IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

GENERAL ACCESS SOLUTIONS, LTD.,	(	CAUSE NO. 2:22-CV-394-JRG
Plaintiff,	(	
vs.	(	
CELLCO PARTNERSHIP, d/b/a VERIZON WIRELESS, et al.,	(	MARSHALL, TEXAS
	(	JUNE 24, 2024
Defendants.	(	9:00 A.M.

VOLUME 1

TRIAL ON THE MERITS

BEFORE THE HONORABLE RODNEY GILSTRAP
UNITED STATES CHIEF DISTRICT JUDGE
and a jury

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Verizon Exhibit 1028
Verizon v. GAS IPR2023-00978

A P P E A R A N C E S

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THE COURT: Be seated, please.

Counsel, are the parties prepared to read into the record the list of pre-admitted exhibits used during yesterday's portion of the trial?

MR. HUGHES: Yes, Your Honor.

THE COURT: Please go to the podium and present your rendition into the record.

MR. HUGHES: John Hughes for General Access, Your Honor. The Plaintiffs move in exhibits DX 4, JX 1, JX 2, JX 4, JX 12, and JX 14 that were referenced during the time of the direct testimony of Mr. Struhsaker yesterday.

THE COURT: All right. Is there objection to that rendition from the Defendants?

MR. ROSENTHAL: No, Your Honor.

THE COURT: Do Defendants have any additional exhibits to read into the record in a similar fashion?

MR. LEE: Good morning, Your Honor. Defendants would like to read into the record DTX 003, DTX 004, DTX 005, DTX 025, JTX 001, JTX 002, JTX 014, JTX 065. These were used in Mr. Struhsaker's cross examination.

THE COURT: Any objection to that rendition from Plaintiff?

MR. HUGHES: No objection, Your Honor.

THE COURT: All right.

Counsel, we need you to identify yourself for the record.

MR. LEE: Apologies, Your Honor. Sung Bin Lee on behalf of Verizon.

THE COURT: Thank you.

All right. Am I correct, Mr. Summers, you are going to continue with this list of deposition witnesses this morning?

MR. SUMMERS: Correct, Your Honor.

THE COURT: Mr. Kubehl, you have something?

MR. KUBEHL: Good morning, Your Honor. Doug Kubehl for intervenor Ericsson. As discussed with Your Honor in chambers, the parties have agreed for Defendants to add to their exhibit list DTX 026 that was inadvertently omitted from the list that was finalized at the pretrial conference.

THE COURT: All right. And can you identify briefly at a high level what this proposed exhibit is?

MR. KUBEHL: This is an Ericsson document entitled Antenna Configuration Guidelines, was cited in the expert report of Doctor Andrews, and Doctor Madisetti was cross-examined on it.

THE COURT: And intervenor's representation to the Court is that, despite reasonable efforts, this was inadvertently overlooked during the pretrial process?

MR. KUBEHL: That is correct, Your Honor.

THE COURT: And do I understand Plaintiff has no objection to the admission at this late date of DTX 26?

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

THE COURT: It will be admitted then.

MR. KNOBLOCH: Your Honor, I'm sorry. One quick thing for Plaintiff. During the examination of Doctor Madisetti today, I would like to display a board that shows the patent language over here. We set up an easel.

THE COURT: All right.

MR. KNOBLOCH: Thank you, Your Honor. I just wanted to alert the Court.

THE COURT: As long as you keep it in that general area, that's fine. Are you going to want to question the witness from the board which is going to take you away from the microphone at the podium?

MR. KNOBLOCH: Only for very, very brief times where I can underline some things in the claims and things like that.

THE COURT: That's not a problem. Just make sure you raise your volume so there's no problem hearing you when you're away from the podium.

MR. KNOBLOCH: I will, Your Honor. Thank you.

THE COURT: Thank you for bringing it up now. I much prefer to know about it in advance.

Anything further from anybody?

MR. SUMMERS: Nothing from the Plaintiff, Your Honor.

MR. KREVITT: Nothing from the Defendant, Your

Honor.

THE COURT: All right. Let's bring in the jury, please.

(Whereupon, the jury entered the courtroom.)

THE COURT: Welcome back, ladies and gentlemen. Please be seated. Hope you had a good evening.

You know, I say ladies and gentlemen when it's one man and seven women, and I say ladies and gentlemen of the jury when it's one woman and seven men. Somehow we got four and four with the ladies on the front row and the men on the back row. That was not intentional.

All right. We're going to continue with the presentation of the Plaintiff's evidence. My understanding is Plaintiff is prepared to call an additional witness by deposition at this time.

Plaintiff, call your next witness.

MS. FAIR: Thank you, Your Honor.

The Plaintiff calls by deposition Ms. Cindy Dong. She is a Verizon senior manager of the headquarters planning team, and this clip is 7 minutes and 19 seconds.

THE COURT: All right. Proceed with this witness by deposition.

MS. FAIR: Thank you.

