales because he can explain how to use the products and help people use the products.

So there was a continuation of this work doing design and development providing that support for customers so that we could sell more chips or packages.

MR. RAFFETTO: So if we could highlight the key accomplishments, which is on Page 3 of your CV, just up a little, there's a bullet that says "key accomplishments" under Toyoda-Gosei, next page, Page 3 of your CV. There you go.

Q (BY MR. RAFFETTO) Now, you mentioned in these bullets that you developed backlit screens for Apple. Do you see that?

A Yes.

Q Would this be the screens on devices like the iPad and the MacBook, something like that?

A Yes. Those were specific. We were actually awarded sole supplier status for those. The 22-inch display was for a desktop. The 15.4 was a MacBook. The 17 inch, I don't recall -- I think that was used both in a laptop and a desktop display.

Q So these would be lights for computer screens; is that right?

A Yes.

Q And then towards the bottom, you also mention passenger lighting on the 787 Dreamliner. Do you see that?

A Yes.

Q What does that refer to?

A This is the cabin lighting for the Boeing 787. Boeing was aware of the abilities of LEDs. Part of the work with Norlex Corporation, we had developed for the

Boeing 737 a hybrid lighting system. This was for passenger lighting, the cabin lighting. So it was a fluorescent light, plus red, green and blue LEDs so we could do some color tuning.

Early 2000, the science, the photobiology aspects of lighting had advanced to the point where they realized that the content of the lights, the actual wavelengths present, not the perceived color but the actual wavelengths, could affect your body. It could have actual noticeable effects particularly for circadian rhythms.

Boeing was very interested for this because it gave them the ability on these long-distance flights, which is what the 787 was designed for, they could shift people's biological clocks to help reduce jet lag. So part of this was the outgrowth of -- related to the stage and theater lighting because we did the same thing. We're changing the content of the light, not necessarily the color. But Boeing seized on this as an opportunity, because anyone who has flown internationally, virtually everyone has issues with jet lag. So if you can reduce jet lag for passengers,

there's a better chance they're going to fly your plane.

Q And looking through your entire description of your work with Toyoda-Gosei on your CV, it's fair to say, isn't it, that that work didn't include LED lighting systems for the TV and film industry, right?

MR. CANNON: Objection; form.

A For what I have listed it doesn't, but that work was ongoing. Some of the same customers who were developing these multichannel fixtures for stage, theater, TV lighting, I was still working with them because the products had been improving, so they still wanted to do it, and there was a lot of issues in integrating the technology and being able to really make it useful.

LED lighting has had a history. The potential has been known before it made sense either in terms of energy efficiency, which we already discussed wasn't really significant for theater lighting, but the capability, the actual light output as the devices became more efficient as you were able to get more light out of a smaller package, a smaller fixture, then it became a lot easier to integrate the technology.

So what used to be a 20-pound fixture could now be a 10-pound fixture, could be more efficient. If you've ever worked in a lot of these lighting environments, it's actually very difficult. Prior to LEDs, production sets tended to be very hot. You have enormous air-conditioning systems. They're really over spec for normal lighting situations, but part of this was also related to the camera technology. If the cameras weren't very sensitive to light, you throw a lot of light on the -- whatever you're filming.

A lot of light, if it's not LEDs, is a lot of heat. Even the early LEDs produced heat, significant amounts of heat. But as the cameras' and LEDs' efficiency improved, then your lighting levels could go down, and then that that made it even easier to use.

Like I said, the biggest draw, though, was throwing away the big crates of gels that they used for different color, colors of light.

Q Okay. So turning back to your CV, though -- and feel free to reference it -- where in your CV do you reference that your work at Toyoda-Gosei included LED lighting systems for TV and film?

A I don't because they weren't significant customers in terms of sales, at least compared to the ones that I did list.

Q So the work wasn't significant?

MR. CANNON: Objection; mischaracterizes.

A I said in comparison. When you have someone buying 100 -- over $100 million a year in product, that's a pretty big customer almost regardless of the field. When you have a customer that's only buying 500,000 to $1.5 million a year in product, I might be okay, but compared to over 100 million, it's in the noise.

There's also a recognition of the customers. If you say you've done work with Apple, everyone knows who Apple is. If you worked with Microsoft, people know who Microsoft is. Do work with Boeing, people know who Boeing is.

There was also some additional work, which I didn't list, which was with GE. It was actually with one of their subdivisions called Gelcore. It was a joint venture between GE lighting and Mcore, another spawn-off from Mcore. But again, the sales just weren't significant compared to the ones that I listed.

Otherwise saying GE, people know the company, but again, it was more the sales and the prestige of the product is why I listed these.

Q (BY MR. RAFFETTO) What were the companies in the TV and film industry that you worked with while at Toyoda-Gosei?

A Well, it would -- they were lighting companies, and there were probably half a dozen.

Q So they weren't companies directly in the TV and film industry?

A Well, you said TV and film industry. That could be a camera company. A camera company I wouldn't have a reason to work for unless they were looking at a viewfinder display. There was some work with a company called Copen. They were developing electronic displays.

So, for example, Kodak camera, this was actually one of my projects back at Uniroyal. Their first digital camera, you have a digital camera. You can always look through things. With an SLR camera, you -- the image when you look through the viewfinder comes through the lens of the camera.

You could do a mirrorless system, and you

could use the image from the chip, the CCD chip, that captures the picture, you could transfer that to the viewfinder. So we developed a -- helped them develop a micro display, so a little miniature LCD display. So instead of having this mirror and worrying about the issues with the mirror and how light and how fast can I move it up and down, you did everything electronically.

You could do a similar thing with TV theatrical cameras. But again, it's -- for LEDs it was more the lighting effects that you could do.

Q In this example you just gave, relating to a Kodak camera, are you saying that you helped design the LCD that provides the user interface?

A It was actually the backlight for the LCD in that case. This was a very small device. It was about 1 centimeter by 1 centimeter, a lot smaller than a postage stamp.

But you had thrown it out as a general field, and I was trying to narrow it. The people I worked with were lighting companies. Okay. A camera company would be in the field you listed. I didn't work with camera companies. I worked with the lighting

companies.

Q So you wouldn't have worked with companies like Kodak or companies like Rotolight or ARRI. You would work with lighting companies; is that what you're saying?

MR. CANNON: Objection; form.

A No, that's not what I'm saying. Kodak was doing digital cameras, so more I'm taking a picture, I am not shooting video. When I am saying lighting companies, companies that are making the lighting fixtures.

Q Now, you mentioned that there were lighting companies, and there were probably half a dozen. Do you recall that?

A Yes.

Q What were the names of those companies that you worked with?

A I don't recall.

Q You don't recall any of them?

A No, because I worked with an awful lot of companies. I just remember seeing product displays at LightFair. That was always a nice thing when they were doing demonstrations, to me, that's satisfaction with your job. When you finally see product -- it's one thing

to develop technology, but there's a lot of technology that's developed that's never used. When you actually see it incorporated into product and demonstrated, it's a good feeling.

Q Did you do any programming for the interfaces of these products that we're talking about?

A Programming they -- the companies usually had that taken care of. My aspect was more on the control, letting them know what was possible and how do you actually create some of these effects and what do you need to do to control the LEDs.

Q Can you read computer code?

A It depends on the language.

Q What languages do you know?

A DC++. In the past, Fortran, Pascal. Most of the work I do now is in Excel -- or Microsoft's VBA just because that's the most affordable. You have to compile your code to run on different operating systems, sometimes specific to the processors. If you use VBA, it's not as efficient as other programming languages, but your compatibility problem is solved courtesy of Microsoft.

I have some VBA code that I've been using for 20 years, and it still works today. So what worked in Excel in VBA in 1998 still works 24 years later.

Q So after Toyoda-Gosei, you moved to Lighting Science Group Corporation, which you highlight.

MR. CANNON: Joe, if you're switching companies, it's been about an hour 15. Do you think we could take a break?

MR. RAFFETTO: Yeah, sure, that's fine. We can pause on that question.

THE VIDEOGRAPHER: Okay.

MR. CANNON: I tried not to interrupt you.

THE VIDEOGRAPHER: The time is 9:21 a.m., and we're going off the record.

(Break was taken.)

THE VIDEOGRAPHER: The time is 9:38 a.m., and we're back on the record.

Q (BY MR. RAFFETTO) Okay. Dr. Bretschneider, so your CV, which is Exhibit 1 to your deposition that we're looking at, indicates that you left Toyoda in 2008 and went to a company called Lighting Science Group Corporation. Do you see that?

A Yes.

Q What did you do at Lighting Science Group?

A Designed, developed solid state lighting products and put them into manufacturing.

Q And by solid state lighting products, do you mean LEDs and other lights?

A LED lighting specifically.

Q So Lighting Science Group makes LED arrays?

A No, they make products. It's not packages. They make the finished products, whether it's a light bulb, a street light, all types of lights. But things you can plug into the wall or at least connect up to a circuit somewhere, a branch circuit.

Q And for the record, they don't make products specifically designed to create lighting effects for TV and film, do they?

A Currently they don't. At the time Lighting Science Group was a -- I don't want to characterize it as a holding, but it -- there were a few companies that were acquired. One of them was called LED Lighting Effects. It was headed by a gentleman named Kevin Furry.

They designed and developed and produced a

lot of specialty fixtures, and some of those were for production work. They were more into the color-changing aspects.

Q Okay. And that's not referenced in your CV, correct?

A It was a part of Lighting Science Group Corporation, and you were asking about Lighting Science Group, so I was giving you some more details.

Q Okay. I understand. So this is work that others at the company would have done?

MR. CANNON: Object to form.

A No, it was just a part of the company. You were asking about systems that were developed, what they produced, and they actually did produce some fixtures that were used for these applications.

Q Okay. Moving on to your next employer, Electech International, which is on Page 1 of your CV, stretching over to Page 2. You went there in 2011; is that correct?

A Yes.

Q And were you in China at that time?

A Yes, I was.

Q And what did you do in Electech International?

A I ran the research and development division. I had 107 employees under me, and there were 10 or 12 direct reports, and then additional people in the department.

Q And what types of research and development did you do?

A It was virtually everything. China at the time, and still today, they take a different approach to technology development. There are substantial incentives from the government. So it's a lot cheaper to get into an industry.

One of the examples, Electech International was vertically integrated. With respect to that, that meant that they could produce their own LED chips, put their chips into their packages, use their packages in the lighting fixtures and sell a finished fixture. We could buy chips and packages and use those in the fixtures, but we had the capability to do everything in-house.

That first part on the chip production, the -- at the time, and possibly still today, the largest

single order for MOCVD equipment was placed by Electech International. It was in excess of $300 million. I think it was actually over $400 million. Based on my knowledge, the order was placed with Veeco, which was formerly Mcore. So I was very familiar with systems when I saw them, and I know how many we had.

But the Chinese government invested probably on the order of $2 billion into Electech International. U.S. dollars, not Hong Kong dollars.

Q And none of your work for Electech referenced in your CV mentions specific work for entertainment lighting or lighting effects for video or film, correct?

A It's not listed. Those weren't significant products in terms of our revenue, so...

Q So then you went to Health Co in 2013 after Electech; is that right?

A It's "HeathCo" not Health Co.

Q Oh, thank you. And what did you do at HeathCo?

A I was director of engineering. They were transitioning their product line from incandescent and halogen lighting to LED technology. So they wanted someone who knew how to incorporate LED technology and

get products out the door.

Q Did your work include things like product recall issues? Is that right?

A I didn't expect that to pop up, but we did have one that was a major portion of my time for a few months.

Q Would it also include making warning labels for products? Is that right?

A That was more -- well, that was a part of it. When you are putting products into different markets, you have UL, which people are familiar with. And in the U.S. you have CUL, which is UL in Canada. And they have bilingual and in some case trilingual language requirements. So it's a major headache. You can do labels. In some cases, you put the warnings, design it into the molds used for the products, so then no one has to attach a label. If a label's missing, that could be considered a significant issue.

Q Now, you don't list in your CV in HeathCo any work relating to lighting effects for TV and film; is that correct?

A That's correct.

MR. RAFFETTO: We can take this CV down.

I'm done with it.

Q (BY MR. RAFFETTO) So none of the companies we just talked about are in the business of making lighting systems specifically for generating lighting effects for TV and film, correct?

A No, that's not correct.

Q Which companies are specifically involved in the business of making lighting systems or generating lighting effects for TV and film?

A The way you asked the question, currently none of them. But as we discussed with Lighting Science Group, they did have a division that that was a part of their product portfolio.

Electech International may still be doing that. It wasn't a major part of their product portfolio, but they -- because of their ties with the government, they were providing LED lights to virtually every lighting industry in China.

It was an ironic position. I was brought in to develop products for North America, Europe and Japan. And almost everything I designed ended up being modified for use in the Chinese market. So I wasn't

supposed to focus so much on the domestic market, but the chairman of the company decided, oh, a few changes, this will be perfect for China. And like I said, they were at the time involved in all aspects, including production lighting. I can't say currently. I know their U.S. product line doesn't include that and hasn't included that to the best of my knowledge. But in terms of the Chinese market, that's a very different story.

Q When you say "production lighting," what do you mean by that?

A TV, theater, studio.

Q Okay. Are you aware that in the entertainment industry there are conventions or annual meetings in which lighting products are demonstrated, introduced and showcased?

A Yes. That's common for most industries, especially in the lighting field. Everyone wants to see the lights. Spec lights --

Q What --

A -- don't cut it.

Q What conventions or annual meetings are you aware of for the entertainment industry?

A I think it's the SMTTE or TPE, I forget. That's the main one.

Q What does that stand for?

A Society for Motion Picture Television Engineers, so I guess it would be "PT," SMPTE, there we go.

Q And that's an entertainment lighting industry convention?

A Yes.

Q Have you ever been to that?

A No, I haven't. Some products do show up at LightFair as well. LightFair is the largest annual lighting conference -- well, used to be the largest. I just went this year, and it shrank back dramatically because of COVID. But you would have north of 5,000 companies presenting and demonstrating products, and it would be all aspects of lighting.

So it could be everything from flashlights to street lights to light bulbs to production lighting.

Q And that's not specific to the entertainment industry, correct?

MR. CANNON: Object to form.

A No, it's not specific to the entertainment industry. But that seven-channel fixture we talked about a little while ago, that was one of the products presented. And actually there was an entire session just on the product and on the capability.

So it was more -- one was, here's the product, here's what it can do. But a lot of it was really showing the capabilities, what you could do with LED lighting, how it was different from we'll say the legacy lighting products.

Q And you mentioned that you've never been to MPTE before, correct?

A SMPTE.

Q SMPTE?

A Yes, there's a "Society" there in the beginning.

Q So you mentioned you've never been to SMPTE before, correct?

A Correct.

Q How did you learn about that annual convention?

A Working with the different lighting companies in product development. So when they had meetings, if

people wanted to demonstrate a product, that was always a deadline. So we had to finish this work before this date so we can demonstrate a product.

Q And you mentioned LightFair. Have you ever attended LightFair?

A Oh, too many times I think sometimes. There's another lighting show. It's actually larger, but it's held every two years called Light and Build that's typically in Germany.

So LightFair emphasizes they're the largest annual show. Like I said, that was the past. Pre-COVID they were the largest. Light and Build is the largest, so the attendees, you'll have well over 100,000 people attending.

Q And what types of people would attend that -- these types of annual meetings or shows?

A Virtually everyone involved in the lighting industry. Whether they're designing the products. They could be selling components, materials for the products.

I always thought it was peculiar. You go to LightFair, Alanod makes reflector materials for lights, so they don't actually make lights. They just

make a reflector that's used in lights, but they usually have a very prominent booth. There's some companies that they design and produce lenses for lights, they show up.

So they don't -- again, they're not lighting product manufacturers. It's more material that's used. It could be companies that produce lighting products, people that use lighting products. So you have a really broad scope.

In the past, LightFair attendance was tens -- easily tens of thousands of people. The most recent show in June was dramatically reduced. Walking the entire show floor, if you didn't stop to people, used to take the better part of a day, almost a full day. So you would typically attend for a few days to be able to see the entire show and have meetings and discussions with people. This year it could be done in a day. Part of COVID.

Q Have you ever heard of a trade show called Prolight and Sound?

A I may have. It doesn't sound particularly familiar.

Q Are you aware of any publications relating to

lighting special effects systems for TV and film?

A I know there are some, but I haven't had a chance to review them and haven't been asked to write articles for them.

Q What are some of the publications that you're aware of?

A It's more that I'm aware the industry has them. Every industry has their trade publications. It tends to be a lot of advertising. They're heavy on that. And not so much on technology.

Q And you don't subscribe to any such publications?

A No, I don't need to read ads. There's always -- there's what's hyped, the capabilities. My interest is more in how it's done. So I can read those. There are a number of LED trade magazines. There are some of those I get specifically, but I usually don't read them because they're so heavily into sales and marketing materials. There's just not a lot of technical content for me.

Q Have you yourself ever used any lighting devices to create a special effect for TV or film?

A Yes, I have.

Q What type of device did you use?

A It was legacy lighting. When I was an undergraduate at Tulane, for three and a half years I worked for what was known TUVAC, Tulane University Video Access Center. So we did on-campus productions. We had a biweekly TV show, POV, Point of View. It was kind of a -- similar to Face the Nation except more regional aspects. It was debate. A lot of it was slanted towards politics. So we would have Democrats, Republicans.

We would help with the lighting and do the video reporting for on-campus productions. Two in particular I was involved with were the productions for The Music Man and Bye Bye Birdie.

Sometimes concerts would come in and we would get permission to do that. We hosted one of the Republican debates. And we also had the Democrats in at one point. And there were a few other things there.

There was one -- one really nice scoop we got. One of the government officials, and I forget who it was, but they made a major policy announcement and we were the only once recording it. So the next morning, we

had calls from all the major news outlets, all the network news, because they wanted access to our footage. So we actually made some good money that night.

Q And so my question was a little more specific. It was, have you yourself used any lighting devices to create a special effect for TV or film? So in these examples you just gave, what special effects did you create?

A Working on the productions to musicals I mentioned. I had to do that. It wasn't so much the effects, but we had to make sure everything worked out well with the cameras. So I was an employee, but I spent a lot of my time as a gaffer. So whatever the production was doing, I had to work with the lighting and make sure that it worked out well and especially played nicely with the cameras.

So we actually -- while I was there, it was after my first year, we had gotten a loan of close to $300,000 from student government to purchase production-quality equipment. So we had a major upgrade in our capability for doing video production.

Q What's a gaffer?

A It's a lighter on a set. So you rig the lights, set up the lights, make sure all the effects go correctly.

Q Okay. But to be clear, you weren't using a lighting device to create a special effect for TV or film, right?

MR. CANNON: Objection; form.

A No, that's a part of the job requirement for a gaffer. You're setting up the lights, you're creating the effects. The producer, the director may say what they want, but someone has got to actually make it happen.

Q So what special effects did you create as a gaffer?

A Changes in lighting. We would do fades, occasionally flashes if we needed them. My favorite thing, and it's more from the -- the term, one of the lighting effects use something -- it's generically called a cookie. It's a cucoloris. It's kind of a sunlight through leaves effect. So you break up the lighting so it's more like you're outdoors instead of in the middle of a large auditorium and theater. But a lot of the

color changing.

As a graduate student I also trained as a dancer, and I was one of the few dancers, because of my background and expertise in lighting, I would actually design the lighting effects for the pieces I was choreographing.

Q Okay. And so the example that you just gave, I think you said fades, cookies, and there was one other one, which on the realtime is unreadable. But those are all examples of lighting effects you created?

A You could have flashes. We had to simulate lightning, chases, which honestly are more of a pain. If you have the right equipment, you can pivot the light. But if you don't have the equipment to have that automated, then you've actually got to have the sequence of lights, moving the light across the stage or across the set.

Q Have you ever operated or used one of Rotolight's products?

A No, I haven't.

Q Have you ever physically inspected one of Rotolight's products?

A Not that I can recall.

Q Have you ever operated or used one of ARRI's products?

A No.

Q Have you ever physically inspected one of ARRI's products?

A Not that I can recall.

Q Now, before this case, had you ever heard of a company called Astera?

A I may have. I'm not sure on that.

Q Why do you say you may have?

A Because there's a lot of lighting companies I've dealt with. I've been asked in the past to do a technical analysis of lighting products. I don't always know who the products are from, but inspect -- look at what's done, look at how it's designed, how it operates.

Q Before becoming involved in these IPRs, have you -- have you ever heard of a company called Verlight?

A Not that I recall.

Q Before becoming involved in these IPRs, have you ever heard of a company called Vitec?

A Not that I recall.

Q From your experience, besides ARRI and Rotolight and Astera, which you said you may have heard of before, what other companies make and sell lighting special effects systems for TV and film?

A There are dozens of them out there. I have a good family friend whose father has a lighting company. They purchase all the lights. They loan them out.

They were very excited because I was visiting the friend and he came in and said, oh, we just got these new LEDs lights, I have to show them to you. And I kind of laughed, I said, you know, that's all I've been doing my whole career. It kind of took his wind out of his sails, but he was demonstrating the effects and I was polite and smiled and said, yeah, aren't they great?

Also the way I met my first wife, her brother was working for Disney MGM Studios.

Q Are you saying that Disney MGM Studios makes and sells lighting special effects systems for TV and film?

A No. They buy a lot of them. So when you work with them, when you see what they have, there's a lot of different equipment that you see.

Q Okay. Now, you mentioned there are dozens of companies that make and sell lighting special effects systems for TV and film. Can you name a couple?

A Offhand, no.

Q So the only ones you can name, as you sit here today, are ARRI, Rotolight and possibly Astera; is that fair?

A Those are the ones I'm familiar with today. I've been familiar with them, looking at materials for the company for the last several months. So that sits fresh in my memory. Other than that, I have looked at lighting products from hundreds of companies.

Q Right. But you can't identify any other companies as you sit here today that make and sell lighting and special effects systems for TV and film?

MR. CANNON: Objection; asked and answered.

A I would have -- it would be speculation. Signify, which was formerly Philips, acquired a company called Color Kinetics. Color Kinetics did do work for production lighting. Their special niche in the beginning was color-changing lighting. So a lot of their

applications were for architectural admittedly, but it's the same type of thing. You want the effects. I know they sold some products to production industries.

There was also -- well, it's not current. The LED Lighting Effects division of Lighting Science Group did in the past, but that division was eventually shut down.

MR. RAFFETTO: Okay. So I would like to mark Tab B as Exhibit 2 and bring that up.

THE VIDEOGRAPHER: Tab V, as in Victor?

MR. RAFFETTO: B, as in boy.

THE VIDEOGRAPHER: B, as in boy.

(Exhibit 2 marked.)

Q (BY MR. RAFFETTO) And, Dr. Bretschneider, I'm showing you what's been marked as Exhibit 2 to your deposition, which is Exhibit 2002 from IPR 2021-01496 related to the ’257 patent.

Do you recognize this document as the declaration you submitted in the ’257 patent IPR?

A Yes.

Q And feel free to flip through as well.

A Okay. I've got the hard copy in front of me

that I can flip through as well.

Q Okay. Perfect.

A So if you see me looking down, that's what I'm doing.

MR. RAFFETTO: And I would like to next mark Tab C as Exhibit 3 and bring that up.

(Exhibit 3 marked.)

MR. RAFFETTO: Thank you.

Q (BY MR. RAFFETTO) So, Dr. Bretschneider I am now showing you Exhibit 3 to your deposition, which is Exhibit 2002 from IPR 2021-01497. Do you see that?

A Okay. Yes.

Q Do you recognize this document as the declaration you submitted in the ’258 patent IPR?

A Yes.

MR. RAFFETTO: And I'm going to do this for each declaration just to go ahead and get them into the record now for ease.

So let's next mark Tab D as Exhibit 4 and bring that up.

(Exhibit 4 marked.)

Q (BY MR. RAFFETTO) So, Dr. Bretschneider, we're

showing you Exhibit 4 to your deposition, which is Exhibit 2022 from IPR 2021-01498 related to the '101 patent.

Do you recognize this document as the declaration you submitted in the '101 IPR?

A Yes.

MR. RAFFETTO: Okay. You can take that down. One more, I would like to mark Tab S as Exhibit 5.

(Exhibit 5 marked.)

Q (BY MR. RAFFETTO) And, Dr. Bretschneider, we're showing you on the screen now Exhibit 5 to your deposition, which is Exhibit 2011 from IPR 2022-00099 related to the '044 patent.

Do you recognize this document as the declaration you submitted in the '044 patent IPR?

A Yes.

MR. RAFFETTO: Okay. We can take that down for a second.

Q (BY MR. RAFFETTO) Do you recall that in your declarations you provided a section titled "Legal Principles Used in the Analysis"?

A Yes.

Q And this understanding of legal principles that you used was the same in each declaration, right?

A I believe so. This was a section that was written by counsel on its legal matters, not technical.

Q So would it be fair to say if we discussed the legal principle section in the ’257 patent declaration, that that discussion would apply equally to the other declarations?

A Yes. I haven't done a word-for-word comparison, but I believe they're substantially the same if not the same.

Q Okay. And to be clear, we're just trying to avoid having to ask the same set of questions four times for you. So we're not trying to trick you.

A Okay.

Q So if we could bring up the Legal Principles section of the ’257 patent declaration, which is Exhibit 2 to your deposition. We can turn to Paragraph 28. Paragraph 2 -- 28 of Exhibit 2 to the deposition.

So taking the Legal Principles section of the ’257 patent declaration as representative, we see

here in Paragraph 28, it says, "I understand that a Petitioner in an inter partes-reviewed proceeding must prove unpatentability by a preponderance of the evidence." Did I read that correctly?

A Yes.

Q So in your declarations, you were evaluating patentability the under the preponderance of evidence standard, correct?

A Yes.

Q So you were looking at whether, in your opinion, Petitioner already has shown that it's highly probable that the prior art invalidated the claims, correct?

MR. CANNON: Object to form.

A I was applying the preponderance of evidence, so more likely than not.

Q (BY MR. RAFFETTO) So what's your understanding of the preponderance of the evidence standard?

A I'm trying to be careful here because this is legal terms and I'm not an attorney. I know in criminal -- I know they're -- they're to evidence, but they -- they have to demonstrate it significantly.

Q I'm sorry. So what was your answer?

A It has to be a strong case.

Q So your view is that -- strike that.

So your understanding is that to meet the preponderance of the evidence standard, you have to have a strong case? Is that --

MR. CANNON: Objection. Calls for a legal conclusion.

A That's one way to phrase it.

Q (BY MR. RAFFETTO) Is that what you applied in evaluating unpatentability under the preponderance of the evidence standard?

MR. CANNON: Object to form.

A My understanding is it has to be more likely than not.

Q (BY MR. RAFFETTO) Okay. So is that the standard that you applied in evaluating unpatentability?

A Yes.

Q And are you aware of any other evidentiary standards?

MR. CANNON: Object to the relevance.

A Not for this matter.

Q (BY MR. RAFFETTO) What about generally, are you aware of any other evidentiary standards?

MR. CANNON: Objection; relevance.

A I know for criminal law, you have to do it -- it's got to be an exceptionally strong case. Criminal law, you can't say, well, it's more likely than not that someone did the crime. You've got to present overwhelming evidence.

Q And so your understanding is the preponderance of the evidence standard is somewhere below that; is that fair?

A That's my understanding, yes.

Q So it has to be strong, but not necessarily -- I think you said exceptionally strong maybe?

A I believe in criminal law the discussion is beyond a reasonable doubt, and my understanding is a preponderance of evidence is a lower hurdle.

Q Are you aware of any other legal standards?

MR. CANNON: Objection; relevance.

A Not that I've referenced here. Again, I'm not an attorney.

Q (BY MR. RAFFETTO) But my question was, are you

aware of any other legal standards?

MR. CANNON: Same objection.

A It's a very vague question. Legal standard with respect to what?

Q (BY MR. RAFFETTO) Evidentiary burdens.

MR. CANNON: Same objection.

A That's what I'm aware of. Like I said, it sounds like you're asking for a legal conclusion, and I'm going to reiterate that I'm not an attorney.

Q (BY MR. RAFFETTO) Yeah. And I'm not trying to trick you. I'm just trying to understand what standard you applied when you said preponderance of evidence standard. It sounded like you said you were looking at whether Petitioner had presented a strong case of unpatentability; is that fair?

MR. CANNON: Objection; mischaracterizes.

A What I said is more likely than not. My understanding is a preponderance of evidence is a lower hurdle than beyond a reasonable doubt.

Q (BY MR. RAFFETTO) Now, in Paragraph 28 you also say, at the very end, you've used your understanding of these legal principles as set forth in this section to

analyze the ’257 patent, correct?

A Yes.

Q And you use the same understanding in analyzing the ’258, '101 and '044 patents as well, correct?

A Correct.

Q Now, if we zoom out on this page and take down the callout, you also discuss the legal principles of anticipation and obviousness in this section of your declarations, for example, at Paragraphs 31 to 42 of the ’257 patent declaration that we have up on the screen now. Do you see that?

A What's on the screen doesn't go all the way to Paragraph 42, but I've scanned through Paragraph 42 and the hard copy I have, and yes.

Q And -- and at any time, too, feel free, because I am talking about the ’257 patent declaration as representative, feel free to look at your '044, '101 and '258 declarations, as well.

A Thank you.

Q What is anticipation?

A Anticipation means that a single reference discloses the claim limitations.

Q So that's your understanding of anticipation?

A Yes. It's a single reference that teaches the same elements of the claim.

Q Does a reference have to use the same words as a claim for there to be anticipation?

A No. As -- to read from my declaration, "The disclosure in the prior art reference does not have to use the same words as the claim, but all the requirements of the claim must be expressly or inherently present."

Q So a reference can anticipate it, based on what the reference says, a person of ordinary skill would understand that the claim feature would be present; is that fair?

MR. CANNON: Object to form.

A Expressly or inherently present.

MR. RAFFETTO: And we can actually zoom out and turn to Page l1 of the declaration.

THE VIDEOGRAPHER: PDF Page 11 or the 11 of the actual declaration?

MR. RAFFETTO: 11 of the actual declaration.

Q (BY MR. RAFFETTO) And here we can see, this is

your section titled "Obviousness." Do you see that?

A Yes.

Q What's your understanding of obviousness?

MR. CANNON: Object to form.

A Obviousness is the subject matter is disclosed in two or more references. They need to be related references. There needs to be some tie-in between the references and a modification to combine.

Q So would you say obviousness requires that there must be two or more references?

A Not necessarily references, but you're combining two or more things.

Q So with obviousness, your understanding is there has to be a combination of two different things?

A Yes. Obviousness is relying on a combination, and anticipation is everything is present here.

Q Can there be obviousness based on a single reference?

A My understanding, obviousness could be a single reference if the reference describes different embodiments. You could -- could have an argument to combine different embodiments.

Q Can there be obviousness based on a single reference if the reference does not disclose multiple embodiments?

MR. CANNON: Object to form.

A My understanding would be no, because that would be looking at a single concept, and that would be anticipation.

Q For obviousness, does a reference need to be modified?

MR. CANNON: Object to form.

A Because obviousness requires combining, there's necessarily some modification.

Q Okay.

A I can't put two things together without changing something that, by definition, something has to be changed or I haven't done a combination.

Q So for obviousness, you need to take a prior art system and make a change to it? Is that what you're saying?

MR. CANNON: Object to form.

A Again, there has to be some change because obviousness relies on a combination. And if I don't make

any changes, I haven't combined anything.

Q (BY MR. RAFFETTO) Now, if we look at Paragraph 37 of your '257 declaration's representative and look at -- towards the end of that, you reference, "objective evidence of non-obviousness, if any exists." Do you see that?

A Yes.

Q And feel free to read Paragraph 37 and look at your other declarations as well.

But here you say that in making a determination of obviousness, one of the things that can be analyzed are these objective evidence of non-obviousness; is that fair?

A Yes.

Q Now, you don't offer any opinions regarding objective evidence of non-obviousness in any of your declarations, correct?

A Could you repeat the question? I was just reviewing my declarations.

Q Yes.

So you don't offer any opinions regarding objective evidence of non-obviousness in any of your

declarations, correct?

A Reviewing the table of contents, I don't see that.

Q Okay. Now, if we go to Paragraph 43 of your '257 patent declaration as representative, you have what looks to be a legal standard for public accessibility of prior art references. Do you see that?

A Yes, I do.

Q And towards the bottom you say that "The critical question for public accessibility is whether a POSITA would have been independently aware of a reference's existence and would have reasonably been able to find the reference."

Did I read that right?

A Yes.

Q And so what you're saying here is that one of the two requirements that a Petitioner would have to show -- or strike that.

You're saying that one of the two requirements to show that something is prior art is that a POSITA has to be independently aware of a reference's existence; is that fair?

MR. CANNON: Object to form.

A That's one and would have reasonably been able to find the reference.

Q (BY MR. RAFFETTO) Right.

And focusing on the first requirement, the one that I just mentioned, as I understand it, what you mean by this is that someone would need to show that a POSITA actually accessed the reference. Is that fair?

MR. CANNON: Object to form.

A The first part is that they would have been aware of it. Finding something you're not aware of is exceptionally difficult.

Q (BY MR. RAFFETTO) So you mean they have to have knowledge of the reference is what you're saying?

MR. CANNON: Object to form.

A That's what is -- what is stated is that they would have been independently aware of a reference's existence.

Q (BY MR. RAFFETTO) And what did you mean by -- or what's your understanding of -- of that phrasing "independently aware of a reference's existence"?

A If it was possible for them to be aware of it.

If I write something on a piece of paper and leave it on my desk, it exists. Would anyone else be aware of it if I haven't said anything? No.

So there's got to be the public accessibility. It's got to be out there and something that would be in the general field of knowledge for a POSITA.

Q Right.

So what you're saying is a POSITA would have to have knowledge of it. Is that fair?

MR. CANNON: Objection; mischaracterizes.

A Knowledge of it or just -- or been aware of it and been able to find it.

Q (BY MR. RAFFETTO) Okay. So I would like to move now to your discussion of a person of ordinary skill in the art, and we can flip to Paragraph 45, Page 14 of your declaration. We can just show the entire page.

And we will again look at the '257 declaration as representative, but, of course, at any time feel free to look through the other declarations which include the same information.

Now, Dr. Bretschneider, you provided

opinions in your declaration as to what you believe the qualifications of a person of ordinary skill in the art would be for these patents, correct?

A Yes.

Q In Paragraph -- if we flip to Paragraph 47 of your ’257 patent declaration, you said that the relevant field for the ’257 patent is lighting systems, in particular involving lighting effects used in the cinematography, correct?

A Yes.

Q And it's your opinion that the relevant field for the other patents, the '258, '101 and '044 patents, is the same, correct?

A Yes.

Q When you say "lighting effects used in cinematography," you mean lighting effects captured by camera for TV and film, correct?

A I'm struggling when you say "film" because film is almost never used these days. I'll say moving pictures.

Q Okay.

A So almost everything is digital. There was a

period of time when, yes, it was film. There was actually something you could look at and see the image. There was also a period of time where it would be put onto a tape medium. These days almost everything is digital. Most people are familiar with a home video camera, a VHS, Betamax, went to 8 Millimeter, and now everything is on a -- a memory card.

Q And light --

A It's a little more than just film and TV.

Q Sorry. I didn't mean to interrupt.

And lighting effects would include, for example, how the light looks to a viewer. Is that fair?

A That's one aspect of it.

Q So, for example, imagine there's a scene where the camera is looking out a window, and there might be some flashes of white light that appear outside the window. Are you with me?

A Yes.

Q And these flashes of white light could be presented in a way that, as captured by the camera, the viewer would perceive them as being light?

A As being what? I didn't quite get the last

word.

Q Lightning.

A Okay. I heard light, and that's why I was very confused there. If you see it as light, obviously, but it could be perceived as lightning, yes.

Q Okay. Yeah, lightning and lighting sounds very similar.

And so in this example, the camera is not focused on the light source itself, right?

A The camera would almost never be focused on the light source itself. Most likely you would end up with glare. It would probably be overexposed. Or if it wasn't overexposed, the rest of the scene would be essentially invisible, it would be underexposed.

Q Right.

So what the camera is capturing is the output of the light on the scene. Is that fair?

A The reflected light, there's what's known as the visual triangle. It applies to cameras as well as it does to people. For displays, you only have two legs to the triangle. You have the light source and you have the detector. But for lighting for cinematography as well as

in vision, you have a source, you have the environment or an object that's illuminated, and then that light is what is picked up by the detector, in this case a camera of some sort.

Q Okay. And this output of light in a scene like we're talking about, that would be an example of a lighting effect that could be used in cinematography, correct?

A Yes.

Q Could a lighting effect include flashing red and blue lights to make the viewer think that a police car is nearby?

MR. CANNON: Object to form.

A That would be one possible lighting effect. That one in particular is a little -- you have to be a little cautious about. There are some issues. Red and blue happen to be good at triggering seizures in certain individuals. So you can use it, but use with caution.

Q (BY MR. RAFFETTO) Could a lighting effect use just a single color?

MR. CANNON: Object to form.

A It could. Stationary lighting is a type of

lighting effect, and it would be a constant light.

Q (BY MR. RAFFETTO) So, for example, if a -- if a bluish light fades quickly to -- to zero, could that appear to a viewer like the light from a TV being turned off?

A It could.

Q Or a if red light slowly fades up in intensity, couldn't that simulate the beginning of a sunrise?

A It would be a little more complicated than that because the sunrise, the intensity and the color temperature change. So it's not a static color.

Q Okay. So you're saying both the intensity and the color may change?

A If you want to do a good job doing it, yes.

Q And so with this example, the changing of color and intensity over time, that would be a lighting effect. Is that fair?

A That's another type of lighting effect.

Q And so, again, for the effects that we're talking about, you wouldn't be looking directly at the LEDs. Instead, you would be looking at what the light is being directed on, like the person or a house or whatever

other object or subject?

MR. CANNON: Object to form.

A For -- as I said, for cinematography you would almost never look at this light directly. There would almost always be some indirect nature to the light.

Q (BY MR. RAFFETTO) Okay. I would like to turn now to your overview of the patent in your declarations, and we'll stick with the ’257 patent IPR declaration as representative. If we could turn to Page 17 of that declaration.

And, again, I know you have your declarations in front of you, so feel free to -- to pull up the corresponding pages of the other ones as well.

A Okay.

Q Now, in your declarations you have a section titled Specification, correct?

A Yes.

Q And under this heading in your declarations, you provide an overview of your opinions regarding what the patent specifications and figures show, correct?

A Yes.

Q And just for the record, you have similar

overviews in -- in your -- each of your declarations, so the '258, '101 and '044 patent declarations as well as the '257 declaration?

MR. CANNON: Object to form.

A That's correct. Sorry. That's correct.

Q (BY MR. RAFFETTO) And for the record, the '257, '101 and '044 patents are all related to the 25 -- strike that.

The '257, '258, '101 and '044 patents are all related, correct?

A Yes.

Q And in particular, the '257, '258 and '101 patents are continuations of the '044 patent, correct?

MR. CANNON: Object to form.

A Yes, that's correct.

Q (BY MR. RAFFETTO) Okay. Now, in the overview in your declarations, you say that the patents are related to a lighting system for videography, broadcasting and cinematography. And we can see this, for example, in the '257 declaration at Paragraph 54.

A Yes.

Q And you note just below what's highlighted with

the sentence that says "The ’257 patent explains," you note that the patents explain that in the film, broadcast and TV industry there is an apparatus called a flicker box.

Do you see that?

A Yes.

Q And if we bring up the next page, you say in your declarations that this is shown in -- as Element 300 in Figure 1 of the patents?

MR. CANNON: Object to form.

A Could you repeat the question?

Q (BY MR. RAFFETTO) Yeah.

So looking at your declarations, you indicated that this is shown as -- this flicker box is shown as Element 300 in Figure 1 of the patents, right?

A Yes.

Q And we can see looking, for example, at Figure 1 of the ’257 patent shown under Paragraph 54 of your '257 declaration, that Element 300 is labeled Analogue effect simulator, parentheses, flicker box, right?

A There are quotes as well as parentheses, but yes.

Q And you also say the patents disclose an improved lighting system that involves controlling the device to produce user-customizable lighting effects, correct?

MR. CANNON: Form.

A User-customizable lighting effect that is time varying.

Q (BY MR. RAFFETTO) Right.

And you're referring to, for example, Paragraph 55 of your declaration?

A Paragraph 55 of the '257 declaration. I'm not sure if it's the same paragraph in the other declarations.

Q And if we turn to the next page of your '257 patent declaration as representative, you point to Figure 2 of the patents which shows a single studio lamp device with an integrated light and a lighting effect simulator, correct?

MR. CANNON: Object to form.

A It's a schematic diagram, but yes.

Q (BY MR. RAFFETTO) Right.

And it shows a single studio lamp device

with an integrated light and lighting effect simulator?

A Yes.

Q And there's no flicker box shown in Figure 2, correct?

A That's correct.

Q And then you go on to say in your declarations, and we have up on the screen Paragraph 56 of your '257 declaration as an example, that the patents allow for the more complex circuitry associated with the flicker box to be dispensed with, right?

A Yes.

Q So it's fair to say that the alleged invention in the Rotolight patents, in your opinion, avoids the need for a flicker box to create lighting effects, isn't it?

MR. CANNON: Object to form.

A I would say the invention doesn't require a flicker box. If someone wanted to, they could still use it with a flicker box, but I think that would be redundant.

Q (BY MR. RAFFETTO) Right.

Because with the invention of the patents,

it's not needed. Is that fair?

A Correct.

Q What is a flicker box?

A It's a control system and some extra associated hardware to create dynamic lighting effects. You wouldn't need it for a static lighting effect, but when you want to change things, particularly rapidly, hence the term "flicker." Flicker talks about a rapid change in light, intensity or color.

Q So how does a -- how does a flicker box work?

A It controls different light sources in different hardware to be able to quickly change the light output. It depends on the effect you're trying to do. With legacy light sources, most of them were tungsten or halogen based. Some of them may have been discharge lamp based. So you have this light source that wants to be on and stay on. It -- you can only change the intensity so -- within a certain limit.

If I turn off an incandescent light, it will actually produce light for a little bit of time. It will cool down, so I can't do a sharp turn-off or sharp turn-on because the filament has to heat up.

For a discharge lamp, because it's a plasma source, there's a warm-up time. And if you turn it off, a lot of cases it has to cool to allow the electronics to be able to restrike the plasma, so there were issues with rapid changes. So the flicker box could do it with hardware. You could use shutters, irises, rapid change filters, a few different things there.

Q Have you ever used a flicker box?

A I haven't used them, but I saw them. They were rather expensive, and I was basically tell us -- tell us what you want to happen, and the people asso- -- who had the experience with it, they made it happen.

Q When did you see a flicker box?

A At Tulane.

Q So this was in the -- what years were you an undergraduate?

A Second half of the '80s.

Q So you saw it in the -- in the '80s?

A Yes.

Q Was this during your time working as a gaffer?

A Yes.

Q Had you ever used a flicker box against --

again since then?

A Well, I didn't use it in the first place, so I couldn't technically use it again.

Q Okay. What circuitry is included in the flicker box?

MR. CANNON: Objection; foundation.

A Never disassembled one, so if you want to know about the exact circuitry, I would be speculating.

Q (BY MR. RAFFETTO) Well, you described the flicker box earlier as a control system and some extra associated hardware. So tell me in more detail what that's comprised of.

A Well --

MR. CANNON: Object to form.

A As is shown in Figure 1, you have the flicker box, it can be attached to a DMX distribution hub. So DMX stands for digital multiplexing. It's a common control protocol that can be used for lights or other components. So it's a network for electrical components to be able to control them from one source. So the effects are created by the flicker box, sends instructions to the DMX through the DMX system to

activate different things. It could be turning a light on, could be changing a filter, could be closing a shutter or an iris, adding a diffuser. There are a number of different components that could be used to create these effects.

Q (BY MR. RAFFETTO) Okay. But sticking with your reference now to Figure 1 of the -- of the patents and Element 300, what types of circuitry would be within that analogue effect simulator flicker box?

MR. CANNON: Objection; relevance.

A Again, you're asking me to speculate since I said I haven't disassembled one or looked under the hood, so to speak. It's described as an analogue effect simulator, so there would be analogue circuits.

Q (BY MR. RAFFETTO) So there would be some -- so that analogue effect simulator would be some type of analogue circuitry?

A That's what I'm going with. If it's an analogue effects generator, there's an analogue circuit somewhere.

Q So one example of a flicker box is just a bunch of analogue circuitry. Is that fair?

MR. CANNON: Object to form.

A I don't think you can do that as a direct mapping. And, again, you're asking me to speculate on a device I haven't taken apart or inspected the functional details of.