CINDY DONG

BY VIDEO DEPOSITION

Q. Good afternoon, Ms. Dong. How are you today?

A. Good. How are you?

Q. How long have you worked for Verizon?

A. I work for Verizon from the 2016.

Q. Okay. And what's your current position?

A. I am the senior manager at Verizon, the headquarter planning team.

Q. And what is the headquarter planning team?

A. My team's job is to planning the Verizon base station functional roadmap.

Q. And what exactly does that entail, if you can just explain in ordinary English?

A. You can understand it in this way. My team is planning what function of the radio network will be enabled or disabled in the coming years in Verizon network.

Q. In 5G, is that also the case? Are there certain transmission modes in which beamforming is used and certain transmission modes in which beamforming is not used?

A. No, the design's different.

Q. So if beamforming has been enabled in 5G, all the user traffic will be transmitted on beamform signals. Is that correct?

A. Once the beamforming is enabled, the user data

trans -- the user data transmit in the downlink that goes through the beamforming.

Q. Are there -- if beamforming has been enabled in Verizon's 5G base station equipment, is there any information or signals that are transmitted without beamforming?

A. This part is following the standards and the vendor's design.

Q. So -- and I know these are basic questions. I'm not an expert in the technology like you. But would I be correct in understanding that all 5G transmissions using C-band would be TDD?

A. C-band is TDD band. No matter what technology are used, it has to be TDD.

Q. And the same thing with mmWave, you have to use TDD?

A. Yes, they are TDD band.

Q. Are you familiar with an organization called Signals Ahead?

A. Yes, I do.

Q. What do you know about Signals Ahead?

A. This is a company do some research marking testing.

Q. And is Verizon a subscriber to Signals Ahead? Do you receive their research?

A. Yes, I do.

Q. Do you -- do you review their research reports?

A. Yes, I do.

Q. Have you generally found them to be reliable?
A. Depends on the topics.
Q. Correct. Do you see that this is a Signals Ahead research report dated February 7, 2022?
A. Yes, I'm open it.
Q. And by the way, this one's entitled "5G: The Greatest Show on Earth," and then at the bottom it says, part of mother -- part of the mother of all network benchmark tests series of reports.
Do you see that?
A. Yes, I do.
Q. If you turn to page 3.
A. Yes, I'm on page 3.
Q. Do you see that under executive summary and the heading Key Highlights from this report, it says that Signals Research Group just completed, quote, a very thorough analysis of the new Verizon 5G Ultra Wideband network that the operator launched on January 19th?
A. Yeah.
Q. Again, do you recall seeing this report when it was issued?
A. I don't remember what the detail of this -- this report.
Q. If you scroll down to page 11?
A. Yes, I'm on page 11.
Q. Do you see that it reads, Bn77 offered meaningful

downlink throughput and capacity gains, slash, spectral efficiency over the LTE and 5G NR Bn5 networks?

A. Yes, I read this paragraph.

Q. Bn77, what does that refer to?

A. From the context from the executive summary, this is referring to the n5 -- the n5 carrier, the FDD carrier. B5 means this carrier is used for LTE. N5 means this carrier is used for NR. I think it's heat innovation. The Bn5 means this carrier is a sharing between LT and n5.

Q. And the Bn77, that's referring to Ultra Wideband?

A. This should be the Verizon C-band, the n77 Ultra WideBand.

Q. Bn77 is the C-band?

A. Yes, the C-band.

Q. If we can go back to page 2, please. I'm sorry, page 3.

If you look at the second paragraph, it says, "Put simply, the Verizon 5G Ultra Wideband network is nothing like its predecessor, the Verizon 5G Nationwide network. Average downlink throughput was easily 15 to 20 times higher than what we observed back in October 2020."

Do you see that?

A. Yes, I do.

Q. Would I be correct in understanding this to be saying that the average downlink throughput with Verizon's 5G Ultra Wideband network was 15 to 20 times better than what was

observed with Verizon's 5G Nationwide network?
A. I can see this is a result based on this testing routine and the testing equipment that cannot represent as an overall national wide, the performance result.
Q. I'm trying to get at what this is stating. It's comparing the Ultra Wideband network to the Nationwide network. Correct?
A. That is -- and particularly he is comparing the n77 and n5.
Q. And the 77 -- the Bn77 is the C-band --
A. Right.
Q. -- and the Bn5 is low-band?
A. You're right.
Q. And the Bn5, that's FDD?
A. Yes, it is.
Q. The Bn77 is TDD?
A. Yes, it is.
MS. FAIR: Your Honor, that completes this deposition.
THE COURT: All right. Call your next witness by deposition.
MS. FAIR: The Plaintiff now calls Mr. Yako Yako. He is a Verizon distinguished member of technical staff, and this clip is 2 minutes and 32 seconds.
THE COURT: All right. Proceed with this witness by

deposition.

YAKO YAKO

BY VIDEO DEPOSITION

Q. Good morning, Mr. Yako. Is there any reason you cannot testify truthfully this morning?

A. No.

Q. Within a Verizon C-band cell site, each antenna can send UEs -- can send downlink data signal to UEs within a sector at the same time.