Q (BY MR. RAFFETTO) Does a flicker box have to be analogue?

MR. CANNON: Object to form.

A It's described as analogue. I don't know the entire development history. Because with LED lighting, we finally had the chance to not need them anymore.

Q (BY MR. RAFFETTO) So you're not sure whether a flicker box has to be analogue?

MR. CANNON: Object to form.

A I'm saying in the context of the patents, it's described as an analogue effect simulator. And I will reiterate that I haven't taken one apart, I haven't done a reverse engineering analysis on it, so you're asking me to speculate.

Q (BY MR. RAFFETTO) Okay. So you're saying that in the context of the patents at least, the reference to flicker box means analogue effect simulator?

MR. CANNON: Objection; mischaracterizes.

A It's described as an analogue effects generator or simulator.

Q (BY MR. RAFFETTO) Okay. What types of controls are provided on a flicker box?

A Again, I haven't operated one.

Q So --

A So I know -- I know you can activate different devices. You can -- it's an analogue output, so I can turn something on or off. But I can also close a shutter or close an iris, which there is an analogue response there. It can be all the way open; it can be all the way closed. I've seen them used to control spotlights, so you go from a flood down to a spot, highlight something.

But, again, I haven't operated one.

Q So you're not sure what types of controls would be provided on a flicker box?

MR. CANNON: Objection; relevance.

A I'm stating I haven't operated one. So when you're asking me specific details about a control, if I knew the specific details, that would imply that I operated one and used one.

MR. CANNON: Joe, I think we're over another hour, if you get to a point that we can take a break.

MR. RAFFETTO: Yeah, let me just finish a couple of questions, and then we can break.

Q (BY MR. RAFFETTO) So what -- do you know if flicker boxes would have things like knobs, dials, buttons?

MR. CANNON: Objection; relevance.

A Probably some slides as well.

Q (BY MR. RAFFETTO) So possibly knobs, dials, buttons and slides?

A Well, the dials, it's a rotary input for an analogue signal. A slide, it's just a linear input. So there's a common functionality, but the actual format is a little different.

Q Right.

But these are the types of -- these are the types of controls that you could use on a flicker box to adjust inputs?

A I will say they could be used. Again, I haven't operated one, so I'm -- I'll say it would make

sense, but, again, I don't have direct experience operating one.

Q Now, looking at Paragraph 57 of your declaration as an example, you also reference buttons, knobs and an interface in connection with the patents, the Rotolight patents invention.

Do you see that?

A Buttons, knobs or a digital interface for user input of parameters.

Q So the same types of controls that you might see on a flicker box. Is that fair?

MR. CANNON: Object to form.

A I'm not aware of a digital interface on a flicker box. Again, I was speculating. I was saying what could be used on a flicker box.

MR. RAFFETTO: Okay. Now is probably a good time to take a break.

THE VIDEOGRAPHER: Okay. Stand by. The time is 10:54 a.m., and we're going off the record.

(Break taken.)

THE VIDEOGRAPHER: The time is 11:09 a.m., and we are back on the record.

MR. RAFFETTO: Thank you.

Q (BY MR. RAFFETTO) So, Dr. Bretschneider, earlier we were talking about what types of circuitry might be included in a flicker box.

Do you recall that?

A Yes.

Q Could a flicker box be comprised of a microprocessor?

MR. CANNON: Objection; relevance.

A I really can't comment on that because, again, I haven't inspected one.

Q (BY MR. RAFFETTO) Right.

So you're not sure whether a flicker box could -- could be comprised of a microprocessor?

A It would be speculation, and that's not my role in this matter to speculate.

Q Have flicker boxes changed over time?

MR. CANNON: Objection; relevance.

A I would assume they have. But, again, it's not my field of expertise.

Q (BY MR. RAFFETTO) Has the circuitry in flicker boxes changed over time?

MR. CANNON: Objection; relevance.

A Since I haven't opened even one up, I can't -- to know if they've changed over time, that would imply I've seen multiple generations.

Q (BY MR. RAFFETTO) Right.

And the only flicker box that you've seen, I believe you mentioned, was the one that you saw working as a gaffer at Tulane; is that correct?

A Yes.

Q Does a flicker box have to be connected to a light through a DMX distribution hub?

MR. CANNON: Objection; relevance.

A That's what's shown in the patent, and I really can't comment beyond that because, again, I haven't used one.

Q (BY MR. RAFFETTO) So you're not sure if there are other ways that a flicker box could be connected to a light?

A DMX isn't the only networking protocol. So there are other alternatives that I would assume could be used. DMX is just a -- a common one.

Q So is your testimony, then, that a flicker box

does not have to be connected to a light through a DMX distribution hub?

MR. CANNON: Object to form.

A I was saying what's shown is DMX, which is the most common network. It stands for -- I know it stands for digital multiplexing. I know there are other networking type applications. I think RDX is another one. I think that's remote device.

But it would be something equivalent to DMX is my understanding. But, again, I'm not familiar with the operation, haven't been trained, haven't used a flicker box.

Q (BY MR. RAFFETTO) So are you saying, though, that RDX could be used to connect a flicker box to a light?

A I'm more saying that DMX is one networking system, it's one control network, and that others could be used. DMX just happens to be very popular.

Q And when you say "could be used," you mean could in theory be used, but you're not sure if it's actually possible or not because you haven't used a flicker box before?

A I --

MR. CANNON: Object to form.

A I haven't used it before, but I do know in lighting environments -- for example, DMX is used outside of theatrical stage production lighting. The project I worked two years ago, the Museum of Fine Arts in Houston, they actually control all the lights in at least their new gallery using DMX.

Again, there are other control protocols, so I'm making some assumptions there. If you want to sell a lot of equipment, you want to make it as compatible as possible. So that would be speculation that something else could be used and that capability could be in a flicker box. I read it as you need to go through a distribution hub. You need to have some networking thing.

Q (BY MR. RAFFETTO) What is a DMX distribution hub?

A It's equivalent to a router for a computer network. It's a way to connect different devices.

Q And what would a DMX distribution hub be comprised of?

A DMX distribution hub would need to have some method of controlling different outputs and obviously connections for the different outputs for how many channels do you want to go through, how many devices are actually connected to the network.

Q Have you ever operated a DMX distribution hub?

A No.

Q Have you ever used DMX to control a lighting device?

A Indirectly. For some lighting installations, lighting designer wants to achieve a certain balance, if you will, in the environment.

To go back to the museum scenario, they need to know what -- what the lights are capable of. And sometimes I ask questions on, well, what can I do, what can't I do, so they know how to install and set up the lights and set up the DMX control system properly.

Q So the answer to my question is you have not used DMX to control a lighting device, correct?

MR. CANNON: Object to form.

A Not directly.

Q (BY MR. RAFFETTO) When did you first learn

about DMX?

A Around 2000 is when I remember hearing the term first.

Q And what is DMX?

A My understanding, it stands for digital multiplexing, and it's a type of network connection for devices. It's commonly used in lighting, but my understanding it can be used for other devices as well. It's a network system for electrical devices.

Q Could it be thought of as a type of programming protocol for a system?

MR. CANNON: Object to form.

A My understanding is that it's more of a network protocol than hardware.

Q (BY MR. RAFFETTO) So let's go back to Figure 2 of the patents. And we can bring up Paragraph 55, which is Page 19 of your ’257 patent declaration as representative. And, again, feel free to look at the corresponding sections in your other declarations.

Maybe we can zoom in on -- it's actually Page 19, yeah.

So we're looking now, Dr. Bretschneider,

at Figure 2 of the patents. And this figure shows the components making up the lighting device of the patents, correct?

MR. CANNON: Object to form.

A It's a type of schematic.

Q (BY MR. RAFFETTO) Right.

And it's a type of schematic that shows the components making up the -- the lighting device of the patents, correct?

MR. CANNON: Object to form.

A It's more of a functional block diagram.

When you say "components," I tend to think of actual circuit components. There's some amusement in -- for an LED lighting system showing a light bulb. But it's really more of that functional block diagram.

Q (BY MR. RAFFETTO) Right.

It's showing the parts of the system that would make up the lighting device of the patents; is that fair?

MR. CANNON: Object to form.

A Could you repeat the question now?

Q (BY MR. RAFFETTO) Right.

So Figure 2 is showing the parts of the system that would make up the lighting device of the patents, correct?

MR. CANNON: Objection; form.

A I'm struggling with the parts. It's more -- like I said, it's a functional block diagram. Because one of the things -- if you look, 106 is referred to as -- as data. How do I point to data? Is that a part? That's a -- that's information. I can't really point to information. It's a data stream. So saying I'm pointing to the bits, the actual data itself, is really difficult to say that you're doing that.

Q I understand. So why don't we walk through the different components one-by-one so we can understand what makes up the lighting device of the patents.

MR. RAFFETTO: And before I do that, I would like to mark Tab F as Exhibit 6 to Dr. Bretschneider's declaration. And maybe we can bring that up quickly. If we could turn to the next page of Exhibit 6. So this is a copy of the ’257 patent.

(Exhibit 6 marked.)

Q (BY MR. RAFFETTO) Do you recognize this,

Dr. Bretschneider?

A Yes.

Q And if we turn to Figure 2 of this patent, this figure is the same figure that you included in your declaration that we were just looking at; is that correct?

A Yes.

Q Okay. Now, the lighting device that we're looking at here, that's Element 120, right?

A Correct.

Q That's shown by a big box, correct?

MR. CANNON: Form.

A Yes.

Q (BY MR. RAFFETTO) And Element 105 is a user interface, correct?

A Yes.

Q And that's shown by what looks like a piece of paper, correct?

A Yes.

Q And if we could turn to Column 6 starting at line 1. Column 6, yeah. And -- and, again, Dr. Bretschneider, feel free to refer to the other

patents, because I understand you have copies of them. But we'll just look at the '257 as representative.

And looking at this -- this section of the patent, you can see here there's a discussion of the user interface, correct?

A Yes.

Q And it says here that -- in the very first sentence that we're looking at, which again for the record is Column 6 starting at Line 1 of the ’257 patent, it says that the input interface 105 includes a control panel provided at the back panel of the lamp device, correct?

A Yes.

Q And then the next line starting at Line 2 going to about Line 5, it says the control panel can include, for example, buttons, rotary knobs, sliders and/or a display input panel for user input parameters for simulating an effect.

Do you agree with that?

A Yes.

Q And then it also says, at around Line 5, that the interface could be a simple digital interface,

correct?

A Yes.

Q And then if we look at about Line 8, starting at Line 8, it says that the interface could also be a wireless user device such as a smartphone or tablet with suitable hardware or software, for example, an app, correct?

A Yes.

MR. RAFFETTO: And then let's go back to Figure 2 of the -- of the patent. If you can bring that up, please.

THE VIDEOGRAPHER: Yeah, I'm just pulling it without flipping pages on the screen.

MR. RAFFETTO: Yeah, understood.

Q (BY MR. RAFFETTO) There's an element here, 100, that's labeled effect simulator, right?

A Yes.

Q And this is shown as sort of a black box, right?

A Again, this is a functional block diagram.

Q Now, the patents don't describe the circuitry making up the effect simulator, correct?

MR. CANNON: Objection; form.

A They don't -- excuse me. They don't describe specifically, but there is a discussion that's bridging Column 4 and Column 5 about using a computer program and software code. So there needs to be a -- a processor somewhere.

Q (BY MR. RAFFETTO) So you're saying the effect simulator could be a processor?

A Starting at the bottom of Column 4 (as read): The invention also provides a computer program and a computer program product comprising software code, which, when executed on a data processing apparatus, to perform any of the methods described herein, including any or all of their component steps.

It goes on to talk more about the computer, about an operating system. So there has to be a computer somewhere. There's a processor that runs software.

Q Right.

And then looking at the sections of the '257 patent, you're referring to, I take it, at Column 5 at Line 1, there's a reference to data processing

apparatus. Do you see that?

A Yes.

Q And so what you're saying is the effect simulator has to be something that can process the -- the data or the information?

MR. CANNON: Objection; form.

A That's it. It's also specific about a computer program. So you've got to have a computer. You can have a computer, but it doesn't do anything by itself without a program to run. So it's a digital computer.

Q (BY MR. RAFFETTO) Right.

So there just has to be some type of computing device, correct?

A A digital computing device.

Q Okay. Some type of digital computing device?

A Yes.

Q Okay. And to be clear, though, the patents don't provide any -- any details about what that digital computing device has to look like, right?

MR. CANNON: Objection; form.

MR. RAFFETTO: And I can rephrase.

Q (BY MR. RAFFETTO) So the patents don't

provide, for example, the types of circuitry that would need to be included within the -- the computing device, correct?

A The specific circuitry, no, but there's a lot that's lumped into the description there. From running a program, I've got a fairly complex processor.

So there's a number of elements that are involved in having that. When it says data processing apparatus and the discussion of operating code, there's no specific circuits, but that's done a fairly good job of describing the unit.

Q So what -- what are the elements, then, that would need to be included in this data processing apparatus or unit?

MR. CANNON: Objection; form.

A You need an input and output interface. You've got to have a processor, something that actually runs the code. You've got to have memory to be able to store the code. Processors have their own resident memory, what's known as cache memory. Then you've also got system memory, which is where operating system would typically reside and the programs that are run through the

processor.

Q (BY MR. RAFFETTO) Right.

Now, the patents don't disclose any software code, correct?

MR. CANNON: Object to form.

A No actual code.

Q (BY MR. RAFFETTO) Okay. Let's stick with Figure 2 now.

Now, the effect simulator we're looking at here, it's connected to the input interface 105 that we talked about, correct?

A Correct.

Q And then it also shows some connections sending data, 106 -- I think you pointed that out earlier -- to a light, 102, right?

A Yes.

Q Now, when the interface 105 is on the lighting device, a person of ordinary skill would understand that there's some wires or circuitry connecting the interface to the effect simulator, correct?

A To the processor, yes.

Q Right.

And you need that -- those wires or that circuitry to connect to the processor and the effect simulator so that information and data from the interface can be conveyed to the effect simulator, correct?

A With respect to this figure, yes, because in Column 6 there's also a discussion about wireless communication.

Q So you're pointing out that the interface -- if the interface isn't on the device, the information could be sent wirelessly to the effect simulator, and in that case you wouldn't necessarily need wires or circuitry connecting the interface to the effect simulator?

A I was just qualifying my answer that it was specific to Figure 2.

And I thought you were -- what I was understanding is you were saying this is the only thing the invention is, that it has to be connected by wires. So I was drawing the distinction between Figure 2 and other parts of the patent.

Q Right.

And you're pointing out that other parts of the patent are teaching that the inputs could be

wireless, and so you don't necessary need wires in between 105 and 100?

A Yes.

Q Okay. Now, there would also be some wires or circuitry between the effect simulator and the light, 102, correct?

MR. CANNON: Objection; form.

A I'm going to answer a little differently.

It doesn't have to be wires. There are some electrical conductors.

Q (BY MR. RAFFETTO) Are you -- are you saying that electrical conductors are not wires or circuitry?

A No, they are. It's just when you're saying "wires," I'm trying to be precise in my answer.

A lot of times these connections would be actually made through electrically conductive traces on a circuit board, so I wouldn't be able to point exactly to a wire. A wire could be used or you could be using the -- the traces on a circuit board.

Q Okay. So my -- to be clear, my question was actually there would also be some wires or circuitry between the effect simulator and the light, 102, correct?

A That's where I was trying to clarify because wires may not necessarily be involved.

Q Right.

So you're saying it could be circuitry instead of wires.

A Circuitry is implying components. What I'm saying is it could be wires or it could be electrically conductive traces on a circuit board. Typically copper, so if I have a trace of copper on a circuit board that conveys the information, I don't have a wire. I could have a wire that connects different components. Like I said, I am just trying to be precise.

You're saying wire, and I'm saying there may be a wire, there may not be a wire. There does need to be an electrically conductive path. You're communicating an electrical signal physically.

Q Right.

And just so I understand, you're saying that circuitry does not include traces, correct?

A No, it's -- I'm trying to be precise again. Because if I have a circuit, I have components in the circuit. If I just have an electrical trace with no

component, that's not a circuit.

So --

Q Okay.

A -- it's -- you're -- you're mixing and matching some terms, which makes me a little uncomfortable. That's why I'm trying to be precise.

It doesn't have to be a wire. A wire may not be there. Is it an electrically conductive path which could be a wire, which could be a trace on a circuit board? Yes. Could it be a circuit on a circuit board in addition to these electrically conductive paths? Yes.

Q Okay. Do the patents -- strike that.

The patents don't describe the circuitry or wires or traces between the interface and the effect simulator and the light, do they?

MR. CANNON: Objection; form.

A There's not a specific discussion, but the initial description is talking about the interface on the back, in which case it would be understood there are conductive traces or elements somewhere. Because then it gives the option that the information could be

communicated wirelessly.

Q (BY MR. RAFFETTO) Are you referring to Column 6 starting at about Line 1 of, for example, the '257 patent? Or are you referring --

A Yes.

Q Yes.

So you're saying that the description of the -- the wires to the circuitry or the traces can be gleaned from the fact that there's an interface that is, you know, connected or that's part of this device?

MR. CANNON: Object to form.

A That's what would be understood, that you've -- you've got a physical connection.

Q (BY MR. RAFFETTO) So given all the -- the circuitry and computing devices that would need to be included within the lighting device 120 of the patents, what makes this less complex than the circuitry of a flicker box?

MR. CANNON: Objection; form.

A It's an all-in-one unit. You've integrated the functionality of a flicker box into the light itself. So instead of needing a flicker box plus a lot of other

components plus the light, you just need the light.

Q (BY MR. RAFFETTO) So it's sort of like a self-contained unit; is that fair?

MR. CANNON: Objection; form.

A You have the functionality without the cost, complexity and bulk.

Q (BY MR. RAFFETTO) Well, you said before instead of needing a flicker box plus a lot of other components plus the light, you just need the light, correct?

MR. CANNON: Objection; form.

A That's basically it. The light itself has the functionality of the old way of doing things with the flicker box and other components.

MR. RAFFETTO: Okay. We can take this down for a minute.

Q (BY MR. RAFFETTO) You would agree that the claims in the '257, '258, '101 and '044 patents include a limitation directed to, quote, calculating, end quote, time varying lighting values, correct?

A It's calculating time varying lighting values. Most of them, there's also a simulation parameter, a

lighting parameter that's involved as well. So there's a little bit of nuances there, but it's a time varying lighting value.

Q Right.

So -- I mean, it's fair to say, though, right, that all of the claims of all the patents include a calculating limitation, correct?

A Yes.

Q Yeah. And, again, I'm not trying to be tricky. I'm just trying to avoid having to go through each individual declaration.

So you would agree that these time varying lighting values that are calculated are the data that are provided to the light, correct?

MR. CANNON: Objection; form.

MR. RAFFETTO: And maybe while Dr. Bretschneider is thinking about that question, we can bring back up Figure 2 that we've been looking at a lot.

THE VIDEOGRAPHER: Figure 2 from the patent or the report?

MR. RAFFETTO: From the -- from the '257 patent, we can bring that one up. Thank you. So it's

Exhibit 6 to the deposition.

THE VIDEOGRAPHER: Okay. Stand by.

MR. RAFFETTO: And, Dr. Bretschneider, let me just repeat my question since I've sort of interjected.

Q (BY MR. RAFFETTO) So you would agree with me that these time varying lighting values that are calculated in the claims of the patents, those values are the data that are provided to the light, correct?

MR. CANNON: Objection; form.

A Yes, the varying lighting values are the data.

Q (BY MR. RAFFETTO) And with reference to Figure 2, for example, that would be the Element 106 that we're looking at on the screen?

MR. CANNON: Objection; form.

A Yes.

MR. RAFFETTO: And if we could bring up Column 8 of the ’257 patent, lines 36 to 38.

Q (BY MR. RAFFETTO) And so the patents say that this data is in the form of brightness and/or color values that vary over time, correct?

MR. CANNON: Objection; mischaracterizes.

A It says that it's -- typically provides data in the form of brightness and/or color values that vary over time.

Q (BY MR. RAFFETTO) Okay. In your opinion, could the data that represents the time varying lighting values, could that be things other than brightness and color values that vary over time?

A It could be. There's a lot of complexity to color lighting. You may be -- I discussed earlier about some examples where the color of the light stays the same, but because the content that makes up that color changes, you can get an effect, what appears to be a static light. You can still have different things happening.

Color values most people will think of is that red, is that green, is that blue? It could be a color temperature value. It could be something associated with color rendering index. These days there are a lot more effects about lighting other than just brightness or color.

Q So as I understand your testimony, then, the time varying lighting values could include brightness

and/or color values that vary over time, but it could include other data as well?

MR. CANNON: Objection.

A That's what --

Q (BY MR. RAFFETTO) Is that fair?

A That's what the patent says, which you asked, was that it is just brightness and/or color values. And the language is clear because it states the lighting effect simulator 100 typically provides data 106 in the form of brightness and/or color values that vary over time. So it's saying that's typically what it is. It's not limiting it just to that.

Q Right.

So more broadly, the time varying lighting values are just -- strike that.

Now, in your declarations, you mention that the calculating limitation that we talked about a few minutes ago is embodied in certain flowcharts included in the patents, correct?

MR. CANNON: Objection; form.

MR. RAFFETTO: And you can take this down. Thank you.

MR. CANNON: Are you specifically quoting a portion of the declaration or --

MR. RAFFETTO: Not yet, but I can repeat my question.

Q (BY MR. RAFFETTO) In your declarations you mention that the calculating limitation in the patents is embodied in flowcharts included in the patents, correct?

MR. CANNON: Objection; form.

A Looking at my '257 declaration, Paragraph 86 on Page 31 (as read): The specification of the ’257 patent describes the calculating step, stating that the simulation calculates how the lighting values -- how the lighting changes over time in order to produce -- to produce the desired lighting effect. This calculating step is further embodied in flowcharts in Figures 3a and 3b.

MR. RAFFETTO: Okay. Why don't we bring up that portion of your declaration. So this is -- for the record, this is Exhibit 2 of the deposition. It's the '257 declaration at Paragraph 86. And maybe we could also show Page 32, Paragraph 87 as well, so the pages side-by-side. Thank you.

Q (BY MR. RAFFETTO) So you include -- as I see it, you include the flowcharts from the patent in your declaration, correct?

A Yes, figures -- specifically Figures 3a and 3b.

Q And Figure 3a has three steps, S1, S2, and S3, right?

A Yes.

Q And Figure 3b has steps S4, S5, S6, and S7, right?

A That's correct.

Q And when you say that these flowcharts embody the calculating step, do you mean that they provide the algorithm for generating lighting effects?

MR. CANNON: Objection; form.

A I -- you've asked a very difficult question. This is a simplification. It is an algorithm of sorts.

What the simulation parameters are and what the variation is supposed to be, that can change from one to one. So there's -- or from one effect to another, one simulation to another depending on what you're trying to do. So it's a extraordinarily high level algorithm. You need to receive the simulation

parameters, then you simulate the variation over time, you do the calculating step there, and then you send the information to the light array.

MR. RAFFETTO: Okay. I want to talk about this in more detail. But before we do, I want to look at your other declarations because there are some slight variations in the figures. So let's turn to Paragraphs 81 to 82 of Exhibit 4 to your deposition, which is your '101 declaration.

Q (BY MR. RAFFETTO) And my question is, this '101 declaration, this includes the same Figures 3a and 3b with the same steps that we just looked at for the ’257 declaration, correct?

A Yes.

MR. RAFFETTO: Okay. So we can take that down.

And let's now bring up Exhibit 3 to the declaration -- strike that -- to the deposition, which is your '258 declaration, and let's look at Paragraphs 89 to 90.

Q (BY MR. RAFFETTO) And let me know when you've got it up in your hard copy, Dr. Bretschneider.

A Okay.

Q So these paragraphs discuss Figure 3 of the '258 patent, correct?

A Correct.

Q And that figure is the same as Figure 3a of the '257 patent and '101 patent, correct?

And feel free --

A Correct.

Q Thank you.

It has the same steps, S1, S2, and S3, correct?

A Yes.

MR. RAFFETTO: Okay. Now let's turn to your last declaration, which is Exhibit 5 to the deposition, your declaration for the '044 patent, and look at Paragraphs 81 to 82.

Q (BY MR. RAFFETTO) So this also includes the same Figure 3 that we just looked at, correct?

A Yes.

Q And this has those same steps, S1, S2, S3, right?

A Yes.

MR. RAFFETTO: Okay. Let's pull back Exhibit 2 to the deposition, which is your ’257 patent declaration, and bring up Paragraphs 86 to 87 again, which show Figures 3a and 3b.

And maybe we could actually just zoom in on those figures. Thank you.

Q (BY MR. RAFFETTO) So I would like to talk in more detail about steps S1 and S2 and S3 that you say embody the calculating steps. And so we've got, for reference, up your '257 patent declaration, which we just discussed is representative.

So the steps of this method are: S1, receive simulation parameters; S2, simulate variation of light over time; and S3, send to light array, correct?

A Yes.

Q And do you agree that the first step, S1, is receiving simulation parameters?

A Yes.

Q And these are parameters related to the desired effect, correct?

A That's correct.

Q And these could include things like brightness,

fade, color, frequency?

A Among other things.

Q So the answer is, yes, among other things?

A I am just saying not limited to what you stated.

Q Okay. And step S2, this just says to simulate the variation of light over time, right?

A That's the calculation step, yes.

Q And the simulation is based on the parameters, correct?

A Yes.

Q So if a user sets parameters of a particular brightness, a desired color, and a desired frequency, these parameters would then be used to simulate the effect?

A To calculate the time varying light values or lighting parameter values.

Q Which simulates the effect, correct?

A Yes.

Q And -- and with that simulating the effect or calculating, I think as you described it, that creates the lighting values needed to produce the desired light

output; is that fair?

MR. CANNON: Objection; form.

A It's the lighting output at a given point in time to create the effect. So unless it's -- I mean, a lighting effect can be a static light. I'll say it's kind of boring, it doesn't change in color or intensity, but that could be a lighting effect because you're just concerned about the color, if you will.

So for dynamic lighting, then you're looking at how those values have to change over time.

Q (BY MR. RAFFETTO) Now, there are no flow diagrams that illustrate or demonstrate how this simulation step S2 is done, correct?

MR. CANNON: Objection; form.

A It just states simulate the variation. So you're doing the calculations, and it would depend on what you're trying to simulate and what the input parameters are.

Q (BY MR. RAFFETTO) So the answer to my question is yes?

A Could you repeat the question?

Q There are no flow diagrams that illustrate or

demonstrate how the simulation in step S2 is done, are there?

MR. CANNON: Objection; form.

A No, there are not.

Q (BY MR. RAFFETTO) And there aren't any formulas or equations included for step S2, correct?

MR. CANNON: Objection; form.

A No formulas or equations.

Q (BY MR. RAFFETTO) And there's no diagram with a more detailed description of the processes and steps you need to use to accomplish step S2, correct?

MR. CANNON: Objection; form.

A Could you repeat the question, please?

Q (BY MR. RAFFETTO) Yes.

And there's no diagram with a more detailed description of the processes and steps you need to use to accomplish step S2, correct?

MR. CANNON: Objection; form.

A No, there aren't. That would be within the knowledge of a person of skill -- ordinary skill in the art. You have to know about color sciences and color mixing and different effects there. So if -- if you're a

person of ordinary skill in the art, you don't need the directions.

Q (BY MR. RAFFETTO) And then -- and then step S3 is just send to light array, correct?

A Send the time varying values to the lighting array, yes.

Q Right.

And that would be like to the LEDs, correct?

A Not directly to the LEDs. To the driver circuits for the LEDs. If I send a digital data stream to the LEDs, they're not likely to do much.

Q Okay. Let's look at Figure 3b now.

So this figure has four steps, correct?

A Yes.

Q And those steps are receive simulation parameters, S4; calculate a time varying lighting value based on the parameters, S5; output the calculated lighting values to the device, S6; and desired lighting effect is simulated, S7.

Do you agree with that?

MR. CANNON: Objection; form.

A You left out some of the parts, because the simulation parameters for this one could be random or user selectable.

Q (BY MR. RAFFETTO) It says that in step S5?

A No, in S4. It says receive simulation parameters such as random and/or user selectable parameters. You just said receive simulation parameters, so I was clarifying there.

Q Got it.

In step S5 here, that's the calculating step, correct?

MR. CANNON: Objection; form.

A Yes, that would be where the calculations are performed.

Q (BY MR. RAFFETTO) And just like with step S2 that we talked about, there are no flow diagrams or formulas or equations or detailed description of the processing steps that are used -- that are disclosed as to how to accomplish this step 5, correct?

MR. CANNON: Objection; form.

A Again, a person of ordinary skill in the art wouldn't need them. And if they were to give an example,

they would have to give an example of every possible lighting effect, which would be a virtual impossibility.

So it's saying calculate the time varying lighting values. If you don't know how to do that, you're not of ordinary skill. So a programmer by themselves would not be able to do this. They would need direction on how to perform the calculations, which that's where a person of ordinary skill in the art would come in.

Q (BY MR. RAFFETTO) Now, in your declarations -- strike that.

MR. RAFFETTO: So can we go off the record for a moment?

THE VIDEOGRAPHER: Stand by. The time is 12:02 p.m., and we're going off the record.

(Break taken.)

THE VIDEOGRAPHER: The time is 12:57 p.m., and we're back on the record.

Q (BY MR. RAFFETTO) So, Dr. Bretschneider, in your declarations discussing each of the four patents, in relation to the calculating limitation, you also reference a Figure 6 of the patents. Do you recall that?

A Yes, I do.

Q And you say in your declarations that this is helpful to illustrate the meaning of the calculating step, right?

A Yes.

Q And let's go ahead so that we -- we have it in front of us and pull up Figure 6 of the patents, which we can see if we pull up Exhibit 2 to the deposition, which is your '257 declaration at Page 33. There you go.

Now, Figure 6 of the patents is an example of a control panel that can receive user inputs for parameters, correct?

A The actual description is a graphic user interface for user input of simulation parameters.

Q And so what you're saying is this is actually the user interface itself that enables the user to input parameters, correct?

A Correct. I was specifying it was a graphical user interface. So when you said an input panel, that implies hardware and this is a software.

Q Okay. And so this might be the software that you might see on the interface of a -- of the light if

you wanted to input parameters; is that fair?

A It's an example. You might see something similar.

Q Okay. Now, this figure doesn't include any calculations steps, correct?

A No, it doesn't.

Q And it just shows the name of the stored effect that the user has selected at the top, which in this case is fire effect, right?

A Well, it's not stored. This is the -- it's to create the effect.

Q Okay. So this -- this fire effect, nothing about this effect was stored on the -- on the system; is that what you're saying?

A Well, there may be default values that come up, but you were implying that it was stored and it was reading the entire simulation. So I was just trying to be precise in my answer.

Q Okay. Would there be some type of algorithm stored that would take these parameters and generate the effect?

A Yes.

Q Okay. And would this interface look different if a user wanted to simulate a different effect?

MR. CANNON: Objection; form.

A A different effect, something would have to be different. Usually there's a common theme. It's just part of good programming practices. You want your interfaces to look similar. You want a theme, a feel to it.

Q (BY MR. RAFFETTO) Right, so if -- if a user selected a stored effect for welding sparks, you expect to see welding effects at the top; is that fair?

A Again, you said a stored effect, and this is talking about calculating the effect. So it wouldn't be recalling a stored effect. It would call up a similar template where the parameters for that effect could be selected and entered.

Q Okay. And -- and that interface, though, I mean, it would probably say "welding effect" at the top, right, not "fire effect"?

A Correct.

Q And then the parameters might change as well, correct?

A Yes.

Q Because you wouldn't expect to see, for example, fire activity in fire color for a welding effect, correct?

A Correct. 2000 Kelvin is a -- it's a good representation of fire. Candle light is typically 1800 Kelvin, so you're right in the ballpark there. Welding is usually a much higher color temperature. And also the dynamic activity for welding tends to be much more rapid.

Q And then also I take it that there would be a different algorithm for the welding effect that would take the welding effect parameters and then output lighting values; is that fair?

A Yes.

Q Because it wouldn't just use the fire effect algorithm, it would use the welding effect algorithm?

A Right, there would be a different routine it would through to calculate the values.

Q And by "routine," you mean software routine?

A Subroutine, yes.

Q So what Figure 6 is showing is how, you know, there are different parameters that a user can input or

change, correct?

A Correct. These are the parameters for this particular effect.

Q Right. The parameters for this particular effect that a user can input and change, correct?

A Correct.

Q And in this particular effect, these include things like fire activity, fire color, peak brightness, minimum brightness, and camera frequency, correct?

A Correct.

Q And, again, if this were a different effect, you'd expect these parameters to be different?

MR. CANNON: Objection; form.

A Each effect would have its own set of parameters.

Q (BY MR. RAFFETTO) And just so I can completely understand, would you expect the parameter options to be based on the effect that the user selects to simulate?

A Yes.

Q And so it's fair to say then, isn't it, that the user can select from different predefined effects on the device, right?

MR. CANNON: Objection; form.

A Different types of effects. Again, you're saying predefined, which was like your previous comments about stored. So there's -- there's an algorithm and I don't know whether there are default values or not, but the -- the predefined is where I'm having issues with your question.

Q (BY MR. RAFFETTO) So for the user interface to be pulled up and for an interface to be generated that says fire effect or welding effect, wouldn't something have to be stored on the device that has that information in it?

A It would have the parameters that need to be input.

Q The parameters associated with a particular effect, correct?

A Yes.

Q And so there would be some storage of effects on the device, because without that you wouldn't be able to generate a user interface for each different effect; isn't that fair?

MR. CANNON: Objection; form.

A The interface would be defined. I don't see it as being generated each time. Particularly for a graphical user interface, there's information that is stored just to display the interface. So you've got to have a number of fields there. Some of them would represent the parameters, the fire activity, fire color, peak brightness, baseline brightness, et cetera. And then there would be another location, a field for the actual value for the parameter.

Q (BY MR. RAFFETTO) But something would be stored on the device that would associate effects with parameter; isn't that fair?

MR. CANNON: Objection; form.

A I'm having some difficulty because of your -- you're mapping the -- the effects require certain parameters. There are multiple parameters, and it's which parameters are used for a given effect.

Q (BY MR. RAFFETTO) Right. But the system needs to know if I select fire effect which parameters to bring up associated with that effect; correct?

A It's not bringing up parameters. It's bringing up the user interface.

Q And so how does it know how to populate that user interface with particular parameters?

A The -- the user interface is defined. That's where -- again, your mapping is -- is awkward when you're talking about programming. I create -- if I'm doing a program I create and define the user interface and it's not pulling up the user interface and then it's created, the user interface has to be created ahead of time.

Q I understand what you're saying. You're saying what the interface looks like is created ahead of time and specified ahead of time. But my question is a little bit different. My question relates to the parameters that are used for each effect for a given interface.

So we previously discussed how the fire effect would have certain parameters. The welding effect may have different parameters. And so how does the system know which parameters relate -- to use for which effect if that information isn't stored somewhere?

MR. CANNON: Object to form.

A It's a part of defining the user interface.

Q (BY MR. RAFFETTO) So is your testimony then that there is no correlation between the effects and the

parameters in the patented invention?

MR. CANNON: Objection; mischaracterizes.

A Each effect has certain parameters associated with it. Like I said, your -- your mapping -- the question, the way I'm understanding it, is kind of backwards. You're going from parameter to effect, not effect to parameters. But again, what is defined for the effect is the user interface. That does have to be defined ahead of time.

So your questions, the way I'm understanding them, are that this user interface is created from scratch every time. And while I would say it might be possible to do that, in terms of programming, it would be an incredibly awkward and challenging effort just because in terms of testing you would have to figure out does it actually work for all combinations. So you have to do a lot more testing. By predefining the user interface, it makes testing and debugging and making robust programming much easier.

Q (BY MR. RAFFETTO) Okay. So let's take a step back. When I select in the -- in the lighting system in the patent's fire effect, how does it know which

parameters to bring up? And not to bring up -- for example, parameters that would only be used for a welding effect?

MR. CANNON: Objection; form.

A That -- that's where the difficulty is. You're talking about selecting effect and bringing up the parameters. Selecting the effect brings up the user interface. The user interface has the parameters on it, so that's where there's an incomplete mapping and you're making a really awkward question to try to ask.

There's a cause and effect relationship. It's -- the effect points to a user interface. The user interface is what will say what parameters you need for the simulation. You're leaving out an intermediate step.

Q (BY MR. RAFFETTO) But the user interface knows which parameters needs to be included, correct?

MR. CANNON: Objection; form.

A Knows means the user interface is selecting the parameters and the user interface is defined. So again, there's a -- there's a logical issue with the question as you're answering it -- or as you're asking it.

So the user interface is defined. That

definition will say which parameters to display -- or actually the display is already fixed, so there's not a selection. The interface is defined. It's done. So that's where I'm having trouble. You're saying it calls them up. Well, no, the interface is defined. The interface includes the parameters.

Q (BY MR. RAFFETTO) So you're saying there's a predefined interface?

MR. CANNON: Objection; form.

Q (BY MR. RAFFETTO) Correct?

A That's -- in terms of programs, that's my understanding. People will do them that way. You define the user interface. To create a user interface on the fly, you're asking for a lot of complications and problems.

Q And so there would be an inter- -- your testimony is that there would be an interface stored for the fire effect with certain parameters, an interface stored for the welding effect with certain parameters, and so on; is that fair?

A Yes.

Q Okay. Now, Figure 6 doesn't show what the

effects simulator does with these parameters, correct?

A No, it does not.

Q But when a user changes the values for the parameters, different lighting values to represent the effect would -- would be needed; is that fair?

MR. CANNON: Objection; form.

A It's not that they're needed. They would be calculated.

Q (BY MR. RAFFETTO) Okay. And Figure 6 isn't showing that calculation, right?

A Correct.

Q And -- and so you would know that once the user changes parameters, something in the lighting device creates lighting values to reflect the user selections; is that fair?

A They're calculated.

Q And then they're calculated because the system knows that if the user is changing parameters, the effect needs to change, and so the lighting values need to be updated?

MR. CANNON: Object to form.

A Updated is implying they preexist, and the

patent is specific about calculating them. So if I pull up the user interface, nothing has been calculated. There's nothing to update.

Q (BY MR. RAFFETTO) Well, let's assume that I've already run the program and so the light is outputting light so to speak. Are you with me?

A Yes.

Q And so I bring up the user interface again and I make adjustments of the parameters. Okay?

A Okay.

Q Would the system recognize that I made adjustments to the parameters and update the lighting values based on those adjustments?

MR. CANNON: Objection; form.

A There's nothing to update. It's a new dataset.

Q (BY MR. RAFFETTO) Well, so would -- your problem is that I use the word "update." You'd rather use the word "calculate"; is that correct?

A It's not that I would rather. That's what the patent teaches.

Q Okay.

A I'm not updating, I'm calculating. And there's

a -- there's a subtle difference. If I write a paragraph, I write the paragraph. If I edit it, I'm updating it. If I write a new paragraph, I've got a blank page, I'm writing it. I'm not updating it, unless you want to say I'm updating a blank page.

Q Okay. So what you're saying is if I run the program, light's being output. And then I make adjustments to the parameters, it's doing an entirely new calculation and providing a whole new dataset; is that fair?

A Yes, that's what the patent teaches is it's calculated. So it's not an update, it's a new calculation.

Q Okay. Now, after showing Figure 6, your declarations include some paragraphs discussing the fire effect in particular. Do you recall that?

A Yes.

Q Okay. And we're showing here on the screen as representative of Paragraphs 89 to 90 of the ’257 patent declaration, which for the record is Exhibit 2 to your deposition. Feel free to also look at the corresponding paragraphs of your other declarations. And just let me

know when you're ready.

A Okay.

Q Now, in these sections that we're looking at, you're explaining how the -- the patents give an example of how the effects simulator calculates lighting values for a particular fire effect, correct?

A Yes.

Q Now, in your view, the claims aren't limited to the fire effect, correct?

A That's correct. It's just used as an illustrative example.

Q And so the lighting effect in the claims of the patents could include other things, right?

A Correct. There are discussions of paparazzi effect, multiple flashes from different locations, propeller effect.

Q Could it include a television effect?

A Yes.

Q Could it include a nuclear explosion effect?

A I think that one might be challenging to simulate if you want to do it accurately, but I would be more comfortable saying an explosion effect.

Q So you don't think it could do a nuclear explosion effect?

MR. CANNON: Objection; form.

A I would rather characterize it as an explosion effect. The issue is a nuclear explosion, the light intensity is so high that if you wanted to accurately simulate that you would burn or damage the set and injure anyone on the set. So there -- there's a simulation there. An explosion is a broader category. If you wanted to do a nuclear explosion, I suppose you could. I don't think there's going to be a lot of call for that, but I would say it's within the realm of possibility.

Q (BY MR. RAFFETTO) Could the effect include a wormhole effect?

A I'm not sure how you're defining wormhole.

Q How do you define wormhole?

A Usually, in my experience wormholes refer to extra-dimensional passages in the space/time continuum, and it's not clear if they would emit any light or have any kind of effect. So to simulate using a light something that may not emit light, which is a theoretical construct, that's where I'm having the trouble.

Q So --

A If we had an example of a wormhole, if we saw one and measured one and it emitted light, then I would say we could simulate it. But when you're talking about a hypothetical construct that we've never seen, that there would be arguments over size effects, what it would look like, if anything. Most of the physics studies if you look at it, wormholes would be microscopic and they would last an infinitesimal amount of time.

Q So is your testimony that the effects could not include a wormhole?

MR. CANNON: Objection; form.

A I am saying no one has seen a wormhole. No one knows what one would look like, so if you want to simulate something that's never been seen and no one knows what it would look like, I wouldn't call that a simulation of such a thing.

Q (BY MR. RAFFETTO) All right. I understand. So you're saying it's not -- you're not certain what that effect would look like, so it's not necessarily an effect that could be generated?

MR. CANNON: Objection; form.

A Someone might create something that they call a wormhole, but it would be all speculation. Like I said, if we haven't seen it and it's not even clear if it could be created, how can you simulate it?

Q (BY MR. RAFFETTO) Understood.

A Someone may call an effect that, but again, we're talking about something that's never been seen. So how do you even draw a picture of something that's never been seen.

Q Understood. And I think we talked about this one earlier, but the effect could include a police light, correct?

A Yes.

Q And could the effect include flashes or strobe?

A Flashes would be related to the paparazzi effect I mentioned was in the patent near the top of Column 8.

Q Could the effect include a strobe?

A It could. It could simulate a strobe light.

Q Could the effect include a color cycle?

A That would be -- I won't say a common type of effect, but it's an effect.

Q And of course we could have other effects as well, right?

A Yes.

Q And there are no details in the specifications of the patents as to what the parameters would be for all other different types of effects that would be available, correct?

A There's -- there's no definition because -- particularly if the type of the effect is known, if it's something that could be measured, you could determine what that would be. So for a paparazzi simulation, you're simulating frequent camera flashes, so there would be an intensity, a frequency if you will, how -- how often the flashes are going off. They tend to be random because it would be a lot of -- a lot of cameras, flashes going off at different times. It's not going to be one person taking repeated flash pictures.

So you could define that for a police car. You would need to know the brightness, the exact shade of red and blue if you want, and then define some timing intervals there for how often each one was on. Normally it goes red and blue, red and blue, so you'd have an

alternating there. With LED lights you could have them both on, but the police lights I've seen, it's either red or blue.

Q Now, the patent doesn't provide details, though, on what the parameters would be for the different types of effects that are available, correct?

A It doesn't. It gives an illustrative example, though. Again, one of ordinary skill in the art would know how to choose the parameters.

Q What would the parameters for a propeller be?

A What's the high-low intensity, something relating to propeller speed.

Q Would there be any other parameters?

A That's what comes to mind, because when you have a propeller, unless you have multiple light sources, the propeller is basically casting a moving shadow, so you've got light going on and off. You've got -- going from a high light level to a low light level. And it's fairly consistent unless you want to ramp up the propeller speed if the plane is getting ready to take off perhaps.

Q Are there any effects you can think of that

would have a single parameter?

MR. CANNON: Objection; calls for speculation.

A I can't think of any that would have a single parameter, because when you're dealing with light, two fundamental parameters would be the color chromaticity of the light, if you will, and the brightness, intensity, some comparable unit. So if I say a color, that color could technically be so dim it couldn't be seen. It would have a theoretical color point. It could be so bright that it appears white.

For example, the sky appears blue when you look at it. At a higher intensity you would say it's white. You're basically over-exposing your eyes. So there's a -- there's a dimension there. You have chromaticity coordinates, which define a two-dimensional color and they -- or it's a two-dimensional metric for color and that assumes a certain amount of brightness.

To be more specific, color is defined in a three-dimensional space. That would be a color space not chromaticity, which includes a lightness. So there's an

amount of light. There's some level of light.

Q (BY MR. RAFFETTO) So is your view, as you sit here today, that the effect would have to have at least two parameters?

MR. CANNON: Object to form.

A I'm saying that when you talk about light, you have to have at least two parameters for it to make any sense. Like I said, if I -- if I specify a brightness and I don't specify the color, then I have an infinite number of lights to choose from. If I specify the color and not the brightness, not the amount of light, then I haven't done a good job specifying it.

Q (BY MR. RAFFETTO) Okay. Now, in discussing the calculating step in your declarations, you also refer Figure 7 of the patents. Do you recall that?

A Yes.

Q And why don't we take a look at Figure 7, and I can direct you to, for example, Pages 36 to 37 of the declaration for the ’257 patent, which is Exhibit 2 to your deposition. We've got that up on the screen. Do you see Figure 7 here?

A Yes, I do.

Q And feel free if you need to take a moment to look at the '258 and '101 and '044 declarations as well.

A Okay.

Q Okay. What is Figure 7?

A Figure 7, what the patent states, Figure 7 shows an example of the brightness varying over time produced according to a simulation as described above. "Two peaks can be seen, one reaching 100 percent intensity and the other reaching 91 percent intensity. The first peak fades up from 10 percent to 100 percent in .85 seconds and back down to 56 percent in .75 seconds." And it goes on to describe the second peak.

Q Are you reading from the patent?

A Yes, I am. That was from Column 10 starting at Line 44 of the ’258 patent.

Q Okay. Can you break that down for me? What is Figure 7? What are we looking at?

A You're looking at the intensity of light as a function of time.

Q Okay. And the bottom scale says "seconds," right?

A Yes.

Q And so that's time obviously, right?

A Yes.

Q And then the vertical scale is brightness percentage. And that's intensity, correct?

A I'm trying to be very cautious here. Brightness is a good generic term when you talk about intensity. The correct units for lighting would be candela. If you are a lighting designer, you're worried about illuminance, in which case, you would be talking about lux. Both of them are measures of brightness. One is what's coming from the light; the other is what reaches the surface. So -- but prefer to just say brightness. It's a measure of intensity, but like I said, technically intensity would be candela.

Q Well, what's the scale of the brightness here?

A This is scaled to the output of the light at the particular color setting going from 10 percent of maximum to 100 percent of maximum for the first peak.

Q Okay. And so in your view, Figure 7 is a representation of the time varying lighting values that would be calculated over time, correct?

MR. CANNON: Objection; form.

A One of the time varying lighting values.

Q (BY MR. RAFFETTO) This is only one time varying lighting value?

A That's all that's shown. There could be multiple time varying lighting values depending on the simulation.

Q So is your testimony then, that if I look at the different points in time, that all of those together are one single time varying lighting value?

MR. CANNON: Objection; form.

A No. I was just saying it was one parameter. Depending on the effect, other parameters could be changing versus time as well. Then you would have more lines, more curves in the figure, and it might be a little more confusing. So it's easy enough to understand X versus Y values. When you start doing X versus multiple Y values, then it can get more confusing.

Q (BY MR. RAFFETTO) So to be clear, your testimony is that Figure 7 does not represent time varying lighting values calculated over time, but rather reflects one single time varying lighting value?

MR. CANNON: Object to form.

A Your question doesn't make logical sense because the value does change over time. If I look at two different time intervals, I have different values. You were just saying -- we got into this because you said, well, this is the only thing that's changing versus time. In this example, this is the only thing changing versus time. It's an illustrative example to show what a time varying lighting value could look like.

Q (BY MR. RAFFETTO) So is your testimony that there would be a different time varying lighting value for every single parameter?

MR. CANNON: Objection; form.

A No. It's just that there could be other time varying lighting values. Again, the way you asked the question was seeking to limit it only to this, this is the only thing that is possible to change. So I was trying to be particular, and I was addressing that.

Other -- other lighting values could change. If you look at the fire effect simulation, there's a discussion of fire color. That could be something that changes versus time as well.

Q (BY MR. RAFFETTO) So what you're trying to say

is that the time varying lighting values aren't limited to brightness only and they could include other things like color, which isn't shown; is that fair?

A That's correct.

Q And I think you said -- you can correct me if I'm wrong -- but these values could be values for a fire effect, for example; is that right?

A They could be.

Q Would a representation of values that were captured by recording a fire look different?

MR. CANNON: Objection; form.

A There would be a similarity. No two fires are identical unless it's, say, a candle flame in a well-controlled environment, then you're going to have a steady light that doesn't change versus time. If there's any air currents, then you'll have some flickering and that will change versus time. So it -- for fire, it may be absolutely steady versus time, or it may be increasing and decreasing random intervals, random amounts with respect to time.

Q (BY MR. RAFFETTO) So I think what you're saying is that because fire is random, you know, it

wouldn't necessarily -- the brightness changes over time, wouldn't necessarily be the same?

A That and the fact that fire doesn't have to be random. Some flames are very stable over time. Probably a kerosene lamp would be the best example I can think of right now. There's a globe, there's a housing around the flame that shields it from ambient air currents. So unless you're really moving the lamp around, it's a very steady flame. So fire could be steady, fire could be random. That's one of the differences I was making.

But to the other part of your response, it's random over time, so it -- I would expect it to look similar, but I don't -- wouldn't expect it to be an exact match.

Q Okay. Now, imagine if I used the lighting device of the -- the patents to generate a kerosene lamp effect, which I believe you just said was a -- would be a stable flame, right?

A If it's not being moved around. If you don't have a lot of wind.

Q Okay. Well, I'm generating with the light, so there's not going to be any wind and I'm not going to be

moving it around, so I'm using the lighting device of the patents. Are you with me?

A Yes.

Q Okay. Now, if I record a kerosene lamp in the real world, could the lighting values captured by that recording look the same?

MR. CANNON: Object to form.

A If you're doing it for a stable source, it's not really a lighting effect. The patent's talking about dynamic, something that changes versus time. So when you're talking about something that doesn't change versus time, you're really outside of the scope and teachings of the patent. But if I measure a constant light source over time and I simulate a constant light source over time, they're going to look the same.

Q (BY MR. RAFFETTO) And so are you saying then that a kerosene lamp effect is not a lighting effect that would be encompassed by the patents?

MR. CANNON: Objection; mischaracterizes.

A No. I'm stating that the patent talks about time varying lighting values, and a static light that doesn't change isn't time varying.

Q (BY MR. RAFFETTO) So from your testimony then, that in the patents the time varying lighting values have to be different over time. It cannot be the same?

A No. I'm saying that by definition time varying values change over time. If they don't change over time, then it's not a time varying value. There's a fundamental logic there. If it's not time varying, it can't change over time. Or if it doesn't change over time, it's not time varying. It's constant.

Q Could a pre-recorded set of values for a fire effect look the same as what we see on Figure 7 here?

A Pre-recorded, you're getting into one of those logical -- is it possible it would be the same? Yes. Is it probable? No. Would it look similar? Yes.

Q Does -- does this figure show color values, Figure 7?

A No. Again, it's an illustrative example just showing how brightness changes over time.

Q And the -- to generate an effect like fire effect, you would need both the color and intensity values, right?

A For a good simulation you would have some more.

As the description says, there's a difference in the fade rate going up and down. So you've got a start and end, and how fast do you get there.

Q I'm not sure of your question -- I mean, to my question. To generate an effect like the fire effect, you would need both color and intensity values, right?

A Are we talking about inputs or outputs?

Q I'm talking about outputs.

A Yes.

Q In sticking with this example here of the fire effect that you've mentioned could be encompassed by Figure 7, how are the color values for this effect calculated?

MR. CANNON: Objection; form.

Q (BY MR. RAFFETTO) Where in the patents is this disclosed?

A That would be at the control panel where you have a fire, and it's specified as color temperatures. It says "fire color, 2000 K," understood to be 2000 Kelvin, which is a very warm white similar to candle flame.

Q So you're referencing the input, correct?

A Yes.

Q Now, the input is different than the calculation, correct?

A The input is necessary to do the calculations.

Q And I guess my question was: How do we get the -- strike that.

Where in the patents does it talk about how the color values for this fire effect we're looking at were calculated?

A It doesn't discuss it in the patent, but when you set fire temperature or the fire color to 2000 Kelvin, there has to be a calculation. You have to know which LEDs to turn on, which ones -- what light sources do I need on and in what intensity to make this color temperature correct. So it would be a -- part of the knowledge of one of ordinary skill in the art.

Q And you're saying that's because they would know the color input and so they could determine the color values over time?

MR. CANNON: Objection; form.

A In this case we were talking about the color temperature being constant over time, so you would know

how to create that using different LEDs, different color channels.

Q (BY MR. RAFFETTO) So here again you're talking about the inputs, correct?

A The -- in this case they're showing the overall brightness. But unless you have an LED that emits light at 2000 Kelvin, which such things do exist, then I've got to mix light from more than one LED, so there's a little bit of additional calculation that needs to be done there. There would actually be a similar curve for, I would expect, at least two different color channels. Because unless you just happen to have that 2000 Kelvin LED in your fixture, you're going to create that by mixing color from different LEDs, mixing the output of different LEDs. So if you were doing it with red, green and blue LEDs, then you would need three of these plots. If you were doing it with white and yellow, then you might only need two plots.

Q And if I'm a person of ordinary skill in the art, looking at the patents here, where in the patent do I look at to figure out how to do these calculations?

A If you're a person of ordinary skill in the

art, you don't have to look at the patent, you would know how to do it. You would start by looking at the chromaticity coordinates for each lighting channel. Those are usually given in x, y values, more specifically lowercase x, y values.

In chromaticity space, there's a way to condense the three parameters. Most people think of color vision as it's a mixture of red, green and blue. You -- they add normalization, so lowercase x plus y plus z equals 1. So if I plot x and y, I automatically know what z is.

So you calculate your lowercase x, y and z, multiply by the luminance flux, then you get capital X, Y and Z. Then you add those together, normalize back so they all add up to one, go back to lowercase. That will tell you your new chromaticity coordinates from those chromaticity coordinates. Then you can calculate what the color temperature is. So there's a little bit of an iterative step there to go through to make sure that you get the right color temperature.

So if you've picked your color temperature, then you know what those lowercase, the

final x and y values, needs to be. So you can use that to determine the ratio between your two lights sources. I only said two in this case. And then you could calculate it. If you have three light sources, then you just have another step you have to go through in adding all of this.

Q And this is disclosed in the patents, correct?

A It doesn't have to be disclosed in the patents because, again, if you're not familiar with lighting, then you shouldn't be reading the patents. If you're familiar with lighting and color science, which I believe a person of ordinary skill in the art would be, then these are standard routine calculations.

Q Okay. Now, I see in Paragraph -- maybe we can emphasize Paragraph 95 of the '257 declaration as representative.

Now, this paragraph, you mention that the calculation generates a more realistic-looking fire effect than replaying a pre-recorded set of values chosen to mimic fire. Do you see that?

A Yes.

Q How would calculating lighting values to

simulate a fire produce a more realistic-looking fire than if someone recorded an actual fire and replayed the values reflecting that recording?

A They would look similar because you're trying to mimic it. But you would have the problem that if you were trying do that, if you didn't record enough time, then you'd have to go back and start your fire and do it all over again. Most people don't happen to have an infinite recording of fire around, so they look at something on a much shorter time interval and they repeat.

Q And so your testimony is that it would look similar over a short period of time, but if the recorded fire effect wasn't long enough, then the algorithmically generated effect would be more realistic because the recorded effect would just be looping; is that fair?

A Yes. I have -- I actually saw a movie recently and I thought it was amusing. The lightning effect was very consistent from lightning bolt to lightening bolt.

Q Now --

A One big flash, three small flashes. And it happened four times in one scene.

Q Now, let's say I only need an effect for ten minutes and I record a fire for ten minutes, why would the -- the -- is it fair to say that the effects -- the fire effect generated algorithmically wouldn't necessarily look more realistic than the recorded fire effect because they were the same lengths?

MR. CANNON: Objection; form.

A You're asking -- actually asking a really difficult result because -- or question because the whole scenario what we're talking about is the film cinematography lighting. So you're pre-supposing that someone knows I need five minutes of fire. I'm going to go build a bonfire. I'm going to bring my photometry equipment. I'm going to have a spector radiometer. I'm going to measure the light output for five minutes and then I'm going to play that back.

So you've gone through an enormous amount of effort to get this recording and then you're only at one lighting level, only at one color point. And if the producer or director says the color is wrong, you have to go back and do it again.

So I would say they would look the same,

but you are pre-supposing an enormous amount of effort that simply isn't done in practice. Is it possible theoretically? Yes. Why anyone would do it, I honestly don't know.

Q Okay. Taking a step back. We talked a lot about the calculating step. In the patents the goal of the calculation is to create the lighting values that will cause the LEDs to produce a desired light output, right?

MR. CANNON: Form.

A To produce the time varying lighting values for the desired output -- or the desired effect to be more specific.

Q (BY MR. RAFFETTO) And that light output will change over time to create the effect; is that fair?

A It's a time varying signal, so it necessarily has to change over time.

Q And if the user wanted to adjust the effect by changing the parameters, the lighting values would change as a result, right?

A A new set of values would be calculated.

Q And these changes, these new set of values

would in turn produce a different lighting output; is that fair?

A Yes.

Q So I want to turn back now to the person of ordinary skill in the art. And if we could bring up Page -- Paragraph 47 in your declaration for the ’257 patent as representative. And again, feel free to look at the corresponding sections in your '101, '258 and '044 declarations.

THE VIDEOGRAPHER: Counsel, did you say 47? I want to make sure I heard that correctly.

MR. RAFFETTO: Yes, sir.

THE VIDEOGRAPHER: Okay.

Q (BY MR. RAFFETTO) And let me know when you're ready, Dr. Bretschneider.

A Okay.

Q Okay. So you say that "The person of ordinary skill in the art would have had the equivalent of a bachelor's degree in electrical or chemical engineering with two to five years of working experience in the design of entertainment lighting systems."

Did I read that correctly?

A Yes.

Q And you also state in this same paragraph in your declarations that additional education such as a master's degree in electrical or chemical engineering could substitute for work experience, right?

A Yes. And experience could substitute for formal education as well.

Q And you offer the same definition of a POSITA in each of your declarations; is that correct?

A I believe it's the same. It's at least highly similar. I would have to put the paragraphs next to each other and do a direct comparison.

Q Well, why don't you go ahead and double-check that.

MR. CANNON: Joe, while he's checking that, I think it's been about an hour or so. Whenever you get to your next breaking point, that would probably be good.

MR. RAFFETTO: Yeah, once he -- once he answers this pending question, I think we can actually take a break.

MR. CANNON: Okay.

A Okay. Yes, the same definition.

MR. CANNON: Okay. So you want to go off the record?

THE VIDEOGRAPHER: Okay. Stand by. The time is 1:57 p.m., and we're going off the record.

(Break taken.)

THE VIDEOGRAPHER: The time is 2:10 p.m., and we're back on the record.

Q (BY MR. RAFFETTO) Okay. Dr. Bretschneider, now, before the break I believe you testified that the definition of POSITA across your declarations was the same; is that correct?

A Yes, that's correct.

Q Now, earlier in the day we talked about the relevant field for the Rotolight patents. Do you recall that?

A Yes.

Q And you said, as you did in your declarations, that the relevant field is lighting systems, and in particular involving lighting effects used in cinematography, right?

A Yes.

Q And we also talked earlier today about how the invention of the patents can produce lighting effects without a flicker box, right?

A Yes.

Q And in your declarations you emphasized what you described as an algorithmic calculation that the patents enable to allow you to create a realistic lighting effect; is that fair?

MR. CANNON: Objection to form.

A It's more to create lighting effects.

Q (BY MR. RAFFETTO) But an algorithmic calculation to create lighting effects, correct?

A Yes. There's no requirement that they be realistic.

Q Okay. Now, you agree with me that chemical engineering isn't relevant to calculating lighting values for special effects, correct?

A No, I disagree with you.

Q Why do you disagree?

A Because fundamentally, what you're talking about for the technology is a control problem. There are two fields of engineering that are particularly strong in

control methods processes analysis. Those are electrical engineering and chemical engineering. Electrical engineers get to control because they design the circuits. Chemical engineers have to do it because of the chemical processes.

The unit operations that go on in a typical chemical plant or an oil refinery are extremely complicated problems, but the potential for something to go wrong or the impact if something goes wrong is very severe. You get a fire, you get an explosion. At best case there's a release of hazardous chemicals, worst case there are fires and deaths.

So both fields have to know how to control a process. They have to know about feedback, feed forward, proportional integral derivative control, how do you get something to behave. And that's what we were discussing before about the lighting. Okay? I want to control these lighting devices to create an effect. If you don't know control theory, you're going to have a problem.

Q Now, the patents aren't directed to creating LEDs, right?

A To creating LEDs, no.

Q And the patents don't discuss the process used to create LEDs, right?

A No, they do not.

Q Now, you understand that Mr. Wood, Petitioner's expert, offers a different definition of a POSITA in his declarations, correct?

A Yes.

Q And you understand that Mr. Wood includes electrical engineering but not chemical engineering as a relevant field of education?

A That's my understanding, correct.

Q I want to turn to your comment in your declaration on this, and maybe we could look at as an example Paragraph 51 of your 257 Patent Declaration, which is Exhibit 2 to this deposition. Do you recall this paragraph, sir?

A Yes.

Q Now, in this paragraph you say that you would qualify as a POSITA under Mr. Wood's definition, correct?

A Yes.

Q And to be clear, though, you don't have a

degree in electrical engineering, correct?

A That's correct.

Q And so you say that you would qualify as a POSITA under Mr. Wood's definition because of extensive background in entertainment lighting systems controls and effects, correct?

A You missed about the electrical components and circuitry. Again, that's a part of it. If you get to a typical electrical engineer, they won't know the information about lighting. We discussed previously about some of the calculations that would need to be done to simply establish a certain color point, a certain color temperature. Those are outside the general field of engineering. They would be more typical for someone with an art degree, someone who deals with lighting, a theatrical lighting degree. Someone who is involved with that, they would have to know all of that information as well.

And again, that's not typical engineering background. But even just in the course of my graduate work I was developing LEDs that had never been designed before, they hadn't existed before, so I had to know

about how to power them, how to drive them, how to test them, how to use them, you know, be able to characterize them in a variety of different types of applications looking at what happens to light output in terms of intensity and color with a change in operating temperature and drive current, look at performance over lifetime. Those are all things that would be gained with that experience in the field, the practical experience.

Q Now, prior to this case, though, you had never heard of -- strike that.

Prior to these -- these IPRs, your testimony earlier was that you had never heard of Rotolight or ARRI, correct?

A That I didn't recall hearing of them.

Q And you also didn't recall hearing of Vari-Lite or Vitec, correct?

A Correct.

Q And you didn't recall hearing of Astera, correct?

A Correct.

Q And as we talked about earlier, none of your previous employment positions were with a company whose

business was to make entertainment lighting effects systems for film and TV, correct?

A My employers, no; the companies I worked with, yes.

MR. RAFFETTO: Okay. We can -- you can take that down.

Q (BY MR. RAFFETTO) So, Dr. Bretschneider, you recall the -- one of the prior art references that was used in the '258 Patent IPR was a reference called the Showline manual?

A Yes.

Q And you're aware that a Mr. Martin Palmer provided a declaration regarding the public availability of that manual?

A Yes.

Q And Mr. Palmer worked for the company that manufactured and distributed the SL PAR 155 product described in the Showline manual, correct?

A I believe that's correct. I don't have his declaration in front of me.

Q You're not sure?

A I'm saying I don't have it in front of me.

That's my recollection.

Q Okay.

A You're asking me about -- there's a lot of pages in this matter, so I'm trying to be careful here.

Q But your recollection is that he did work for the company that made and distributed the SL PAR 155 product?

A Yes.

Q Okay. Now, in his declaration Mr. Palmer also explained he had direct knowledge of the production and distribution of the Showline manual. Do you recall that?

A Yes.

Q Okay. I would like to bring up Exhibit 3 to your deposition, which is your declaration in the '258 IPR. And if we can turn to Paragraph 26. Now, you see in this paragraph that you say that you have carefully considered the declaration of Martin Palmer; do you see that?

A Yes.

Q And did you carefully consider that declaration when preparing your opinions?

A That's what I stated, yes.

Q Do you know Mr. Palmer?

A No, I do not.

Q Have you ever spoken with him?

A No.

Q Did you ask to speak with him in connection with preparing your opinions?

MR. CANNON: Objection; relevance.

A No, I did not.

Q (BY MR. RAFFETTO) And you don't have any reason to doubt Mr. Palmer's testimony on the Showline manual, do you?

A Could you repeat the question, please?

Q Yes. You don't have any reason to doubt Mr. Palmer's testimony regarding the Showline manual, do you?

A No.

Q Are you aware that Rotolight did not take the deposition of Mr. Palmer?

A I haven't seen deposition transcripts that doesn't -- that doesn't tell me whether or not it actually occurred.

Q Did you ask to see deposition transcripts for

Mr. Palmer?

A No.

Q Dr. Bretschneider, let's turn to Page 42 of your declaration for the ’258 Patent. And you can see at the top here there's a heading that says, "Petitioner failed to demonstrate that Showline was publicly available to a POSITA prior to April 8, 2016." Do you see that?

A Yes.

Q And if you look at Paragraph 7, you state that the Petitioners at most established that customers could access the manual, right?

A It's Paragraph 107, not Paragraph 7.

Q Oh, thank you. So in Paragraph 107 you state, "the Petitioners at most established that customers could access the manual," correct?

A Correct.

Q So you agree that at least customers and others who receive this SL PAR 155 products would have been given access to the manual before April 8, 2016, correct?

A No. What was presented was information that they received the quick start guide, not the actual

manual. So there was a link to the electronic version, but there's no evidence that the customers actually accessed or were able to access it. Having a link doesn't necessarily mean the manual was there.

Q So your testimony is that they could access the manual before April 8, 2016, but there's no evidence that they did; is that fair?

A No. For the quick start guide to have a link, what I was saying was more refined, okay, a link to an electronic version of the -- of the manual that's a -- you've got a link there, you've got a URL that points to something. I didn't see evidence of what that actually was, but it was more particular. It was to the customers, and there was no evidence that the people who had access to it were POSITAs.

Q Okay. Now, you recall that Mr. Palmer testified that since late 2013 persons interested in the SL PAR 155 could obtain information about the SL PAR 155 and copies of the SL PAR 155 manual from the web site? Do you recall that?

A Could you repeat the question?

Q Sure. So, now, you recall that Mr. Palmer

testified that since late 2013 persons interested in the SL PAR 155 could obtain information about the SL PAR 155 and copies of the SL PAR 155 manual from their web site? Do you recall that?

A I don't. I don't see that referenced in my report, and I did not review his declaration in preparation.

Q So you can't recall one way or another if he testified that the manual was available on his company's web site since late 2013?

A Well, if what we were discussing before is where I see an issue, if you had to be a customer to get the quick start guide to get the link to the manual, that doesn't say that I call up and say, hey, I want to see your manual. In my experience most companies wouldn't do that because that would mean a competitor would have full free unfettered access to everything. And I really doubt that Mr. Palmer would sell a fixture to a competitor, which would have been a sale to a person of ordinary skill in the art, to allow them to disassemble it and see how it works and be able to copy it.

Q So are you disputing Mr. Palmer's testimony

that his company put the SL PAR 155 manual on their web site since at least 2013 available for download?

A No. What I'm saying is that my declaration was signed in June 16th. I considered his declaration in preparing it, but I did not review it in preparation for today's deposition, so I don't recall all the details of his declaration. I'm going with the summary that I have here. It was available to end user customers, but there's no evidence -- no evidence was presented that the customers were persons of ordinary skill in the art.

Q Would it have been important for you to be aware of the fact that Mr. Palmer testified in his declaration that persons interested in the SL PAR 155 could obtain the SL PAR 155 manual from his company's web site since late 2013?

A That would presuppose that they knew about the existence of the device. It would also assume a lot of information, if the information had been available, if it was accessible.

I know when web sites are set up there's a lot of information tracking, who accesses the web site, who downloads different things. Since that information

was not presented that these individuals downloaded, they would qualify as one of ordinary skill in the art, since that wasn't presented, I have to assume it did not exist.

Q So you dispute Mr. Palmer's testimony that the SL PAR 155 manual was available on his company's web site since at least late 2013?

A No. What I'm saying is summed up in Paragraph 110, "Therefore, the evidence presented by Petitioner is insufficient to show that a POSITA could have, through an exercise of reasonable diligence, located the Showline manual."

Q But let's just focus on my question, sir. So my question is do you or do you not dispute Mr. Palmer's testimony that the SL PAR 155 manual was available on his company's web site since at least late 2013?

MR. CANNON: Objection to form.

A I'm going -- I'm going to reiterate again that I did not review his declaration in preparation for today's deposition. So you're asking me, I feel like, a memory game; do you remember this exact passage in this declaration. I did not refer to it in my report. I'm looking at my 258 Declaration. I do not see comments on

that.

What I do see is what I stated, which I believe is relevant to the case, that the Petitioner did not prove that a POSITA with reasonable diligence could have located and seen the manual.

Q (BY MR. RAFFETTO) Now, Paragraph 109 of your declaration, though, sir, you say that Petitioners only established that customers could access the manual. Do you see that?

A Yes, and I emphasize customers.

Q But you would agree with me, wouldn't you, that you're saying here that it's been established that the manual is out there available for access, correct?

MR. CANNON: Object to form.

A The more particular is that the manual was available to customers and the testimony was that the end users were lighting operators, which would not qualify them as a POSITA. A lighting operator could be someone with a high school education, no knowledge of electrical engineering. They could just be trained to use the lights, so they would not qualify.

So what was shown is that individuals who

weren't POSITAs could have accessed; but again, there was no information that anyone accessed the manual. Again, I have a web site, I will know who accessed it, who downloaded it. That information would have been readily available, just look at the statistics on the web site on the link to the manual and they could have said how many times it was viewed and downloaded. Again, since it wasn't presented and it would have been highly relevant to the case, I have to believe it did not exist, otherwise it would have been submitted here.

Q (BY MR. RAFFETTO) So you're saying evidence of access should have been presented; for example, that someone actually downloaded the manual?

MR. CANNON: Object to form.

A If it had been me and I had access to the information, I would have used it. But there's a compound issue there that the individuals who had access weren't persons of ordinary skill in the art and there's no evidence that it was accessed.

Q (BY MR. RAFFETTO) If Mr. Palmer had testified that since late 2013 persons interested in the SL PAR 155, including customers and other interested parties,

could also obtain information about the SL PAR 155 and copies of the SL PAR 155 manual from his company's web site, would that change your opinions?

A I'd have to consider the testimony that I don't recall. It's not cited here. I don't believe that Mr. Wood cited that information either. So you're asking me a hypothetical that I don't know the exact testimony and would have to consider in light of everything else in this case.

MR. RAFFETTO: Well, I disagree that Mr. Wood didn't cite that. But let's go ahead and just bring up the declaration.

I want to mark Tab N as Exhibit 7.

(Exhibit 7 marked.)

THE VIDEOGRAPHER: N as in Nancy?

MR. RAFFETTO: N as in Nancy, that's it.

Q (BY MR. RAFFETTO) And I want you to turn to Paragraph 11, please.

MR. RAFFETTO: If you could highlight the -- yeah, the statement at the beginning of the first sentence.

Q (BY MR. RAFFETTO) And so my question to you,

sir, is do you dispute this sentence in Mr. Palmer's testimony?

A It states what it is. It says customers and other interested parties, although that contradicts that the -- you had to get the quick start manual to get the link. So the question here is how would I find the link that I didn't know existed.

Q So my question is -- is much simpler, sir. My question is, do you dispute this sentence in Mr. Palmer's declaration?

A I believe I answered it as best I could. His testimony is his testimony. What is missing from this, though, is the information evidence that it was accessible to a person of ordinary skill in the art.

Q So you don't dispute that the manual was available on the web site, you dispute whether additional evidence was submitted that persons of ordinary skill could have found that web site; is that your testimony?

MR. CANNON: Objection; form.

A No, I don't dispute that the statement was made. Again, what's missing is the evidence. Where is evidence that this web site could be found short of

purchasing the equipment? The testimony actually was that the first sales were to dealers. Those dealers sold the product to end user customers, so the dealers had access to it. A person who is dealing with these types of lighting fixtures would not be a person of ordinary skill in the art, and then they would turn around and sell that product to customers. And again, customers would use the light and they would not be a person of ordinary skill in the art. And I am aware that in fields like this selling product to a direct competitor, which would be an example of a person of ordinary skill in the art, would be not allowed.

Q (BY MR. RAFFETTO) So --

A His -- his testimony is what it is, but what is missing is the evidence. He's made a statement and it wasn't supported.

Q So you do dispute his testimony?

A No. I don't think you're listening to me. His testimony is what it is. What I said is no evidence was shown to support it, evidence which should have been available.

Q So you dispute his testimony because you feel

there is insufficient evidence to support it?

MR. CANNON: Object to form.

A No. Mr. Wood relied on the testimony without any evidence to support. Okay, again, Paragraph 110, "Therefore, the evidence presented by Petitioner is insufficient to show that a POSITA could have, through an exercise of reasonable diligence, located the Showline manual." So if I have a manual that sits on my desk and has been on my desk since 2013 that no one knows exists, that doesn't mean it's available, it means it existed. This was a web site, this was a link, that information is tracked and recorded. That information wasn't provided. If Mr. Wood wanted to make a stronger case, that would have done it.

So I'm looking at this statement, his testimony is what it is, but there's no supporting evidence for it and there should have been supporting evidence. If you wanted to make it conclusive, show the evidence.

Q (BY MR. RAFFETTO) So you don't want to answer my question?

A I did --

MR. CANNON: Objection; form.

A -- answer your question, but you keep misstating my response.

Q (BY MR. RAFFETTO) So I will ask it again. Do you dispute the sentence in his declaration that we're looking at here which you did not address in your declaration?

MR. CANNON: Objection; asked and answered.

A I address --

Q (BY MR. RAFFETTO) I'm talking about this sentence.

A I addressed it in my response to Mr. Wood's reliance on and use of the information.

Q Where did you address this sentence in your declaration?

A Again, you're misstating my response. I said I addressed it through Mr. Wood's reliance and use of this information.

Q So where is this sentence addressed in your declaration?

A Starting Paragraph 107 through Paragraph 110.

Q And where do you discuss this sentence in those paragraphs?

A Again, I addressed Mr. Wood's reliance on this. It's a simple statement. There should have been supporting evidence that would have been conclusive that was not provided.

I will reiterate that Mr. Wood did not do enough to show that a POSITA could have, through an exercise of reasonable diligence, located the Showline manual. At best he showed customers could. People who were not persons of ordinary skill in the art could have accessed it.

Q And so let me focus again on just the facts that's stated in this sentence here. Do you dispute whether persons -- since late 2013, persons interested in the SL PAR, including customers and other interested parties, could also obtain information about the SL PAR 155 and copies of the SL PAR 155 manual from our web site?

MR. CANNON: Objection; form.

Q (BY MR. RAFFETTO) It's a yes or no.

A Could you repeat the question?

Q So let me focus again on just the facts from this sentence, the facts in the sentence. Do you dispute whether persons since late 2013 interested in the SL PAR SL PAR 155, including customers and other interested parties, could also obtain information about the SL PAR 155 and copies of the SL PAR 155 manual from our web site?

MR. CANNON: Objection; form.

Q (BY MR. RAFFETTO) It's just a yes or a no question.

A Actually, it's not because you are presupposing that it is a fact that it can be supported. Was the statement made, yes. Was any evidence provided to verify to confirm that it was a fact, no. This was roughly eight, nine years ago, so the fact whether it was available or not, that should have been supported. It's a statement. Was the statement made, yes; was it a fact, no, I can't say that. There was no evidence that it's a fact, so it was testimony. But again, there's missing information.

Q And so you dispute this?

A It's testimony. I dispute that it is a fact

and Mr. Wood did not support it, so a statement was made. Information should have been available to confirm to prove this. As it is, it's just a statement from 2 -- about events in 2013.

Q A statement which you dispute?

A The statement was made. And again, where I have the issues is you're stating it's a fact which would mean that it's true and verifiable, but it hasn't been verified, so that's the dispute.

Q Okay. We can take this down.

So you've mentioned a couple of times that the quick start guide and the link, that would have been included with that guide. Do you recall mentioning that?

A Yes.

Q Do you have any reason to doubt that customers could use that link in the quick start guide to get the manual?

A It's stated the link was there. Whether there was something at the link or not, I don't have any comments on that which would have, again, been supporting information. So Mr. Palmer did say it would be available to customers, and the first sales were to dealers, so it

would be to someone who would turn around and resell the product.

Q No. My question, sir, was do you have any reason to doubt that customers or dealers, whoever received the quick start guide, could use the link within that guide to get the manual?

A I believe there was a link. Again, I'm trying to be very specific. What was accessible through the link, I haven't seen information on that.

Q Did you try to use the link?

A If I used a link now it would be irrelevant on stating -- on determining whether or not it was active and there was something there in 2013.

Q Did you try to use the link?

A I got the current one. But again, it's well after 2013.

Q But you didn't try to use the link to see if that would work to access the manual?

MR. CANNON: Objection; relevance.

A No. My response was more whatever is at that link now does not confirm what was there in 2013.

Q (BY MR. RAFFETTO) I understand that, but my

question initially to you was do you have any reason to doubt the customers would be capable of clicking on the link in the quick start guide and downloading the manual, assuming the manual was there?

A Assuming the manual was there, they should have been able to access it.

Q And assuming the manual was there, do you have any reason to believe that the manual on the web site would not have been accessible to others interested in entertainment lighting products?

A Accessible in a theoretical, but being able to access something you don't know about is a bit of a sticking point for me.

Q And my question, sir, is whether technically it would have been possible if -- if someone interested in the manual typed in SL PAR 155 manual, could they have figured out how to get to the web site and get a copy of the manual, or would the web site have blocked them from getting the manual because they weren't a customer?

MR. CANNON: Objection; form.

A That wasn't stated in Paragraph 108. I state here, "Petitioner has only presented evidence that

Showline customers received a quick start guide and not the actual manual which contained a link to an electronic version of the Showline manual." So what -- whether the web site required some verification that they were customers to access it or not is not clear and was not presented.

Q (BY MR. RAFFETTO) Now, we just looked at testimony from Mr. Palmer who said the manual was available on the web site to anyone interested in the SL PAR 155. Do you recall that?

A To anyone interested, that was his testimony.

Q Now, I understand that you dispute his testimony, but let's assume for a second that he's telling the truth. Would someone interested in the SL PAR 155 been able to go to a web browser, go to the Vari-Lite web site and get the manual? Would that have been physically possible?

MR. CANNON: Objection; form.

A I can't comment on that exact question. If someone knew the URL could they enter it and try to access it, yes.

Q (BY MR. RAFFETTO) Are there any other ways to

find web sites of companies on the Internet in 2013 and on?

A There were a few search engines you could use.

Q Was there a company called Google?

A Yes.

Q And you could use Google to search for the SL PAR 155 if you were interested in it, right?

MR. CANNON: Objection; speculation.

A If you knew about it, if you were interested in it, you would probably try to call the company first.

Q (BY MR. RAFFETTO) So if you were interested in Vari-Lite's lighting products, your testimony is that you wouldn't look them up on the Internet, you would instead call them by telephone; is that right?

A Actually, where I'm having the issue is with the evidence presented. We've gone off on a real tangent because we started in what the testimony was is that customers got the quick start guide, the quick start guide had a link to the manual. So if I'm not a customer, how do I know the web site exists? How do I know I can access it? So you're asking me to assume a lot of things that weren't presented by the Petitioner

that should have been, and my testimony is focused on the fact that they didn't prove their case.

There's a lot of suppositions, there's a lot of guesswork involved, and there's a lot of information that would have proven the statements that wasn't provided, so I don't think they did a good job proving that a person of ordinary skill in the art could find and access the manual.

Q And that's your expert testimony?

A I will repeat Paragraph 110, "Therefore, the evidence presented by Petitioner is insufficient to show a POSITA could have, through an exercise of reasonable diligence, located the Showline manual." Your line of questioning is presupposing that I know the manual exists in the first place. So instead of being a person of ordinary skill in the art, if I have -- if I'm omniscient and know the existence of it, then I can find it. But how would the person of ordinary skill in the art find it and access it?

Q So were you familiar with the company Philips before becoming involved in this matter?

A Which Philips? There's the -- a few versions

of Philips.

Q Sure. Royal Philips Lighting?

A Which I believe is now Signify, yes.

Q So you're familiar with them?

A Yes.

Q Had you heard of Vari-Lite before this matter?

A I don't recall Vari-Lite.

Q But you do recall Philips, correct?

A Philips is -- I will say was because it's not Philips anymore -- one of the oldest lighting companies, oldest and lardest [sic] -- largest lighting companies.

Q So well-known in the industry?

A Yes.

Q Well-known in the field of entertainment lighting?

A I will say they are known.

Q But they're not well-known?

MR. CANNON: Objection; mischaracterizes.

A It's a matter of debate depending on what you mean by well-known. Were they known in the field, I will say yes.

Q (BY MR. RAFFETTO) Okay. Would a person of

ordinary skill in the art having experience in entertainment lighting systems have known about Philips in 2013?

A Yes.

Q If someone knew about Philips in 2013 and wanted to find information on its products, do you have any reason to believe that they couldn't have accessed the web site with information on the products?

A They could have accessed the web site. In terms of accessing the information, again, the testimony was that customers received the quick start guide and that was how they got the link to the manual. So there's a missing link there that it was readily available. And, again, evidence wasn't provided to support that.

Q But my question is more focused on Philips now, okay, and its web site. Do you have any reason to believe that someone interested in Philips lighting products wouldn't have been able to find Philips' web site in 2013?

MR. CANNON: Objection; form.

A They would have been able to find the web site.

Q (BY MR. RAFFETTO) Okay. And if they made it

to the web site, would they have been able to find different products on the web site?

MR. CANNON: Same objection.

A They would have been able to find some products.

Q (BY MR. RAFFETTO) Products that they're interested in?

A There would have been information on products. I'm just struggling with a little "that they're interested in." If someone is going to the web site, whether they're interested in products or not, there's information on products there. I'm trying to answer as precisely as possible. I could find information on products I'm not interested in, that's why I'm struggling a little with your question.

Q Right. So they would be able to find information on products that they're interested in or not interested in; is that fair?

A They would be able to find at least some information on products.

Q Right. Products that they're interested in or not interested in, correct?

A Where I'm having the issue is that Philips was known for having limited information available on their products, particularly at this time. These fixtures, I would have to do some work, would most likely have been a result of their acquisition of a company called Color Kinetics and basic information on the products would be available. Specific information like user manuals, that was not provided.

So you could find the summary of the products; but a user manual was not always available because they wanted to make sure that you were an actual customer, that you weren't a competitor. They didn't want to give away things for free so to speak.

Q Right. You said user manuals were not always available; is that your testimony?

MR. CANNON: Objection; mischaracterizes.

A It's one of the things I stated because you asked a very broad question. Would information be available, yes. I was trying to be more particular that that doesn't mean all the information on the product is available.

Q (BY MR. RAFFETTO) Okay. Now more broadly, if

someone in the field -- strike that.

Have you ever had to look for a user manual before?

A Yes.

Q Have you ever used Internet searching to find a user manual?

A Usually I just go to the company's web site.

Q And so my question was have you ever used Internet searching to find a user manual like Google?

A I believe I have.

Q And how did you do it?

A Do a search on the company and a product.

Q So you might type in the company name and the product name and then the word manual; is that fair?

A That would be fair.

Q Did you ever open up Google and do a search for Philips or Vari-Lite SL PAR 155 manual?

MR. CANNON: Objection; relevance.

A No.

Q (BY MR. RAFFETTO) Would you be surprised if I told you that I ran the search and the first result was the exact link to the manual Mr. Palmer describes in his

declaration?

MR. CANNON: Objection; form.

A I don't see how that's really relevant because it's 2022 and the point was what was available, what would come up in 2013. So I don't see a link to what we're talking about here.

MR. RAFFETTO: Okay. Can we go off the record for a minute. So the --

THE VIDEOGRAPHER: The --

MR. RAFFETTO: Oh, I'm sorry.

THE VIDEOGRAPHER: The time is 3:00 p.m. and we're going off the record.

(Break taken.)

THE VIDEOGRAPHER: The time is 3:12 p.m., and we're back on the record.

Q (BY MR. RAFFETTO) Dr. Bretschneider, do you recall in the '257, '101 and '044 patent IPRs one of the references used what's called the Astera manual?

A Yes.

Q And do you recall a Mr. Simon Canins provided two declarations regarding the public availability of that manual?

A Yes, I do.

Q And you considered these two declarations, correct?

A Yes, I did.

Q Any particular -- and I believe in your declarations you said you carefully considered them, correct?

MR. CANNON: Objection; form.

A I'm looking for if I exactly said that.

Q (BY MR. RAFFETTO) Would you have carefully considered the declarations?

A I -- I would have.

Q Okay.

A You were just asking -- it's like I get this feeling you had a specific paragraph in mind.

Q I do.

You can see, for example, Paragraph 22 I believe of all three of your declarations, the '257, '101 and '044.

A Okay. I was looking at later pages.

Q And you understand that Mr. Canins also provided deposition testimony in connection with the

'257, '101 and '044 IPRs, correct?

A Yes.

Q And you reviewed this deposition testimony?

A Yes, I did.

Q Do you recall Mr. Canins worked for the company that made and distributed the Astera AX10 product described in the Astera manual?

A That's my recollection.

Q And do you recall that in his declaration Mr. Canins explains that he has direct knowledge of the production and distribution of the Astera manual?

A Yes.

Q Do you know Mr. Canins?

A No, I do not.

Q Have you ever spoken with him?

A No, I have not.

Q Did you ask to speak with him in connection with preparing your declarations?

A No.

Q You don't have any reason to doubt that Mr. Canins' testimony on the Astera manual was truthful, do you?

MR. CANNON: Objection, form.

A I'll just say there's inconsistencies in his testimony.

Q (BY MR. RAFFETTO) And so you believe that these inconsistencies indicate to you in your expert opinion that he may not be telling the truth? Is that your testimony?

MR. CANNON: Objection; form.

A What I'm referring to is the date format that he said was commonly used throughout the company, the date format that he used. But in determining the date of the public availability, it's a different date format.

Q (BY MR. RAFFETTO) I guess my question, though, Dr. Bretschneider, is do you have any reason to doubt whether Mr. Canins is -- is telling the truth about his opinions or his -- the facts, as he understands them, in his declaration?

A I'm pointing out that there's an inconsistency in his testimony that hasn't been explained. That there are two contradictory things that he has stated, and it's difficult for me to ascertain which is true. One of them should be true. It's possible both of them are wrong,

but it's impossible for both of them to be correct.

Q So you believe, in your expert opinion, Mr. Canins may be lying. Is that fair?

MR. CANNON: Objection; form.

A There's an inconsistency I can't explain that wasn't explained. Specifically I'm talking about the date format. If Mr. Canins uses a year month date format, and that was the most common format in the company, there's no explanation to why the date of issue is listed in a different date format.

So he went on saying it was -- made the most sense, was common to use, was very logical. He thought it was the best format. It's what he personally used. But then a guide he was responsible for has a different date format, and that's where I struggle. I can't reconcile that. If it's his document and his date format, it should be consistent.

Q Are you reading from your declaration?

A Part of it was from memory, because it's a very peculiar thing. I'm well aware of the Chinese date format. I worked in Mainland China for a while. We discussed that when we went over my employment history.

So I know their date format. I know people who use military date format, which is day of the month, then month, then year. In the U.S. we normally go month, day, then year.

But to say that the most common format and the one I personally use is year, month, day, and then to reverse things and say, well, no, this is a military format, this is a different date format, that's very difficult to reconcile. There was no explanation of why the quick start guide has a date of issue that's in a different date format.

Q And the quick start guide is a different document than the user manual; is that correct? In other words, they're two distinct documents, right?

A Yes.

Q Have you ever personally used different style dates on different documents?

MR. CANNON: Objection; relevance.

A When I'm taking meeting notes, I will append what Mr. Canins has referred to as the Chinese date format, the year, month, day, except I won't do just 16. That causes a lot of problems. So I will do a four-digit

year, two-digit month, two-digit day, because that makes it easier to sort through meeting minute notes. I know when the meeting was.