A. Each antenna can send downlink data to the UEs that are served by that antenna at the same time, but it's different sectors, different units.

Q. And has Verizon ever used the beam sweeping feature to transmit SSB in C-band?

A. To the best of my knowledge, we have never deployed such thing or tested.

Q. Can you describe the beam management that's used in Verizon's mmWave deployments?

A. Any specific part of beam management?

Q. I'm most interested in knowing about the SSB transmission used in beam management procedures used in mmWave deployments in Verizon's 5G network.

A. On a high level in mmWave, they use multiple predefined small beams for SSB. And then they -- the beam management itself is just sweeping the beams and the user selecting the

best beam.
Q. In mmWave, Verizon's base stations use the beam sweeping feature to transmit SSB?
A. In mmWave, currently it does use beam sweeping for SSB.
Q. When beam sweeping is used in Verizon's mmWave base stations, each subsequent beam proceeds from one part of a sector until the end of that same sector. Correct?
A. High level, it sweeps the -- the coverage area of the -- of the sector.
Q. So different SSB beams are sent, each one directed at a different portion of that sector?
A. That's how it works, yeah. The -- each short beam will have kind of a unique identifier. That's how the device can know which beam it's connecting to.

MS. FAIR: Your Honor, that completes this deposition.

THE COURT: All right. Call your next witness by deposition.

MS. FAIR: The Plaintiff calls Mr. Daniel Fortes. He is an Ericsson customer solution manager, and this clip is 7 minutes and 22 seconds.

THE COURT: Proceed with this witness by deposition.

DANIEL FORTES

BY VIDEO DEPOSITION

Q. All right. Good morning, Mr. Fortes. My name is Sten

Jernudd, and I represent General Access Solutions. Can you please state your name for the record?

A. Morning, Sten. My name is Daniel Fortes.

Q. How long have you worked at Ericsson, Mr. Fortes?

A. I work with Ericsson since 1997, so more or less 26 years.

Q. What's your current title?

A. Customer solution manager.

Q. How long have you been in that role?

A. I've been in this role calculating more or less eight years, since 2006 -- 16.

Q. Mr. Fortes, do you understand that you're testifying today as a corporate representative of Ericsson on certain topics?

A. I do understand.

Q. You understand that that means you're testifying on behalf of the company?

A. I do understand.

Q. Mr. Fortes, does Ericsson sell 5G base station equipment to Verizon?

A. Yes.

Q. What are the main base station components that Ericsson sells to Verizon?

A. Components are the baseband unit and the radio unit and one -- some of -- yeah, baseband unit and radio units. And

some of the radios have a combination of both. They are called street macro. So basically either --

Q. What is a baseband unit?

A. Baseband unit is the part of the base station that process call or where most of the intelligence is ran and most of the intelligence is run.

Q. So the baseband unit is the part of the base station that does the process constantly or most of the intelligence is run. Is that correct?

A. That's correct.

Q. And what does the radio do?

A. The radio transmit the radio signal, also receives the radio signal, and -- and transmit the data to the baseband unit.

Q. Is it fair to say that the BBU controls the radios in the site?

A. It's fair.

Q. Okay. So the BBU controls timing. Is that right?

A. That's right.

Q. Is the beamforming typically enabled in the Ericsson base station equipment used in Verizon's 5G TDD network?

A. By enabled -- would you clarify what you mean by enabled.

Q. By enabled, I mean is it turned on? Are those base stations capable of beamforming at any given time?

A. Okay. As I gave you a number before, for C-band, my

estimation is 95 percent are capable of beamforming. mmWave, a hundred percent are capable of beamforming.

Q. What do you know about Signals Ahead?

A. I know about their publications. That's the limitation of what I know.

Q. So can you tell me whether the data Ericsson provides to carriers like Verizon based off simulations is generally reliable?

A. I have no reason to believe it would not be reliable. And I think every simulation that we provide, we're very careful to specify the conditions.

Q. So when we have Ericsson base station equipment on Verizon's 5G TDD network, are there times when that equipment will transmit more than one beamform signal at the same time?

A. Yeah, the best of my understanding, there will be times it will be transmitted more -- there will be transmitted more than one beamform per signal.

Q. At the same time?

A. At the same time.

Q. So when multiple beams are transmitted at the same time from Ericsson equipment on Verizon's 5G TDD network, are those beams transmitted in the same system frame number?

A. That's my understanding, yes. That would be a great question to confirm with Sebastian as well, but that's what my understanding is. But it would be a great question for

Sebastian.

Q. Yes. So my question is basically this: In situations where a base station has one BBU operating more than one radio, or two or more radios, do all those radios use the same system frame numbering?

A. The best of my understanding, they are aligned. They have alignment in time.

Q. What radios has Ericsson supplied to Verizon for use in its 5G TDD networks?

A. The 5G TDD networks for C-band?

Q. Yes, for C-band.

A. Top of my head is 8843 and 6449. I believe we may have some 6417. Those are the ones that I -- the main ones -- the most common ones, 6449, 8843.