When I sign, I commonly use a military date format just because I spent five and a half years in a military school. That was my high school education, part of my middle school education. I default to that. I know a lot of forms people want the U.S. standard, the month, day, year.

Q (BY MR. RAFFETTO) And so the answer to my question then is, yes, you have personally used different style dates on different documents, right?

A In a document I keep it consistent. It's -- depends on what the document is. And I didn't state that I have a preferred, and this is what I personally use.

Q Okay. I'm going to ask my question again. It's very simple.

Based on your testimony that you just gave, you do -- strike that -- you have personally used different style dates on different documents, correct?

A I will say different date formats.

Q On different documents?

A Yes.

Q Okay. And so your -- in your expert opinion, based on the facts as you evaluate them, you believe that Mr. Canins is wrong in his testimony, whether that be because he's simple mistaken or he's lying or there's some other reason. Is that a fair characterization of the situation?

MR. CANNON: Object to form.

A The characterization is there's an inconsistency that he didn't explain. He said the company has a standard date format. There is a date format that he uses because it's the best date format, and then he didn't explain why the quick start guide used a different date format. So that's where I have the problem. He said he uses a format all the time, the company uses a format, but apparently the company doesn't use the format.

So there's no explanation there. That should have been -- he should have provided an explanation of why that was different. But I would say at best he went against company policy on date format. But, again, there's no explanation for it.

Q So in your expert opinion, because he has no explanation for why he went against company policy, he must be wrong about the facts; is that fair?

MR. CANNON: Objection; form.

A What I'm most comfortable saying is there an inconsistency that has not been explained. He created the document. He stated what his personal date format is, what the Astera date format was, but a document that he created used a different date format. If he created it, it should have been his date format, the one he personally uses.

Q Dr. Bretschneider, I've asked a couple of times today whether you felt that Mr. Palmer, now Mr. Canins, were wrong and whether you disagreed with them, and you seem to be resistant to saying yes or no to that or answering that question directly.

Why is that?

A It's really because Mr. Wood, the Petitioner, they didn't provide robust information. Okay. They have provided information that's contradictory, and I don't think they've proven anything. If they had resolved these issues, if there had been a clear logical

explanation for Mr. Canins, why this different date format was applied, instead of just saying this is the date, and I used a -- there was a reason to change the date format, that wasn't provided.

So the Petitioner is relying on contradictory information to establish facts, to establish a timeline when documents were in fact available, and they haven't met their burden of proof.

Q Now, Dr. Bretschneider, are you aware that Rotolight has contended that Mr. Canins is biased?

MR. CANNON: Objection; relevance.

A I will say it was evident in his deposition he views Rotolight as a competitor. And --

Q (BY MR. RAFFETTO) You -- go ahead. I'm sorry.

A He views them as a competitor, and there seems to be some animosity.

Q So you feel that you can understand why Rotolight would contend that Mr. Canins is biased?

A No. I would understand why Mr. Canins might reinterpret a date format.

Q So you're saying he may have done that deliberately due to his biasness?

MR. CANNON: Objection; mischaracterizes.

A I recall testimony that he provided information, I believe it was to the European patent office, trying to invalidate the patents. I know that the Astera manual was considered and rejected by the European patent office, and it seems like he's trying to make his point again here.

Q Okay. So your testimony, then, is that, in your expert opinion, Mr. Canins is, let's put it bluntly, lying.

MR. CANNON: Objection; mischaracterizes.

A No. My opinion is that there are inconsistencies in his testimony and, because of those inconsistencies, that the Petitioner hasn't met their burden of proof that this document was, in fact, prior art.

Q (BY MR. RAFFETTO) Now, you said a moment ago, though, that you would understand why Mr. Canins might reinterpret a date format. Do you recall that?

A I'm speculating. And, again, he's the one who reinterpreted or interpreted a date format different from what he stated he personally uses. Again, there was no

explanation as to why this is a different date format, not the one he personally uses, not the one the company uses. And to -- to do that, there's an issue. That's calls -- calls into question whether or not the document was available in 2015 or 2016.

Q So do you agree with Rotolight that Mr. Canins is biased?

A I would have to give some thought to that. I would say it's apparent he has some strong feelings on the patent, and apparently he has a disagreement with the European patent office.

Q So he may not be biased is your testimony?

MR. CANNON: Objection; mischaracterizes.

A I haven't formed an opinion on whether or not he's biased. My opinions are based on the facts that were presented, the explanations, the lack of explanations, and that I don't think the Petitioner has proven that this document, the Astera document, was in fact prior art.

I do know that it was considered by the European patent office. The European patent office rejected it as prior art.

Q Are you a European patent attorney?

MR. CANNON: Objection; relevance.

A I'm struggling with that because I would say a European patent examiner. Whether that patent examiner happens to be a patent attorney or not, I'm -- I can't comment on that.

Q (BY MR. RAFFETTO) My question was, are you a European patent attorney?

A Am I? No.

Q Are you a European patent examiner?

A No.

Q Have you ever worked for the European patent office?

A No.

Q Are you an expert in European patent office procedure?

A No.

Q Have you ever studied European patent office decisions throughout your professional history?

A I have been involved in matters related to European intellectual property.

Q So back to the biasness issue. You don't have

an opinion one way or another, as you sit here today, whether or not Mr. Canins is biased.

A My testimony today is that the information he has given is inconsistent. And if there had been an explanation for the change in date format, that might change my opinions on things. But, again, the new date format was just stated this is what the date means with no explanation. I would think it would be easy enough to explain why this document had a different date format from his personal and from the company's standard.

Q So you don't want to answer my question?

MR. CANNON: Objection; argumentative.

A I stated I hadn't formed an opinion. If you're demanding I do one now, I'm going to reserve judgment on that because I haven't considered whether he's biased or not. I would say I could understand why people would come to that opinion, but I don't have a personal opinion today.

Q (BY MR. RAFFETTO) Did you carefully review the deposition transcript of Mr. Canins?

A I did review his deposition transcript, yes.

Q And so your recollection is that he testified

that he -- that his company Astera and Rotolight are competitors?

A That's my recollection. I did not review his deposition testimony in preparation for today.

Q Would it surprise you if he actually testified the opposite?

MR. CANNON: Objection; form.

A I don't recall that. There did seem to be some animosity to reach out to the patent office to submit documents that you believe would invalidate a patent. That's a strong interest one way or another. That's not a friendly gesture. It may be out of a moral ethical feeling that, no, this is right. But the European patent office, I would say, would know better. They're the ones who considered the reference and came to the decision.

Q (BY MR. RAFFETTO) So it sounds like, then, it would surprise you if he testified that Astera and Rotolight actually aren't competitors?

MR. CANNON: Objection; mischaracterizes.

A I don't recall that. I was just stating what I do recall of his testimony. It's been a number of months since I read that.

Q (BY MR. RAFFETTO) Did you ask to speak with Mr. Canins in preparing your declarations?

MR. CANNON: Objection; asked and answered.

A No, I did not.

Q (BY MR. RAFFETTO) Now, Dr. Bretschneider, you've opined that, in your view, the Astera manual was not publicly available before April 8, 2016, right?

A Yes.

Q And I think you've mentioned this already, but I understand you believe that there's some ambiguity on the date of the quick start guide that Mr. Canins discussed, right?

A On the availability to a person of ordinary skill in the art, again, it's the Petitioner's burden to show this, and I don't think they did a good job doing it. I don't think they met their burden.

Q So my question, though, was you believe there's some ambiguity on the date of the quick start guide that Mr. Canins talked about, right?

A Yes, because of his testimony with respect to date formats. He hasn't explained why this one is a

different format from what he uses personally.

Q Now, you agree, right, that Mr. Canins did testify in his declaration that the date of the quick start guide is 16 June 2015, correct?

A Yes.

Q And you agree with me, right, that at least in his declarations Mr. Canins himself was not unsure about this date?

MR. CANNON: Objection; speculation.

A I'd have to review that again. Again, it's not something I reviewed in preparation for today. So you're asking me to recall details about a document that it has been a few months since I reviewed.

Q (BY MR. RAFFETTO) It's fair to say, though, that in the -- in his declarations, Mr. Canins never said that the quick start guide was in a Chinese date format, right?

A No, he didn't.

Q And, in fact, he testified that the quick start guide was updated right after the manual was finalized in May of 2015. Do you recall that?

A I recall something to that effect.

Q Now, you also believe that the Astera manual wasn't publicly available before April 8, 2016, because it discusses anti-flicker and theft alarm features of the AsteraApp, right?

A It discusses features which weren't available until a later date.

Q And the two features that you point out, I believe, are anti-flicker and theft alarm, correct?

A Yes, anti-flick and theft alarm.

Q And you have -- you base this opinion that these features weren't available until a later version of AsteraApp based on a review of some screenshots someone provided of Google Play and APK-Store pages. Do you recall that?

MR. CANNON: Objection; form.

A Yes.

Q (BY MR. RAFFETTO) Do you know where these screenshots came from?

MR. CANNON: Objection; form.

A I'm not sure specifically, but I did my own checking on that.

Q (BY MR. RAFFETTO) What do you mean by that,

you did your own checking?

A Going through the Google store. I'm sorry, the Google Play store.

Q The current Google Play website?

A Some of the historical information for it.

Q How did you find historical information on the Google Play website?

A There are archive sites that you can verify information.

Q Which archive site did you use?

A Wayback Machine.

Q So you went to the Wayback Machine to look at the Google Play store?

A Not all the screenshot snapshots, but enough to comfort myself that the information was correct.

Q And did you contact anyone at Google to verify the accuracy of those pages you were relying on?

A No.

Q And one of the screenshots we have been talking about, I think, is from the Google Play store for Version 9 of the AsteraApp; is that correct?

A Yes.

MR. RAFFETTO: So I would like to bring up now or mark as Exhibit 8 Tab R.

(Exhibit 8 marked.)

MR. RAFFETTO: And if you could go to Page 102.

THE VIDEOGRAPHER: Can you repeat that page again? I'm sorry, counselor.

MR. RAFFETTO: 102.

THE VIDEOGRAPHER: 102.

MR. RAFFETTO: And for the record, this is Exhibit 2008 from IPR 2021-01496.

Q (BY MR. RAFFETTO) Do you recognize this document, sir?

A It looks familiar.

Q Does this appear to be a Google Play store screenshot?

A Yes.

Q And you believe this indicates that the anti-flicker and theft alarm features weren't included in the AsteraApp until at least summer of 2016; is that correct?

A Could you please repeat the date again?

Q Yes.

You believe that this indicates that the anti-flicker and theft alarm features weren't included in the AsteraApp until at least summer of 2016; is that correct?

A Yes.

Q Now, right below the images that we see on Page 102 of this exhibit that we're looking at, there's a line that reads, AsteraApp Version 9 with Talkback plus is now online. Do you see that?

A Yes.

Q And below that various features are listed including anti-flicker and theft alarm, right?

A Yes.

Q And in your opinion, everything below this line is a feature new to AsteraApp Version 9, right?

MR. CANNON: Objection; mischaracterizes.

A Not necessarily a new one. Apps will -- frequently they will include discussion of what they view as key features. They don't have to be new features.

Q (BY MR. RAFFETTO) Okay. So not all of these features here are new to AsteraApp Version 9.

A They're not necessarily new.

Q And so how did you determine which features that are listed here were new?

A It was more looking. In Paragraph 123 of my '257 declaration, I state (as read): Accordingly, the Wayback Machine archive shows that Version 9 was not released until after June 9th, 2016, and consequently after the priority date of the ’257 patent.

Q Okay. But my question was, you were looking at this document that we have in front of us, and you decided that at least some of these features were new as of Version 9.

How did you make that determination?

A Okay. I'm going to go back to my declaration in Paragraph 121.

Q Uh-huh.

A Actually starting at Paragraph 120, I talk about some of the features of the Astera AX10 product were only accessible via the AsteraApp. Two such features are the anti-flicker and theft alarm described in Section 7.12 and 7.13 of the Astera manual. The anti-flicker and theft alarm features were not released

until at least the summer of 2016.

Then I talk about reviewing the screen snapshot of the Google Play store page, which I believe we're using now.

Q Uh-huh.

A And actually what I stated was that those were new features. So I believe I misspoke earlier when I said some of them may have been existing.

Q Okay. So now your testimony is that all of these features that are listed here are new?

MR. CANNON: Objection; form.

MR. RAFFETTO: And for the record, I'm talking about the features on Page 102 of Exhibit 8 to Dr. Bretschneider's deposition.

A I'm going to stand by my original testimony in my declaration, because I had reviewed this exhibit in much more detail at the time I drafted this declaration.

Q (BY MR. RAFFETTO) And so what you're saying is that your testimony is now that all of the features that we're looking at on Page 102 of Exhibit 8 to your deposition, that all of these features are new, correct?

MR. CANNON: Objection;

mischaracterization.

A That's what was -- what's stated in my declaration, and I'll stand by my declaration.

Q (BY MR. RAFFETTO) Okay. And so before Version 9 of the AsteraApp, for example, the AX10 wasn't able to create programs out of colors, effects or settings. Is that -- that's your testimony?

MR. CANNON: Objection; mischaracterizes.

A Could you repeat the question, please?

Q (BY MR. RAFFETTO) Yeah.

And so your testimony a moment ago was that all of these features listed on 102 of Exhibit 8 to your deposition are new as of Astera Version 9. And so my question was just confirming that Astera AX10 before Version 9 could not create complex programs out of colors, effects and settings.

MR. CANNON: Objection; mischaracterizes.

A Astera could create some effects using the control panel. And I believe your question was asking if you had to use the app.

Q (BY MR. RAFFETTO) No, sir.

My question was, you testified that all of

the features listed on Page 102 that we're looking at are new features to AsteraApp Version 9. And so I am simply confirming -- the very first feature listed is programs, create complex programs out of colors, effects and settings.

And I'm saying to you, so as I understand your testimony, that feature was new to AsteraApp Version 9.

MR. CANNON: Objection; mischaracterizes.

A My testimony is that the anti-flicker and theft alarm features weren't released until the summer of 2016. I didn't comment on the other features.

Q (BY MR. RAFFETTO) Okay. So the other features may or may not be new.

A I didn't provide a comment on those.

Q So you don't know one way or the other if those features are new or not?

A I'll go with Paragraph 124 (as read): My opinion is that the anti-flicker and theft alarm features -- new to Version 9 of the AsteraApp -- do not appear to have been available before the priority date of the ’257 patent.

And that's something that the Petitioner should have supported and demonstrated.

Q Okay. So that still doesn't answer my question.

My question is whether the other features listed besides theft alarm and anti-flicker are or are not new in your opinion. And if you have no opinion, that's fine, too. I'm just trying to understand.

A Thank you for the clarification.

I didn't provide an opinion on the other features. There was a comment in Paragraph 122 about the Talkback plus, about that being new to Version 9 as well.

Q Okay. But you don't have an opinion one way or another as to the other features?

A Not that I've provided in my declaration.

Q Okay. So this goes back to a question I asked about 20 minutes ago, and that's how did you determine that the theft alarm and the anti-flicker features were new as of AsteraApp Version 9?

MR. CANNON: Objection; form.

A There is no evidence that the features were available before the priority date.

Q (BY MR. RAFFETTO) That wasn't my question.

My question was, you're looking at this document in front of you that says AsteraApp Version 9, and you made a determination that theft alarm and anti-flicker were new features as of Version 9.

How did you make that determination? And if you don't recall, that's fine.

MR. CANNON: Objection; form.

A It was based on reviewing the web page. And also in Paragraph 129, I comment (as read): Finally, I note that in the European patent office proceedings mentioned above, a key issue was whether or not the Astera manual was prior art to the ’257 patent's family member application. The European patent office concluded the Astera -- Astera manual was not shown to be prior art. The basic reasoning was the same as I discussed above, e.g., functionality such as anti-flicker and theft alarm for the AsteraApp discussed in the Astera manual was not released until after the effective filing date of the ’257 patent, calling into question the date listed on the cover of the Astera manual. The Petition and declaration of Mr. Canins do not squarely address this

functionality release discrepancy, instead only function -- only focusing on the release/sale dates of the general AX10 product. Therefore, the patent -- Petitioner had notice of this particularly problematic discrepancy, yet failed to address it, further demonstrating the failure to show that the Astera manual is prior art by a preponderance of evidence.

So it was known that this was an issue. This was brought before the European patent office. If the Petitioner had evidence that it was available, then it's their burden to find it and share it. They're the ones trying to invalidate a patent. It's not my job to do that. It's to evaluate what was known at the time and the evidence presented. And this is at best very weak evidence. In summary, they didn't prove that it qualifies as prior art. So it's not just my opinion, it's also the European patent office.

Q (BY MR. RAFFETTO) And for much of your answer, you were reading from Paragraph 129 and thereabouts from your declaration, is that right, the '257 patent declaration?

A Yes.

Q Okay. I still don't think you answered my question, and so I'm going to ask it one more time.

How did you determine that the theft alarm and anti-flicker features were new as of Version 9 of the AsteraApp?

MR. CANNON: Objection; asked and answered.

A I believe I stated that the European patent office found that they were not new features. The Petitioner and Mr. Canins were aware that this was an issue brought before the European patent office, and they didn't address it.

Q (BY MR. RAFFETTO) Okay.

A So I agreed with the European patent office. It was up to the Petitioner to support their assertion, and they didn't. They knew it was a problem. They didn't address the problem.

Q Okay. So your -- your opinions are based on the European patent office's decision?

A The European patent office and the failure to adequately demonstrate that it was prior art.

Q Right.

Because Petitioner and Mr. Canins didn't address these allegedly new features, right?

A They didn't address that, and the European patent office I believe to be competent in such matters.

Q So not -- you testified earlier that you also reviewed the second declaration of Mr. Simon Canins, correct?

A I know I reviewed his declarations. I don't recall if I specifically said the second one.

Q So you're not sure if you reviewed the second declaration of Mr. Simon Canins?

A No, I am not sure if you asked earlier if I reviewed the second declaration of Mr. Simon Canins.

Q Okay. Did you review the second declaration of Mr. Simon Canins?

A Yes.

Q And you recall that in that declaration, Mr. Canins specifically addressed Rotolight's and your opinions that the theft alarm and anti-flicker features were not available in AsteraApp until the summer of 2016?

A I didn't review his declaration in preparation for today, so I feel like we're playing a bit of a memory

game.

Q Well, sir, you just testified under oath that Mr. Canins and Petitioner never addressed Rotolight's specific contentions that the theft alarm and anti-flicker features were new as of AsteraApp Version 9, and so I'm asking you about a declaration that you said that you reviewed that specifically addresses that very issue.

You don't recall that declaration?

A I do, but what I said specifically (as read): The Petitioner had notice of this particularly problematic discrepancy and yet failed to address it, further demonstrating the failure to show that the Astera manual is prior art by a preponderance of evidence.

So to address it and address it adequately I don't believe was done.

Q Okay. But you don't recall anything about the second declaration of Mr. Simon Canins other than that it was inadequate in your opinion; is that correct?

MR. CANNON: Objection; form.

A What I am stating is I did not memorize the entirety of that second declaration. I don't believe

that Mr. Canins has provided adequate information to resolve the matter of the priority date of the Astera manual.

Q (BY MR. RAFFETTO) Do you recall if in any of your declarations you specifically addressed the second declaration of Mr. Canins?

MR. CANNON: Objection; form.

Q (BY MR. RAFFETTO) And if it would short-circuit this for you, I can just direct you to where you address it, if you'd like.

A If you could.

Q Well, I only --

A I've got a lot of pages in front of me.

Q Yeah, understood.

MR. RAFFETTO: Why don't we bring up Exhibit 5 to the deposition, which is his '044 declaration, and go to Paragraph 127.

THE VIDEOGRAPHER: And, Doctor, I sent you a text. Your camera is looking at your forehead.

THE WITNESS: Oh, I'm sorry. I moved one of my binders back, and it moved the camera.

THE VIDEOGRAPHER: And, Counsel, what

paragraph did you say? I was trying to get that message in.

MR. RAFFETTO: Exhibit 5 to the deposition, his '044 declaration, at Paragraph 1 -- 127, which stretches across Pages 53 to 54. Yeah.

Q (BY MR. RAFFETTO) Do you see that heading, Doctor, titled Petitioner's supplemental evidence does not resolve the issues for the Astera manual status's prior art?

A Yes, I do.

Q And do you recall that this refers -- the supplemental evidence that you're addressing here is the second declaration of Mr. Simon Canins?

A I believe that's it. I have what I list, Exhibit 1009 and Exhibit 1010.

Q And I'll represent to you that Exhibit 1009 and Exhibit 1010 are the second declaration of Mr. Canins and some attachments to that declaration.

A And Attachment A to the second declaration.

Q Yes, sir.

Now, in addressing the supplemental evidence, did you dispute Mr. Canins' testimony that the

theft alarm and anti-flicker features were not new as of Version 9 of the app and, in fact, were much older?

Do you address that anywhere in Paragraph 127?

A In Paragraph 127 I focus on the fact that he did not resolve the date discrepancy. There was no sufficient explanation for that.

Q Right.

And I recall, though, his second declaration was specifically directed to yours and Rotolight's contentions about the anti-flicker and theft alarm features being new.

And in responding to that, do you, in Paragraph 127, address what he says?

A No, I do not in that paragraph.

Q Did the EPO have the first declaration of Mr. Canins from these IPRs when it issued its determination or ruling that you've referenced a number of times?

MR. CANNON: Objection; speculation.

A I believe the declaration was done after the European patent office had the information. I do recall

that Mr. Canins provided the information and I believe comments to the European patent office when he sent the Astera manual.

Q Did the EPO have the first declaration of Mr. Canins from these IPRs?

A What I stated was I believe his declaration was after that date.

Q So no?

A Correct.

Q Did the EPO have the second declaration of Mr. Canins from these IPRs?

A I don't believe they did.

Q Did the EPO have the deposition testimony of Mr. Canins from these IPRs?

A I don't believe they did since it happened after their consideration.

Q Did the EPO have the declarations or deposition testimony of -- testimony of Mr. Wood from these IPRs?

A I don't believe they did.

MR. RAFFETTO: Okay. I want to bring back up Exhibit 8 at Pages 102 to 103. And if you could highlight -- there's a reference on Page 103 to What's

New, Please see about release notes, towards the bottom.

Q (BY MR. RAFFETTO) Do you see a section in this Google Play store, Dr. Bretschneider, that says What's New?

A Yes.

Q And do you see how right under that it says, "Please see about," with an arrow, "release notes"?

A Yes.

Q Were you aware that Mr. Canins testified that to determine what was new in a version of the app, one has to look at the release notes?

A I don't recall his exact testimony today. As I said, I did not review that information in preparation.

Q And you don't discuss these release notes in your declarations, correct?

A As we just discussed in Paragraph 127 of the '044, no, I do not.

Q Do you recall if you ever reviewed these release notes?

A I can't recall one way or the other today.

MR. RAFFETTO: Okay. Can we go off the record for a minute?

THE VIDEOGRAPHER: Stand by. The time is 4:14 p.m., and we're going off the record.

(Break taken.)

THE VIDEOGRAPHER: The time is 4:40 p.m., and we're back on the record.

MR. RAFFETTO: So you still have me, Dr. Bretschneider.

So I would like to bring up now the next exhibit in sequence -- you can take this down, thank you -- the next exhibit in sequence, which is I believe Exhibit 9; is that correct?

THE VIDEOGRAPHER: 9 is the next exhibit, yes.

MR. RAFFETTO: And I would like to mark Tab G as Exhibit 9.

(Exhibit 9 marked.)

MR. RAFFETTO: Go ahead and bring that up.

Q (BY MR. RAFFETTO) And you recognize this document as the '25 patent, Dr. Bretschneider?

A Yes.

Q And you recall we discussed earlier that this patent is related to the other patents that are being

challenged, the '257, the '101 and the '044 patents?

A Yes.

Q And I believe we established that they were continuations of one another; do you recall that?

A Yes. I forget which one was the original parent, but three of them are continuations.

Q And it's fair to say, isn't it, that the ’258 patent is substantially similar to the other patents, correct?

MR. CANNON: Object to form.

A They're all related. That's what you would expect for continuations from an original application.

Q (BY MR. RAFFETTO) All right. I believe my question was a little bit different.

I said it's fair to say that the ’258 patent is substantially similar to the other patents, correct?

A Yes.

Q And so, for example, you wouldn't expect the same terms used across the patents, like "calculating" or "lighting effect" to be ascribed different meanings in each patent. Is that fair?

A Yes.

MR. RAFFETTO: So I want to turn to paragraph -- to the -- to the paragraph starting at Column E, Line 41.

THE VIDEOGRAPHER: Can you repeat that column? It cut out.

MR. RAFFETTO: Sorry about that. Column 8, Line 41.

Q (BY MR. RAFFETTO) Okay. Now, this indicates here that the effect simulator provides data in the form of brightness and color values that vary over time.

A Yes.

Q And I believe we talked about this earlier, but these brightness and color values, these would be the calculated time varying lighting values that would be referred to in the patent's claims, right?

A That's what we were discussing before.

Q So the answer to my question is, yes, these brightness and color values would be the calculated time varying lighting values referred to in the patent's claims?

MR. CANNON: Object to form.

A They are examples of the time varying values. We talked there can be other ones, but brightness and color are what we discussed before.

Q (BY MR. RAFFETTO) Right, I recall that.

So if you'd turn to Column -- let's go to Column 8, but go to Line 65, you can see again that these -- the lighting -- it's talking about the lighting values are calculated as part of a simulation of the desired lighting effect; is that fair?

MR. CANNON: Object to form.

A Could you repeat the question, please?

Q (BY MR. RAFFETTO) Okay. So looking at this portion of the ’258 patent, which starts at Column 8, Line 65, you can see here how it's describing how the lighting values that we were just talking about are calculated as a part of a simulation of the desired lighting effect; is that fair?

MR. CANNON: Object to form.

A Here it's a little different because you're talking about lighting values, and what this section is actually talking about is lighting data values. So what you read, you omitted a term there.

Q (BY MR. RAFFETTO) What do you -- what's lighting data values to you?

A Where we were talking before, the earlier section, there was a discussion about converting the lighting values into data for controlling the LED array.

So the exact passage is starting at Line 41 (as read): The lighting effect simulator 100 typically provides data 106 in the form of brightness and/or color values that vary over time. In order to cause the light 102 to produce the desired effect, a lighting data converter may convert the data 106 from the lighting effect simulator 100 into a suitable signal for a particular light 102.

So there's a difference between the lighting value and the lighting data values, and that's the understanding here because this follows on from that paragraph, from that discussion.

So what you read at Line 60, you omitted data values. You said lighting values as opposed to lighting data values.

Q Okay. And that wasn't intended to be a trick.

But I want to look back at Line 65,

because it says lighting data values output from the simulator 100. Do you see that?

A Yes.

Q And back up above in what you were referencing, it says, lighting effect simulator 100 typically provides data 106 in the form of color -- brightness and/or color values that vary over time, correct?

A Yes, it typically provides data in that form.

Q So both of these passages that we're talking about refer to data being output from the simulator. Is that fair?

MR. CANNON: Form.

A Yes, they're both talking about data output.

Q (BY MR. RAFFETTO) From the simulator, correct?

MR. CANNON: Same objection.

A They're both talking about the simulator providing data, the same simulator, 100.

Q (BY MR. RAFFETTO) Right.

And so are you saying that in Lines 41 to 43, that data is brightness -- the simulator is providing brightness and/or color values or other similar types of data, but in Line 67 -- 65 to 66 to 67, the simulator is

actually providing --

THE COURT REPORTER: I'm sorry. I didn't hear the end of that question.

Q (BY MR. RAFFETTO) -- signals for a light?

MR. CANNON: Objection; form.

A No, I'm just -- I was drawing the distinction. As I said, you omitted data values. And what's actually said at Line 41 (as read): The simulator 100 typically provides data in the form of brightness and/or color values that vary over time.

So there could be other ways to provide that data that varies over time.

Q (BY MR. RAFFETTO) Right.

But just to be clear, you don't disagree that the lighting data values that are being talked about at Line 65 to 66, that's the same data 106 that's being talked about at Lines 41 to 42; is that fair?

MR. CANNON: Objection; form.

A It's not because there's a subtle distinction. The discussion above, there's the data that comes out of the simulator, and you may need a translator to talk to the light. So in 65 the understanding would be that that

could be either the data directly from the simulator or the translated data, if you will.

Q (BY MR. RAFFETTO) Oh, so you're saying the simulator can actually include the lighting data converter as well? Is that your testimony?

A No. What I'm saying is the output of the similar may go through -- simulator may go through a data converter. And it's not that I'm saying that; that's what the patent states.

And I am saying in terms of lighting data values, that could either be the direct output of the simulation or could be the values after the translator, if that's used.

Q So your testimony is that lighting data values output from the simulator actually means lighting data values output from the translator?

MR. CANNON: Objection; form.

A No. Again, that's not what I stated. Because the output of the simulator, again, it's -- it's typically in the form of brightness and/or color values. It could be other parameters we discussed before.

At the bottom in 65, what you're -- when

you're saying the lighting data values output, that would be the output from the simulator. But with the discussion above, you may need to go through a translator.

Q (BY MR. RAFFETTO) So are you saying that Line 65 to 66 should say lighting data values output from the simulator that go through -- may need to go through a translator and then to the light?

And I am not trying to be tricky. I am just trying to understand if you view something different coming out of the simulator at Line 66 than what's coming out of the simulator at Line 41. And it sounds like you do.

A I'm just trying to --

MR. CANNON: Objection; form.

A I'm just trying to -- to draw the fact that the data does come -- the output is from the simulator. It does go to the light. I'm just trying to stay consistent with Line 41 where there may be a translation in between. The data still goes. It may not be the exact same format that came out of the simulator because the light may need those values to be translated to be useful.

Q (BY MR. RAFFETTO) Okay. So -- but in both portions of this specification that we're talking about, light -- time varying lighting values are coming out of the simulator, which can include brightness and/or color values, and those values may need to go to a translator, which would then ultimately go to the light.

Is that fair?

MR. CANNON: Object to form.

A Well -- yes. What we're saying is the source of the data is the simulator. The data finally ends up at the light, and it was just the question of if it needs to be translated in between. It may or may not.

Q (BY MR. RAFFETTO) Okay. I think we're on the same page.

And so turning back to Lines 65 through about 67, you see how it says that the -- that the calculation may be done in near-real time? Do you see in near-real time going from Line 66 to 67?

A Yes.

Q So we agree that the -- that the specification is teaching that the calculations can be done in near-real time?

A In -- yes. Nothing is instantaneous. So you could say real time, but there is a finite delay from creation of the data until it's actually received.

Q So this means that as a user adjusts a parameter, the calculation of the required new values to send to the LEDs can happen almost instantly, right?

A It could.

Q So, for example, if I change the color I want for the light, the calculation would almost instantly generate new values for the LEDs that say -- indicated a red output light instead of blue?

A Yes.

Q And that would be a reacting to a change in an input parameter from a user?

A Yes.

Q And so that calculation can happen almost instantaneously to generate new values to make sure those LEDs output the appropriate light when a user changes an active parameter setting?

A Yes.

Q Okay. Now, if we go -- continuing on in Column 67 -- I'm sorry -- Column 8, Line 67, over to Column 9 to

about Line 2 -- if we can bring those up.

The '258 -- the '258 patent also says the calculation may be performed in advance. Do you see that?

A Yes.

Q And that the lighting data values output for store can be -- output for storage and later use to enable quick reproduction on set or location, right?

A Yes.

Q And so the '258 patent is saying that the calculated values can be stored, right?

A That's what's described there.

Q And when it says "output for storage and later use to enable quick reproduction," this later use and reproduction would be a recalling of those calculated values, right?

MR. CANNON: Objection; form.

A There's a little bit more subtle interpretation as well. Because depending on how the data is transmitted, it's similar to streaming a movie. You may need a little bit buffer. There may be problems with communication. So there may be an intentional delay

built in just to make sure that information can always flow. But it could be stored for later use, much later use.

Q (BY MR. RAFFETTO) So after this in Column 9, starting at about Line 14 and then continuing through Line 42, you see a large listing of effect -- effects.

Do you see that?

A Yes.

Q And this is listing -- a nonexhaustive list of example effects that may be produced by the lighting system, right?

A Yes.

Q And then if we go just a -- just below this at Line 42 through 49, it says (as read): It should be appreciated that due to the nature of the light 102, the effects may be customized by a user, for example, the frequency/speed, peak/minimum brightness or color/color temperature may be dynamically changed, and/or made to vary over time in a customized manner. Such user-customized effects may be stored and recalled at a later time.

Did I read that right?

A Yes.

Q And so the patents are recognizing that values can be calculated based on user parameters, and then those calculated values can be recalled and replayed at a later time, right?

MR. CANNON: Objection; form.

A That's what's stated.

Q (BY MR. RAFFETTO) And you agree with that, right?

MR. CANNON: Objection; form.

A Again, it's what the patent states.

And you're -- I feel like you're asking me if I agree with the patent, but the patent states what it states. You read that from the patent, so you read it correctly.

Q (BY MR. RAFFETTO) Okay. And just because those values stored, recalled later on, that doesn't mean they weren't initially calculated, right?

A They were initially calculated by the effect simulator.

Q Okay.

MR. CANNON: Form.

MR. RAFFETTO: So that's -- can we go off the record for a second?

THE VIDEOGRAPHER: Stand by. The time is 5:02 p.m., and we're going off the record.

(End of proceedings at 5:02 p.m.)

(According to Federal Rule 30(e)(1) Deponent or party must request to read and sign before the deposition is completed. Since this was not done, signature is considered waived for this transcript.)

STATE OF TEXAS)

I, Kelly Hassell, RPR, CLR, CSR in and for the State of Texas, do hereby certify that, pursuant to the agreement hereinbefore set forth, there came before me on the 17th day of August, A.D., 2022, at 8:05 a.m. CDT, located in the City of Flower Mound, State of Texas, the following named person, to wit: ERIC BRETSCHNEIDER, PhD, who was by me duly cautioned and sworn to testify the truth, the whole truth and nothing but the truth, of his knowledge touching and concerning the matters in controversy in this cause; and that he she was thereupon carefully examined upon his oath, and his examination was reduced to writing under my supervision; that the deposition is a true record of the testimony given by the witness, same to be sworn to and subscribed by said witness before any Notary Public, pursuant to the agreement of the parties; and that the amount of time used by each party at the deposition is as follows:

Mr. Raffetto - 6 hours, 39 minutes;

I further certify that I am neither attorney or counsel for, nor related to or employed by, any of the parties to the action in which this deposition is taken, and further that I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially interested in the action.

In witness whereof, I have hereunto set my hand and affixed my seal this 22nd day of August, A.D., 2022.

I further certify that before the completion of the deposition, the deponent and/or a party did not request to review the transcript pursuant to Federal Rule 30(e)(1).

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Case: ARRI AG v. Rotolight Ltd.
Date of deposition: August 17, 2022
Deponent: Eric Bretschneider, Ph.D.

Please be advised that the transcript in the above referenced matter is now complete and ready for signature. The deponent may come to this office to sign the transcript, a copy may be purchased for the witness to review and sign, or the deponent and/or counsel may waive the option of signing. Please advise us of the option selected. Please forward the errata sheet and the original signed signature page to counsel noticing the deposition, noting the applicable time period allowed for such by the governing Rules of Procedure. If you have any questions, please do not hesitate to call our office at (202)-232-0646.

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Deposition Date: August 17, 2022

I do hereby acknowledge that I have read and examined the foregoing pages of the transcript of my deposition and that:

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STATE OF TEXAS)

I, Kelly Hassell, RPR, CLR, CSR in and for the State of Texas, do hereby certify that, pursuant to the agreement hereinbefore set forth, there came before me on the 17th day of August, A.D., 2022, at 8:05 a.m. CDT, located in the City of Flower Mound, State of Texas, the following named person, to wit: ERIC BRETSCHNEIDER, PhD, who was by me duly cautioned and sworn to testify the truth, the whole truth and nothing but the truth, of his knowledge touching and concerning the matters in controversy in this cause; and that he she was thereupon carefully examined upon his oath, and his examination was reduced to writing under my supervision; that the deposition is a true record of the testimony given by the witness, same to be sworn to and subscribed by said witness before any Notary Public, pursuant to the agreement of the parties; and that the amount of time used by each party at the deposition is as follows:

Mr. Raffetto - 6 hours, 39 minutes;

I further certify that I am neither attorney or counsel for, nor related to or employed by, any of the parties to the action in which this deposition is taken, and further that I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially interested in the action.

In witness whereof, I have hereunto set my hand and affixed my seal this 22nd day of August, A.D., 2022.

I further certify that before the completion of the deposition, the deponent and/or a party did not request to review the transcript pursuant to Federal Rule 30(e)(1).

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Patent Owner.

_____

Case IPR2021-01498

Patent 10,203,101

VIRTUAL VIDEOTAPED DEPOSITION OF

ERIC BRETSCHNEIDER, VOLUME 2

Thursday, August 18, 2022

8:01 a.m. Central Daylight Time

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I-N-D-E-X

WITNESS:		PAGE:
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Exhibit 11	X10 Spotmax™ User Manual (No Bates) (38 pages)	467
Exhibit 12	U.S. Patent Application Publication US 2012/0044474 A1 (No Bates) (27 pages)	558
Exhibit 13	U.S. Patent 10,203,101 (No Bates) (15 pages)	582
Exhibit 14	U.S. Patent 9,743,010 (No Bates) (21 pages)	604

P R O C E E D I N G S

THE VIDEOGRAPHER: The time is 8:01 a.m. on August 18th, 2022. This is Video 1, Volume 2, of the continued video-recorded deposition of Dr. Eric Bretschneider.

A reminder to the witness, you are still under oath. And, Counsel, you may proceed.

Whereupon,

ERIC BRETSCHNEIDER, Ph.D.,

was called as a witness, after having been first duly sworn by the Notary Public, was examined and testified as follows:

CONTINUED EXAMINATION BY COUNSEL FOR PETITIONER

BY MR. HUGHES:

Q Good morning, Dr. Bretschneider.

A Good morning.

Q We're going to continue from where we were yesterday.

And, Dr. Bretschneider, one of the

features the patents discuss is that the controller is integrated with the lighting device. Do you recall this?

A Yes.

Q And this idea of an effect simulator controller being integrated with a lighting device is recited in some of the claims of the patent, isn't it?

A Yes.

Q And this would include claim 1 of the '258 patent?

And if you'd like to take some time to check these as I go through them, that would be fine.

A That's correct.

Q And claim 19 of the '257 patent?

A Yes, that's correct.

Q And claim 15 of the '044 patent?

A Yes.

Q And claim 16 of the '101 patent?

A That's correct.

Q So I want to take a look at where

the patents talk about this claim term "integrated." So if we can bring back up the '257 patent, which was Exhibit 6, and if we can go to column 5, lines 58 to 60.

Thank you.

And if you can see where it says "FIG. 2 schematically shows an example where a lighting effect simulator 100 and the light 102 are integrated in a single studio lamp device." Did I read that right?

A Yes.

Q Now, if you can also bring up FIG. 2 next to this text, please. Thank you.

Now, Dr. Bretschneider, this figure is showing the user interface 105, the effect simulator 100, and the light 102 being integrated because they're all within the same box identified as 120, right?

A Yes. And more specifically, the specification a little bit below what's brought up, a microcontroller or other computing unit is integrated in the lamp

device, so 120 is being described as a lamp device for performing calculations. So 120 is the lamp device.

Q And 120 is the box in this drawing, correct?

A Yes, that's correct.

Q Okay. And the figure does not show any physical connections between user interface 105 and the effect simulator, right?

A Not in this. It's a schematic.

Q And there's no physical connection shown between the effect simulator and the light, are there?

MR. CANNON: Objection, form.

THE WITNESS: It's a schematic diagram. It's not a rendering of a device. So when it's a schematic, that's where I'm having the issue.

BY MR. HUGHES:

Q When you say it's not a rendering of a device, there's no figures in these patents that are an illustration of a rendering of the

device, are there?

A No. I was addressing your description of the figure, and when it's a schematic, that's where -- the schematic, you wouldn't expect to show physical connections, going with the description in the text, what it's telling you.

Q So if you wanted to see the physical connections, you would expect a different type of drawing, like a physical rendering or something showing the physical rendering, right?

MR. CANNON: Objection, form.

THE WITNESS: You would look for -- if you wanted to see it, then it would be a mechanical drawing, but again, the text here is very clear that it's integrated into a single studio lamp device.

BY MR. HUGHES:

Q And just to be clear, there's no mechanical drawings included in these patents either, are there?

A No, there is not.

Q Okay. But you agree there would be some kind of physical connections between these components, right?

MR. CANNON: Objection to form.

THE WITNESS: Where we're talking right now, it says they're integrated into a single device, so I'm going with that as a person of ordinary skill in the art would understand it.

BY MR. HUGHES:

Q So when this says "single device," that's not saying that the light is the same thing as the user interface, right?

A I'm having some issues with the terms because you have a light as a part of the lamp, and then the user interface is a part of a lamp. So I think you're switching back and forth between "lamp" and "light."

The lamp is the integrated unit. The single studio lamp device, the light is a part of that light. The lamp would also have

a housing too, which isn't present here.

Q So when I say "light," we can agree that that's element 102, the LEDs, right?

A Yes.

Q So my question is, the light 102, that's not the same component as the interface 105 and the effect simulator 100, right?

A Correct.

Q So those may be connected together, maybe through wires or circuitry or some traces, right?

A Yes.

Q So in this figure in the patents where it's talking about integrated, what that means is that these components are physically connected together, right?

MR. CANNON: Objection, form.

THE WITNESS: The figure is not the one that's saying that. The specification is saying that it's an integrated device.

BY MR. HUGHES:

Q So as used in the specification,

when it says "integrated device," this means that these are physically connected together, right?

MR. CANNON: Objection, form.

THE WITNESS: It means it's a single unit. If something is integrated -- I'm having issues with the connection part. I could take it apart, but it's designed as an integrated unit, so it's a -- that is the device as it is.

It's like asking if my fingers are integrated into my hands. That doesn't mean I take them apart. It's all together.

BY MR. HUGHES:

Q So when you say you can take it apart, you mean you can maybe disconnect some of these things from each other, and if you disconnected them and took some to one room and some to another room, maybe that's not integrated anymore?

A No. You're bringing up the integrated aspect, that's where you're having

the questions, and "integrated" means it's all one unit.

Q I guess what I'm trying to understand is when you say "all one unit," do you mean that these things are all the exact same component?

A I'm trying to understand your question because you're going back and forth between "integrated" and "connected."

Q I'm talking about integrated. And we talked earlier, and I think you agreed, that we do have a light, an LED, and that's not the same thing as the user interface, right?

A Correct.

Q So what I'm asking is, when those are integrated like as used in the patent here, they're connected together some way?

MR. CANNON: Objection, form.

THE WITNESS: That's what I'm trying to understand the "connected," because "integrated" means it's a single unit.

BY MR. HUGHES:

Q So what is your definition of "single unit" then? Because there's a box drawn around it, everything in that box is now one thing?

MR. CANNON: Objection, form.

THE WITNESS: No, it's a schematic diagram. It's described as an integrated unit. So "integrated" means it's one unit.

You're asking about connections, and that's where I'm struggling. I mean, these are parts that are all disassembled. The LEDs aren't even on a circuit board. When you start manufacturing, they're integrated onto a circuit board.

Are they connected? You could say that, but now I have an integrated board with LEDs on it. I have what would be termed in the industry "a light engine."

So I'm struggling with that connection part, and that's where "integrated" means one unit.

BY MR. HUGHES:

Q So, for example, something that would not be integrated is like, as the patents reference, having controller interfaces on an app on a mobile device that's just entirely remote from the light itself; is that right?

A That would not be integrated.

Q But if all of the components are together, they're part of the same thing, now you're saying this is integrated; is that correct?

A Saying the same thing as what goes with integrated. If I have a bunch of parts on a desk, they're together, but that's not integrated.

Q So if I have parts on a desk, how can I make them integrated? If I join them all together, now are they integrated?

A I was just going -- you were saying together, and I was trying to be more specific. It's assembled into the final

device.

Q So those parts on the table, when I assemble them into the final device, for them all to be considered integrated, they all have to be joined together, right?

MR. CANNON: Objection, form.

THE WITNESS: They have to be assembled.

BY MR. HUGHES:

Q Could I assemble it and leave some of them not joined together?

A Then you wouldn't have assembled it.

Q So --

A Also a puzzle with missing pieces isn't a finished puzzle.

Q I understand. So it's when I complete the puzzle, put all the pieces together, now I have the integrated unit?

A Yes.

Q Now I'd like to talk a little bit about claim 17 of the '258 patent. If we can bring up what was marked as Exhibit 9, and if

we can go to claim 17 of this, please.

And if we see here, claim 17 says, "The lighting system according to claim 1, wherein the controller is separable from the lighting device." Do you see that?

A Yes.

Q And Dr. Bretschneider, are you aware that the term "separable" appears only once in the '258 patent in claim 18 itself -- or claim 17 itself?

A I haven't done a word search on the patent.

Q It's not used in the detailed specification, is it?

A If you would like to give me the time to read the specification, I could answer, but I just said I haven't done a word search on the specification.

Q If you'd like to take a little bit of time and look for it, that would be okay.

A Thank you. I don't see that word within the claim.

Q So then it's fair to say that the '258 patent does not provide any particular definition of what is meant by "separable," right?

MR. CANNON: Objection, form.

THE WITNESS: An explicit definition, no, but this would have to be read in light of the understanding of a person of ordinary skill in the art.

So if I have an integrated system, and a part is designed to be separable, I would know how to do that.

BY MR. HUGHES:

Q So to a POSITA then, "separable" would just mean, like you said, something that can be joined, or then separated from something else, right?

A Yes.

Q So it's fair to say that "separable" as used here means something that can be connected or disconnected from something else?

A Could you be more specific about

connected or disconnected?

Q If I have two things, two objects, and I connect one object to the other, I make a physical connection between them, and then I disconnect them, I remove that physical connection, are they now considered -- is that separable? First they were together, now they're apart?

MR. CANNON: Objection, form.

THE WITNESS: I'm struggling because what's coming to mind for "separable," what's common with a lot of electrical equipment, is you may have a controller that, for lack of better terms right now, snaps into the device, it's physically connected to it.

You can disengage physical connections, but there would still be wired connections. So I have a cable that still has a connection, but I've actually removed the housing of the controller from the device, so I'm looking at something a little broader than what you were saying, but I'm just going with

the understanding.

BY MR. HUGHES:

Q So on that, isn't the cable something physical?

A It is something physical.

Q And could a cable be considered a piece of equipment too?

A It could be a part of it, but I was trying to elaborate on what the full meaning of "separable," on what would be understood.

Q So what would be understood by "separable," then, if it's not connecting and disconnecting?

A I was trying to address, because you seem to be focused solely on physical, breaking of a physical connection, or I should say making it -- you're making it I believe more absolute, that there are physical connections or no physical connections.

And separable, if something clips in, if it's physically retained on the device, or if that can be -- that physical connection

can be broken, but there's still a wire connection, that would still be under the guise of "separable."

Q Okay, if we can bring up the '258 patent again and go now to column 11, line 44.

THE VIDEOGRAPHER: Which exhibit was the '258 again?

MR. HUGHES: We're in it now.

THE VIDEOGRAPHER: Okay.

MR. HUGHES: If you can just go to column 11.

THE VIDEOGRAPHER: Hold on, my Zoom is breaking up. Does everybody hear me?

MR. HUGHES: Yeah, we can hear you.

THE VIDEOGRAPHER: Test 2? Hello?

MR. HUGHES: I can hear you.

THE VIDEOGRAPHER: All right, there we go. My sounds back.

THE REPORTER: We can hear you.

THE VIDEOGRAPHER: Thanks, Dawn. I don't know what happened there.

All right, you said column what? Column 11, line 44.

BY MR. HUGHES:

Q And if we see here, it says, "For example, it should be appreciated that the effect simulator 100 or the computing device 130 may be separate from any light, and connectable to lights 102 by either a wired or wireless connection," right?

A Yes, that's the description.

Q So that's saying that the effect simulator could be separate from the light to start with, right?

A That's the specification, but the claim language is different.

Q I understand.

A You were asking before about "separable." This is not being in the specification of the patent. This is an example where there's an equivalent. So "separate" and "connectable" would be "separable."

So you focused on a specific word, not necessarily the meanings.

Q So I'm talking here about this passage in the specification now.

This is saying, for example, that the effect simulator or the computing device may start out as being separate from the light, right?

A That's the description here.

Q And then it can be connected to the light; is that right?

A Yes.

Q And one way that it can be done is through wiring or cabling, right?

A Yes.

Q So I think you just mentioned this is saying "separate," not "separable," right?

A "Separate" and "connectable" is the equivalent of "separable."

Q Okay.

A It's kind of reading the definition backwards or the terms backwards.

"Separable" means integrated and you can disconnect it, and this is saying it can be separate and connectable, so there's an equivalence there.

Q Okay. Now, where things are entirely separate, you would agree that those are not integrated, right? If there's no -- if you can answer that. Sorry, strike that.

Where things are entirely separate, they're not integrated, right?

A Not physically integrated.

Q Now, Dr. Bretschneider, I'd like to go back now, if we can, to your declaration for the '257 patent. That's Exhibit 2 to this deposition, and if we can go to page 17 of this declaration. (PDF page 22)

Now, here you provide an overview of the '257 patent; is that right?

A Yes.

Q And under the heading "Specification," if we can go down to paragraph 58 (PDF page 55) of the declaration,

please, and here talking about the '257 patent you say, "The effect simulator described in the '257 Patent is characterized by its use of random simulation parameters," right?

A Yes.

Q And if we can now bring up Exhibit 5, the '257 patent, and if we can --

THE VIDEOGRAPHER: Are you sure it's Exhibit 5? Because this is Exhibit 5.

MR. HUGHES: Exhibit 6. If you can go to column 7, please, and line 30.

BY MR. HUGHES:

Q And, Dr. Bretschneider, I'd like to talk a little bit about these random parameters that are used in the '257 patent.

This part of the specification says, "Where a random parameter is algorithmically generated it is only pseudo-random, but for the purposes of the simulation a pseudo-random parameter is sufficiently random for realistic simulation and is hence considered to be equivalent to a truly random parameter,"

right?

A Yes.

Q So the patent itself is equating something that is pseudo-random with being random, right?

MR. CANNON: Objection, form.

THE WITNESS: It's saying it's sufficiently random for realistic simulation and is equivalent -- considered to be equivalent to a truly random parameter.

BY MR. HUGHES:

Q So again, the patent says that something is -- that pseudo-random is considered random, right?

MR. CANNON: Objection, form.

THE WITNESS: It's considered to be the equivalent.

BY MR. HUGHES:

Q Okay. My question is, though, the patent equates something that is pseudo-random with being random, right?

MR. CANNON: Objection, form.

THE WITNESS: It's saying there's an equivalence.

BY MR. HUGHES:

Q And you understand as a POSITA, when it says there's an equivalence, it's considering, you know, if I have pseudo-random, it would consider that to be random, right?

MR. CANNON: Objection, form.

THE WITNESS: There's a -- it's because the discussion in the beginning is where I'm hesitating because it's algorithmically generated.

There are different ways to get a pseudo-random number, so this is some algorithm is being used.

BY MR. HUGHES:

Q Okay. And it also says a truly random parameter, right?

A Equivalent of a truly -- sorry, equivalent to a truly random parameter. That's what it says.

Q What is a truly random parameter?

A Here it would be talking about the simulation parameters: brightness, intense -- or brightness and intensity or equivalent color, duration, fade rate.

Q What does "truly random" mean?

A There is a statistical correlation of values over time, but it's impossible to predict the sequence of values.

Q What do you mean "impossible to predict the sequence of values"?

A You can describe it statistically, but you can't say from one value to the next what it will be.

The easiest example would be flipping a coin. It's a random choice. It's heads or tails. I can't -- if I flip heads, I can't determine what the next one is going to be. I know it's going to be heads or tails, but I can't predict that.

Q So something that's truly random, could that be done or made with a computer

program?

MR. CANNON: Objection, foundation.

THE WITNESS: A program by itself, that's where I'm struggling, because there are hardware components that generate random numbers, and a computer program could use -- incorporate the output of such a device, and then you could create something that's random.

There's a lot of ways to create these algorithms, so I'm having some difficulty on that. If you say just a computer program, I need more information about the program.

BY MR. HUGHES:

Q When we do have the algorithm or the computer program, that could create pseudo-random numbers though, right?

A If you have an algorithm, you have a seed value that starts the algorithm. The difficulty I'm having is how that seed value is chosen.

If I have an algorithm, but my seed

value is random, then you end up in a different situation than I'm using the same seed value for the algorithm every time.

Q And you were just talking about seed values. So a POSITA would understand that to calculate pseudo-random numbers, an equation with a seed value is often used, right?

A You need an initial number somewhere, and that's -- that's why I'm struggling with the question, because depending on the skill of the programmer, there are ways you ensure the algorithm receives a new seed every time, and that can be based on a variety of inputs.

It could be the exact time that it started, in which case I'm still going to get a different set of numbers every time I run it, but there would be this pseudo-random nature to it.

So there's -- that's why I'm struggling a little with the truly random aspect of your question.

Q Let's take a step back from that and just talk about the pseudo-random for now.

So again, when we're talking about generating pseudo-random numbers, a POSITA would understand that this is often done using an equation with a seed value, right?

A It's not just an equation. It has to be a series of equations. There's an algorithm for it. It's not take a value, add 1. That would be a simple equation. There's multiple equations involved to create a pseudo-random number.

Q And sometimes these series of equations and the program, sometimes they're called a random number generator, right?

A Yes.

Q And like we were talking about, the seed value is a base value that's used by the equation or equations to produce the random output numbers, right?

A It's used by the equations, or more specifically, by the algorithm.

Q Okay. And if we used a different seed value, then different random output numbers would be calculated, right?

A A different sequence of numbers, yes.

Q And the different sequence of numbers, you mean you're going to get different numbers output when you have a different base -- or different seed value, right?

A I'm just struggling because it's possible two seed values could end up producing the same sequence. In general, you would get a different sequence.

Q Okay. And in general, I think you mentioned earlier, the seeds could be something like the timing of the system clock itself may be down to the milliseconds, right?

A The better ones are usually that way. It depends on what the purpose of the pseudo-random number is.

I discussed yesterday, I do optical

design as well. The software incorporates, there is a random number generator because you need to look at a statistically significant number of rays coming out of a light source. That distribution is defined, but I need to sample it statistically very well.

So a low-level simulation, I might use 20- or 30,000 rays, so I need those to have the statistical properties equivalent of random. For a detailed simulation, it may be 30-, 40-, 50 million rays.

So to generate those, there is an algorithm for it, but that's a special case where you set the seed number because you want to know exactly -- use exactly the same ray set. If I'm making a modification, if I'm looking for stray light in the system, I'm necessarily looking at a small signal. So I need to know that any changes in that are due to changes in the optical design and not the few rays that actually make it to that part.

So that's one software package I'm

aware of or one application where you specifically use the same seed every time, but in general, there's a different seed, and that's taken care of automatically.

Q And, generally, the seed values are something that's changing sufficiently quickly or different where it's unlikely you get the same seed value, and thus the same outputs every time, right?

MR. CANNON: Objection, form.

THE WITNESS: In general, that's done. If I use Excel's random number generator, it's going to be different every time. They choose a seed value based on multiple parameters, so ...

BY MR. HUGHES:

Q Okay. And in generating these pseudo-random values, this equation can be implemented in software, right?

A Again, it's an algorithm, it's not one equation. That's a hang-up for me because I can't have one equation that, okay, this

does it. There has to be a sequence; that's why it's an algorithm. So there are a few steps involved in the algorithm.

Q So if you've got a pseudo-random value, you're saying that that has to come from an algorithm, not just an equation?

A It's going to be more than one equation, and there's some decisions in there.

An algorithm can be a simple equation, but for a random number generator, it is not a single equation, there's a series of steps, so it's an algorithm.

Q So in your opinion, if I've got a pseudo-random number, then a POSITA would consider that I had an algorithm or series of algorithms to generate that?

A There's an algorithm somewhere behind that, and I'm just trying to be more specific. That algorithm is not a single equation.

Q Okay.

A That's where I have problems, the

one-to-one mapping. Algorithm equals one equation. An algorithm can, but for pseudo-random numbers, it has to be more than one.

Q Yeah, I understand that. And my question is, if I have a pseudo-random number, what you're saying is that I would have needed an algorithm or algorithms to generate that?

A Yes.

Q Okay. And those algorithms, or the random number generator, they can be implemented in software, right?

A Yes.

Q As kind of a computer program or computer code that could be executed?

A Yes.

Q Can it also be implemented in hardware?

A We discussed that before. There are physical components that can have an output that is random; that would be technically a physical random number generator. It would be

a random signal, which would get converted to a number.

Q What would convert that random signal to a number?

A Could be an analog-to-digital converter, so another piece of hardware, another part of the circuit.

Q So some hardware in the circuit could generate a random signal, and then another piece of hardware in the circuit could change that into a number?

MR. CANNON: Objection, form.

THE WITNESS: A digital representation, software doesn't work well with analog values.

We do have variables that can be analog that can vary, but you need to convert that physical signal into a digital format for the software.

BY MR. HUGHES:

Q Okay. So, Dr. Bretschneider, I now would like to starting talking about the

Showline Manual. And before we get into that, can we pull back up the '258 patent, please? It's Exhibit 9 to his declaration, and if we can turn to claim 1 of the '258 patent.

And, Dr. Bretschneider, do you recall that in your declarations for the '258 patent you discuss the Showline reference?

A Yes.

Q And you recall this was a User Manual for a Showline SL PAR product?

A Yes.

Q And if I refer to that as the Showline Manual, will you understand it?

A If you say Showline, I will understand it to be referring to the manual.

Q Okay. And so if I make a distinction, if I say Showline or Showline Manual, you'll understand I'm talking about that reference?

A Yes, that's correct.

Q Okay. Now, looking at claim 1, the

first limitation is a lighting system, right?

A Yes.

Q And in your declaration, you don't dispute that the Showline Manual discloses a lighting system, do you?

A No. Actually, in specific, Showline discloses an LED lighting fixture.

Q And an LED lighting fixture would be part of a lighting system, or actually could be a lighting system itself, right?

MR. CANNON: Object to form.

THE WITNESS: Lighting fixture would be a lighting device.

BY MR. HUGHES:

Q Okay. So when you say "lighting device," that's the next limitation in the claim, correct?

A I was just going with terms. If I say "lighting fixture," that could be a part of a system.

What I read was just the first part. Showline discloses an LED lighting fixture, so

I'm just being precise with the terms.

Q So in your view, a Showline Manual does not disclose a lighting system?

A No. I just read the first part of a sentence. You were asking about a lighting system. I read -- again, this is page 24, paragraph 68, (Exhibit 3 - PDF page 29), Showline discloses a LED lighting fixture," the rest of that, "and an LCD Display/Menu System."

Q And when you say you just read that, are you reading from your declaration for the '258 patent?

A Yes, I am.

Q And which paragraph did you say?

A That's on page 24, paragraph 68.

Q So my question though is do you agree that Showline discloses a lighting system?

A Showline discloses a lighting system.

Q Okay. And if we look at the next

limitation in claim 1, it says a lighting device, right?

A Yes.

Q And again, you don't dispute that the Showline Manual discloses a lighting device, do you?

A No. We just had that conversation.

Q And the lighting device in the Showline Manual is the LEDs in the unit, correct?

MR. CANNON: Objection, form.

THE WITNESS: The LEDs would be a part. There's a little bit more than just the LEDs.

BY MR. HUGHES:

Q But again, you don't dispute that the Showline Manual discloses a lighting device, right?

A No, I don't. I was just trying to be specific with your question.

LEDs by themselves are capable of emitting light, but to be a working lighting

device, you have to have some supports, some drive electronics, a few other things. That's all I was trying to clarify.

Q What other things?

A Well, that's what I was saying. You were saying the LEDs are the lighting device. An LED by itself, as I said, is capable of emitting light, but it wouldn't be a finished lighting device. You need to be able to power it up. You need to be able to support it with LEDs. You also need to have some thermal management system.

So they're a part of a lighting device. They aren't -- in this context, that's where I was just trying to be specific. They're not the lighting device by themselves. They need a little bit more.

Q So you mentioned I think driver circuitry or driver electronics for the LEDs?

A Something to provide power.

You also need the thermal management. You need a physical mounting

system for them. LEDs are fairly small devices.

Q So in the Showline Manual, there would be those driver electronics for the LEDs, right?

A Yes, those are a part of it.

Again, I was just trying to be specific. You said LEDs are the lighting device. By themselves, they're not.

Q I understand. And so as a POSITA, when you see and read the Showline Manual, you understand it has not just the LEDs, but also that required driver electronic circuitry as well?

A And thermal management system.

The manual and the descriptions, there are some optics as well. Those aren't as critical.

Again, I was just trying -- you were equating -- what I heard from your question, you were equating LEDs to the lighting device, period. There needs to be a little bit more.

That's the only clarification I was trying to provide.

Q Yeah, and I'm not sure I got an actual answer to my question, though.

When you, as a POSITA, read the Showline Manual, you understand it has not just the LEDs, but also required driver circuitry for them, right?

A Yes. I believe I said Showline does describe a lighting device. Again, it was your mapping LEDs are the lighting device, that's where I had the issue, not that Showline doesn't disclose a lighting device. It does.

Q Okay. So if we look at the claim, the next limitation recites "a controller adapted to control the lighting device to produce a user customisable [cinematic] lighting special effect selected from a range of different user customisable cinematic lighting special effects, the controller comprising," right?

A Yes.

Q And when we see the controller comprising, the next limitations are now telling us what this controller includes; is that right?

A Yes.

Q And the first one of those is that the controller includes an input interface, right?

A Yes.

Q And the next limitation, it tells us that the controller also includes an effect simulator, right?

A Yes.

Q Now, looking at claim 1, you don't see the word "processor" in this claim, do you?

A The word "processor," no.

Q And anywhere in the claim, correct?

A I don't see the word "processor" in the claim.

Q Okay. So if we can go back to

Exhibit 3, which is your declaration for the '258 patent, and if we can turn to paragraph 112, please. (PDF page 49)

Now, Dr. Bretschneider, here you admit that the Showline Manual describes an LCD Display and Menu System, right?

A Yes.

Q And you agree that the Showline Manual explains that this LCD Display and Menu System is on the SL PAR 155 device itself, right?

A Yes.

Q And in fact, it's kind of incorporated, or it's in the back of the device; is that right?

A Yes.

Q And then the LED lights are on the front of the device, right?

A The output is on the front. The LEDs are actually inside a little behind the front.

Q But to be fair -- or sorry, strike

that.

We have -- in the SL PAR lighting fixture itself, we have the LCD Display and Menu System at the back of that fixture, and then the LEDs are somewhere towards the front; is that right?

A Yes.

Q Within the same fixture, right?

A Yes.

Q Okay. So the LCD Display and Menu System and the LEDs are part of the same light fixture, right?

A Yes.

Q So if we look at paragraph 112 of your declaration, you say here that "Showline does not explicitly disclose the LCD Display and Menu System includes a processor."

Do you see that?

A Yes, I do.

Q But as we just talked about, claim 1 of the '258 patent does not use the word "processor," does it?

A No, but it also discusses calculating, and if you're doing calculations, you have to have a processor.

Q Can you have hardware components that do calculations?

MR. CANNON: Objection, form.

THE WITNESS: Well, a processor is a physical component. I'm struggling with your question on that.

If I open up my computer, there's a physical component that's a processor; it does calculations.

BY MR. HUGHES:

Q But the claims don't cite or say "processor," right?

A They do not have the word "processor."

Q So the claim is not explicitly requiring a processor, is it?

A It's inherently requiring one because I have to -- it discusses performing calculations. Specifically, calculating a

time-varying lighting value based on at least one simulation parameter. So there has to be a processor running, there has to be code running.

Q Where is it? Do we see computer code in claim 1?

MR. CANNON: Objection, form.

THE WITNESS: No, we do not.

BY MR. HUGHES:

Q So claim 1 does not say there needs to be a processor and code running, does it?

A It tells a person of ordinary skill in the art that there is a processor running computer code there.

Q My question is that claim 1 does not explicitly require a processor running computer code, does it?

MR. CANNON: Objection, form.

THE WITNESS: It inherently requires it. It doesn't explicitly state a processor running computer code.

BY MR. HUGHES:

Q So in your view, if we go on to paragraph 113 of your declaration, just to try and understand what you're talking about here, you say that you didn't see anything in the petition or Mr. Wood's declaration explaining why the LCD Display and Menu System in the Showline Manual necessarily requires a controller; is that right?

A Yes.

Q Now, when we were looking at claim 1, where the controller -- we talked about how the claim says it has at least two things, right? The first was the input interface?

A Yes.

Q And you don't disagree that the LCD Display and Menu System includes a user input interface, do you?

A The LCD display would be the user interface.

Q And as a POSITA, you understand that

operation of the LCD Display and Menu System as described in the Showline Manual controls the LED lights, right?

MR. CANNON: Objection, form.

THE WITNESS: It allows the input of parameters. The LCD may not be doing the actual control. There would be switches that would be operating to actually control the lights.

BY MR. HUGHES:

Q So as a POSITA -- strike that.

So in your view, there's something else besides just that LCD Display Menu System interface in the SL PAR, right?

A My view was that Mr. Wood was equating the LCD Display to a controller, and the displays for receiving input.

I have a touchscreen on my phone. That's to input and output information. That's not a controller.

Q I think you said at paragraph 113, though, that there was not an explanation of

why the LCD Display and Menu System in the Showline Manual necessarily required a controller, right?

A Correct.

MR. HUGHES: So if we can pull up Tab L and mark that as Exhibit 10.

(Bretschneider Exhibit 10 was marked for identification.)

BY MR. HUGHES:

Q Dr. Bretschneider, do you recognize this as the Showline Manual we've been discussing?

A Yes.

Q And if we can go to page 14 of this manual?

THE VIDEOGRAPHER: PDF or numbered page of the manual?

MR. HUGHES: That's correct, the numbered page, thank you. (PDF page 17)

BY MR. HUGHES:

Q Okay, Dr. Bretschneider, do you see the heading on this is saying "LCD Display and

Menu System"?

A Yes.

Q And do you see at the very top of the page, this says it's describing the operation and programming, correct?

A Yes.

Q And underneath "LCD Display and Menu System," it says "[t]he SL PAR 155 ZOOM RGBW LED Luminaire's LCD Display and Menu System provides local control," right?

A "For accessing the following fixture's settings."

Q So this indicates that the LCD Display and Menu System controls the device, doesn't it?

MR. CANNON: Objection, form.

THE WITNESS: No. The Display and Menu System allows access to different settings, so it means locally I can change settings. That does not mean the LCD Display is a controller.

An LCD Display simply displays

information. It's that simple.

BY MR. HUGHES:

Q Now, this is not just called an LCD Display, right? It says it's an LCD Display and Menu System, right?

A Yes.

Q And so is it your opinion that something that provides local control of a device is not a controller for that device?

A Where I'm having the issue is you're taking a part of a sentence. The full statement is it provides local control for accessing the fixture's settings. So what it's doing is allowing you to change the settings.

You're focusing on control, and you're ignoring the entirety of the context. The control is limited to the fixture's settings.

Q So if we can zoom out a little bit, and if we see going through these pages there's the LCD Display and Menu System

operation, right?

And if we can go to the next page, this is again showing the operation of this menu, right?

A It's explaining the interface.

Q And in explaining the interface, for example, here where it says "Recalling or Editing Presets," it's explaining how the menu is used to actually operate the device, isn't that right?

A No. It's explaining how to change the settings.

Q You don't consider changing settings part of operating a device?

A No, that's not operating. That's just settings.

Q And when you change these settings, that causes the LEDs to output something, correct?

A No, it changes the settings.

Q When I change the settings, and then I, for example, on this preset, select to play

that preset, am I now operating the device?

A Where I'm having trouble is you're talking about the display operating the device.

I'm looking at this videoconference on a display. My display is not operating, it's outputting information.

Q Well, I think your testimony, though, was that you didn't see anything in the Showline Manual to say that this necessarily requires a controller, right?

MR. CANNON: Objection, mischaracterizing.

THE WITNESS: Actually, what I said was I do not see any further explanation in Mr. Wood's declaration or in the petition explaining why an LCD Display and Menu System necessarily requires a controller, or that a controller is inherently present.

The issue I have is that Mr. Wood said there's an LCD Display and Menu System that is a controller, and an LCD Display and

Menu System is a user interface. It's an input/output.

We discussed this allows changing the settings. Changing settings does not require a controller being present. I've just changed the settings.

BY MR. HUGHES:

Q So let's walk through some of the operations that you can perform using this LCD Display and Menu System as described in the Showline Manual.

If we can go back to paragraph 113 of your declaration. (PDF page 50)

So here you say, following that, "Mr. Wood admitted that the Showline Manual does not provide any details about how the lighting device receives inputs and changes the outputs." Do you see that?

A Yes.

Q If something is receiving inputs, and you get changed outputs, would you then consider that there's a controller?

A No.

Q So if something can receive inputs and change outputs, that can be done with no controller present?

A There's no controller. It's just I've changed settings. If I turn a knob, I've changed a setting. An LCD Display is just a different way to change the settings.

Q So let's go into -- let's break this down a little bit.

First you say there's no details about how the lighting device, this SL PAR in the Showline Manual, receives inputs, right?

A Actually what I said was that Mr. Wood didn't provide details about how -- or the manual -- Mr. Wood admitted that the manual does not provide any details about how the lighting device receives inputs and changes the outputs.

Q Does the Showline Manual provide details about how the lighting device receives inputs?

A Receiving the inputs, yes; changing the outputs, no.

Q So let's go back to the Showline Manual, if we can go to page 14, and do you see where there's a heading two, and that reads "LCD Display and Menu System Operation"?

A Yes.

Q And if we look at this, it says that "The LCD Display Menu system consists of several categories. Use the Menu Buttons to access and make changes to the menu items," right?

A Yes.

Q And it says, "When the desired menu item is reached, press the desired Menu Button to display the menu options and to navigate and configure the menu options as required," right?

A Yes.

Q And this is being done through the LCD Display and Menu System, correct?

A Yes.

Q And if we can turn to page 15, there's a Figure 11, if we can zoom in on just the top there. And do you see this Figure 11 from the Showline Manual?

A Yes, I do.

Q And this is an illustration of the menu interface part of the LCD Display and Menu System, correct?

A Could you repeat the question? That sounded a little awkward.

Q I said this is an illustration of the menu interface -- and I'll clarify my question.

This is an illustration of the menu interface of the LCD Display and Menu System, correct?

MR. CANNON: Objection, form.

THE WITNESS: I would say it's the user interface.

BY MR. HUGHES:

Q That's fine. So this is the user

interface of the LCD Display and Menu System, right?

MR. CANNON: Objection, form.

THE WITNESS: Yes.

BY MR. HUGHES:

Q Okay. And do you see where the manual describes menu buttons, like UP Arrow Button down at the bottom left-hand corner?

A Yes.

Q LEFT Arrow Button and RIGHT Arrow Button, DOWN Arrow Button, OK (Check Mark) Button?

A Yes.

Q And do you see further buttons at the top for user to select?

A There are other buttons for -- that have different labels.

Q Okay. Aren't these buttons how the device receives inputs from the user?

A The best I can answer is they're a part of the user interface.

Q So my question though was, aren't

these buttons how the device receives inputs from the user?

A Where I'm having a tough issue, this is an LCD Display, so it's -- I'm understanding it to be a touchscreen, since it is LCD, so there's not a physical button.

So the LCD Display doesn't have the functionality that you're saying. Those buttons don't have the functionality. They're icons. They're graphical representations of something. That's why I was trying to be more precise in saying it is the user interface. This is an example of the user interface.

Q But the Showline Manual refers to these as buttons, right?

A Yes.

Q So when I say "button," I'm referring to the buttons as shown in this interface here. Do you understand that?

A Yes.

Q And so, again, these buttons are how the device receives inputs from the user,

right?

A What's shown here is accessing the menu. At the menu level, I don't see any inputs. I mean, you're moving left to right, up/down, return to main screen, return up one level, DMX addressing, so on.

This is a menu. If selecting menu settings, if that's your definition of inputs with respect to this figure, then yes.

Q So if a user pushed the Edit a Preset button, that would be an input to the LCD Display and Menu System to do something, correct?

A For an LCD Display, if you press it too hard, you're going to break it. I'll say if they touch it, if they select it.

It's not a physical button. I'm not -- I've worked with LCD displays. When you say "pressing it," I think you actually mean touching it or selecting it.

Q Yes. So I understand you're saying that these are not a physical button like the

keyboard of my computer. I understand it's an area of a touchscreen that would perform the same function. If I touch that area, it's the same as pressing a physical button, correct?

A Similar function. You're navigating to a different portion of the menu.

Q Right. So if I want to interact with this, the way a user does it is by pressing these buttons -- sorry, is by touching these buttons, correct?

A Yes.

Q Okay. And you mentioned the two at the top, we have "Edit a Preset" and "Edit a Chase," correct?

A Yes.

Q And if we can go to page 17 of the User Manual now. And do you see at the top of this page, this says "Editing User Chases," right?

A Yes.

Q So this page is describing how a user can edit a chase; is that right?

A It's describing how to change the settings for a chase.

Q And changing the settings for a chase would edit that chase, correct?

A Yes.

Q Okay. And if we can just zoom in, there's a small figure. If you can zoom in on that figure, please.

And so, again, we're seeing the same buttons here that a user can touch to make those selections to edit a chase, right?

A Yes.

Q And if we can go back to the broader page, please. Thank you.

So now you see where it says under "Editing User Chases," "Eight user chases can be further customized to create different effects on the fixture." Do you see that?

A Yes.

Q And down below, it says "To edit and save a Step," right?

A Yes.

Q And Step 1 says "Select Edit Step or New Step from the Edit User Chase menu," right?

A Yes.

Q What is a chase?

A A chase is a sequence of lights to give the impression of a moving light source.

So if I have three lights — a center, a left and a right — and I would turn them each on in sequence, turn one on, turn it off, turn the next one on, turn it off, turn the next one on, turn it off, so that in terms of lighting effect, it looks like a moving light.

Q And what is a step?

A That would -- I have to read a little bit more here to make sure I get this.

Step is one of the sequences used in the chase.

Q When you say "sequences," do you mean different -- you know, here -- strike that.

When you say "sequence," you mean a different lighting setting?

MR. CANNON: Objection, form.

THE WITNESS: I'm going back to the previous page in the Showline Manual. On page 16, they talk about the effects parameters. They have total steps as one of the ones listed. It's total steps used by the chase. The field is not editable. So that would be -- a step would be a portion of a chase.

BY MR. HUGHES:

Q And can we go to page 16 just to make sure I'm seeing what you're looking at here. Are you looking down in Table 3?

A Yes.

Q Okay. And this is the display for what would be effects parameters, correct?

A Yes.

Q And where it says "User Chase/ Built-In Chase" at the top, do you see that?

A Yes.

Q And User Chase, as distinguished from Built-In Chase, that's because the User Chase can be edited; is that right?

A Yes.

Q And I think you were talking about the total steps?

A Yes, that was to make sure -- when you were talking about what a step was, that's the information that informs you what a step is, so that would be a portion of a chase.

Q Okay. And when this says displays the total steps, that's saying that this is just going to be telling you how many steps are in whichever chase you have, right?

A Yes. It says it's not editable, so it's a fixed number of steps.

Q The field -- the display field is not editable, right?

A The step field is not editable.

Q So, for example, if I have a built-in chase that has 10 steps to it, in

this display of the total steps for that chase, it's going to say 10, right?

A I think there are more than that. The rest of the manual may say the actual number of steps, but whatever is there is there. It can't be changed.

Q Now, for a user chase, where a user can edit and add new steps, this display would just be whatever the current number of steps are for that chase, right?

A My --

MR. CANNON: Objection. Objection, form.

THE WITNESS: My understanding is that the chases all have the total number of steps, same total number of steps, and that you can't edit it. It just tells you how many steps you can go through.

BY MR. HUGHES:

Q So if we can go back to page 17 then, do you see under Step 1 it says "To edit and save a Step," and it says, "Select Edit

Step or New Step from the Edit User Chase menu." Do you see that?

A Yes.

Q What would new step be? Isn't that adding a new step into the chase?

A No. I would understand it, in light of the previous page, to being a step with no information.

Q A step with no information would not be used by the chase, would it?

A It's not clear, but if it's new, again, that's my understanding, there would be no information on the chase.

If you look at the graphic in the top right of this page, those fields would be empty is my understanding. So I would assume it wouldn't be used because there's no information, but I'm doing some speculating there. I don't know what would happen if you created a new step, didn't edit any values, and tried to use that.

Q But you agree that with the new

step, a user can add in new values and now populate a new step that was not present before, right?

A They would add in values. By definition, if they were empty, they would be new values. There's some redundancy in your question.

Q Before you said that you understood that if you went to new step, there would just be no values here, right?

A Yes.

Q And so what I'm saying is, under that understanding, if I do select new steps and start to fill it in, whereas before there was nothing, I'm now going to have some instructions for the light there, correct?

A Yes, that's adding a value. A new value would imply an old value. That's where I was trying to clarify.

Q So this is actually including values for the first time; is that right?

A That's --

MR. CANNON: Objection.

THE WITNESS: That's my interpretation. If it's a new step, they don't say what's actually there.

BY MR. HUGHES:

Q And I'd just like to go back again. You know, I understand you talked about the total steps, but my question is, individually, what is a step of a chase?

A It's a segment of a chase.

Q What would be some of the characteristics of it? Would the segment include maybe a brightness value for light, a beta time, a fade down time? Is that a step?

MR. CANNON: Objection, form.

THE WITNESS: For the step, I can't quite read what's on the display. I don't have enough light on mine. It's very fine print.

So I can at least make out fade, speed, it does say total steps, and master intensity.

BY MR. HUGHES:

Q Yeah, if we can zoom in.

A That's better, thank you.

Q Okay. So again, here we see total steps is three. And I know you said a step is a sequence, so I'm still trying to understand, in your opinion, what would one step be?

A It's a subdivision of a chase. To have a chase, you necessarily have to have at least two lights that change in intensity or you don't have a chase.

One's going to be fading down, the other one is going to fade up, so it's a portion of a chase. A chase has to have different portions to make it up.

Q Okay, if we can go back to -- put that back. Thank you.

Now, if you see -- so Step 1, we agreed a user can either edit a step or add a new step from the menu, correct?

MR. CANNON: Objection, form.

THE WITNESS: That's what it states.

BY MR. HUGHES:

Q And if we go on to Step 2, this is saying that the top left field indicates the preset or color filter to be used for the step. Do you see that?

A Yes.

Q And then do you see at the end it says, "Use the left and right buttons to scroll through all presets and color filters"?

A Yes.

Q So this would allow a user to select a color for this step of the chase, correct?

A Yes.

Q Now, if we can look at Step 3, this says that a user can use the Up and Down keys to scroll through parameters, and then once a parameter is accepted, use the left and right arrow buttons to make adjustments.

Do you see that?

A It says, "Once a parameter is selected," not "accepted," "use the left and right arrow buttons to make adjustments."

Q And using the left and right arrow buttons to make adjustments are making adjustments to that parameter, right?

MR. CANNON: Objection, form.

THE WITNESS: It's changing the setting for that parameter.

BY MR. HUGHES:

Q Okay. So using these buttons, a user can change or modify the parameter that they've selected, right?

MR. CANNON: Objection, form.

THE WITNESS: Yes.

BY MR. HUGHES:

Q Okay. And then if we look down a little bit, we have a Step 4 here, correct? And this says, "Once all values are adjusted as desired," do you see that?

A Yes.

Q And when it says "all values are adjusted as desired," that's talking about the values for the parameters that could have been adjusted in Step 3, right?

MR. CANNON: Objection, form.

THE WITNESS: It's all the values for the step.

BY MR. HUGHES:

Q And that would include the values of the parameters that were adjusted, right?

MR. CANNON: Objection, form.

THE WITNESS: It would include those values. If values weren't adjusted, something would still be saved. That's where I was struggling. It's not just what was changed.

BY MR. HUGHES:

Q So you're saying -- you're looking at the second part of this, correct? Is that where it's talking about "press the Check Mark button to return to the Edit User Chase screen"? Is that what you're talking about?

A You were talking about just the values that were adjusted. So if I didn't adjust a value, something still has to be there.

Q In Step 4, though, if you look at

the beginning, we're talking about adjusting values still, right?

A Step 4, you have finished adjusting.

Q And just to go back, we're talking in general here about either editing a step or making a new step, right?

MR. CANNON: Objection, form.

THE WITNESS: We're talking about a step.

BY MR. HUGHES:

Q If we look at the heading, doesn't this say "To edit and save a Step"?

A Yes, it does.

Q So aren't we talking about, just like it says in Step 1, we're either editing or we're doing a new step, right?

MR. CANNON: Objection, form.

THE WITNESS: It is talking about editing or creating a new step.

There's -- my point was that it's saving the information for the step. There's a little bit of redundancy in what you were

stating.

BY MR. HUGHES:

Q So I don't think we're -- we're not down to saving yet. Here in Step 3, you agree the user makes adjustments, correct?

A Yes.

Q And so Step 4 is saying, once you've made those adjustments, you can now press a Check Mark button to go back to the Edit User Chase screen, right?

A Yes.

Q Okay. And you would agree that Step 5 indicates that a user can continue editing steps as needed, right?

A That's what it states.

Q And so this would be, for example, editing other steps in the chase, right?

A Yes.

Q And adjusting the parameters for those other steps, right?

A I'll say adjusting the parameters could be optional.

Q Understood. It allows a user to adjust the parameters of the other steps in the chase, right?

A It allows that possibility. It's not clear that it requires adjusting them.

Q Using this, a user could edit the parameters of multiple steps in a chase, right?

MR. CANNON: Objection, form.

THE WITNESS: Yes.

BY MR. HUGHES:

Q And add new steps to the chase as well, right?

MR. CANNON: Objection, form.

THE WITNESS: Step 1 does say you can select a new step.

BY MR. HUGHES:

Q Okay. And then if we look at Step 5, "When complete, press Return to Main Menu button," correct?

A "Return to Main Menu button or up one level."

Q And at Step 6, the manual says that once you've completed this process, this edited user chase is now saved and can be recalled via the menu or DMX, right?

A That's what it states, yes.

Q And if I recalled the chase effect and made it active, the LEDs would output the light for the steps in the chase, right?

MR. CANNON: Objection, form.

THE WITNESS: I'm trying to find what the manual says about making it active.

BY MR. HUGHES:

Q If we -- so I'll -- if we just look under Strobe/Timing just below this, do you see the second sentence there says, "These settings are instantly applied to any active Preset, Color filter, or chase"?

Do you see that?

A Yes.

Q So an active chase would be one where the LEDs are outputting the light for that chase, right?

A That's a reasonable assumption.

Q And while we're in this Strobe/Timing Menu, the manual states that this is another menu in the system that allows you to assign strobe and timing values from the menu system, right?

MR. CANNON: Objection, form.

THE WITNESS: That's what it states.

MR. CANNON: Scott, if we're switching to Strobe/Timing Menu, can we maybe take a break? It's been like an hour and a half.

MR. HUGHES: That's fine.

THE VIDEOGRAPHER: Okay, stand by.

The time is 9:35 a.m., and we're going off the record.

(A break was taken.)

THE VIDEOGRAPHER: The time is 9:52 a.m., and we are back on the record.

BY MR. HUGHES:

Q Dr. Bretschneider, we've been talking a lot about chases, and so before we

get into that strobe and timing menu, I just wanted to know, have you ever created a chase using a lighting effect system?

A No, I've directed them. There were some discussions yesterday about my past working as a gaffer, and the equipment at the time, I wasn't allowed to use. So I'm familiar with the equipment, the process -- familiar with the process, but the equipment was deemed a little too expensive for me at the time.

Q So you never actually operated the equipment to generate a chase, is that what you're saying?

A I worked with the lights, but the actual control equipment in the '80s was considerably more complicated than today, and hence expensive.

Q Understood. So they didn't want you at the controls at that time, right?

A Yes. They wanted me working with the actual lights, and there was some work on

the directing.

Q Okay. We can go back to page 17 of the Showline Manual where we were.

So, Dr. Bretschneider, you'll agree we just talked about how a user can edit, and then save a chase, correct?

A Yes.

Q And I don't know your exact wording, but I think you agreed that a reasonable interpretation would be when we say that a chase is active, the LEDs are outputting the light for that chase, right?

MR. CANNON: Objection, form.

THE WITNESS: The chase is being played on the light. The LEDs are -- they're outputting something.

BY MR. HUGHES:

Q And that would be the light that would reflect what's in the steps for the chase, right?

A Yes.

Q Okay. And in the Strobe/Timing

section on the manual -- and again, for the record, we're at page 17 of the Showline Manual -- this says, again, that you can use the up/down buttons to select parameters, and the left and right buttons to adjust the currently selected parameters, right?

A Yes.

Q And these adjustable parameters are shown in Table 4; is that correct?

A I'm sorry, I'm just -- what it says is they're described in Table 3, but they're shown in Table 4. Sorry about that.

Q I agree. For the record, we can both understand that when it's talking about the Strobe/Timing adjustable parameters, that's Table 4, which is titled "Strobe/Timing Parameters," correct?

A Yes, that's correct. I was following what you were reading, and that really threw me, so apologies there.

Q Okay. So the adjustable

Strobe/Timing parameters shown in Table 4, these include a master intensity parameter, right?

A Yes.

Q And there's also a strobe parameter that lets you turn on a strobe mode, correct?

A Yes.

Q And there's a duration parameter?

A Yes.

Q And the duration parameter is indicated as being the time each strobe flash remains on; is that right?

A That's what the table says.

Q And then there's an intensity timing parameter, correct?

A Yes.

Q And that's described as the time used to change intensity values when running a chase, correct?

A Yes. And I think this was another editing problem with the manual. So we're talking about strobe, but then it says chase,

so I'm going to assume that meant for the values when doing the strobe.

Q For duration, when it says "strobe flash," do you understand that that could just be a flash of a particular step in a chase?

MR. CANNON: Objection, form.

THE WITNESS: Could you repeat the question?

BY MR. HUGHES:

Q When under the -- in the description for Duration, when it says "strobe flash," could that be a strobe flash of the LEDs or a step of the chase?

MR. CANNON: Same objection.

THE WITNESS: It's difficult for me to answer because we're talking about Strobe/Timing. At the beginning, the first paragraph under this section, there is a sentence, "These settings are instantly applied to any active Preset, Color filter, or chase."

So it's not clear if the strobe

overrides a chase, or if it replaces a step. So I'm not sure I can answer that question based on what's here.

BY MR. HUGHES:

Q Okay. But there is a setting for the duration where you can change the time, some strobe flash remains on, whether that's a strobe that's added in or a flash in the chase itself, right?

A Yes.

Q And we were talking about intensity timing and stated that's the time used to change intensity values when running a chase, right?

MR. CANNON: Objection, form.

THE WITNESS: That's what's stated, the time used to change intensity values when running a chase.

BY MR. HUGHES:

Q So that would be the time to go from one intensity value to another, right?

A It's not clear whether this is to

change from one intensity value to another, whether that's a rate, or I show a certain intensity, and then I go to a second intensity.

Q If you go from a first intensity to a second intensity, this would be the time needed to go from that first to second intensity, right?

A That's what I'm saying is not clear. The manual hasn't described adequately how that's doing.

It could be the time on one intensity, and then a change to a second intensity.

Q You agree, though, that it is related to some unit of time between having one intensity value, and then having a different intensity value, right?

A Yes.

Q And then the last parameter in this table is Color Timing, correct?

A Yes.

Q And that's described as the time used to change color values when running a chase, right?

A Yes.

Q Okay. And this section of the manual says that when the user makes the selections using the buttons, the strobe and timing value settings are instantly applied to any active preset, color filter, or chase, correct?

A Yes.

Q When it says that these are instantly applied, this indicates that if a user adjusted the Strobe/Timing parameters in Table 4, you would instantly see a change in the output of the LEDs, right?

A I would say virtually instantly. Everything takes a finite amount of time, but this is implying there's no significant delay.

Q So, for example, if I changed the master intensity, the LEDs would either brighten or dim, right?

A There are scenarios where it might not. If I increase the master intensity, but it was supposed to be dimming at the time, it might cancel out.

Ignoring that situation, then yes.

Q Even in that situation, if I made the adjustment, the light output would look differently than it would have if I didn't change that parameter, correct?

A That's correct.

Q So to summarize, the LCD Display and Menu System includes an interface with buttons, right?

A Graphical user interface. They're button icons.

Q And a user can use these buttons -- or as you're saying, button icons -- to adjust parameters of different steps of a chase, right?

A If they navigate to the correct portion of the menu, yes.

Q And then a user can make that chase

effect, for example, active on the LEDs, right?

A Yes.

Q And a user can also add or adjust strobe and timing parameters, correct?

A Correct.

Q And the LEDs output light based on the selected parameters for the chase and strobe and timing, right?