Q. In a typical Verizon small cell base station, how many SM6701s are there?

A. Typically it's either three or two depending on the -- three or two are the most common.

THE COURT: Does that complete this witness by deposition?

MS. FAIR: Yes, Your Honor.

THE COURT: Call your next deposition witness, please.

MS. FAIR: The Plaintiff now calls Mr. Andrew Youtz by deposition. He is a Verizon distinguished member of

technical staff, and this clip is 8 minutes and 50 seconds, 5-0.

THE COURT: Please proceed.

ANDREW YOUTZ

BY VIDEO DEPOSITION

Q. Good morning, Mr. Youtz. As I said, my name is Mike Valaik. I'll be taking your deposition here today.

Are you prepared to testify on behalf of Verizon today?

A. Yes, I am prepared.

Q. Are you familiar with the term hotspot, sir?

A. Yes, I am.

Q. What is a hotspot?

A. In a smartphone, a hotspot is when you can use the WiFi on the smartphone as an access point and then connect other devices, you know, to your smartphone through the WiFi access point, and then use the cellular modem as the backhaul to the internet gateway.

Q. Do you know what a wide area network is?

A. Yes.

Q. What is it?

A. We typically view our cellular network as a wide area network.

Q. Do you know what a local area network is?

A. Yes.

Q. What is it?

A. It's a smaller network that emanates typically from a -- most commonly from a WiFi access point.
Q. When did you speak with Mr. Gamboa?
A. At least three times over the last month.
Q. What is a received signal strength?
A. A receiver on any device can measure -- if it's receiving a signal from another device, can typically measure the power of the signal that it's receiving, and that's the received signal strength.
Q. Other than the WiFi RSSI, did you discuss anything else with Mr. Gamboa yesterday?
A. He did discuss also how packets are moved.
Q. And did you ask him questions with respect to how packets are moved?
A. He confirmed for us that in the case of the mobile hotspot, where the device is acting as a WiFi access point, in that scenario the device is acting as a bridge or does packet forwarding from the cellular modem to the WiFi modem to the LAN-side end user device.
Q. How does Verizon use cellular data to connect devices to the internet via WiFi?
A. The WiFi access point within the device, you know, connects to the cellular modem, and the device acts as a bridge and forwards the packets from the WiFi access point to the cellular modem, and then the cellular modem passes those

packets up to the network and to the internet gateway, and then the network takes them to the internet gateway.

Q. Now, in order to enable and then use Verizon's hotspot functionality, your cellular plan has to actually provide for that. Correct, sir?

A. From a billing perspective, we do treat hotspot data differently from regular data.

Q. Well, indeed, Verizon charges a fee for hotspot functionality. Right?

A. Typically a price plan will allow a certain amount of data at a certain data rate for a mobile hotspot.

Q. Does the WiFi modem measure any aspects of the signal to the mobile devices?

A. The WiFi access point, when it's acting as an access point, may measure the signal strength of the devices connected to the access point. So the uplink signal coming from the LAN-side device up to the access point, the access point may measure the signal strength of its receiver of those -- of the signals coming from those devices.

Q. What we're looking at here is a home router. I used that term a few minutes ago. Is that a term you're comfortable with, or you've used other terms, I know, you know, WiFi access point and some other things. How should I refer to it?

A. Well, I think it depends on how -- in terms of how we're discussing. In terms of the WiFi access point aspect of it,

in -- when the device is acting or has the WiFi modem acting as an access point connected to the cellular modem for backhaul, we would view it not as a router, but as a bridge or, you know, a packet-forwarding, you know, agent where it's simply taking, you know, packets from the cellular network, passing them to the WiFi access point, and then passing them to the LAN-side device.

Q. Is there a transceiver kind of contained within that gateway that we're looking at here, this Verizon LTE home router? Does that have a transceiver?

A. There is a -- well, the cellular modem will have a transceiver, and the WiFi modem may have a separate transceiver as well, may have a transceiver -- whether or not that's broken out separately within silicon is totally dependent on how they -- the vendor did it.

Q. Okay. But again, breaking down your answer, the cellular modem you said can have a transceiver, and, in fact, the WiFi modem can have a transceiver. Is that correct?

A. Correct, yeah. Each modem has its own transceiver.

Q. And so sticking with these transceivers, in the course of Verizon providing its WiFi functionality here using cellular backhaul, does the base station provide a signal to the cellular transceiver that's ultimately communicated to the devices that are shown here?

A. The cellular base station sends a signal to the cellular

modem and passes packets to the cellular modem. The cellular modem then passes those packets and/or forwards those packets to the WiFi access point, and then the WiFi access point forwards those packets to the connected LAN-side device.

Q. Now, you know, I realize what we're looking at here, Mr. Youtz, is this Verizon LTE home router, but if we look at this diagram, this network map, and instead of the home router being shown there here as the gateway, if we start to talk about a mobile phone's hotspot functionality, is it correct then to characterize that hotspot functionality to where, instead of this home router being shown, that mobile device in and of itself is performing the same or similar operation to provide WiFi?

A. I want to be careful. I mean, we don't conflate smartphones with these sorts of devices. In a smartphone, again, we have a cellular modem, we have a WiFi modem which acts as a WiFi access point, and we have LAN-side devices that connect to the access point.

Packets are sent to the network to the cellular modem, the cellular modems forward those packets to the WiFi access point, and the WiFi access point forwards those packets on to the LAN-side device, and then, you know, uplink packets in reverse order.

THE COURT: Does that complete this witness by deposition?

MS. FAIR: Yes, Your Honor.

THE COURT: Call your next witness, please.

MS. FAIR: Our last video deposition, Your Honor, is Mr. Aldrich Gamboa. He is a Verizon distinguished member of technical staff, and this clip is 6 minutes and 10 seconds.

THE COURT: Please proceed with this deposition witness.

ALDRICH GAMBOA

BY VIDEO DEPOSITION

Q. Good morning, Mr. Gamboa. Please state your name.

A. Sure. It is Aldrich Gerard Azrin (ph) Gamboa.

Q. How long have you worked at Verizon?

A. 17 years, give or take.

Q. Mr. Gamboa, you're referred to at Verizon, one of the things is an SME, a subject matter expert. Is that correct?

A. I would say so in WiFi, yes.

Q. Does that transceiver monitor or measure the signal of the users on the hotspot?

A. To clarify, when you say users, do you mean client devices?

Q. Yes.

A. The hotspot can monitor the transmit signal from the client devices.

Q. How does it do so?

A. It has its own receive sensitivity, which it then can

test the signal strength from the client devices.
Q. You said signal strength. Is that commonly referred to as RSSI?
A. Yes.
Q. What does RSSI stand for, sir?
A. I'm not a hundred percent sure this is everyone, but I do believe it's received strength -- received -- yeah, received strength signal indicator.
Q. Received signal strength indicator, is that your understanding, sir?
A. Yes.
Q. And does that radio or transceiver actually measure the RSSI coming from the client device?
A. Its sensitivity to the device. So it's basically measuring it's receivability from the transmit of the client device.
Q. And so that radio or transceiver will update based on that information, and then it will go ahead and transmit the data. Is that correct, sir?
A. Yes, it would -- it would update, and then send data, the amount of data it could possibly send based upon RSSI and the calculation.
Q. And so, sir, to maybe get a little more specific with regard to how Verizon provides hotspot functionality to its customers, can you explain -- Verizon has a cellular network.

How does Verizon use that cellular network to provide what is essentially WiFi functionality to a mobile phone user? Can you generally explain how that's done?

A. Yeah. So the dedicated mobile hotspot would create basically a backhaul to a cellular network to connect to the internet, and then it would link some client device where it would basically bridge or forward any requests that the client had made to the internet in order to provide internet service to the client device.

Q. And you've used the term there 'backhaul'. What does backhaul mean?

A. Typically we use a term like backhaul because we view data coming to and from a device. So backhaul is usually what we say when we go to the internet facing from the device we're referencing.

Q. And if we use the example of a dedicated mobile hotspot, does that have a specific transceiver that communicates with the base station?

A. So speaking from a high level, yes, there would be a cellular radio that would talk to the cellular network.

Q. And that cellular radio in the dedicated mobile hotspot or mobile device can communicate with the base station according to a 5G protocol, for instance. Correct?

A. If the dedicated mobile hotspot does indeed have a 5G chipset capable radio, then yes.

Q. And that dedicated mobile hotspot or mobile device also has another transceiver that communicates with the local area network according to a WiFi protocol. Correct?
A. Yes, there would be a separate radio for WiFi.
Q. Do, in fact, Verizon devices that provide hotspot functionality use information obtained from the uplink connection to estimate the downlink characteristics?
A. In terms of WiFi, no.
Q. So the only characteristic that that radio or transceiver can measure is the transmit signal? Is that correct, sir?
A. Correct. In terms of measuring, yes, that -- it can only measure the transmit signal from the client device, if you're speaking only about a client device.
Q. Is it also measuring the RSSI or no?
A. So, again, the RSSI is a calculation of that transmit signal from the client device.

MS. FAIR: Your Honor, that completes the Plaintiff's depositions at this time.

THE COURT: All right. Call your next witness, Plaintiff?

MR. KNOBLOCH: Plaintiff calls Dr. Vijay Madisetti.

THE COURT: All right. Doctor Madisetti, if you'll come forward and be sworn, please.

(Whereupon, the oath was administered by the Clerk.)

THE COURT: Please come around, have a seat on the

witness stand, sir.

THE WITNESS: Good morning.

THE COURT: Counsel, are there binders to distribute with this witness?

MR. KNOBLOCH: Yes, Your Honor. If my colleague may approach.

THE COURT: Let's get that done.

MR. KNOBLOCH: And, Your Honor, these are just materials the witness has brought up with him. I don't think we'll be using exhibit binders.

THE COURT: All right.

All right, counsel. Let's proceed with direct examination, please.

MR. KNOBLOCH: Thank you, Your Honor.