A I would say the active parameters.

Q And the active parameters would include the parameters for the step in the chase and any Strobe/Timing parameters that are added on, right?

MR. CANNON: Objection, form.

THE WITNESS: If that is active.

BY MR. HUGHES:

Q So if I have an active chase, and I have parameters for the step of that chase, and I have actively assigned strobing timing parameters, those would all be reflected in the LED output light, right?

A When you're talking about a chase, because it's a sequence of steps, when that step comes up, then it would be reflected.

Q Yeah. So to be clear, the LEDs are outputting light based on the selected parameters, right?

A Again, I'm trying to be precise. It's not on the selected parameters. It's on the active parameters for the effect.

Q And the active parameters for an effect would include the selected and adjusted parameters that the user input in making the chase, correct?

A Among other parameters, it would be all of the parameters for that effect.

Q So wouldn't a POSITA know that there's some type of computing unit that would be taking the parameters and creating lighting values?

MR. CANNON: Objection, form.

THE WITNESS: No, because the menu, you actually enter those lighting values. The

user enters them. Those don't have to be created. We went through the menus, and those menus are the lighting values.

BY MR. HUGHES:

Q Now, those entered lighting values, they go to the LEDs, right?

MR. CANNON: Objection, form.

BY MR. HUGHES:

Q Strike that. You mentioned that there's some values that get input on the user interface, right?

A That's been our discussion.

Q And we agree that the LEDs are actually outputting light, right?

A Yes.

Q So wouldn't a POSITA know that some type of computing unit has to turn those different adjustable parameters entered on the interface into signals for the LEDs?

MR. CANNON: Objection, form.

THE WITNESS: It doesn't have to be a computer.

BY MR. HUGHES:

Q There would have to be something between that interface that the user can touch and the LEDs, correct?

A I'm struggling because of the way DMX works. DMX, there's a -- you can have some two-way communications there, so at some point --

Q Well, in the context of what we were just talking about, we haven't been using DMX here, correct?

A Correct.

Q So I'm talking about in the context of what we just talked about, just using the LCD Display and Menu interface and going through the steps we talked about.

In that context, there would have to be some kind of computing unit between the actual interface with the buttons and the LEDs, right?

MR. CANNON: Objection, form.

THE WITNESS: No.

BY MR. HUGHES:

Q So wouldn't a POSITA understand that something would have to turn those parameters entered on the menu into signals for the LEDs?

MR. CANNON: Objection, form.

THE WITNESS: The LEDs don't receive a signal. LEDs light up in response to a forward bias current.

I can send a signal all day long. There was some discussion on this yesterday. If I send a binary signal to the LEDs, they're not likely to do anything.

BY MR. HUGHES:

Q And that would go to -- that signal, though, would go to the driver circuitry for the LEDs, correct?

A That depends on the driver circuitry, if it's configured for a digital signal, if there's an integrated processor or not.

There doesn't have to be a processor. I've designed hundreds of lighting

fixtures that you can make adjustments, but there's no processor.

Q And in the context of the Showline Manual and the LCD Display and Menu Control System that we've been talking about, wouldn't a POSITA have understood that one way to go from having the input values on the menu to output an LED light would be to have a processor somewhere in between?

MR. CANNON: Objection, form.

THE WITNESS: You could have a processor, but it's a question of using it, because if you add a processor, you're adding cost and complexity. Now you've got to have computer codes, you've got to go through troubleshooting.

LED lighting is expensive as it is, and adding cost tends to hurt sales, so I'm struggling with the motivation for a person of ordinary skill in the art to make something more expensive and less desirable for the end user, the market.

BY MR. HUGHES:

Q Now here, though, we have a digital LCD system, correct?

A We have an LCD display.

Q And we've also talked about the saving and recalling, correct?

A Yes.

Q Saving and recalling implies that there's a memory to save and recall those values too, right?

MR. CANNON: Objection, form.

THE WITNESS: There's some method to save the information.

BY MR. HUGHES:

Q And a POSITA would likely consider that to be a memory, right?

A There would be some form of memory.

Q And wouldn't a POSITA also consider that there would be a processor that would access that memory where these parameters are?

MR. CANNON: Objection, form.

THE WITNESS: Could you repeat the

question?

BY MR. HUGHES:

Q I said wouldn't a POSITA also consider that there would be a processor that would access that memory where these parameters are?

MR. CANNON: Same objection.

THE WITNESS: There's something that would access the memory.

BY MR. HUGHES:

Q So some type of computing unit in here that would take the parameter values and turn them into signals so that eventually the LEDs can produce the correct light, right?

MR. CANNON: Objection, form.

THE WITNESS: It doesn't have to be a processor. That's what I'm struggling with.

And again, signals aren't what light the LED -- LEDs. You need a certain current to do that.

BY MR. HUGHES:

Q So there, my question -- I didn't

say processor.

My question was there'd have to be some type of computing unit in the device that would take those parameter values and change them or turn them into something that's going to go to the LEDs, right?

MR. CANNON: Objection, form.

THE WITNESS: I was equating computing unit to a processor. It doesn't have to be a computation or a computing unit.

BY MR. HUGHES:

Q Wouldn't a POSITA understand that one way you could do this where you have a memory with values, one way to do it would be to have a processor that is programmed to read those values, and then issue command signals?

A Again, would it be possible to do that? Yes. Would there be any motivation to do that is the problem because the processor, again, brings with it complexity and cost.

Q And you say complexity and cost.

Have you ever worked with one of

these kind of lighting devices like the SL PAR?

MR. CANNON: Objection, form.

THE WITNESS: Lighting devices that do similar effects, yes. A lot of architectural lighting is very equivalent.

You design a light, typically a version of a wall wash for a building facade. People like -- if you spend a lot of money on a building, you want it to look nice at night, and --

BY MR. HUGHES:

Q What about a light that, like this, can generate chases and effects, you know, clearly used for mounting in a studio or a film studio like that?

A You interrupted.

I was saying with old lights, which legacy lighting technology, you were limited to static light.

With the advent of LEDs, then you could make changes. You could have color

cycling, you could have fades, you could have chases, and those --

Q Have you ever taken --

A Those --

Q Have you ever taken apart a device like the SL PAR 155?

A Yes, and you didn't allow me to finish my answer.

Q Go ahead.

A And I was saying, for those devices, you don't need a computational unit.

Q And when you say "those devices," you are talking about a light for the exterior of a building, correct?

A Or for theatrical lighting. I don't need a computational unit. It can be done with analog circuitry.

Q And I'm talking about lights that look like the SL PAR where we have the multiple LEDs, we have the LCD Display and Control Menu on the back, we can do the editable chases.

Have you taken apart a light like that?

A Yes, and I've designed lights like that.

Q And when you've taken apart those lights, have they had processors in them?

A That's what I was saying. You don't have to have a processor. Usually you try to avoid that because of the cost and complexity.

Q My question was, when you've taken apart a light like the SL PAR, did it have a processor?

A No.

Q And what light was that that you took apart?

A It was actually a light I was designing in conjunction with LED lighting effects when I was working at Lighting Science Group.

Q Are you aware that some of the devices like the SL PAR have processors in them?

A That's what I'm trying to say, is what's the motivation for that?

If you ask an engineer to do something, they can do almost anything. It's a question of doing what's economical and makes a viable product.

Your questions are saying this would be obvious to do, and no, it wouldn't.

Is it a possible option? You could, but it's not necessary, and I haven't seen any information that this device has that.

Q If we can go to page 18, please, of the manual. And do you see under Settings/General, there is a statement that says "Dim Response"? If we can zoom in.

A Yes.

Q And do you see where that says -- under "Reduced" it says, "The response to dimming commands will be calculated with a smaller algorithm"?

A Yes.

Q Now, earlier we talked -- when we

were talking about pseudo-random effects, you were equating an algorithm to being implemented by a processor, right?

MR. CANNON: Objection, form.

THE WITNESS: Yes.

BY MR. HUGHES:

Q Wouldn't you expect again here, when we see that this is using an algorithm to do dimming commands, that we would have a processor?

MR. CANNON: Objection, form.

THE WITNESS: The statement about that is in conflict with page 22 of the manual, where you have dimming curve selection, and I only have four curves, and I can't edit them.

BY MR. HUGHES:

Q I'm talking about --

A Actually, under Dim Response -- under Dimming Curve, it says "[s]elect one of four dimming curve choices."

So in that case, in conjunction with

the previous one, it says there's analog circuitry, so I can't edit the shape of those curves.

If it were a general algorithm running on a computer, I could edit it, but I can't.

Q I'm sorry, you said it says there's analog circuitry. Can you point me to that?

A No, I didn't say that, but because I can't edit it, I don't see that I'm running on a computer. This would be understood to be analog circuitry, or it is a lookup table, a data table, because I can't edit.

If it's an algorithm, I could edit. I could make these anything I wanted. If it was an algorithm, simple polynomial equation, I could have the linear curve, the PL curve, the S curve, the square curve. I could have any number of curves. But because I am only limited to these four, there's something non-editable, which tells me it's not a computer.

Q Now, looking at this, though, it says that it will be calculated with a smaller algorithm to provide emulation with other manufacturers' products, right?

A That's what it says for Dim Response for Reduced, but again, I'm trying to look at it. If I have to accept the manual, I have to accept all of it.

Q Now, if you were going to emulate other manufacturers' products, they might require different dimming commands, correct?

MR. CANNON: Objection, form.

THE WITNESS: Could you repeat the question, please?

BY MR. HUGHES:

Q Sure. If you were going to provide emulation with other manufacturers' products, those products could require different dimming responses or dimming commands, right?

MR. CANNON: Same objection.

THE WITNESS: I'm trying to separate dimming responses and dimming commands.

Command is a signal to dim. A response is what does that curve look like?

You're asking two different things in the same question.

BY MR. HUGHES:

Q So if we just focus on emulation -- provide emulation with other manufacturers' products, that's recognizing that there are differences between different manufacturers' products, right?

A Products could behalf differently.

Q And this is saying that you need to calculate with an algorithm to provide emulation with those different products, right?

MR. CANNON: Objection, form.

THE WITNESS: I was talking about the response to dimming commands. So there's -- your question is not quite in line with what's stated. So I have to issue a command, and the question is what is the response to that command?

BY MR. HUGHES:

Q And the response to that command is calculated with an algorithm, right?

MR. CANNON: Objection, form.

THE WITNESS: It states the response to dimming commands will be calculated with a smaller algorithm.

BY MR. HUGHES:

Q And earlier when we were talking about algorithms, you agreed that it's very typical to implement algorithms with a processor, right?

MR. CANNON: Objection, form.

THE WITNESS: Algorithms are what's needed for writing computer code.

BY MR. HUGHES:

Q So when you see this, is that letting you know that there's likely computer code here?

A It's not clear what the algorithm is. An algorithm can be done with analog circuitry. An analog circuit, you build a

circuit that's a model of a process.

Q And that circuit can calculate?

MR. CANNON: Objection, form.

THE WITNESS: What I'm really reading here is that the dimming command has to be translated into something else.

BY MR. HUGHES:

Q So calculating just means translating?

MR. CANNON: Objection, form.

THE WITNESS: Again, what is being discussed here is a response to a dimming command, so it's -- I have to issue the proper command to get the response, and that's -- that's what this discussion is there, is how to interpret a command, not execution of the command.

BY MR. HUGHES:

Q So issuing a proper command is calculating?

MR. CANNON: Objection, form.

THE WITNESS: Issuing a command is a

command.

BY MR. HUGHES:

Q This says it's calculated, right?

MR. CANNON: Objection, form.

THE WITNESS: This is saying there's a translation of a command.

BY MR. HUGHES:

Q So you're interpreting "calculated" to be translation of a command?

MR. CANNON: Same objection.

THE WITNESS: I'm reading the entirety of the sentence because it's a response to a dimming command.

The response is what it is. The dimming command is what's being modified to give a response.

BY MR. HUGHES:

Q So "calculating" is modifying something?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: I'm talking about

making sure the command does what you expect it to do.

BY MR. HUGHES:

Q And I'm trying to understand. This says "calculated" here, and I'm just -- you know, you've given a couple different answers here, and I'm trying to understand how you're interpreting "calculating."

Is it your position that calculating is just translating a command?

MR. CANNON: Objection, form.

THE WITNESS: No. What I'm saying here is what this section is saying is that you're reinterpreting a command.

The dimming curves are fixed. I'm reinterpreting the commands being sent to execute a dimming curve is what's being discussed here. You're trying to generalize that to everything; I'm trying to answer this specific area.

BY MR. HUGHES:

Q And I'm trying to understand, when

this says that it's being calculated with a smaller algorithm, what that means.

And isn't it -- wouldn't a POSITA see calculating something with an algorithm, and expect that one way to do that would be, just like we talked about earlier, implementing the algorithm as computer code with a processor?

MR. CANNON: Objection, form.

THE WITNESS: That's where it's not necessarily that. And again, you have to -- you're looking at calculated with a smaller algorithm, and you're ignoring the rest of the sentence.

BY MR. HUGHES:

Q Let's just focus on that calculated with a smaller algorithm part for now.

When it says calculated with a smaller algorithm, whatever calculation that is, wouldn't a POSITA expect that that could be done with software code on a processor?

MR. CANNON: Objection, form.

THE WITNESS: Again, you're taking -- you're trying to extrapolate from a phrase and apply that back to the sentence, and that's incorrect mapping.

I can look at "calculated" by itself, and we can talk about that. Can I do calculations by hand? Can I use a calculator? Can I use a spreadsheet? There's any number of ways to do a calculation.

But we're dealing with an entire sentence here, so to parse out a phrase without interpreting it in the context of the full sentence, that's where I have the issues.

So you're asking the generic, and I'm trying to stay within the context.

BY MR. HUGHES:

Q So in the context here, what is calculated with a smaller algorithm?

MR. CANNON: Objection, form.

THE WITNESS: What this tells a person of ordinary skill in the art is that the dimming commands are reinterpreted.

They're translated.

BY MR. HUGHES:

Q So reinterpreting and translated is how you see calculated?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: Again, what this is talking about is you have a dimming command that's being given to the light. The dimming command may be different for a different light.

So if I have this in a system, in a DMX network system, with a different light, and I want to issue one dimming command to all the lights, I have to make sure that the lights all behave the same, which means that, at the light level, they have to have their translation of the command.

BY MR. HUGHES:

Q And that's the calculation?

MR. CANNON: Objection, form.

THE WITNESS: That's what would be

understood here because it's a response to a dimming command.

If I give a dimming command, it's no different from, say in the military, giving an order in Spanish. If your troops don't speak Spanish, you don't know what's going to happen necessarily; and if you translate that order into English, if they're American troops, or into another language that the troops understand, then you get the response you want.

BY MR. HUGHES:

Q So let's take a step back now. I know we've been talking about this dimming response, but again, let's just go back.

In the very beginning of this, I think you said the LCD menu itself is just an interface, correct, in your view?

A The display is an interface, or it's part of an interface.

Q Okay. And so you agree with me, then, that just the display portion on the

very back, just that, cannot make the LEDs output light, correct?

A The display wouldn't have the capabilities. There's some -- I'll say the LEDs for the light, most LCD displays have an LED backlight, so there's some LEDs integrated there.

I just want to make sure we're talking about the same LEDs.

Q The LEDs that are producing the light for the chase effects.

A Correct, the display wouldn't do that.

Q So you agree there is something else in between that allows the LEDs to actually output the light, right?

A The drive circuitry is what powers the lights.

Q And something has to translate the values that are input in the menu into something that's going to the drive circuitry, right?

A There has to be a signal to the drive circuitry.

Q And that signal would be representative of the parameters and the values that were input, right?

A Yes.

Q If we can go back to your declaration for the '258 patent now, and if we can go to paragraph 115 of that.

THE VIDEOGRAPHER: What exhibit was that again, Counsel?

MR. HUGHES: That is Exhibit 3, and paragraph 115.

BY MR. HUGHES:

Q Here you say that "Showline only discloses stored presets or stored chases," right?

A Yes.

Q Now, as we just talked about, at least they can be edited, correct?

A Yes, and the following sentence says, "While these stored lighting effects are

modifiable by a user," so a user can change them.

Q And with the chases we saw, you can actually even add on new steps that weren't there before, right?

A Yes.

Q So with the chase effects, before the user adds all the new steps and makes all the adjustments, the values for the entire final chase don't exist yet, right?

A Could you repeat your question?

MR. CANNON: Objection.

THE WITNESS: Could you repeat the question?

BY MR. HUGHES:

Q Yeah, I'll rephrase.

So with the customizable chases, before the user adds and adjusts all the steps, the final values for the parameters of that chase don't exist, right?

MR. CANNON: Objection, form.

THE WITNESS: The chase isn't fully

defined.

BY MR. HUGHES:

Q Okay. So before the user adds all those steps in, there is no existing pattern for that chase, correct?

MR. CANNON: Objection, form.

THE WITNESS: I'm struggling because, if I look at a chase, and there are steps in it, and I'm adding a step, there's still values for the chase. It exists at some level. So you've asked a very awkward question.

BY MR. HUGHES:

Q So I'll rephrase.

Even in that situation where I have a chase with some steps, when I add more steps to it, the values for those were not there before, correct?

MR. CANNON: Objection, form.

THE WITNESS: That's correct. The user has to enter those values.

BY MR. HUGHES:

Q So isn't it fair to say that, at least for the user customizable chases, the pattern of light output by the LEDs is not pre-recorded?

MR. CANNON: Objection, form.

THE WITNESS: It's not stored yet. There's no recording. If I'm entering values, that's not a recording. I'm saving a series of steps, I'm inputting the values.

BY MR. HUGHES:

Q So I think we agree here, for the user customizable chases, before I make one of those, there's no values for that chase stored on the SL PAR unit, correct?

MR. CANNON: Objection, form.

THE WITNESS: Before they're entered, the values can't be there.

BY MR. HUGHES:

Q So the values for the LED settings are created as the user creates edits and saves the chase, right?

MR. CANNON: Form.

THE WITNESS: No. What's being entered are actually the lighting values, not the signals to the LEDs. We already talked about that.

BY MR. HUGHES:

Q The values are for the luminaire's LEDs settings, correct?

A No.

Q If we can bring back up the Showline Manual and go to page 16.

And under "Effects," do you see where it says, "Effects are chases stored values of the luminaire's LED settings"?

A Yes.

Q So the LED -- the stored values for the LED settings are stored as the user creates edits and saves the chase, right?

MR. CANNON: Objection, form.

THE WITNESS: What's stored are the parameters for the chase, so the intensity, the duration, the color. We discussed that.

BY MR. HUGHES:

Q And those are the values for the LED settings, correct?

A That's different from the values for the LED settings. Those are the values that describe the output of the LEDs when that step is active.

Q So when this says the chases are stored values of the LED -- of the luminaire's LED settings, doesn't that mean that there are values for the settings for the LEDs that are stored for that chase?

MR. CANNON: Objection, form.

THE WITNESS: I'm trying to find -- we talked earlier about the actual settings for a chase.

BY MR. HUGHES:

Q We can agree that there are --

A So if we go to -- on page 16, so there are chases there, there's a master intensity, there's steps, there's speeds.

I thought we discussed earlier about

the actual editing of a chase step. That's what I'm looking for.

Q So we can agree, though, that when we edit the chase, there's some values for the parameters that are created and stored, right?

A Parameters for settings describing the light output.

Q And when those are recalled and the light is made active, that's replaying the user-created chase, right?

MR. CANNON: Objection, form.

THE WITNESS: That's sequencing through the values that the user entered.

BY MR. HUGHES:

Q When you say sequencing through the values, something is translating those values into a signal that's eventually going to go to the LEDs?

A I'm struggling again with your use of "signal." It will affect the output of the LEDs, but the chase steps are the lighting values.

Q And is it your view that once the chase steps are stored, they can no longer be considered calculated?

MR. CANNON: Objection, form.

THE WITNESS: They've never been calculated because they were entered.

If I enter the values, there's no calculation required. I merely entered them.

BY MR. HUGHES:

Q If you enter the values, and then adjust them, nothing has to change for the LEDs to reflect that change in parameter?

MR. CANNON: Objection, form.

THE WITNESS: I made the change. There's no calculation involved in creating that data. I did that, not the fixture.

That's where I'm struggling. We're talking about calculating time-varying lighting values; there's no calculation because the user enters the lighting values.

BY MR. HUGHES:

Q So if a user -- if a user enters

something, there can be no calculation --

MR. CANNON: Objection.

MR. HUGHES: -- is that your opinion?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: There's no calculation by the lighting unit. I entered it in.

BY MR. HUGHES:

Q So if we look at paragraph 118 of your declaration, here you say that "the ability to recall and replay pre-recorded lighting patterns does not disclose the effect simulator claimed in the '258 Patent because replaying a pre-recorded lighting pattern does not create data."

Did I read that correctly?

A Yes.

Q Now, as we just talked about with the edit a chase, you can actually create new steps, correct?

A Yes.

Q That would create new data, wouldn't it?

A No. I'm entering the data. The data is not being created, it's merely being entered.

We're talking about the context of the patents, and it does -- the controller create the data. The user creates the data in this case.

Q The user is selecting different parameters, correct?

A They're modifying the parameters for a step.

Q Okay. And the parameters for that step are then saved and can be recalled, correct?

A Yes.

Q And that's data that can be saved and recalled?

A The information is stored somehow.

Q And it can be recalled to replay the effect, right?

A Yes.

Q And if you change the parameters, wouldn't the natural result of changing those parameters be that the lighting fixture settings would change?

MR. CANNON: Objection, form.

THE WITNESS: The output of the light would change, but if we stay in the context of the patent, looking at claim 1, there's a limitation, an effect simulator adapted to calculate a time-varying lighting value.

Those lighting values are the data the user entered for each step. So necessarily with Showline, the effect simulator is not calculating any lighting values. It relies on stored information or user entered information, so it's not calculating lighting values.

BY MR. HUGHES:

Q Let's go back, if we can go back to, I think we're talking about page 17 of the

Showline Manual, and actually I think if we can going to page 16 first.

Do you see Table 3 with the effects parameters? And we talked about this earlier.

You would agree that some of the parameters for the effects are master intensity, right?

A Yes.

Q And speed?

A Yes.

Q And fade?

A Yes.

Q And then if we can go to page 17, with the Strobe/Timing Menu, we can also adjust parameters relating to intensity, duration, intensity timing, color timing, and strobe, right?

A Yes.

Q So to summarize, you would agree with me that the parameters that can be adjusted in the Showline Manual include things like intensity, color, fade time, duration,

timing for intensity changes, and timing for color changes?

MR. CANNON: Objection, form.

THE WITNESS: Could you repeat the question? That was a little long.

BY MR. HUGHES:

Q To summarize, you would agree that the parameters in the Showline Manual that can be adjusted include intensity, color, fade time, duration, timing for intensity changes, and timing for color changes?

MR. CANNON: Same objection.

THE WITNESS: Yes, those are the lighting values.

BY MR. HUGHES:

Q And if we can now bring up Exhibit 9, the '258 patent, and if we can go -- you understand the '258 patent also talks about the parameters that can be used in creating its lighting effects, right?

A Yes.

Q And if we can go to column 1 at

line 66, one of these parameters is color, correct?

A Yes, color or color temperature.

Q And continuing in column 2, a parameter can also be rate of increase or decrease of brightness, right?

A Yes.

Q And it says rate of color -- rate of change of color, right?

A Yes.

Q Adjust the brightness, correct?

A Yes.

Q And brightness is kind of intensity too, right? I know yesterday you said there's a difference between these, but --

A Yes, but there is -- the question was a little awkward at the time, but brightness and intensity are equivalent.

Q Okay. And in the '258 patent, do you agree that when a user inputs or changes these parameters, the system then calculates lighting values for the lighting effect,

right?

MR. CANNON: Objection, form.

THE WITNESS: Could you repeat the question?

BY MR. HUGHES:

Q You agree that when a user inputs or changes these parameters in the '258 patent, the system then calculates lighting values for the lighting effect, right?

MR. CANNON: Objection, form.

THE WITNESS: I'm looking for where the patent talks about the user activities.

Could you repeat the question, please?

BY MR. HUGHES:

Q So in the '258 patent, and in the patents in general, after the user inputs these parameters, then the system can calculate the time-varying lighting values, right?

MR. CANNON: Objection, form.

BY MR. HUGHES:

Q In other words, the calculation in these patents is based on the input of these parameters, right?

MR. CANNON: Same objection.

THE WITNESS: There are a series of calculations that could include one or more of those parameters.

BY MR. HUGHES:

Q And some of these parameters are the same ones we just discussed with respect to Showline Manual, right?

A Yes.

Q So I'd like to go back to your declaration for the '258 patent, that's Exhibit 3, paragraphs 128 and 129.

So here you mention that the '258 patent distinguishes between calculating time-varying lighting values and replaying pre-recorded effects, right?

A Yes.

Q And you give an example of a

pre-recorded effect of something that maybe sampled the intensity of a real flame, correct?

A Yes.

Q The Showline Manual does not describe sampling a real flame, does it?

A No, it does not.

Q And the Showline Manual also does not state that its presets and chases are made from sampling a real flame, or any other lighting effect, does it?

A No, it does not.

Q And the user customizable chases, those cannot be pre-recorded samplings of a real event, right?

MR. CANNON: Objection, foundation.

THE WITNESS: They could be measurements of a real effect.

BY MR. HUGHES:

Q But they're not pre-recorded samplings of a real event, right?

A If I look at the -- if I measure the

intensity of light and color of light coming from a candle flame, and record that data and enter it, in essence, that data is a recording. It would be a coarse one necessarily, but --

Q But the Showline Manual allows people to input their own values to create the steps of the chase, right?

MR. CANNON: Objection, form.

THE WITNESS: It allows them to create a data table.

BY MR. HUGHES:

Q And it allows them to adjust the parameters for those effects, right?

A They're the ones making the adjustment, yes.

Q Okay. And again, when they make those chases, that's creating new data, it's not acting on pre-recorded data, right?

MR. CANNON: Objection, form.

THE WITNESS: They're entering the information. I'm struggling with the creating

new data.

BY MR. HUGHES:

Q When a user is making a new chase, they're not working with pre-recorded data, correct?

MR. CANNON: Objection, form.

THE WITNESS: They're not working with data that's already entered or already inside the system.

BY MR. HUGHES:

Q Okay. So I think if we can go back to the Showline Manual -- and, Counsel, I see we've been going about an hour, but I have just a little bit more on this, if you don't mind.

MR. CANNON: As long as it's fine with the witness.

THE WITNESS: We can keep going a little longer.

MR. HUGHES: Okay.

BY MR. HUGHES:

Q Okay. So on page 10 of the

Showline Manual, do you see where it says the device can be connected to a DMX512 network?

A Yes.

Q And if we go to page 15, under the "Presets" heading, you agree that this says that "Presets are stored values of the luminaire's LED settings that can be recalled via the menu system or DMX"?

A Yes.

Q And if we can go to page 16, under "Color Filter," do you see something similar there? It says that these can be recalled via the menu system or DMX?

A Yes.

Q And page 16, if we look under the "Effects" heading, again, it says that these are stored values of the luminaire's LED settings that can be recalled via the menu system or DMX, right?

A Yes.

Q So this indicates that the presets, color filters, and chases can be controlled

using DMX, correct?

MR. CANNON: Objection, form.

THE WITNESS: I believe actually what it was saying is they could be activated. You can switch from one recording to another.

BY MR. HUGHES:

Q And I can do that using DMX, correct?

A They can be recalled using DMX.

Q I think you also mentioned maybe switching between them?

A Well, if I recall -- I'm trying to go with what it says here on page 16. "Effects are chases stored values of the luminaire's LED settings that can be recalled via the menu system or DMX."

So if can be recalled via DMX, that would be understood to be selected through DMX.

Q And that would be --

A Somehow DMX can choose a different one.

Q And that would be through a DMX controller, right?

MR. CANNON: Objection, foundation.

THE WITNESS: I'm struggling with DMX controller. It just says "or DMX." A DMX signal can activate it. Whether that comes from a controller or not is where I'm struggling with your question.

BY MR. HUGHES:

Q You're aware that there are DMX controllers that could be connected to these units, correct?

A They're designed to be compatible with DMX.

Q And in fact --

A DMX is a network, and that's where I'm trying to be precise.

The signal comes from the network. Whether the other device that it receives a signal from is a controller or another fixture that's just relaying information is where I'm having issues.

Q Okay. But some DMX control source would be what's doing this, correct?

A I would be most comfortable saying a DMX signal.

Q And would you agree that that DMX signal would originate from a DMX control source?

A It's possible. Again, I'm just trying to be as accurate as I can, because it can be recalled via DMX, so a DMX signal is what recalls it.

Q Okay. And I guess if we just go to page 10 of the manual, zoom in on that again.

Do you see where it says "[a] cable runs from the control console (or DMX512 control source) to the DMX connector"?

A This is where I was getting to the issue with my answer, because if you continue, it says to -- it goes from the control console, or DMX512 control source, to the DMX connector on the first SL PAR 155 ZOOM RGBW LED luminaire.

Another cable runs from the other DMX connector on the first unit to a DMX connector on the next SL PAR 155 ZOOM RGBW LED luminaire, or DMX512 device to be controlled.

Q I think we agreed here that you can have a DMX control source that's connected in through a cable to the DMX connector on the back of the device, correct?

A There can be a direct connection to a DMX512 control source.

Q All right. Counsel, can we go off the record?

THE VIDEOGRAPHER: Stand by. The time is 11:01 a.m., and we're going off the record.

(A break was taken.)

THE VIDEOGRAPHER: The time is 11:18 a.m., and we're back on the record.

BY MR. HUGHES:

Q Okay. So, Dr. Bretschneider, I'd now like to turn to the Astera Manual, if

you're familiar with that, and if we can go to Tab J, and I'd like to mark this as Exhibit 11.

(Bretschneider Exhibit 11 was marked for identification.)

BY MR. HUGHES:

Q Dr. Bretschneider, do you recognize this as the Astera Manual?

A Yes, I do.

Q And have you looked at this Astera Manual in connection with several of the patents in these IPRs, correct?

A Yes.

Q And you understand you've reviewed the Astera Manual in connection with the '257 patent?

A Yes.

Q And the '101 patent?

A Yes.

Q And the '044 patent as well, correct?

A That's correct.

Q If we can go to page 28 of this manual, this includes a listing of effects that can be produced, right?

A Yes.

Q And if we're just going through, some of these are colors of flow sets, running lights. Do you see those?

A Yes.

Q And a rainbow effect?

A Yes.

Q And one of these effects is a fire effect, right?

A Yes.

Q And if we can go to page 27 of the manual, this is showing an example of a graphic user interface for the Astera app, correct?

A That's correct. My understanding is the previous page was related to the Astera app as well.

Q And you understand the Astera app is one of the ways that a user can control the

AX10 lighting device, correct?

A It was something that was an add-on, yes.

Q And the interface that we're looking at here on page 27, this allows users to select effects, correct?

A Yes.

Q For example, the top left, we see a main screen that has different effects the user can pick, right?

A Yes.

Q And again, one of these is fire?

A Yes.

Q And another is wedding, correct?

A Yes.

Q And now I'd like to bring up FIG. 6 from the patents, and if we can do that side by side with this document here. Can we bring up, for example, the '257 patent, and go to FIG. 6 for that.

THE VIDEOGRAPHER: Which exhibit number was that?

MR. HUGHES: That is Exhibit 6.

BY MR. HUGHES:

Q And if we can zoom back in on the figure on the left, please, to -- sorry, all three of those, please. Okay.

So looking at FIG. 6 of the patents, you see the selected effect name at the top, "Fire Effect," right?

A Yes.

Q And if we look at page 27 of the Astera Manual, on the two interfaces, I guess the middle and the right, we also see the name of the selected effect displayed, in this case "Wedding," right?

A Yes.

Q And do you agree that, let's say a different effect, like Fire was chosen, we would expect the display of the effect name at the top there to say "Fire" instead of "Wedding," correct?

A Yes.

Q So going back to FIG. 6 of the

patents, the interface here also has simulation parameters for the effect, right?

A Yes.

Q And these simulation parameters include things like color and brightness, right?

A That's correct.

Q And we again see the same things in the Astera Manual, right? We have parameters like speed. Do you see that?

A Yes.

MR. CANNON: Objection, form.

BY MR. HUGHES:

Q And parameters of strobe, fade, and brightness?

A Difficult to see at this resolution.

Q We can scroll down on that page. You can see it. Okay, that's fine?

A Crossfade, strobe.

Q And if we go down, I think you'll also see brightness at the bottom there.

Do you see that one?

A Yes.

Q And in Astera, you can also allow a color parameter to be adjusted, correct, like for the fire effect?

A Yes.

Q And now, in the patents, after you select an effect and adjust the parameters, the lights would output light to mimic that effect, right?

MR. CANNON: Object to form.

THE WITNESS: I'll say in the patent it's ready to create the effect.

BY MR. HUGHES:

Q Okay. And when it actually creates the effect, then the lights are outputting light to mimic the effect, right?

MR. CANNON: Form.

THE WITNESS: In column 8, starting around line 36, "The lighting effect simulator typically provides data in the form of brightness and/or colour values that vary over time." And then it goes on to describe that

it causes the light to produce the desired effect a lighting data converter may convert the data. So it's creating an effect, or it's causing it to be produced.

BY MR. HUGHES:

Q So after you select and adjust the parameters, you can then cause the effect to be produced on the LED, right?

A Then the calculations start.

Q And the result is the lights are going to output light to mimic the effect based on the parameters, right?

MR. CANNON: Objection, form.

THE WITNESS: It's an odd question because it's creating the effect, so mimic isn't really correct. It's running the effect. It can't mimic itself.

BY MR. HUGHES:

Q So here in FIG. 6, after the user selects for fire effect and adjusts the parameters, and then wants the LEDs to do this, the LEDs are going to output light to

mimic a fire, right?

A I'm just most comfortable saying it's running the effect, and the effect is fire. It's running that.

Fire is supposed to -- the effect is supposed to mimic a fire, but the effect is being run.

Q So after you select the effect and adjust the parameters, the lights output light to run that effect?

MR. CANNON: Objection, form.

THE WITNESS: Running the effect results in the output of light, or necessitates the output of light, so you asked kind of an awkward question there. The light runs the effect.

BY MR. HUGHES:

Q Okay. So when I select the effect, adjust the parameters and run the effect, then the lights are outputting the light, right?

MR. CANNON: Objection, form.

THE WITNESS: The effect is being

run.

BY MR. HUGHES:

Q Which is the LEDs outputting the light, correct?

A Outputting light -- need light is the problem. They're outputting light. The light implies a specific light, and the patent is about time-varying lighting values.

Q And those aren't light? So you're saying that the LEDs output values?

A No, they output light. You used a definite article, "the light." That implies not changing, because you just said "the light."

Q For the light, it would be the series of values for the effect?

MR. CANNON: Objection, form.

THE WITNESS: This gets down to the article you're using describing light. They output light.

I'm much more comfortable, again, if you use a definite article there. I need

something else with light.

If you want to say output the lighting effect, that's fine, but you say output the light, and it's tripping me up.

BY MR. HUGHES:

Q That's fine. So after the user selects for fire effect and adjusts the parameters and runs the effect, the LEDs are going to output light for that effect?

A You're glossing over a calculation step there, but the beginning and end are correct.

Q So beginning and end, the user selects the effect, adjusts the parameters, and the end result is the LEDs output light for the effect?

MR. CANNON: Objection.

THE WITNESS: Again, the end result is the creation of light for the effect.

BY MR. HUGHES:

Q Okay. And the same is true for Astera, right? After you select the effect

and adjust the parameters, the LEDs -- if you run the effect, the LEDs output light for that effect, right?

MR. CANNON: Objection, form.

THE WITNESS: I'll say the information for the effect is stored. I'm looking. I'm not seeing that it immediately makes a change, so ...

BY MR. HUGHES:

Q So you're not sure if a user runs one of the adjusted effects in Astera, that the LEDs can output light for that effect?

MR. CANNON: Objection, argumentative.

THE WITNESS: No. What I was saying was that after the effect is created, it's more -- to be specific, the fixture could run the light. You were saying that it does run, and that's where I was looking over the manual to see that, because I believe --

BY MR. HUGHES:

Q We have the same option in the

patents, right? I can create an effect, and then choose not to run it right away, correct?

MR. CANNON: Objection, form.

THE WITNESS: I'm still focused on the manual. That is described in the patents.

BY MR. HUGHES:

Q So in both cases, let's assume that we are actually running the effect, okay?

A Okay.

Q Now, in the Astera Manual, we have the same as we did for the patents, right? You can select an effect, adjust the parameters, and then run the effect, and the lights output the light for that effect?

A Once it's -- repeat the question, please.

Q So I said in the Astera Manual, same as we did for the patents, you can select an effect, like fire effect, adjust the parameters, and then run the effect, and the lights output the light for that effect?

A Yes.

Q Now, your testimony is that, in the patents, the lighting values based on these parameters have to be calculated, right?

MR. CANNON: Objection, form.

THE WITNESS: More specifically, time-varying lighting values.

BY MR. HUGHES:

Q And so your testimony is that, in the patents, time-varying lighting values, based on these parameters, have to be calculated, right?

MR. CANNON: Objection, form.

THE WITNESS: The calculation of those time-varying lighting values is a key part of the patents.

BY MR. HUGHES:

Q Okay. But in Astera, with respect to Astera, your testimony is that time-varying lighting values, based on these same parameters, are not calculated, right?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: It's not clear, and we're talking about the app, not the fixture.

BY MR. HUGHES:

Q Can you answer the question?

With respect to Astera, isn't it your testimony that time-varying lighting values, based on these same parameters, are not calculated?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: Respectfully, I did answer the question. We're talking about the app. I wanted to clarify that, and you're talking about Astera.

There is a fixture, there is the app, which is one method of controlling the fixture, but it is not the fixture by itself, and it does not discuss calculating.

BY MR. HUGHES:

Q So your opinion is that it doesn't do calculating?

MR. CANNON: Objection to form.

THE WITNESS: I believe I stated it clearly. It doesn't say time-varying lighting values are calculated.

BY MR. HUGHES:

Q Right. So your testimony is that, in the patent, when we're looking at FIG. 6 here, and fire effect has been selected, and a user has input parameters like color and brightness, time-varying lighting values are calculated from this, right?

A Yes.

Q And your testimony with respect to Astera is that when we have almost the same kind of menu, we've selected the effect, and we've put in some of the same parameters, that there is no calculation time-varying lighting values, right?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: I haven't read that in the manual, and I don't believe Mr. Wood found that in the manual either.

BY MR. HUGHES:

Q So you're not sure if Astera can do calculations?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: Astera doesn't say that it's calculating time-varying lighting values.

BY MR. HUGHES:

Q So let's compare between the two here. Both Astera Manual and FIG. 6 of the patent allow for adjustments of color, right?

A Yes.

Q And when a color is changed in the patents, you don't deny that new lighting values are calculated, right?

A The patent states that new lighting values are calculated.

Q So in FIG. 6, a user enters a color of 2000K, and in your view, that indicates the patents are going to calculate a color from that; is that right?

MR. CANNON: Objection, form.

THE WITNESS: It's a part of the calculations. It's an input into the calculations.

BY MR. HUGHES:

Q What if I only input a color? Would there be a calculation?

MR. CANNON: Objection, form.

THE WITNESS: I'm struggling. If you only input a color, then there's nothing varying with time.

BY MR. HUGHES:

Q So here with the fire color 2000K, is there a calculation that has to be made so that the lights can produce a color of 2000K?

MR. CANNON: Same objection, form.

THE WITNESS: Where I'm struggling, you're talking about a calculation, but the patent is talking about calculating lighting -- time-varying lighting values.

So fire color is a lighting value, and that would be a part of the calculations,

but again, we're talking about time-varying and we're talking about lighting values.

BY MR. HUGHES:

Q So color is one of the values in the time-varying lighting values, right?

A It's a lighting value.

Q Is it one that's calculated?

MR. CANNON: Objection, form.

THE WITNESS: I feel like we're stepping outside of the bounds of the patents, because if it's not time-varying, then I don't -- it's not within the scope of the patents. Somewhere in the program there would be a value for the fire color.

BY MR. HUGHES:

Q Is that a calculation?

MR. CANNON: Objection, form.

THE WITNESS: The value would be used in the calculations. In this case, what I'm seeing here, 2000 kelvin, that's the color of the fire. If it's a constant, it's not time varying.

So again, we're talking about calculations and calculating time-varying lighting values, so that's where I'm struggling. You're going back and forth between calculating and calculating time-varying lighting values, calculating lighting values and calculating.

So you're mixing and matching, and I'm just trying to make sure what type of calculations you're talking about.

BY MR. HUGHES:

Q So let's say I have here with fire color, let's say I have an effect playing, so I do have -- let's say the brightness or the intensity is going up and down, okay?

A Yes.

Q And now a user selects or inputs fire color 2000K for that change in intensity light, okay?

A Okay.

Q Is there a calculation to get the light to the 2000K color?

MR. CANNON: Objection, form.

THE WITNESS: And there are different ways to get to that color. The patent talks about using a program to calculate the time-varying lighting values.

Again, where I'm struggling is the patent is about the lighting value. You're talking about the light, which is the output of the light, which should match the lighting value, but there's a disconnect there that I'm struggling with.

BY MR. HUGHES:

Q I'm talking about the lighting values as well. When I have -- like I said, if we have that kind of just light with intensity going up and down, and I input here a fire color, is there a calculation done to get that color into those time-varying lighting values?

MR. CANNON: Objection, form.

THE WITNESS: Here we only have one color. In this case, for this effect, the

time-varying values would be, what I'm seeing here on this display, is the peak brightness, the baseline brightness.

And then you have, showing below, camera frequency and color swing blue versus monochrome, so there is some color variation there.

BY MR. HUGHES:

Q So what if I changed the color in the patents? What if I put in a new value? You don't deny that that new lighting value is now calculated, right?

MR. CANNON: Objection, form.

THE WITNESS: You entered in the value. The value you entered isn't the calculation. The calculation is applied to the inputs to create time-varying lighting values.

BY MR. HUGHES:

Q Okay. So when I input a color, or I change that value in the color, you don't deny that there is a calculation then to create

time-varying lighting values that would reflect that new color, correct?

MR. CANNON: Objection, form.

THE WITNESS: The calculations reflect the color that's input.

BY MR. HUGHES:

Q Okay. And in Astera, you can change the color as well, correct?

A You can.

Q And I can change the color, including a fire effect, just like in FIG. 6, right?

MR. CANNON: Objection, form.

BY MR. HUGHES:

Q I'll rephrase.

In Astera, I can also have a fire effect and change the color for that effect, correct?

A Yes.

Q So how can color be changed in Astera without any calculation?

A Yesterday I spent some time talking

about what would be necessary for calculations for a color temperature.

The easiest way for a programmer is to use a lookup table, use these values for this color.

And Astera evidentially has fairly extensive data tables because there are a number of effects, number of colors, and they're all predetermined. There's nothing in Astera about lighting values being calculated.

Q So I don't think that actually answers my question.

If I change -- you know, you said here, FIG. 6, I've changed the color value, right? I've inputted values, it's there. I've said instead of 2000K, I now say 3000K, right?

A Yes.

Q And your testimony was that there would be a calculation for the time-varying lighting values to reflect that change, right?

MR. CANNON: Objection,

mischaracterizes.

THE WITNESS: Again, the patent is about doing the calculations. The Astera Manual does not talk about doing calculations.

BY MR. HUGHES:

Q So my question to you though is, in Astera, where I have a fire effect, and I change the color, how can that be changed without any calculation?

A And that's what I answered. It's called a lookup table.

Q Does Astera say that there's a lookup table? I don't see any reference to lookup table in that reference.

A I don't see a reference to a lookup table, and I don't see a reference to calculations. So one of skill in the art has to look at it. Does it teach calculations? No, I don't see that.

Q Now, you're saying changing color temperature, though, that does require a calculation, correct?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: No. I'm saying that the patents discuss calculations. You can calculate. If you know about the LEDs, you can calculate different color temperatures, you can calculate different colors, but that's what the patent is about.

I don't see anything in Astera that talks about doing calculations, so the same input can achieve the same output by different methods.

The patents clearly talk about calculations, and Astera is absolutely silent about calculations.

BY MR. HUGHES:

Q So what is the calculation in the patent to change the color?

MR. CANNON: Objection, form.

THE WITNESS: That's not what I was talking about. I said the patent talks about making calculations, and more specifically,

calculating the lighting values.

BY MR. HUGHES:

Q And so my question is what is the calculation in the patents to change the color?

MR. CANNON: Objection, form.

THE WITNESS: The patents don't talk about a calculation for changing color, but they talk about calculations.