VIJAY MADISETTI, Ph.D.,

having been duly sworn, testified under oath as follows:

DIRECT EXAMINATION

BY MR. KNOBLOCH:

Q. Good morning, Doctor Madisetti.

A. Good morning, sir.

Q. My name is Nosson Knobloch. I am one of the attorneys representing General Access. We've met before. Correct?

A. Yes.

Q. Could you please introduce yourself to the jury?

A. Yes. My name is Vijay Madisetti. I live in Atlanta with

my wife and son. I teach at the university there.
Q. And, Doctor Madisetti, I've been calling you Doctor. That's because you have a Ph.D. Right?
A. Yes.
Q. And what's your Ph.D. in?
A. Yes. As we see in the next slide, I obtained my undergraduate degree in electronic and electrical communications, my Ph.D. from UC Berkeley in California. It's in electrical engineering and computer sciences.
Q. Why are you here today?
A. I'm here to opine on the -- a few topics, topics of infringement as well as validity as well as benefits, technical benefits. So today I will talk about infringement and technical benefits.
Q. And did you work to prepare a set of slides to help explain those subject matters to the jury?
A. Yes.
Q. Okay. Before we talk a little bit more about your analysis, I just want to talk a little bit more about your background.
How long have you taught at Georgia Tech?
A. I've been teaching for a long time, almost 35 years. I've been teaching there since '89, and so it's been 35 years.
Q. And what do you do as a professor at Georgia Tech?
A. I do three things. I do a lot of research, I do

teaching, I also do a variety of guiding students for their Ph.D.s. So I do a lot of research in the area of signal processing, communications. I also write papers and books. I do sponsored research.

I teach courses, typically three or four a year, so I must have taught about 15,000 students so far. And Georgia Tech is a top-ranked program in the country, so one in seven engineers in the U.S. is a Georgia Tech graduate. So we have a lot of students, smart students.

Q. And you mentioned you've written books. What are the books shown here?

A. Yeah. I like writing books. The first book I wrote was in 1995. It's called *VLSI Signal Processors*. Since then one book every two or three years, and more recently two or three books every year.

So the most recent book was on the right that was published a couple of months ago. It's on cloud computing which is currently already a popular area. And the books have been very well-received. They are followed by, you know, over 500 universities worldwide, and they also received a number of awards. The book on cloud computing got the annual best of computing books recognition.

Q. And what is the -- I see that's from the Association for Computing Machinery. What is that association?

A. It's a very large association of computing professionals,

several hundred thousand of them, and they review a lot of good books each year.

Q. Have you received any professional awards?

A. Yes. Over the years I've been fortunate to receive many awards. One of them on the left is the Terman Medal from the American Society of Engineering Education.

Q. And what is that medal awarded for, Doctor Madisetti?

A. So it's -- typically it's awarded to one person a year each year for outstanding contributions to the electrical engineering profession while under the age of 45. So they select one person each year. And I got that about 15 years ago.

Q. And the next award is I see from the IEEE. I think the jury's already heard about them. Can you explain what the IEEE is and what that award is?

A. Yes. The IEEE is one of the largest professional bodies in the world. It has about 400,000 members. So each year they select .1 percent of those members, that means about 400, to the rank of a fellow. So I was elected to the rank of the fellow in 2006 or 2007. That's 15 years ago.

Q. And what about the next award shown here?

A. I also -- as I said, I'm a teacher, and I like teaching, and I received several teaching awards at Georgia Tech. I also guide Ph.D. students, and I received the Georgia Tech award for the best doctoral thesis advisor. And so these are

some of the awards I'm specifically proud about because they deal with teaching.

Q. Can you tell the jury a little bit about your research work?

A. Yes. As a faculty member, we have to spend a lot of time on research. I do a lot of research for the U.S. government, including the Department of Defense, the Air Force, the Navy, and also the National Science Foundation. And here are some of the agencies that I receive funding from, and I supervise research in these areas.

Q. Have you done any research related to the area of wireless communications?

A. Yes. Over the past 20, 30 years, my books cover these topics, papers, as well. Here is one such paper. This was an invited paper in the flagship *Journal of the IEEE.* It's called "The Proceedings of IEEE." Here I offered a paper on "Next Generation Applications for Cellular Networks," which we're looking at 4G and beyond.

And this paper I wrote actually with people from Ericsson. So the people -- the co-authors on that are leading the Ericsson research center at -- in California.

Q. Aside from this case, have you taken on other consulting work involving patents?

A. Yes. I have over the years done some consulting. Here are some of the companies that I consulted primarily in the

areas of electrical engineering and computer science.
Q. Have you served as an expert witness in other cases relating to wireless communications?
A. Yes.
Q. Doctor Madisetti, how are you compensated for the time you spend working on this case?
A. I'm an independent expert, and I'm paid only for my time. My opinions are my independent opinions.
Q. Is your compensation tied in any way to the outcome of this case?
A. It is not.
MR. KNOBLOCH: Your Honor, General Access moves to qualify Doctor Madisetti as an expert witness in this case regarding wireless communications.
THE COURT: Is there objection?
MR. ROSENTHAL: No objection, Your Honor.
THE COURT: Without objection, the Court will recognize this witness as an expert in those designated fields.
MR. KNOBLOCH: Thank you, Your Honor.
THE COURT: Please continue.
Q. (BY MR. KNOBLOCH) Doctor Madisetti, what is shown here?
A. So here we have the two patents that are at issue in this matter, the '931 Patent on the left and the '794 Patent on the right.