BY MR. HUGHES:

Q What is the calculation that's done to change a color?

MR. CANNON: Objection, form.

THE WITNESS: I went over that yesterday. I can repeat it. It will take some time, and may be a little confusing.

BY MR. HUGHES:

Q Do the patents describe a particular calculation for color changes?

A The methods to do the calculations would be known; that's why I went over them yesterday to give an example.

In 5 or 10 minutes, I can write down everything you would do, and it might be easier to understand, but it's a little awkward in a deposition setting.

Explaining it verbally, if you're not familiar with color science and photometry, it may get confusing.

I'm more than happy to go through them, but you can calculate a chromaticity, you can calculate a color temperature. It's not a simple set of equations, but you have to do some calculations, or you use a lookup table.

If someone doesn't talk about calculating values, they're probably using a lookup table because -- and I can make it the same every time.

Q So what if in Astera the fire I created had a bright red flickering color, and I'm running that effect?

MR. CANNON: Objection, form.

BY MR. HUGHES:

Q Are you following me?

A Yes.

Q Okay. So the LEDs there are getting time-varying lighting values for the random flicker that include red color information, right?

MR. CANNON: Objection, form.

THE WITNESS: There's a step. If I send the lighting values, if I send 2000; kelvin to the LEDs, the LEDs don't know what to do with it.

The program is creating that information. It's tracking what is that fire color? What is that color temperature at any given point in time?

BY MR. HUGHES:

Q So the program gets information on the color you want, and then creates the data for that color?

MR. CANNON: Objection, form.

THE WITNESS: What the patent is

about is creating time-varying lighting values. And brightness, fire color are examples of lighting values. I can't send those values directly to the LEDs. That's where you're missing a step.

If I send 2000 kelvin to the LEDs, they're not going to do anything. They're really deaf to that.

So the program is calculating -- that's when it says a time-varying lighting value, those are what are being calculated.

BY MR. HUGHES:

Q Okay. So let's say in Astera I have time-varying lighting values for a bright red flickering fire effect, okay?

A If you could point to me where Astera talks about time-varying lighting values, I could follow you better.

Q So if I have a flickering fire effect, do you agree that the values for that have to change -- they have to be time varying to create the flicker?

MR. CANNON: Objection, form.

THE WITNESS: There would be a series of values. Again, I'm trying to stick with the patents and calculate it. Does it go to a pre-recorded effect or a lookup table? That's possible.

BY MR. HUGHES:

Q My question is, if I have a flickering fire effect, I have time-varying lighting values for that effect, right?

MR. CANNON: Objection, form.

THE WITNESS: That's where I'm struggling. Could you measure the light and determine time-varying lighting values? Yes, but the effect does not need time-varying lighting values to create time-varying lighting values.

BY MR. HUGHES:

Q I think my question is simpler than that.

If I have a flickering fire effect, there are time-varying lighting values for

that effect, right?

A You're asking an incomplete question, and I tried to answer as best as possible. The output of the light, those lighting values would change.

Q To get the output of the light, you need some kind of input that's going to the LEDs, right?

A Yes.

Q And that input to the LEDs, whether direct or it has to go through the drive circuitry, that includes the time-varying lighting values, doesn't it?

A No.

Q So the LEDs don't receive time-varying lighting values?

A I already said LEDs wouldn't know what to do with time-varying lighting values. I can send 2000K to LEDs all day long, and they're not going to do anything.

Q So would the time-varying lighting values be going to the converter, like the

driver circuitry, that's right before the LEDs?

A Again, there are electrical signals there. There's not a time-varying lighting value there.

The lighting values, they're exemplified in the control panel here, so fire color, peak brightness, baseline brightness. So what's being calculated, the lighting values are that color, are what is the brightness. That's what's time varying.

I can stop the program, I can read those values at any point in time.

Q So going back to Astera then, in that program, if I'm running the fire effect and I change the color, I would get the same time-varying lighting values, wouldn't I?

MR. CANNON: Objection, form.

THE WITNESS: Again, Astera doesn't describe time-varying lighting values, so that's where I have the problem. You're making a leap of faith.

That's why I've asked if you can point me to the section of Astera that talks about time-varying lighting values, I'd be able to answer your question, but you're skipping over a lot of details.

The patent is specific about time-varying lighting values, and you're asking about things that aren't lighting values.

BY MR. HUGHES:

Q So let's talk about -- we can maybe frame it in terms of brightness and color values.

Do you agree that there's brightness and color values in Astera for the fire effect?

A There are inputs for that.

Q But are there brightness and color values?

MR. CANNON: Objection, form.

THE WITNESS: I answered as best as I could. There are inputs for brightness and

color.

BY MR. HUGHES:

Q So in Astera, you're not sure if there's brightness and color values?

MR. CANNON: Objection, form.

THE WITNESS: That's not what I stated.

BY MR. HUGHES:

Q You said that there are inputs for that. If there's inputs for something, then the values would also exist, right?

MR. CANNON: Objection, form.

THE WITNESS: The values are input.

BY MR. HUGHES:

Q Like the color, fire color is input in FIG. 6?

A That's one of the inputs, yes.

Q So in Astera, if I decide I want my fire to change to bright yellow as the flickering color, and I make that change and run the effect, wouldn't the color value have to change from red to yellow?

A I would have a different input, but it's also a question of calculations.

Q So if I change -- I mean, if I change my color of the flickering fire effect in Astera from red to yellow, wouldn't the lighting values change to reflect a change from red to yellow?

MR. CANNON: Object, form.

THE WITNESS: I'm struggling which lighting values?

BY MR. HUGHES:

Q The color value.

A Let me try an analogy.

If I have a stereo, I can have music come out of the left speaker, the right speaker, or both speakers. In this scenario, the left speaker can be equivalent to red, the right speaker can be equivalent to yellow.

So if I play the same music on the left versus the right, do any calculations need to be done? No.

Do I play yellow? Do I play red?

Calculations don't need to be done. There's no lighting value. I'm just playing the same song on different speakers.

Q But the speakers are what produce the sound though, right?

A The speakers would be the LEDs in this case.

Q So not red and yellow, right? Not a value of red or a value of yellow there. They're the LEDs, right?

MR. CANNON: Objection, form.

THE WITNESS: You would have different -- and I'm hesitating to use this, but it's the most apt.

You would have different color channels. It could be red and yellow.

BY MR. HUGHES:

Q So in Astera, when I have the fire effect and I change from red to yellow, wouldn't there be a change the user would see of the color from red to yellow?

A The user would see a difference.

Just be a little more specific because some people get funny about this.

What Astera uses are red, green, blue, amber and white LEDs, so those would be the color channels. Amber has a little bit different connotation from yellow.

Q Can you create a yellow color with Astera?

A You and I might talk about yellow, but the manual describes amber LEDs. I'm trying to stick to the manual as much as possible, not to be difficult.

Q Okay. So I'm just trying to understand.

In Astera, there is a value associated with red, for example, right? Like the LEDs cannot just receive the word "red," right?

A There is a red channel.

Q So are you saying that on the red channel, the word "red" is sent to the LEDs?

MR. CANNON: Objection,

mischaracterizes.

THE WITNESS: No. I'm saying there's a group of LEDs that emit red light.

BY MR. HUGHES:

Q So when a user inputs red for the fire color, do those LEDs on that channel receive red, the word "red"?

A No. They would receive a current, or more likely a pulse with modulation current that would cause them to emit red light.

Q So something has translated that input selection of the word red to something the LEDs can receive and use?

A Someone flipped the switch to turn the LEDs on, to try to put it in simplest terms.

Q And when they flip that switch on, the LEDs receive the word "red"?

A No, they receive --

MR. CANNON: Object to form.

THE WITNESS: They receive a current.

BY MR. HUGHES:

Q So again, something translated that input of the word "red" to a current then, right?

A I feel you're missing the details.

When red was selected, a series of switches were closed, so that when current was sent to the LEDs, it would go through the red LEDs.

Q So something had to determine, based on the exact color input, which of those switches would be changed, right?

A That's fair.

Q Okay. So color is not the only parameter that can be changed, right?

MR. CANNON: Objection, form.

BY MR. HUGHES:

Q In Astera.

A There are other parameters.

Q So what if I change color, brightness, fade, and add a random strobe, would there be a calculation based on that?

A It's hard to answer because, again, Astera doesn't talk about calculations.

Q But Astera doesn't store -- you're not saying that Astera would store all possible permutations of all effects in the system, right?

MR. CANNON: Objection, form.

THE WITNESS: I'm saying Astera could work with a series of lookup tables.

BY MR. HUGHES:

Q So you're saying that those lookup tables would include all possible permutations for all of the effects and all of the different adjustments to the parameters?

MR. CANNON: Objection, form.

THE WITNESS: Each effect could consist of a lookup table. Here's the information that describes the effect, the intensity over time.

Another lookup table could say how much current through each LED color channel to create the color temperature so the

permutations become very large very quickly.

It's not one master table with everything. It would be a series most likely.

BY MR. HUGHES:

Q And so in that situation, all those different values would have to be brought together into one signal eventually, correct?

A Those values would affect a series of switches that would modify the output of the fixture.

Q And something would have to determine what to do with each of those switches, correct?

MR. CANNON: Objection, form.

THE WITNESS: The settings would dictate the switch configuration.

BY MR. HUGHES:

Q And something has to determine, based on the settings, what the exact switch configuration should be, right?

A The settings would define it. I'm struggling, because if I say setting 1 means

do this, there's not an interpretation. It's defined necessarily. That's what a lookup table is.

Q So if I say, for example, I want red at 20% intensity with a strobe effect, something has to combine those parameters into something the LEDs can use, right?

MR. CANNON: Objection, form.

THE WITNESS: Something dictates the setting of the switches and the current for that to be the output.

BY MR. HUGHES:

Q I see -- one second.

Dr. Bretschneider, I see we talked earlier about trying to go for about an hour, and I think we're about there, so we can maybe stop here, take a break, if that's okay with you.

A Okay.

THE VIDEOGRAPHER: Stand by.

The time is 12:08 p.m., and we're going off the record.

(Lunch break taken.)

THE VIDEOGRAPHER: The time is 1:00 p.m., and we're back on the record.

BY MR. HUGHES:

Q Okay. Dr. Bretschneider, do you recall that in your '257, '101, and '044 patent declarations, you have a section where you say that Petitioner and Mr. Wood mischaracterized Astera's ability to adjust parameters of pre-recording lighting effects as calculated, right?

For example, this is at paragraph 146 of your '257 patent declaration. And we can bring up Exhibit 2, the '257 declaration, for reference.

THE VIDEOGRAPHER: What paragraph again, Counsel?

MR. HUGHES: 146, please.

THE WITNESS: Yes.

BY MR. HUGHES:

Q And feel free to confirm this for the '101 and '044 declarations as well.

A Okay.

Q Now, if we turn to paragraph 149, still within this same section, for example, here you say that "[t]he '257 Patent distinguishes its algorithmic generation capabilities from prior art systems that, like Astera, merely allow for customization of pre-recorded patterns."

Do you see that?

A Sorry, I think I accidentally muted my mic. Sorry, apologies.

Q I'll reask the question.

So looking at paragraph 149 in this same section, for example, here you say that "[t]he '257 patent distinguishes its algorithmic generation capabilities from prior art systems that, like Astera, merely allow for the customization of pre-recorded patterns." Do you see that?

A Yes.

Q And in paragraph 150, you say that while a user may adjust parameters, the

underlying pattern is not changed.

Do you see that?

A Yes.

Q What do you mean by "underlying pattern"?

A To stay with the MP3 recording analogy, I'm changing the playback speed or the volume.

Q When you say stay with the MP3 analogy, you're referring to an analogy you've made in your declarations with respect to comparing an MP3 recording to a jazz musician, correct?

A Correct.

Q Okay.

A And playing back a recording is not the same as calculating.

Q So what is an underlying pattern?

A For the MP3 recording analogy, that's the sequence of notes.

Q And what about in Astera, what is the underlying pattern in Astera?

A That would be the data values that are output. There's a pattern there, and you're rescaling it one way or another.

Q Is there one underlying pattern for all the effects in Astera?

MR. CANNON: Objection, form.

THE WITNESS: You mean do they all have the same underlying pattern, or does each effect have a pattern?

BY MR. HUGHES:

Q Well, you said that, in Astera, there's just an underlying pattern, right?

MR. CANNON: Objection to form.

THE WITNESS: What I say specifically is while a user may adjust the playback speed, color, or overall intensity of a pattern. So there is a pattern.

The playback speed would be one aspect of that pattern, color would be another aspect of it, the intensity would be another aspect, but the pattern is being stretched or compressed, if you will.

BY MR. HUGHES:

Q What do you mean by "underlying"?

A Because what one gleans from Astera is they have a lot of pre-recorded effects, and you can modify those recordings.

Q So again, what do you mean by "underlying" though?

A The recording in Astera. They're pre-recorded, they're stored effects.

Q So do you mean that Astera has recorded a fire, for example, and it uses that pattern every time?

MR. CANNON: Objection, form.

THE WITNESS: What one of ordinary skill in the art would understand is there's a stored effect that says fire, and then that's what's replayed.

BY MR. HUGHES:

Q So Astera has recorded a fire, and then stored it?

MR. CANNON: Objection, form.

THE WITNESS: They have a data file

that represents fire.

BY MR. HUGHES:

Q Was that data file obtained by recording an actual fire?

MR. CANNON: Objection, form.

THE WITNESS: It's not clear how that would have been generated. It could have been a user inputting values that they felt simulated fire.

BY MR. HUGHES:

Q And in your view, when someone selects the fire effect, Astera is using that same pattern every time?

MR. CANNON: Objection, form.

THE WITNESS: The basic effect is being used.

BY MR. HUGHES:

Q Is it the same pattern every time when a user selects the fire effect?

MR. CANNON: Objection, form.

THE WITNESS: What's not evident is if I select the effect, does it start from the

beginning or start in the middle? So the understanding is the pattern is the same.

BY MR. HUGHES:

Q Where does Astera say that its fire effect has the same pattern every time?

A What Astera describes are predefined programs, so everything is defined. If it's predefined, then it's going to be the same thing. It's not generated from new every time. That's reading from page 21.

Q You understand Astera describes the fire effect as a random flickering effect, right?

A I'm looking for the exact description in Astera for the fire effect.

Q It's on -- I'll help you out. It's on page 28, for example, of the Astera Manual.

A Okay. It states it shows a random flickering effect.

Q So the random flickering is the same every time you play the effect?

MR. CANNON: Objection, form.

THE WITNESS: I'm at the top of this page under "List of Effects." It says "[t]he effects' patterns are pre-defined and cannot be modified by the user." So it's predefined.

BY MR. HUGHES:

Q My question though was, so the random flickering is the same every time the user plays the effect?

MR. CANNON: Objection, form.

THE WITNESS: I'm going with what it says. It says it's predefined, so it should be the same.

It doesn't say it's not predefined. It's very clear it's predefined and it can't be modified by the user, so the pattern is defined.

BY MR. HUGHES:

Q So by "random flickering," you think Astera means play the same flickering pattern, and just loop that same flickering for as long as the effect is played?

A No. What I'm saying is that Astera

says that the pattern is predefined. So if the pattern is predefined, it is predefined.

I believe I'm being as clear as possible in that answer.

Q I understand you're reading from the top under "List of Effects." I'm asking you something a little bit more specific than that.

In your view, when Astera says "random flickering," do you think Astera means play the same flickering every time for as long as the effect is played?

MR. CANNON: Objection, form.

THE WITNESS: I believe I answered this before. It's the same pattern.

The only thing that's not clear here is does it always start from the same point in the pattern, or is it a continuation in the pattern?

So if I go halfway through, and then I play it another time, select it another time, does it start from where it stopped, or

does it start at the beginning again?

But the pattern is what it is. The only question is where is that starting point.

BY MR. HUGHES:

Q And is the flickering the pattern?

A There's a pattern associated with flickering, so you're kind of mapping backwards.

Q Does the pattern set the flickering?

A The pattern is the flickering, so you're asking a question that doesn't have a good answer.

Q So my previous question, which was is the flickering the pattern, your answer is now yes?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: The pattern defines the flickering, and your question is does the flickering define the pattern, so there's a logical flow to it.

The pattern is what is the

flickering, and there's a mapping. It's not that flickering sets the pattern.

BY MR. HUGHES:

Q All right.

A So you're asking a logical question that -- the sequence is wrong. When you reverse it, it's correct, but you have to have the pattern to have the flickering. That's the best I can answer.

Q So the flickering, whatever the pattern is, that's setting what I'm going to see in the flickering?

A Yes. The pattern determines the effect, not the effect determining the pattern. That was the question you were asking, that's why I was struggling.

Q So would someone seeing the same flickering every time they play the effect think it was random?

MR. CANNON: Objection, foundation.

THE WITNESS: It would depend on the length of the pattern and how much attention

was paid to the pattern.

BY MR. HUGHES:

Q So in Astera, it doesn't say or give any particular length for the pattern, right? It doesn't say that there's a set length of a pattern stored, does it?

A I'm not seeing in this section that says there's a maximum duration. At some point, it would repeat.

Q And a repeating pattern, if someone saw a repeating pattern, they wouldn't consider that to be random, would they?

MR. CANNON: Objection, form.

THE WITNESS: The complication is when you're talking about light changing in intensity, which is characteristic of flicker, if there's variations to that pattern, it's not like hearing words that I can say you're saying the same thing, you just said that word before.

Our brains aren't designed to process that flicker pattern and to realize

this is the exact same. We see variations, they look random, that's what sticks in our minds is that it's random, something is changing, I don't see an immediate pattern. So past a certain period of time, it would be exceptionally difficult to determine.

You've asked an incomplete question in that if the pattern repeats on a very short time, then you would not think that it was random. There is some time scale where you would think it was random unless you were incredibly familiar with it.

A flicker is a type of visual noise, and that noise, that randomness, is what our brains would have trouble with.

BY MR. HUGHES:

Q And what about the random strobe in Astera? Where does Astera say that this random strobe is the same every time?

MR. CANNON: Objection, foundation.

THE WITNESS: Astera says the effects patterns are predetermined.

BY MR. HUGHES:

Q And if we look in that list -- are you looking at the list of effects on page 28 of Astera?

A Yes.

Q Can you tell me where in that list of effects you see strobe or stroboscope?

A I don't see that in the list.

Q Instead, if we look at page 27, stroboscope is something that can be done to change effects, correct? Do you see that under "AN EFFECT CAN BE HIGHLY CUSTOMIZED" heading on page 27?

A Yes.

Q And do you see where it says "[a]dditionally, three random stroboscope options are available: slow, medium, and fast"?

A Yes.

Q So where does Astera say that this slow, medium, and fast random strobe is the same every time?

MR. CANNON: Objection, form.

THE WITNESS: I only have three options to choose from, and again, I'm not seeing that it's calculated.

Everything in Astera is predetermined, even if it can be edited. That still goes with I'm playing back a recording. I'm not doing calculating.

BY MR. HUGHES:

Q The Astera Manual doesn't say that the strobe -- the random strobe is predefined, does it?

A It says I only have three options.

Q It says random stroboscope options, correct?

A Yes.

Q If something is random, doesn't that mean it is different each time?

MR. CANNON: Objection, form.

THE WITNESS: Again, we had the discussion with lighting effects. What appears random and what is actually random

would be different. So it appears random.

Again, I have to go with what it says. You do lighting effects, you do a lot of things that can appear random even if they're predefined.

BY MR. HUGHES:

Q So does Astera say that the stroboscope effect appears random?

A It just says random stroboscope option. What I don't see is details on how that's determined. But when I look at everything else in Astera, it tells me it's defined somewhere.

Q If a random -- in a random strobe, wouldn't the values have to be calculated each time to make it look different or random?

MR. CANNON: Objection, form.

THE WITNESS: No.

BY MR. HUGHES:

Q If I just pulled stored values and used those each time, isn't that the definition of a set pattern?

A It could be a definition of a set pattern.

Q And isn't a set pattern almost the opposite of being random?

MR. CANNON: Objection, form.

THE WITNESS: There's a logical issue with that because if I roll a set of dice and record the numbers that show up, that's a random process. That's a random sequence of numbers.

By the definition you're saying, as soon as I write them down and create the list, it's no longer random.

So the numbers were created for a random process, and the act of putting them down you would say would mean they are not random.

So there's a random effect, and that's what it is. This is an effect. It's not saying it's truly random, it's a random effect.

BY MR. HUGHES:

Q Astera doesn't say that they just recorded values for this, does it?

A I think the more important question is or point is that Astera doesn't say it calculates random values.

It only gives me three options, which is extremely limited. If this were truly random, I would have a lot more than three options.

Q If something is random, doesn't that mean it's different?

MR. CANNON: Objection, form.

THE WITNESS: Randomness relates to a perceptible pattern.

BY MR. HUGHES:

Q So again, I'll ask my last question. Astera does not say that these values for the stroboscope effect are recorded values, does it?

MR. CANNON: Objection, foundation.

THE WITNESS: What Astera says, this

is on page 27, "After the effect is adjusted, it may be saved back to the main screen by pressing the save button."

So if it's saved back, it had to have been saved in the first place, it had to be recalled. So to save it back, it came from somewhere, and it went back somewhere after I changed it.

BY MR. HUGHES:

Q My question, though, is where does it say that the random stroboscope values are pre-recorded? It doesn't say that, does it?

A Those words don't appear, but I'm trying to go with what one of ordinary skill in the art would understand.

If you want to reduce the Astera Manual to a single sentence, whether or not a single sentence appears, then I can answer that question, but this line of questioning has been about the whole manual, and when I read that, saying that an effect after it's adjusted may be saved back, it's saved back.

It doesn't say it's saved. It's not created. It was pulled from someplace, it was read from someplace, modified, and then saved back.

Q So it says that the stroboscope effect can be enabled, correct?

A Yes.

Q So if I have an effect, and one of the adjustments I want to make is to enable stroboscope, that means a stroboscope was not part of that effect before, doesn't it?

A To be enabled, it has to have been present someplace before. I can't enable something that doesn't exist, so there is a pattern that was added in.

And again, it's the fact that it can be customized, and I have to look at the document in its entirety.

Q And just to be clear, though, looking at the document in its entirety, it does not say that the stroboscope values are pre-recorded, correct?

A Those exact words, no. But again, if I take an effect, and if I adjust it, and if the adjustment is enabling something, something had to be present in order for it to be enabled.

Q So you understand that the claims of the '257 patent all include a requirement of a simulation parameter that is a random brightness, a random duration, or a random interval, right?

MR. CANNON: Objection, form.

THE WITNESS: Could you repeat the question? I was finding where that is in the claims.

BY MR. HUGHES:

Q Yeah. So you understand the claims of the '257 patent all include a requirement of a simulation parameter that is a random brightness, a random duration, or a random interval, right?

MR. CANNON: Same objection.

THE WITNESS: At least one of. It

can be multiple.

BY MR. HUGHES:

Q What is a simulation parameter of a random brightness?

A The patent gives some examples.

When we were talking before about FIG. 6 and FIG. 7, FIG. 7 shows going from one brightness level to another, so you have a starting point, an endpoint.

There is a characteristic curve, there is some curve that's calculated there for that transition.

The brightness goes down over a period of time at a changing rate, goes up to a new value at a changing rate, and then goes down again at another changing rate.

Q So where in FIG. 7 is there a parameter of a random brightness?

MR. CANNON: Objection, form.

THE WITNESS: I was discussing FIG. 6 and FIG. 7.

BY MR. HUGHES:

Q So my question, though, is where in FIG. 7 is there a parameter of a random brightness?

MR. CANNON: Objection, form.

THE WITNESS: FIG. 7 is an example display. I'll read the description.

FIG. 7 is a graph of light brightness over time. There's not a clear pattern there.

BY MR. HUGHES:

Q FIG. 7 could be generated -- I could program in the values myself and create FIG. 7, correct?

A You could use the data table to do that, but the patent talks about calculating it, so your question is a little awkward.

You could reproduce the figure, but that wouldn't necessarily be calculating.

Q I'm just talking about what's in the figure. If I could create those same brightness values over time, that could even

come from a recording of an actual light in the real world, couldn't it, if I recorded those values and plotted them?

A It could, but FIG. 7 is not a recording. That's where I'm struggling.

You're saying FIG. 7 is a recording. I made FIG. 7 by recording. FIG. 7 is described in the patent as a calculation.

Q So again, where in FIG. 7 is there a parameter of a random brightness?

MR. CANNON: Objection, form.

THE WITNESS: You've got an awkward question there because a parameter of random brightness -- randomness says there's no discernable pattern. I don't see a discernable pattern, so that would be the characteristic.

Looking at this, I can see that there's a maximum intensity and a minimum intensity, and that's what I can say.

What I can see in between going from a local maximum to -- or local minimum to

local maximum or vice versa, I can see there's a rate of change that changes over time. It's not a simple linear slope. The curves are very different in between those transitions.

So the slope going that first upswing, that slope is changing the entire time. If I had data points, I could calculate how that slope is changing versus time, the first derivative of that. I don't know if that's constant or if that's variable, but I can see that it is changing continually.

BY MR. HUGHES:

Q So random brightness is just a brightness that changes maybe not in a uniform manner?

MR. CANNON: Objection, mischaracterizes.

THE WITNESS: No. As we discussed before, randomness is characterized by no perceivable pattern.

BY MR. HUGHES:

Q So if I repeat it -- I see we have

2.8 seconds here in FIG. 7. If I repeated this exact same brightness values every 2.8 seconds, would that still be random?

A It depends on the calculation method. If I flip a coin 10 times in a row and get heads each time, the laws of probability allow for that. It's not very probable. It could still be random.

So you're asking a difficult question because it depends on how those curves were created.

Randomness allows something to repeat, hence the overall pattern. That's the question. So you've asked something that's really very difficult to answer exactly.

Q So let's just go back to the more broad question.

In the patents, what is a simulation parameter of a random brightness?

MR. CANNON: Object to form.

THE WITNESS: Could you repeat the question, please?

BY MR. HUGHES:

Q What is a simulation parameter of a random brightness?

MR. CANNON: Objection, form.

THE WITNESS: In column 10, there is a description for sequence of instructions for simulation. At the end of a spark up and down period:

- reset the duration for the next spark between 2.5 to 5 seconds;

- generate new brightness targets for the next spark between 12.5% and 100% of the current maximum brightness;

- offset the random brightness targets by the requested brightness floor value;

- set the new peak brightness target for each new spark;

- ensure the new targets are greater than the existing faded brightness value to prevent downward jumps;

- set the fade direction to up;

- start a new animation frame;
- calculate brightness fade step sizes;
- fade up fast, progressively larger -- fade up fast, progressively larger fade step sizes;
- change fade direction at the peak;
- fade down slow, progressively smaller fade step sizes;
- prevent the curtailment of a long fade by a new short pulse. If the faded brightness is still greater than 25% of the max, then don't allow new frame period to be less than the old.

BY MR. HUGHES:

Q So all of that is required to be a parameter of random brightness?

MR. CANNON: Objection to form.

THE WITNESS: No. You asked for an example of a parameter, and I gave you several.

BY MR. HUGHES:

Q I asked what is a parameter of random brightness. So if you're saying you gave an example of several, are you saying everything you just read is an example of a parameter of random brightness?

MR. CANNON: Objection, form.

THE WITNESS: It's multiple examples. The duration, the beginning intensity, the end intensity.

BY MR. HUGHES:

Q Any others?

A The shape of the fade, so that exact curve going between a low-intensity and a high-intensity value.

Q Any others?

A That's what comes to mind for now.

Q So from that list --

A This was a specific example.

Q Other than going to examples, can you just explain what a simulation parameter of a random brightness is?

A You're asking a very difficult question, because a random brightness simulation parameter, I gave some examples there, but you could be changing the color.

So if it's just brightness, you are going to look at an overall maximum, a minimum allowable amount of light, then you would look at what's the difference.

Do I want to be able to go from absolute minimum to absolute maximum? Do I want to constrain that?

What's the minimum and maximum time durations to make a transition from a minimum to maximum, or vice versa?

What's the variation in ramp rate?

What's the shape of the curve between those two points?

Q So is all of that required to figure out if something is a random brightness simulation parameter?

MR. CANNON: Objection, form.

THE WITNESS: No. You asked what

they could be.

BY MR. HUGHES:

Q I asked what it is. I think there's a difference. I'm not asking what it could be. I'm asking if, other than going to examples, you can give an explanation of, as used in the claim, the simulation parameter is a random brightness.

A That's the problem. You're asking about what is a simulation parameter. There's more than one simulation parameter for brightness.

I'm telling you -- I'm giving you examples of what one could be, and then you're trying to read it as I only have one simulation parameter.

If it's a random brightness maximum, I could say maximum allowable intensity, but that's not sufficient to describe a random brightness. That's not enough by itself. You need more.

So you're asking what's one

parameter, or an example of a parameter for something that necessarily needs more than one parameter to be defined.

Q I'm looking at the claim, and it says at least one simulation parameter is at least one of a random brightness.

And what I'm asking is, like that says, I have at least one simulation parameter that is a random brightness, and I'm just trying to understand what that is.

A That means a brightness that changes over time without a perceptible pattern.

Q So perceptible pattern which would be as seen by a user -- or seen by a viewer of the light?

MR. CANNON: Objection, form.

THE WITNESS: The outputs of the calculation don't have a perceptible pattern.

BY MR. HUGHES:

Q To who?

MR. CANNON: Object to form.

THE WITNESS: That's an awkward

question because, again, what you're saying to who, it would be to the average user.

BY MR. HUGHES:

Q What would they be perceiving as the light output?

A I'm waiting to make sure you don't talk over me again.

We've talked about what random is, so I'm saying there's no perceptible pattern, and then you're trying to have me define random better than that -- better than that.

One of the random parameters could be a random brightness. So the brightness changes randomly.

Random would imply, would require no perceptible pattern. I'm not simply going from 10% to 100% back to 10% and repeating that.

Q So anything where you don't have a perceptible pattern is going to be a random brightness parameter?

MR. CANNON: Objection, form.

THE WITNESS: No. You're asking a really, really difficult logical question, because if I have a random set of ones and zeros, that has nothing to do with a brightness pattern, but that's something that's random.

So the pattern of the brightness is what is random, and you asked a question that doesn't map to that.

You said anything that's random could be a random brightness pattern, and the level of brightness is what is being characterized as random.

BY MR. HUGHES:

Q Your answer was that random would imply no perceptible pattern. So I'm asking any parameter that would not result in a perceptible pattern, is that a random brightness parameter?

MR. CANNON: Objection, form.

THE WITNESS: Again, you're trying to do a one-to-one mapping of something that's

random, and that's where I have problems.

You're saying brightness, there's only one parameter for the randomness, okay? I can specify the level is going to be what changes, and then the rate of change between different levels is constant, I could do that. In general, it wouldn't be because it does say at least one of. So you could have, for example, every second the brightness changes to a different value. That could still be random.

BY MR. HUGHES:

Q So what about a random duration? What is a simulation parameter of random duration?

A There's more than one, but one would be what's the maximum duration.

Q So any maximum duration is a random duration parameter -- or a parameter of random duration?

A No, that's not what I said.

Q You said one would be maximum

duration, right?

A Yes.

Q So maximum duration is a simulation parameter of random duration?

MR. CANNON: Objection, form.

THE WITNESS: It could be. The question you're asking is equivalent to stating that humans are mammals, and then saying, therefore, mammals are humans.

So if a maximum duration is a parameter for a random time interval, I can't say that a maximum iteration necessarily is associated with a random time interval.

BY MR. HUGHES:

Q So are you saying that I first need to know that I'm doing something random, and once I know that, then any parameter associated with that is a random parameter?

A No. What I'm saying is you're asking what's an example of a random parameter associated with a time duration, and then you are reversing the logic and saying a maximum

time duration is a random parameter.

Q Well, I think --

A Humans are mammals; that does not mean that mammals are humans. That's the equivalent of what you're doing.

A maximum time duration by itself does not mean it's a random parameter, and that's the -- or the parameter for a random duration. That's where I'm having a problem, is there's a logical inconsistency to your question.

Q So if we can go back to my original question, I asked what is a parameter of random duration, and you answered a maximum duration, right?

A That would be one parameter, but a maximum duration does not necessitate that it's a random parameter for a duration time interval.

Q So what would make one maximum duration a parameter of random duration, and another maximum duration not a parameter of

random duration?

A There's a link there that you keep breaking. If a maximum duration is how long do I allow the unit to operate before I turn it off to save battery life, for example, that has nothing to do with a random duration. That's a maximum duration, but it doesn't have anything to do with randomness.

A maximum -- or a random time interval, there's going to be a maximum for that, and there's going to be a minimum. And again, you're trying to take a part of something, and then mapping that part back, even if it's something else, to the first thing. It's got to flow logically.

So a maximum time duration does not mean that it is a maximum time duration for a random interval. That's the question you keep asking, and that's why I'm struggling.

Q So the question I'm asking -- and I'll ask it again -- what is a simulation parameter of a random duration?

MR. CANNON: Objection to form.

THE WITNESS: And I told you, one. One would be a maximum duration.

BY MR. HUGHES:

Q So you told me now that a maximum duration is a simulation parameter of random duration. I just read back your answer, right?

A No, you reread the answer that a maximum duration -- one of the simulation parameters is. You're starting with the parameter and reading back, but your parameter could be applied somewhere else.

The simulation, that's one of the parameters, but having that parameter doesn't mean it applies irrespectively because you haven't fully defined that parameter.

If it's a random time interval, you're going to have a maximum and you're going to have a minimum. You're saying if I have a maximum time interval, that necessitates that the maximum time interval is

associated with a random duration.

Now, if you want to make that link, you keep breaking that, and I'll go back to the thing. If I say humans are mammals, you're saying so mammals are humans.

Q No, that's not what I'm saying.

I'm asking what is a random duration parameter, right? And the answer I've gotten is one is a maximum duration.

A Yes.

Q Okay.

A But you're saying -- what you have been asking -- or what you have been stating is -- doesn't necessarily follow, because a maximum duration is a random parameter for this. Well, that's not it, because I can have other maximum durations, and that's where I'm having the problem.

You're asking the very general, and then trying to tie it to the specific.

Q So if a random duration in general is not a random duration -- sorry.

If a maximum duration in general is not a simulation parameter of random duration, how would you know that a maximum duration is a simulation parameter of random duration?

A The question you need to ask are what are the parameters for a random duration. You keep going from parameter to the effect.

Now, if we want to stipulate that everything is the effect that we're only talking about for random duration interval, then it gets much easier, but you haven't done that, and you're throwing out a very generic thing, and I said I'm trying to stay logically consistent.

Q Okay, let's just go back to the general question. What is a simulation parameter of a random duration?

A One of those simulation parameters could be a maximum duration.

Q Okay. So you are stating that a maximum duration can be a simulation parameter of a random duration?

MR. CANNON: Objection, form.

THE WITNESS: You reverse the order again and again. That's where -- one of the simulation parameters of a maximum duration -- or of a random duration is a maximum.

Again, you're flipping it, and that's where it gets really uncomfortable, because it can be interpreted differently.

The question you're asking, I have a maximum duration, so that is this. Now, it could be, when you reverse it, there's a necessity, but when you flip the direction, there's not an absolute match to it.

BY MR. HUGHES:

Q So I'm just going to read back your answer. I asked what is a simulation parameter of a random duration, and you said one of those simulation parameters could be a maximum duration. Do you agree with that?

A Yes.

Q So under random durations, maximum duration can be one of those parameters?

A Now that you have qualified it with "under random durations," yes.

Q So in order to know if I have something that's a parameter of a random duration, I first need to know that I have a random duration?

A If you have a random duration, you know what the input parameters are, you're trying to go from input parameters and tying that necessarily to the end product. That's where we're having the difficulties.

If I am going to define something for a random duration, there's going to be a maximum and a minimum. You're trying to go from the maximum to minimum, jumping right to it.

When you qualify it and saying for a random duration, when that qualifier is added, then the question gets very easy to ask, but you keep omitting that qualifier.

Q So are you saying that you need the qualifier? I need to first know whatever I'm

doing is going to be random before I can know whether any parameters for that are random parameters? I'm trying to follow --

MR. CANNON: Objection, form.

THE WITNESS: What I'm trying to say is, if you ask what a maximum duration is, you need to know what that maximum duration applies to to say if it's a parameter for a random duration.

If I say this light can emit a thousand lumens, that's a maximum output. Is that necessarily the output for a random brightness? Well, that's the limit of the light. I don't know if that's an input for a random brightness. It could be, but it's not.

So we're going from -- you're asking a question where the answer is it could be, but you're trying to ask it as if it must be.

BY MR. HUGHES:

Q So if I have an effect with a random duration, and then I set parameters of the maximum duration for that, or I change

anything of duration, that would qualify, in your view, as a parameter of random duration, correct?

MR. CANNON: Objection, form.

THE WITNESS: The maximum duration would be one of the parameters for the random duration.

BY MR. HUGHES:

Q And that's because I knew that my effect was going to be random, right?

MR. CANNON: Objection, form.

THE WITNESS: You knew that we were talking about a duration, specifically a random duration.

Again, it's trying to be exact, because what's the duration?

BY MR. HUGHES:

Q So I need to know that I'm talking about a random duration before I can know whether any parameter is a parameter of a random duration?

MR. CANNON: Objection, form.

THE WITNESS: Well, you keep asking questions about parameters, and then you're trying to say, oh, this parameter is associated with this. That's the problem.

You're asking the hypothetical anything in the universe, and then trying to map it back, and that's where the issue is.

So if you ask me a maximum duration, if it's a battery operated device, well, how long can the device operate on the battery? That's your maximum duration. That doesn't mean that that maximum duration is a parameter for a random duration.

So when you say -- if you were to ask, if we're talking about random durations, would a maximum duration be a parameter? The answer is yes.

But what you ask is -- or what you're stating and asking me to agree with is a maximum duration is this. Well, a max duration might not be that. That's the issue.

BY MR. HUGHES:

Q So what else could be a simulation parameter of a random duration as that term is used in the claim?

MR. CANNON: Objection, form.

THE WITNESS: What's the minimum duration?

BY MR. HUGHES:

Q Okay. So what would be the plain and ordinary meaning to you of simulation parameter of a random duration?

A It would be the -- it's difficult. It would be the -- again, you're asking about one, but it's going to need to have more than one.

It would be the limits for the randomness, because depending on what you're doing for random, to stick with time interval, there could be a maximum, there could be a minimum. What's the shape of the distribution? Is it uniformly random? Is it a log-normal? Is it a Gaussian distribution

for random?

Q So it's --

A There's a lot of parameters, and you're trying to be exact for something that could have a lot of options.

I can give you examples of what they are, but you're trying to go from the example to say it has to be this.

Q Is it safe to say it's anything that can impact the randomness?

MR. CANNON: Objection, form.

THE WITNESS: Anything that bounds the randomness, more or less, that's a good one. If it affects the randomness, that could be a parameter.

BY MR. HUGHES:

Q And does a user have to input these parameters -- these random parameters?

A They have to have the ability to change them.

Q Okay. If we can go to FIG. 6 of the '257 patent.

A FIG. 6.

MR. CANNON: I think we've been another hour, so whenever you get to the next good breaking point.

MR. HUGHES: Just a few questions on this, and then we'll be good.

BY MR. HUGHES:

Q So if we look at FIG. 6, what is the simulation parameter that is at least one of a random brightness, duration, or interval?

MR. CANNON: Form.

THE WITNESS: Peak brightness would be one. Oh, sorry, for a random interval? Fire activity.

Multiple things are going on, that's why the random interval is a little bit of an awkward question, because that interval is used with other things.

BY MR. HUGHES:

Q I had asked all three, so anything of random brightness, duration, or interval?

A Activity would be associated with

time interval.

Peak brightness and baseline brightness would obviously be associated with brightness.

Between color and color swing, you have variations in color with that.

MR. HUGHES: Okay. All right, I think we can go ahead and take a break.

THE VIDEOGRAPHER: Stand by.

The time is 2:00 p.m., and we're going off the record.

(A break was taken.)

THE VIDEOGRAPHER: The time is 2:17 p.m., and we're back on the record.

MR. HUGHES: Okay. So I'd like to shift now and talk about the Pohlert reference, and if we can bring up Tab K, and I'd like to mark this as Exhibit 12.

(Bretschneider Exhibit 12 was marked for identification.)

BY MR. HUGHES:

Q Dr. Bretschneider, do you recognize

this as the Pohlert reference that you've discussed in some of your declarations?

A Yes.

Q If I say "POE/LERT," is that okay? I'm not sure if it's "POE/LERT" or "POW/LERT." I don't know if you have a preference.

A "POE/LERT" is how I've been pronouncing it, so we're on the same page.

Q We will go with "Pohlert" then. Thank you.

So if we look at the abstract of Pohlert, it says that it is directed to a lighting apparatus comprising a light panel having a panel frame, and a plurality of LEDs or other light elements secured to the panel frame, correct?

A Yes.

Q And you don't dispute that these lighting devices in Pohlert were used, for example, in photography, film, television, right?

A No.

Q And the lighting apparatus in Pohlert is able to produce different lighting effects, right?

A Yes.

Q And Pohlert discloses a few different controllers to produce the effects, right?

A Yes.

Q And, for example, one of these would be a controller. We can go to FIG. 5A.

Do you agree that 5A is one of these controllers which has an effects generator 543, correct?

MR. CANNON: Objection, form.

THE WITNESS: It's a block diagram of an electronic controller.

BY MR. HUGHES:

Q Okay. And do you see what's labeled as "EFFECTS 543"?

A Yes.

Q And then if we can look at FIG. 5B, this is another controller in Pohlert,

correct?

A It's another block diagram.

Q Of a controller?

A Of a controller.

Q Okay. And in 5B, this controller has a processor 574, correct?

A Yes.

Q And that processor is in communication with a memory 575, right?

A Yes.

Q And do you see where it says interface 580?

A Yes.

Q And there's an arrow between the interface 580 and processor 574, right?

A Yes.

Q And it's through that interface that the processor can receive inputs from a user, correct?

A Yes.

Q Okay. And earlier we mentioned that Pohlert can produce certain lighting effects.

If we can go to paragraph 63 of Pohlert.

Do you see here it says that "[p]attern generation may be accomplished by, e.g., manual selection from a number of predefined patterns, or else through an interface allowing different pattern sequencing"?

A Yes.

Q And then I'm going to leave out some of the reference numerals, if that's okay, but it says that "[p]atterns may include, for example, strobing or flashing different groups of light segments...in a predefined sequence (which may be a pseudo-random sequence, if desired), strobing or flashing different light elements of the light segments in a predefined (or pseudo-random) sequence, gradually dimming or brightening light segments (individually, in groups, or collectively), or various combinations of these effects," right?

A Yes.

Q And do you agree that this paragraph is describing the effects that can be produced with the effects generator of FIG. 5A?

MR. CANNON: Objection, form.

THE WITNESS: Yes.

BY MR. HUGHES:

Q Okay. And then if we go down another paragraph to paragraph 65, do you see this is now talking about the FIG. 5B controller that we discussed?

A Yes.

Q And then if we go to paragraph 67, we see that this is talking about the processor of that controller in FIG. 5B, correct?

A Yes.

Q And just to confirm, if we go towards the bottom of that, do you see a sentence that starts, "As mentioned before, patterns may include, for example"?

A Yes.

Q And you agree that this is the same

list of effects, including the pseudo-random sequences, gradually dimming or brightening of different elements, or combinations of the different effects that we just talked about from paragraph 63?

A I didn't do a one-to-one mapping, but it appears to be.

Q Okay. So part of the patterns for these effects discussed here include sequences, right?

MR. CANNON: Objection, form.

THE WITNESS: A predefined or pseudo-random sequence.

BY MR. HUGHES:

Q So you agree that these patterns could be either predefined or they could be pseudo-random sequences, right?

MR. CANNON: Objection, form.

THE WITNESS: Actually, the descriptions would be more consistent with a predefined pseudo-random sequence.

BY MR. HUGHES:

Q It says "or," doesn't it?

A It does, but the discussion is about the sequence could be pseudo-random, so it could just be a list of pseudo-random numbers.

Q Okay. Now, it also says that the user can select or combine the different effects, right?

A Yes.

Q And so that would include things like combining a pseudo-random sequence with gradually dimming with brightening of light segments, either individually or in groups, right?

MR. CANNON: Objection, form.

THE WITNESS: You talked about gradually dimming and brightening together. That's a little contradictory.

Pseudo-random with brightening or pseudo-random with dimming would make a lot more sense.

I'm struggling how you define

dimming and brightening at the same time. It would seem to counteract each other.

BY MR. HUGHES:

Q But it's fair to say that I could combine different sequences to make an effect, and I can also have some sequences, and then also combine in some dimming with that, correct?