Q. And what conclusions have you reached about these patents?

A. As -- so here is a summary of the opinions, and I will spend the next hour or two trying -- providing evidence that supports my opinions.

With respect to the '931 Patent, Verizon's accused 5G TDD base stations practice and infringe claims 28 and 29, and Verizon's use of the claims 28 and 29 improves the downlink throughput and capacity of its accused 5G TDD base stations by 32 percent.

Q. What about with regards to the '794 Patent? In the summary, what conclusions have you reached?

A. That accused products, the base stations, infringe claims 1, 2, and 5, and that Verizon's use of these claims enables Verizon's accused hotspots to more efficiently serve more than one mobile station.

Q. Doctor Madisetti, can you explain to the jury what sort of information you reviewed in your analysis of the issues you just summarized?

A. Yes. So there was a lot of documents and other evidence that I reviewed over the past couple of years. They include thousands of Verizon technical documents, both from Verizon as well as the two suppliers, Verizon-Ericsson, as well as Samsung. And these are, again, thousands of documents that I reviewed, relevant portions of many of them or most of them,

and I also reviewed deposition testimonies that -- from more than a dozen witnesses.

And I also did some testing that I will talk about. I looked at Verizon's website and other documents and also looked at some standards that the systems comply with.

Q. All right. Now, I'd like to start with the '931 Patent. Could you explain what we see here?

A. Yes. This is the cover page of the '931 Patent, and it's wireless access system using selectively adaptable beamforming in TDD frames and the method of operation.

Q. Now, what was the issue or problem that the '931 Patent addressed?

A. Yes. So if you go to the next slide. So the problem that -- there are a few ways of communications.

Q. And what is -- what are some of the ways to communicate?

A. Yes. So you have heard a lot about TDD, but let's look at the two ways. One is FDD and one is TDD. When you have FDD, which is frequency division multiplexing, you have two parties that are communicating, one of them is the base station. The other one is the mobile phone on the right.

Q. And what is shown here in this animation?

A. So what is happening here is that for the entire duration of time, the first channel, the base station uses one frequency, and the second channel is used by the mobile phone. It uses a different frequency. So they can talk to each other

all the time using different frequencies. That's called frequency division duplexing.

Q. And can you just make sure -- I want to make sure we get this. What is a frequency?

A. Frequency is a way -- it's an identifier of how frequently certain information wave changes in value. So based on the frequency, for example, a high-pitched tone would be a higher frequency and a low-pitched deep tone would be a lower frequency. So if you have a high pitched and low pitch talking to each other, you can recognize them individually.

Q. And in the context of FDD, is there a connection between frequency and what you've labeled here as the first and second channel?

A. Yes. Each channel has a separate frequency, and FDD systems have been traditionally used for voice communications where you are able -- you are having a symmetric channel where both parties are talking most of the time.

Q. What is a symmetric channel?

A. Symmetric channel is where both the channels are equally active. So when two people talk together, they are talking frequently with each other.

Q. How about TDD?

A. TDD is the other common protocol. TDD, there's a single channel or a single set of frequencies, and they are shared in time between the two different parties. So they decide who

speaks first, who speaks next, but the one thing is that the person who speaks has access to all the resources, all the frequencies so they can put in a lot of information.

And what is happening recently is that we spend more time browsing the internet and not uploading to the internet. So having more time for the downlink is very advantageous because we can spend more time for the downlink and less time for the uplink so this way it allows a much more efficient channel. And the patent describes all these two cases.

Q. And what is shown in this animation, Doctor Madisetti?

A. So here we have a common channel. And for some period of time the base station is transmitting, and that's called the downlink. For some period of time the mobile station is transmitting. That is called the uplink.

Q. In a TDD system or a system using time division duplex, how do the two parties know when to communicate and when to listen?

A. That's the important part of TDD. So that's called the use -- they use something called TDD frame. So frame is like a timetable, so it designs a schedule for the transmission. So both sides agree on a TDD frame, which is a timetable, and then based on that, they can communicate. So it says from this time you are in charge of the channel; from this time, you can listen, and so on.

Q. In a TDD frame, what is the portion dedicated to

communication from the base station to the user like what we see here with the blue arrow? What is that portion of the frame -- what is that kind of communication called?

A. It's called TDD frame. It's based on slots.

Q. And what is the portion that goes from the base station to the user called?

A. The base station to the user, that's typically called the downlink. And then from the smartphone to the base station is called uplink.

Q. And what does the patent -- the '931 Patent explain as one of the benefits of using TDD?

A. This again is something I mentioned earlier, that we spend most of the time downloading information or listening to a song or viewing a movie, so it's better to have more time for the downlink and more resources for the downlink. And that's the advantage of TDD because the frame can allocate dynamically more time for the downlink.