MR. CANNON: Objection, form.

THE WITNESS: Combinations, what I'm reading here, what's coming to me is basically chaining them together.

BY MR. HUGHES:

Q Okay. When you say "chaining them together," you mean I could choose to have multiple different -- or multiple sequences and chain them all together?

A That's one way of combining the effects.

Q Okay. So you recall that in your declarations you say that Pohlert's patterns, including the pseudo-random sequences, are

predefined, right?

For example, we can bring up Exhibit 3, your declaration to the '258 patent, at paragraph 165.

A Yes.

Q Okay. And feel free to confirm. It's in the '257 patent declaration as well, if you haven't already done that.

A I just looked at that as well.

Q Okay. So you understand that Pohlert says a user can create patterns that includes strobing or flashing different groups of light segments in a predefined sequence, which may be a pseudo-random sequence, if desired, strobing or flashing different light elements of light segments in a predefined or pseudo-random sequence, gradually dimming or brightening the light segments, individually, in groups, or collectively, or various combinations of these effects, right?

A Yes.

Q Okay. So when you say that the

effects in Pohlert are predefined, are you saying that Pohlert had stored all possible combinations of predefined sequences, pseudo-random sequences, dimming and brightening?

MR. CANNON: Objection, form.

THE WITNESS: No. The sequences are defined, and the user can select how to combine them.

BY MR. HUGHES:

Q So if a user makes different selections of different combinations, something in Pohlert then combines them?

MR. CANNON: Objection, form.

THE WITNESS: Could be like a playlist. So I can choose what order to play songs in, Pohlert can choose what order to play the patterns.

BY MR. HUGHES:

Q And depending on the different order, you're going to see a different pattern, correct?

MR. CANNON: Objection, form.

THE WITNESS: The overall sequence, when you run the entire effect, would be dependent on how they were combined.

BY MR. HUGHES:

Q And what dimming or brightening was added?

A Could you repeat the question?

Q You said it would -- you said the overall sequence would depend on how they were combined. Were you referring to how different sequences were combined?

A Yes.

Q And so my question was, it would also depend on whether any of the dimming or brightening was also added to those sequences, correct?

MR. CANNON: Objection, form.

THE WITNESS: I'm not seeing that dimming or brightening was necessarily added.

BY MR. HUGHES:

Q Pohlert -- if we can go back to

paragraph 67, Pohlert says, after it talks about -- I'll just start reading.

Strobing or flashing different low power lamps of the light segments in a predefined or pseudo-random sequence, gradually dimming or brightening the light segments, or various combinations of these effects.

And then at the end, we also see predefined or pseudo-random sequence, gradually dimming or brightening the lamps individually, in groups, or collectively, or various combinations of these effects as contemplated.

The combinations there would refer to including the dimming or brightening, correct?

A They do, but there's a section earlier in the paragraph talking about, to accomplish dimming, processor may be programmed to select binary-encoded values to load into registers of the switch selector,

which in turn select a variable resistance value which controls the output from each individual or group of switches.

So there's some circuitry that's doing the dimming.

Q And that processor executing the instructions, that would also be getting the sequences that a user may have selected, correct?

MR. CANNON: Objection, form.

THE WITNESS: No. What it's saying is that the processor is controlling the switches.

BY MR. HUGHES:

Q And the control of the switches is in reaction to user selections of the different sequences — strobing, dimming, brightening — that the user selects, right?

A The discussion is about dimming, so I'm not sure strobing would be a part of that, but the processor is setting some switches.

Q Do you see where it says the

programming instructions may also provide for various lighting effects, such as dimming, strobing, pulsation, or pattern generation? Up towards -- it's about five lines down.

A Yes.

Q So the programming instructions can also provide for the pattern generation we've been discussing, right?

A It's the programming instructions and the registers of the switch selector.

Q And the program instructions are executed by the processor, correct?

A It's loading binary-encoded values into registers.

Q If we read the beginning of paragraph 67, it says "the processor reads instructions from the memory and executes them." Did I read that right?

MR. CANNON: Objection, form.

THE WITNESS: Yes.

BY MR. HUGHES:

Q Okay. So we agree that the

processor is reading and executing programming instructions that can provide for the pattern generation, right?

MR. CANNON: Objection, form.

THE WITNESS: It's reading instructions from memory on how to set switches.

BY MR. HUGHES:

Q To provide for one of the things, pattern generation, right?

A Yes.

Q Okay. And if we can bring back up Exhibit 3 -- I'm sorry, yeah, Exhibit 3, your '258 declaration, and if we can go to paragraph 166.

In this paragraph you say that, in your opinion, "executing strobing or flashing in a pseudo-random sequence is not the same as 'calculating...a time varying lighting value.'" Is that right?

A Yes.

Q So you're saying that here the

pseudo-random sequence is not calculated?

MR. CANNON: Objection, form.

THE WITNESS: I'm saying here that the sequence was read from memory.

BY MR. HUGHES:

Q If a user selected for the system in Pohlert to generate a pseudo-random sequence, the lights would output a pattern of flashes or strobes, right?

A Could you repeat the question, please?

Q If a user selected for the system of Pohlert to generate a pseudo-random sequence, the lights would output a pattern of flashes or strobes, right?

MR. CANNON: Objection, form.

THE WITNESS: It's not clear that Pohlert generates a pseudo-random sequence.

What is clear is that there is a pseudo-random sequence, and with the memory, in terms of programming, if you're reading instructions, it's easiest to point to a

different data table.

So I'm having some issue with your instructing Pohlert to generate a pseudo-random sequence, which I'm not seeing here.

BY MR. HUGHES:

Q Just in general, a sequence would be a series of flashes or strobes, right, in the context of Pohlert?

MR. CANNON: Objection, form.

THE WITNESS: It would be equivalent to a recording.

BY MR. HUGHES:

Q So what this would be, though, is a series of flashes or strobes, right?

MR. CANNON: Objection, form.

THE WITNESS: It's reading instructions, and it's following the recording.

BY MR. HUGHES:

Q My question is, when -- strike that.

Do you agree that in Pohlert the

system can generate a sequence, including a pseudo-random sequence, of lights?

A I would say it can read one. Generating a pseudo-random sequence is where I'm having an issue, because the user inputs the sequence if it's multiple effects being combined together. So it's not the system generating it; the system is doing what it was told to do.

Q If I was looking at the LEDs in the system of Pohlert when one of these pseudo-random sequences was running, I would see that sequence as a series of flashes or strobes, right?

MR. CANNON: Objection, form.

THE WITNESS: You'd see it as a lighting effect being played back.

BY MR. HUGHES:

Q And the lighting effect would be different -- when I say flashes or strobes, maybe if I said pulses of light, would that help? I would see different pulses of light

of different durations, maybe different intervals between them?

A I think it depends on the lighting effect. That's where I'm trying to be precise. The effect would be playing.

Q And if I'm playing a pseudo-random sequence, that won't just be the lights are just on continuously without changing at all, correct?

A There would be some changes depending on the data values being read.

Q And those changes might be we have some gaps, correct? There might be times when the lights are not on?

A It's possible.

Q And the time the lights were not on, or maybe not the same intensity, that time would change to make the different sequences, correct?

A That would be dictated by the sequence that was being run.

Q So the sequence that's being run

could have information for different durations or intervals of the intensity of the light for each of the LED elements, is that fair?

MR. CANNON: Objection, form.

THE WITNESS: I would say that the sequence being run does have, not that it could. If it didn't have them, then it wouldn't do anything.

BY MR. HUGHES:

Q Okay. So the sequence that's being run would have different durations and intervals for the intensity of light for the LED elements that are running it; is that fair?

I'm not trying to trick you. I think I -- you said "would."

A It's not clear the exact format of the data in Pohlert, that's why I'm struggling.

I'm trying to map your question into what is in the teachings of Pohlert. I basically have a recording, and I'm playing it

back. Whichever one I select, that's -- the light will act according to those instructions recording.

Q Can we agree that, per the sequence, especially one that's pseudo-random, so we're not seeing something consistent, we would have some different durations and intervals of the flashes in that sequence, right?

MR. CANNON: Objection, form.

THE WITNESS: You could measure the different durations and intervals.

BY MR. HUGHES:

Q Okay. And because in Pohlert, if we're talking about the pseudo-random sequences, because these are pseudo-random, at least the order in which the LEDs might have intensity change would be different, right?

A Different from? What's it being compared to?

Q If I ran -- if I chose to run a pseudo-random sequence in Pohlert and I let the lights run, and then I chose to run

another pseudo-random sequence, you wouldn't expect to just see the exact same thing again, correct?

A If it was a different pseudo-random sequence, then no, I would expect it to be different.

Q And if I said at one point let's do a pseudo-random sequence, and then a day later I said let's do a pseudo-random sequence, again, you wouldn't expect it to be the same thing, right?

MR. CANNON: Objection, form.

THE WITNESS: It would depend on your memory and whether the system started the sequence from the same point, or if it picked up from where it left off.

BY MR. HUGHES:

Q And in Pohlert, it could be that, looking at FIG. 5B, the processor executing the programming instructions, which would determine which pseudo-random sequence might be played?

A Which data file to read? It would depend on that, which recording, if you will, is it playing, and where is it starting?

Q And Pohlert doesn't specifically say that these pseudo-random sequences are recordings, does it?

A It says it's predefined. I'm looking in paragraph 63. "Patterns may include, for example, strobing or flashing different groups of light segments...(given the example of FIG. 3B) in a predefined sequence (which may be a pseudo-random sequence, if desired), strobing or flashing different light elements of light segments in a predefined (or pseudo-random) sequence."

So it's predefined, which says that it's basically a data file. It's the equivalent of a recording.

Nothing was recorded, but the pattern was stored. It was created and loaded into the system.

Q Like it says here, a user could

choose to have the pattern be a pseudo-random sequence, right?

A The prestored sequence could be a pseudo-random sequence.

Q Okay, Dr. Bretschneider, so we've talked about the '257, '258, and the '044 patents. You also gave a declaration specific to the '101 patent. Do you recall that?

A Yes.

Q And the '101 patent has a calculation limitation in the independent claims of that. If we can bring up exhibit -- this will be Tab H. We can mark this as Exhibit 13.

(Bretschneider Exhibit 13 was marked for identification.)

BY MR. HUGHES:

Q And if we can go to the claims of this patent. And, Dr. Bretschneider, you can review these, but let me know if you agree that these independent claims all require a calculation step that includes compensating

for rolling shutter artifacts?

A Yes.

Q Is it fair to say that a rolling shutter artifact occurs when there's a lighting change in the middle of a camera frame?

A Artifacts aren't -- rolling shutter artifacts aren't limited to that. If we're talking most generically, then it's a change in the middle of the frame.

A rolling shutter, there's the entire frame, but each line is essentially a frame, so there's a little bit of peculiarity there. It's not like a traditional I'm taking a picture all at once.

Q Understood. So the rolling shutter artifacts occur when you have a lighting change, for example, while the shutter is closed, and then when it reopens, we now get a jump, correct, in that frame?

A Could you repeat the question?

Q I'll go back to my previous one

because I think we're on the same page here, but it's fair to say that, as one example, a rolling shutter artifact occurs when there's a lighting change in the middle of a camera frame, right?

A A full camera frame, just to be specific, because as I said, a rolling shutter is basically a series of frames, but you have the entire image, which would be the full frame.

Q Okay. And one way to compensate for rolling shutter artifacts is to synchronize the lighting device to the shutter of the camera; is that right?

A One way is just to not change the light ever, but synchronizing is one alternative.

Q If I have light that's changing, then one way to do it would be to synchronize the lighting device to the shutter of the camera, right?

A And to coordinate the changes with

the shutter of the camera.

Q Okay. And so if I synchronize or coordinate the changes of the light with the shutter of the camera, then I'm going to get a clean image that's free from the rolling shutter artifacts, right?

A From ones that are related to light. Rolling shutter artifacts are also from motion. You can have a distorted image.

So if we want to agree we're talking about ones based on light and not motion, then it's a little easier.

Q And we can agree we're talking about ones based on light.

A Okay.

Q And so you agree that if we do synchronize the light with the shutter of the camera, we're going to get the clean image with no rolling shutter artifacts, right?

A That's one of the steps. It's not necessarily everything. That's a start.

Q Okay. And are you familiar with the

Edwards reference that was discussed in the '101 patent IPR?

A Yes.

Q And you agree that Edwards discloses synchronizing LEDs to the shutters of digital cameras to obtain these images free from artifacts, right?

MR. CANNON: Objection, form.

THE WITNESS: The main thing about Edwards is synchronizing -- it's to be able to shoot a scene with multiple lighting conditions at the same time.

BY MR. HUGHES:

Q Okay, let's go back to your declaration, Exhibit 4, which is your declaration for the '101 patent, and if you can go to paragraph 86, please.

Now, here you say that the '101 patent takes the user inputs, which will be provided via the interface of FIG. 6, and simulates a fire effect while also compensating for rolling shutter; is that

right?

A Yes.

Q And in this same paragraph of your declaration, you say that "[t]he '101 Patent details an algorithm for how this calculation may be performed." Do you see that?

A Yes.

Q And you cite here to column 9, line 59, through column 10, line 62, of the '101 patent, right?

A Yes.

Q Where is this algorithm in column 9, line 59, through column 10, line 62?

A It's saying "[f]ire is simulated as a series of 'sparks.' Each spark has the following random parameters: Interval" -- I'm going to summarize here -- peak, ramp-up time, fade-down time.

There's some other stipulations on the duration of the interval to keep the center -- the range from drifting.

The effect simulator cycles through

a loop, and that language description is the algorithm.

There's actually a more specific example, column 10, starting at line 26. That's where it gets to a repeat. So it talks about at the end of a spark up and down period, reset the duration of the spark between 2.5 to 5 seconds, and then it keeps going on, and it's describing.

So the text is actually talking about the algorithm. That English language description is the algorithm.

Q And can you point to me where rolling shutter is mentioned in this section where you say an algorithm is disclosed?

A I'm not seeing rolling shutter here, but to eliminate a rolling shutter effect, a person of skill in the art would know that you can't change the light interval once you sync -- while the rolling shutter is open.

Q Okay, I'd like to go now -- I think we're going to -- if you remember, we touched

earlier, we have a little analogy to a live jazz performance. If we can go to paragraph 90 of this declaration.

And, Dr. Bretschneider, do you recall making this same analogy in your declarations for the other patents when discussing calculating?

A Yes.

Q Okay. And using your analogy, it's your opinion that the patents are like a live jazz performance, right?

A They're actively calculating the lighting values.

Q And you compare that to the musician doing a live jazz performance, right?

A Yes.

Q Okay. And in your opinion, the cited prior art in the IPRs, like Astera and Edwards in the '101 patent, you say that they're like an MP3 recording; is that correct?

A Yes.

Q So in your opinion, the '101 patent, and the other patents, are like a live performance because a musician can adjust in real time how he or she is playing the music?

A It's more in terms of the data. The music doesn't exist before the musician plays it, so there's no sound unless the musician makes the sound.

Q What is the data that's input to a musician?

A It would depend on the musician. Particularly with jazz, there's a lot of free form to it, so it's literally made up as it goes along.

Q So the data is coming from the musician themself in their head?

A The musician is deciding the notes to play, the volume, the intensity, the attack, the pitches is the note itself, but the timing is all being done by the musician. They're the ones that would be doing the calculation in this analogy.

Q So the musician can think about these different notes or the different parameters what they want to play, and then do it live, correct?

A It's a part of jazz, there's improvisation; that was a big part of the development of jazz was not -- was literally that the music wasn't the same every time.

I experienced this a lot in New Orleans at Tulane. They are literally making it up as they go along in some cases.

Q So the patents are like a live jazz musician performance because the musician can adjust in real time how they're choosing to perform the music; is that fair?

A It's like that because the values are being calculated. I'm not reading values out of a table. I'm calculating them.

Q So when the musician makes the adjustments in what they're doing, that's akin to the calculating limitation in the claims?

MR. CANNON: Objection, form.

THE WITNESS: It's not predetermined, so they're making a decision, and you see the results of that decision.

BY MR. HUGHES:

Q What if a jazz musician is following along to sheet music in front of them? Are they no longer calculating then?

A Having spent a number of years in New Orleans, there are a lot of jazz musicians who would argue with that.

Someone still has to play the music. I'm not playing something back. Someone has to create the music.

Q So are you saying, just generally, a jazz musician would never be following along with sheet music? Was that your concern with the question?

A I'm just saying, having spent a few years in New Orleans, there are some purists who would say that. The notes --

Q If I switch it to if a musician is following along to sheet music in front of

them, are they not calculating?

A They still have to do some calculations. If you've ever played music, depending on the instrument, there are a lot of choices. There's a lot of thought that has to go into playing every note. It's not just a sound. It's not as easy as pressing a button.

Q So if a musician, for example, decided to change some of the notes, maybe hold one note longer than they were supposed to, that might be something that would be akin to calculating?

A That would be slightly changing the rhythm, changing the attack of the note, how fast does the note ramp up in volume, what actual volume to play.

If you've played music, then, yeah, there's a lot that has to be considered.

Q Okay. And in your analogy, you're saying that the jazz musician would be like the effect simulator in the claims of the

patents, right?

A They're creating the music as they go along.

Q My question is, though, in your declaration you say, in this analogy, the jazz musician takes the place of the effect simulator, right?

A Yes.

Q What are the input parameters to the jazz musician?

A At a high level, what's the song? What's the piece of music that they're trying to play, or is it simply free form?

It could be what's their feeling at the time, and they're converting that into music.

Q Would things like what note to play, what pitch to have, the duration of the notes, would those be input parameters to the jazz musician?

MR. CANNON: Objection, form.

THE WITNESS: Note and pitch are the

same thing. That would be parameters for the music. You still have to consider the timing of the music.

You also have to still go through the calculations, what are the finger movements, lip movements required to play the note, what volume to play the note.

BY MR. HUGHES:

Q And you compare the live performance against something else, like a recording, and I think you used an MP3 track, correct?

A Yes.

Q What are the input parameters to the MP3 track?

A I have a recorded piece of music. It's already done, I'm just simply playing it out.

Q And when I play that MP3 track on an MP3 player, can I add input parameters to it then?

MR. CANNON: Object to form.

THE WITNESS: You could change the

volume, you could change the playback speed, but the music is what it is. There's no calculation involved; you're simply playing what was recorded.

BY MR. HUGHES:

Q So you said speed and volume may be some parameters you could input to the MP3 player; is that right?

A Yes.

Q Then how could the input parameters like speed and volume be input to a jazz musician?

A They're not really input. Those are decisions that are made.

Even if you have those parameters, they're the ones who have to decide. Like I said, depending on the instrument, if it's a string instrument, they have to decide where do they place their fingers on the fret? Which strings do they strum? How far do they -- does their finger travel? How long is it in contact with the string? Everything

that they would go through to play the note.

It's not as simple as just playing a note. If you're a very skilled musician, you can say that, but there's an enormous amount of training and a lot of work in their brains to make that happen, but if they don't do that, you have no music.

With a recording, the music is there. It's really a question if you play it or not.

Q So these are decisions that a jazz musician is kind of making in their mind as they go; is that fair?

A There are a lot of calculations they have to do. Like I said, just to play a note, depending on the instrument, there's muscles that they have to move, they have to position their body, their fingers, their lips, even their breathing patterns depending on the type of instrument. All of that has to be factored in to play the music, but without the musician, you have no music.

Q And how does the patented device or the patents -- strike that.

How do the systems and methods in the patents do this?

MR. CANNON: Objection, form.

THE WITNESS: Another way to look at it is a form of data compression. The patents use the information that limits the boundaries of the simulation, and then they create the simulation, as opposed to going to a data table of values and reading off of a list.

BY MR. HUGHES:

Q So I'd like to go back, we were talking about the MP3 track.

Do you remember that?

A Yes.

Q So what if I had that MP3 track, but instead of just playing it on an MP3 player, I was a DJ playing the track live using a sophisticated sound table.

Could I be doing calculating?

MR. CANNON: Objection, form.

THE WITNESS: You could be, but the MP3 player is still going to be reading that pattern.

BY MR. HUGHES:

Q What if using my sound table I took that track and I started to change the song — for example, changing the tones or holding one note for a very long time — would that make me an effect simulator that's calculating?

MR. CANNON: Objection, form.

THE WITNESS: It would make you a DJ. Sorry, I'm trying to -- you're making decisions to modify the music, but you're still starting with a pattern that existed before you did anything.

BY MR. HUGHES:

Q If I decide that I want to change the song though — for example, I'm going to hold some notes much longer than others and change different tones of the notes — I'm not playing the same song anymore, am I?

MR. CANNON: Objection, form.

THE WITNESS: You're still playing the same sequence of notes. The underlying pattern hasn't changed. You may change it in time, but you're the one doing that. You're still reading from a list, if you will.

BY MR. HUGHES:

Q Now, earlier when we were talking about the jazz musician, you said when the jazz musician decides to hold a note for a longer amount of time, that might be calculating, right?

A Yes.

Q But if a DJ chose to hold that same note for a longer amount of time, in your opinion, that's not calculating?

A With a live performance, the music doesn't exist. It's being created. The DJ is using a recording. That's the difference.

There's a list, and if they change the speed, they go through the list, they're still reading off of a list. How fast were they reading is the question.

The pattern has been defined and it exists. It's a recording.

Q But can't a DJ make the same kind of real-time adjustments as a jazz musician?

MR. CANNON: Objection, form.

THE WITNESS: The difference is that the DJ has the music already recorded, the jazz musician creates the music as they go along.

BY MR. HUGHES:

Q So in the MP3 example, you said that increasing the playback speed is not calculated, right?

A You're still following a pattern.

Q And you are saying that increasing the volume is not calculating, right?

A Correct.

Q Are there any changes that a user could make to the MP3 track that you would consider to be calculating?

MR. CANNON: Objection, calls for speculation.

THE WITNESS: You're still pulling the pattern. The pattern is coming from the recording, you're not creating it, and that's the difference. You're using stored information, and you're still replaying it. Even if you make a change, that pattern still exists.

BY MR. HUGHES:

Q So no matter how much those changes make the music sound different, none of that could be considered calculating?

A Could you repeat the question?

Q So I was asking, you know, no matter how many changes they make or how much those changes make the music sound different, in your view, none of that could be considered calculating?

A They're still relying on a predefined pattern. If they switch from one song to another, they're still taking one recording and switching to another recording.

Q So let's compare -- maybe let's go

to a random effect, like the fire effect in FIG. 6 of the patents.

MR. CANNON: Scott, if we're changing back to the patent, it's been a bit over an hour, I just wonder if we can take a break.

MR. HUGHES: I have about three more minutes on this.

MR. CANNON: Okay.

BY MR. HUGHES:

Q So when the fire effect is playing on an LED lighting device, and the lighting director changes maybe fire color in real time, would you agree that that's like a jazz musician?

A Are we talking about the patent or on a generic light?

Q We're talking about the patent.

A In terms of the patent, whether there's a decision to change the color or not isn't the point. It's that the pattern of the lighting values are being calculated.

Changing the input would be changing the inputs to the calculations, so a new pattern is being generated. So within the context of the patent, it's being calculated. Something is being calculated whether a change is made or not.

MR. HUGHES: We're good to take a break if you want to.

THE VIDEOGRAPHER: Okay, stand by.

The time is 3:17 p.m., and we're going off the record.

(A break was taken.)

THE VIDEOGRAPHER: The time is 3:30 p.m., and we're back on the record.

BY MR. HUGHES:

Q Okay. Dr. Bretschneider, I'd now like to talk about the Edwards reference. If we could bring up Tab M., and I'd like to introduce this as what will be Exhibit 14.

(Bretschneider Exhibit 14 was marked for identification.)

BY MR. HUGHES:

Q Dr. Bretschneider, do you recognize this document?

A Yes.

Q And this is the Edwards reference that you discussed in some of your declarations in connection with the IPRs, right?

A Yes, that's correct.

Q And generally speaking, Edwards discloses a system that synchronizes lighting effects with camera shutters, right?

A Among other things, yes.

Q And in the Edwards system, there are at least two inputs that are required for this synchronization: one would be an input of lighting commands; and then the second is an input of camera parameters, such as shutter speed. Is that right?

A An input of the effect, and then shutter speed.

Q Is your answer yes?

A Yes, I was just clarifying. I think we meant the same thing there.

Q Okay. So the synchronization signal is related to the timing of the shutter, right?

A Yes.

Q And without at least these two inputs, then the system in Edwards would not be able to synchronize the lighting commands and effects with the shutters, right?

A Correct.

Q And if we can go to column 4, line 47 of Edwards. And if you see, this says "[i]n one embodiment of the present invention the active lighting is synchronized to the camera shutter, so a special effect such as a gun shot flash can be synchronized with the exact time pulse when the camera shutter is open. This ensures the lighting event is captured cleanly on camera in that specific frame." Do you see that?

A Yes.

Q And "captured cleanly" means -- that's referring to there's no artifact, right?

A Yes.

Q And a gun shot flash is a lighting effect, right?

A It's an example of one, yes.

Q Okay. And when this says "synchronized to the camera shutter," that's talking about synchronized shutter speed, right?

A It's a little more than just shutter speed. It's synchronized with the opening and closing of the shutter.

Q And the opening and closing of the shutter, how often that occurs, is it fair to call that the shutter speed?

A The shutter speed more particularly is the amount of time that the shutter is open. It's the time difference between opening and closing.

Q Okay. And that's a -- the shutter

speed is a parameter of the camera, right?

MR. CANNON: Objection, form.

THE WITNESS: It's a setting on a camera. I don't know if I would say parameter necessarily, but it's set on the camera.

BY MR. HUGHES:

Q There's some cameras that allow adjustments of the shutter speed, right?

A Yes.

Q And shutter speed can vary depending on different types of cameras, right?

A Different cameras may have different shutter speeds. It depends on how the camera is set.

Q The synchronization in Edwards, that's shifting the timing of the lighting effect so that it only occurs when the shutter is open, right?

A I can't say that it occurs only when the shutter is open, because the idea behind Edwards is that the lighting is constant when the shutter is open, so the light has to be on

before the shutter opens, and it still has to be on when the shutter closes.

So the shutter overlaps the effect, but it's -- you'd have an unusual artifact at the top and bottom if it was exactly synchronized.

Q So the synchronization is ensuring that there's no transitions of the lighting effect that are happening when the shutter is closed, right?

A No, when the shutter is opened.

Q Sorry. The transitions -- any transitions in the lighting effect occur when the shutter is closed, correct?

A That's correct.

Q So this requires the system to perform some calculation to shift the timing for the effect, right?

MR. CANNON: Objection, form.

THE WITNESS: There's a sync signal that's used.

BY MR. HUGHES:

Q And in using the sync signal with the effect, the system needs to perform some calculation, doesn't it?

MR. CANNON: Objection, form.

THE WITNESS: It's -- could you repeat the question, please?

BY MR. HUGHES:

Q The system would need to perform some calculation to use the sync signal and shift the timing of the lighting effect, right?

MR. CANNON: Objection, form.

THE WITNESS: No. The sync signal just -- it's basically a start and stop. So on the rising pulse of the sync signal, the lights are on, and on the falling it's off.

BY MR. HUGHES:

Q Doesn't knowing when the rising/falling edge of a sync signal is present require some processing?

MR. CANNON: Objection, form.

THE WITNESS: It's setting the parameters for the sync signal.

BY MR. HUGHES:

Q But doesn't knowing when or whether we're at the rising or falling edge of the sync signal require some processing?

MR. CANNON: Objection, form.

THE WITNESS: Not necessarily.

BY MR. HUGHES:

Q The lighting commands are not just played at any time, right?

A I'm struggling because a big part of Edwards is being able to have -- to shoot multiple lighting setups in one shot, so there's a staggering.

The example they give is you shoot a scene with four different lighting setups. Depending on what we're talking about, the signal could be the same across all four, so there would be no changes.

Q If we're talking about just one of those, so from one of those lighting setups,

we have the light that's going to be producing the effect for that, and we have the camera that's going to be capturing it, correct?

A Yes.

Q And we have a sync signal that corresponds to the shutter speed of that camera, right?

A It corresponds to the operational state of the shutter.

Q Okay. And something in Edwards has to hold the lighting commands until the appropriate time to match with the sync signal, right?

A The sync signal is used as a trigger.

Q And again, something has to hold the lighting commands until the appropriate time to match with that sync signal, right?

A So I read the data file, and when I get the sync signal, then I start playing. I think that would be the fair analogy.

Q And so there's some kind of

processing involved in monitoring that sync signal to know when to start playing, right?

A It doesn't have --

MR. CANNON: Object to form.

THE WITNESS: It doesn't have to be processing, because the sync signal is a voltage signal, so I don't need to do any processing to -- for that voltage to be useful.

BY MR. HUGHES:

Q You say you don't have to. It could involve processing, though, to monitor that signal, right?

A I'm struggling on the processing. It's a simple voltage, and the voltage has an effect on circuits.

So I could set up a computer to monitor that, but that processing would slow things down. That's where I'm having some issues, and I might not be synchronized anymore.

Q Okay. You understand in Edwards

there are lighting schemes that can be created by a lighting director?

A I understand there are recorded lighting schemes, yes. The lighting scheme is predefined, if that's what we're talking about.

Q If we can bring up Edwards and maybe go to column 7 at line 45.

THE VIDEOGRAPHER: Exhibit number?

MR. HUGHES: This would be Exhibit 14. I think we're actually in it. We just need to go to column 14 -- sorry, not 14, column 7, I'm sorry, line 45, and I think we're actually going to start at about line 33. And we can actually go a bit above that. Keep going up. Okay.

BY MR. HUGHES:

Q So do you see here where it says "[u]sing either the control panel on each light or using DMX commands, cinematographer adjusts each light until he/she has the desired settings on all lights for the

'lighting scheme'"?

A Yes.

Q Okay. Do you agree this is -- if I refer to this lighting scheme, we understand we're talking about this, correct?

A Yes.

Q Okay. And now if we can go down to line 45, please, and if you see here, Edwards here mentions that camera settings and parameters can become digital settings in the lighting schemes, right?

A The wording is a little bit different. Any digital setting available to the camera could be stored with the scheme.

Q So let's look at the parameters that can be stored. It says, for example, things like camera settings like gamma, ISO, color settings, shutter speed, resolutions, right?

A Yes.

Q And then it says any digital setting available to the camera could be stored and recalled for use in a scheme, right?

A Yes.

Q So you agree that these camera settings can become part of the lighting scheme, right?

A They're stored with the scheme, but those camera settings, they're not a part of the scheme.

Q Do you see where it says that they can be stored and recalled for use in each scheme?

A Yes.

Q And it says "[s]tore is preferably a system level command and all multi-scheme lighting and cameras on the system network will store the scheme"?

A Yes.

Q And users would choose whether to use or input such a digital camera in the system, right?

MR. CANNON: Objection, form.

THE WITNESS: Without a camera like that, the system doesn't work. Choosing to do

it isn't an option if you're using a system, as I understand it.

BY MR. HUGHES:

Q So, for example, a cinematographer would pick which cameras are being used on the set?

A They could.

MR. CANNON: Object.

BY MR. HUGHES:

Q And could also pick things like some of these different digital settings for the camera?

MR. CANNON: Objection, form.

THE WITNESS: They could choose the camera settings.

BY MR. HUGHES:

Q And Edwards discloses a couple different dynamic lighting effects, right? If we can go to column 11, line 38.

If you look at this list, you'll see a list of effects. You would agree that some of these are dynamic lighting effects,

correct?

A Yes.

Q Like lightning, a car driving by, fire effects?

A Yes.

Q For these dynamic lighting effects, you would agree that they are comprised of time-varying lighting values, right?

MR. CANNON: Objection to form.

THE WITNESS: Not if they're pre-programmed. It's a program sequence, so it's -- there's not a calculation there is where I'm having the issue. The light may change with --

BY MR. HUGHES:

Q My question didn't ask about the calculation. My question was, for these dynamic effects, you would agree that they are comprised of time-varying lighting values, right?

MR. CANNON: Objection, form.

THE WITNESS: No.

BY MR. HUGHES:

Q In your opinion, these lighting values would not change over time?

MR. CANNON: Objection, form.

THE WITNESS: No.

BY MR. HUGHES:

Q Can you clarify? You're saying no, these values don't change?

A The output of the light would change, but it's a question of how the data is stored. It's not clear that it's stored as a lighting value. So there's information on what to do, but I can't match that to a lighting value.

Q These dynamic lighting effects would have a brightness that varies over time, wouldn't they?

MR. CANNON: Objection, form.

THE WITNESS: The lights playing them would have a brightness that varies over time.

BY MR. HUGHES:

Q And that brightness varying over time, if you were looking at the brightness compared to time, that could look like what we see in FIG. 7 of the patents, right?

MR. CANNON: Objection, form.

THE WITNESS: It could look like that.

BY MR. HUGHES:

Q And Edwards also discloses that these dynamic lighting effects can be adjusted in real time, correct?

MR. CANNON: Objection, form, foundation.

THE WITNESS: It says -- this is further up in column 11 -- "It would be possible for the board operator using the DMX console to adjust lighting of each track real time, watching the monitors."

So the operator can make adjustments. This is talking about the lighting of each track, and I'm not sure --

I'm missing the map to the actual lighting effects you're talking about.

BY MR. HUGHES:

Q The lighting of each track, that would include the lighting effects, wouldn't it?

MR. CANNON: Objection, form.

THE WITNESS: Where I'm having the problem, for example, a gunshot, that's a single flash. How do I change that in real time? I can't.

BY MR. HUGHES:

Q What about something like a car driving by that's a longer effect, can you adjust that in real time?

MR. CANNON: Objection, form.

THE WITNESS: Column 11, starting about line 24, "For example, a spotlight could be dimmed and increased in brightness real time on just" -- I believe that should be one track -- "on track without effecting the others using the DMX address for that track.

The VALT lighting system preferably reads the values stored in each DMX address in real time."

So changes can be made, but data is still being read and it's still a recording.

BY MR. HUGHES:

Q Edwards discloses that users can set the parameters for the lights, right?

MR. CANNON: Objection, form.

BY MR. HUGHES:

Q And I'll direct you to column 7, lines 20 to 31, and if we can look at lines 27 and 28 in particular.

And here, Edwards mentions that one of the things a user can set using the control panel on the light for DMX is color temperature; is that right?

We may need to scroll up a little bit. There we go.

A Okay, your question again?

Q So my question is, Edwards mentions that one of the things a user can set using

the control panel on the light or DMX is color temperature, right?

A It could be.

Q And other parameters include, for example, dimming or the -- sorry, dimming, which is the percentage of light coming out of the fixture?

A Dimming which controls the percentage of light coming out of the fixture?

Q Yes. You agree that's another parameter that the user can set?

A Yes.

Q And when the user sets the color temperature for using the control on the light, this light with the control panel then calculates the signals for the right LEDs to create that temperature, right?

MR. CANNON: Objection, form.

THE WITNESS: There's nothing there that says a calculation is performed.

It does say once all the lights on the network are set up at the correct

settings, the STORE command is issued. So the schemes are stored, preferably digitally, so I have a data file.

BY MR. HUGHES:

Q Now, in Edwards -- and you can scroll up a little bit here. Okay, we're good there.

In Edwards, you agree, as we see here, that these lighting schemes and effects are selected and chosen by a cinematographer, right?

A It's describing there that a cinematographer can set up the lighting options. It wouldn't necessarily have to be a cinematographer, but someone is doing the work.

Q Isn't a cinematographer like a jazz musician?

MR. CANNON: Objection, form.

THE WITNESS: They're doing the programming. I don't think the cinematographer is a part of the system.

BY MR. HUGHES:

Q Isn't the cinematographer setting these light values on the set?

A They're setting the light values that are stored.

Q If we can bring up Exhibit 4, which is your declaration for the '101 patent, and if we can go to paragraph 102, please. And I think -- there we go. Thank you.

So in this section, you provide a long excerpt from the Edwards reference, do you see that?

A Yes.

Q And like it says in 102, this is column 7, line 20, to column 8, line 1, of Edwards, right?

A Yes.

Q And in this excerpt, Edwards discloses creating of the lighting schemes, correct?

A Yes.

Q And the lighting schemes direct

lighting devices to create customized lighting effects, right?

A Could you repeat the question, please?

Q I'll clarify.

These lighting schemes are what direct the lighting devices to generate customized lighting effects, correct?

A They're what direct the lights to create the lighting effect, because what's described here is that there's a discussion about the RECORD command, so the settings are saved, and then they're replayed.

Customized would say that they're not being replayed, that something is being done to them. So I'm having some issues with your question.

Q This section of Edwards discloses a RECORD command, right?

A Yes.

Q And that's when the cinematographer is ready to kind of hit RECORD and actually

film or capture the scene, right?

A I'm just trying to read to make sure if the RECORD is for the camera or to save the scheme. I do have the STORE for saving them.

Where I have the issue with that, in one embodiment of this invention, when the RECORD command is issued, a list of schemes would also be selected by the cinematographer.

Q Mm-hmm.

A And that's where I'm having a problem, because if I've started recording, then that cinematographer better be very, very fast in selecting the schemes. I'm wasting -- old days, it would be wasting film, but wasting data.

Q If we go on from that, you see it says that when the RECORD command is issued, all lights would prepare to replay scheme 1, then 3, then 5, in sequence, correct?

A They would prepare to, yes, to replay the schemes, the stored schemes.

Q Right. The lighting schemes are not

just passively played back in this scenario, right?

A There's a synchronization. There's a trigger. The sync signal is described as a trigger for turning on and off each scheme -- I'm sorry, each scheme frame.

Q So when the RECORD command is issued, those lighting schemes are held back and modified until they can match with the sync signal, correct?

MR. CANNON: Objection, form.

THE WITNESS: They're not modified, they're just held. The sync signal is a start and stop.

BY MR. HUGHES:

Q So these lights don't just start playing as soon as the RECORD command is issued, correct?

MR. CANNON: Objection, form.

THE WITNESS: My problem with your previous question was you said they were modified. They're not modified. The scheme

is -- it says it's replaying them.

The schemes are timed with the correct frame.

BY MR. HUGHES:

Q I think my question that's pending was, so these lights don't just start playing as soon as the RECORD command is issued, correct?

A They start depending on the sync signal.

Q So the playing of the schemes is adjusted to synchronize with the particular camera that's being used to film the scene?

A With the frames for each scheme.

Q And so the lighting schemes have lighting commands that are time altered to turn on and off in sync with the sync signal, correct?

MR. CANNON: Objection, form.

THE WITNESS: Could you repeat the question, please?

BY MR. HUGHES:

Q Yeah. The schemes have lighting commands that are timed -- that are altered in time so that they turn on and off in sync with the sync signal, right?

MR. CANNON: Objection, form.

THE WITNESS: I'm struggling with the "altered in time." I'm not sure what you mean by that.

BY MR. HUGHES:

Q They're not just played right away. They're held to wait for the sync signal, correct?

A I'll say they're coordinated with the sync signal.

Q And some determination has to be made as to when to start playing the values, right, with the sync signal?

MR. CANNON: Objection, form.

THE WITNESS: That's a difficult question to answer because the sync signal is the play button, if you will.

So what you're asking is the sync signal is received and a decision is made to start. There's a logical issue there; the sync signal indicates the start.

BY MR. HUGHES:

Q And something sees that sync signal, and then determines now is the time to start playing the lighting values, right?

A The sync signal is the point to start. That determines that it's time to start. I'm having a logical issue with that because the sync signal is the start.

MR. HUGHES: Counsel, if we can just go off the record for a minute?

THE VIDEOGRAPHER: Okay, stand by.

The time is 4:03 p.m., and we're going off the record.

(A break was taken.)

THE VIDEOGRAPHER: The time is 4:06 p.m., and we're back on the record.

BY MR. HUGHES:

Q Okay. Dr. Bretschneider, we'd just

like to get some clarification on something.

If we can pull up Exhibit 2, which was your '257 patent declaration, and go to page 72 of this. And if we can actually go to paragraph 169 on the next page. (PDF page 78)

Now, in this paragraph, you say that the Astera system -- or Astera does not disclose a system where the controller and lighting device are integrated in a combined unit, right?

MR. CANNON: Object to the form.

BY MR. HUGHES:

Q Strike that.

Looking at this paragraph here, you say that Mr. Wood relies on the Astera Manual's disclosure of a fire effect to argue -- among other things, to argue that the random simulation parameter is met, right?

A A fire chaser in strobe.

Q And you say that Mr. Wood fails to show that these effects are accessible in standalone mode, right?

A Yes.

Q If we can go back to Exhibit 11, the Astera Manual, please, and if we can go to page 10, and you see we have -- sorry, let me -- page 20, please. (PDF page 22)

And, Dr. Bretschneider, you agree this is a page illustrating STANDALONE mode?

A Yes.

Q And do you see the first box on the right side labeled "Standalone: PROGRAM"?

A Yes.

Q And do you see next to that box it says "[s]elect one of the predefined patterns, see table below," right?

A Yes.

Q And if we start scrolling down, and we'll get to page 21, we now see this table below, correct?

A Yes.

Q And do you see at the bottom of this table, do you see where it says "FIRE"?

A Yes.

Q So fire effect is available in the STANDALONE mode, right?

A As a predefined program, yes.

Q I think we're good. We just reserve any time for recross in case there's any redirect.

MR. CANNON: Okay, just a quick redirect.

EXAMINATION BY COUNSEL FOR PATENT OWNER

BY MR. CANNON:

Q Good afternoon, Dr. Bretschneider.

A Good afternoon.

Q We'll get you out of here shortly.

You understand that the same rules apply that counsel went over yesterday morning?

A Yes.

Q Do you recall that counsel asked you some questions about your experience in entertainment lighting yesterday?

A Yes, I do.

Q And do you recall specifically that

you were asked some of these questions in the context of your definition of a person of ordinary skill in the art?

A Yes.

Q If we could pull up Exhibit 2, paragraph 47, which is probably on page 15. (PDF page 20)

Do you recall that you were asked questions specifically about this paragraph in your '257 declaration?

A Yes.

Q Dr. Bretschneider, how, if at all, do you believe you qualify as a person of ordinary skill in the art as you have defined it here?

A I have both a bachelor's and a Ph.D. in chemical engineering, and I have at least 2 to 5 years of working experience in the design of entertainment lighting systems.

I've designed an extensive number of lighting systems, but a number that were specific to entertainment lighting.

Q Can you expand a little bit about your statement that you have designed lighting systems in the context of entertainment lighting?

A This is designing the actual lights, the lamps, fixtures. There's a few terms in the industry, but fixtures would normally be it.

So it's creating the lights that would be used for these applications, everything from selecting the LEDs, the drive electronics, user interface, thermal management, optical considerations, putting them all together, making sure they work, manufacturing them, and getting them out to customers.

MR. CANNON: Thank you, Dr. Bretschneider. No further questions.

MR. HUGHES: No further questions from us.

THE VIDEOGRAPHER: Okay, any other statements for the record before we go off?

MR. CANNON: If we need to, just reserve signature until Dr. Bretschneider can review the transcript.

THE VIDEOGRAPHER: Okay. Stand by.

The time is 4:13 p.m., August 18, 2022. We are going off the record, completing today's video-recorded session.

(Whereupon, at 4:13 p.m., the taking of the deposition was concluded. Reading and signature were RESERVED.)

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I, DAWN A. JAQUES, a Notary Public in and for the Commonwealth of Virginia, before whom the foregoing deposition was taken, do hereby certify that witness whose testimony appears in the foregoing pages was duly sworn by me; that the testimony of said witness was taken by me in shorthand at the time and place mentioned in the caption hereof and thereafter reduced to typewriting under my supervision; that said deposition is a true record of the testimony given by said witness; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition is taken; and, further, that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the actions.

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Dawn A. Jaques, CSR, CLR
Notary Public in and for
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My commission expires:
August 31, 2023
Registration No. 132328

Eric Bretschneider, Ph.D., c/o
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Washington, D.C. 20004

Case: ARRI AG v. Rotolight Ltd.
Date of deposition: August 18, 2022
Deponent: Eric Bretschneider, Ph.D., Vol II

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CERTIFICATE OF NOTARY PUBLIC

I, DAWN A. JAQUES, a Notary Public in and for the Commonwealth of Virginia, before whom the foregoing deposition was taken, do hereby certify that witness whose testimony appears in the foregoing pages was duly sworn by me; that the testimony of said witness was taken by me in shorthand at the time and place mentioned in the caption hereof and thereafter reduced to typewriting under my supervision; that said deposition is a true record of the testimony given by said witness; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition is taken; and, further, that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the actions.

_____

Dawn A. Jaques, CSR, CLR
Notary Public in and for
Commonwealth of Virginia

My commission expires:
August 31, 2023
Registration No. 132328