Q. So I believe you said at the beginning that the '931 Patent was directed to beamforming in TDD frames. So why don't we -- I'd like to turn next to beamforming. Can you explain to the jury what that is?

A. Yes. You heard about beamforming. Beamforming allows you to focus energy in a particular direction, so that way it means that you can send more data to a particular user more effectively. And that's the benefit of a beamforming system.

And the specification in figure 9 of the '931 discloses a beamforming network that directs information in certain beams.

Q. What are the portions of figure 9 on the top right that are highlighted there?

A. Those are the antennas. The antennas are directing the information in different directions.

Q. And what does this animation show?

A. This animation shows that the base station is sending beams to radius user devices, or UEs, in different sectors of a base station.

Q. And what does this next slide explain?

A. So the base station, the base station cell site has three sectors, and the base station tower is shown in the middle. And so when there is a beam that is being sent to a particular mobile station, the beam is not -- the beam has some collisions with the uplink shown in light blue.

So if there is a downlink beam and then there is an uplink transmission, they can collide with each other and in the sense they have problems with what is called interference both within a sector and across sectors.

Q. And so what is interference?

A. Interference means that when two different signals are sent at the same time, they can actually interfere with the ability to listen to either of them. So if two people are talking at the same time, then it's difficult to listen to

them. That's called interference. So you want all this to be carefully coordinated.

Q. Now, Doctor Madisetti, you mentioned that each -- that this slide shows a base station with three sectors. What is a sector?

A. The sector has been construed by the Court, and the Court has provided as a construction. It's an area defined by an arc around the cell site, each covered by its own antenna. So each sector has its own radio and antenna, and as discussed in the '931 Patent, each modem has an individual antenna to transmit and receive in its assigned sector.

Q. Now, in the previous slide we looked at, we saw an example of interference within a sector. Is there also sometimes interference between sectors?

A. Yes.

Q. And what do we see here?

A. This is, again, an animation where neighboring other sectors are also having the same problem because of interference between the uplinks and the downlinks. So when you have a TDD frame, you want to make sure, as the inventors of the '931 recognized, that you want to make sure they are highly coordinated so that the uplinks and the downlinks are carefully scheduled.

Q. And what would happen in a base station with multiple sectors if the uplinks and downlinks were not carefully

scheduled, as you described?
A. As you can see here, there's a lot of problems because of interference. These are powerful beams, they interfere with each other, and you have a lot of loss of data and a loss of capacity.
Q. Now, Doctor Madisetti, I believe you mentioned that the '931 Patent discusses the importance of synchronizing and scheduling. Right?
A. Yes.
Q. What is the tool, the solution, that the '931 Patent uses to synchronize and schedule transmissions in multiple sectors?
A. Yes. The secret sauce is the TDD frame. The TDD frame is the common timetable that essentially delineates when certain things happen, when the uplink happens, when the downlink happens, who receives what, how do they all synchronize with each other across all of these sectors.
Q. What is shown in this figure from the patent?
A. Figure 14 shows an example of a TDD frame that I've shown in blue.
Q. What is sent at the start of a TDD frame?
A. At the start of the TDD frame, there is something called a broadcast beam signal that is sent, and the broadcast beam signal consists of a number of broadcast beams. Each beam -- each broadcast beam is for a sector. The broadcast beam signal is a composition of all these individual broadcast

beams.

Then there is a downlink portion where the TDD frame decides who is going to be receiving the downlink data at which time. And then there is an uplink where different mobile devices are provided a slot for sending data uplink.

Q. So in a nutshell, what are the three main components of a TDD frame as described in the '931 Patent?

A. The three components would be the schedule for the first portion which is at the start of the beginning, that's called a broadcast beam signal. Then there is an uplink portion or a downlink portion. The claim says downlink.

Q. All right. And what is shown in this next figure?

A. So this is a generic case where in figure 2 you have a number of base stations. The base stations are 110A, 110B, 110C. Each of them has its own sectors, so you have four sectors for each base station here, and that's the general network of base stations.

Q. Now, focusing in on just one of those base stations, what do we see here?

A. So here is a typical base station with four sectors. Each sector in this case is 90 degrees. And on the top we have an exemplary TDD frame.

Q. And once again, what happens at the beginning of the TDD frame?

A. At the beginning of the TDD frame, you have a radio and

an antenna for each sector. So each sector gets a broadcast beam that -- and the combination of the broadcast beam is the broadcast beam signal. So we show that the broadcast beam signal is going to all the sectors providing the synchronization information.

Q. And in your view, is a broadcast beam signal sent by one antenna or multiple antennas?

A. The broadcast beam signal is sent by multiple antennas, one per each sector as required by the Court's construction.

Q. And just to remind the jury, why is that required by the Court's construction?

A. Because the Court has required or construed the term 'sector' as I described, that each sector receives from its own antenna.

Q. And what does that mean then for a broadcast beam signal to be transmitted to users in multiple sectors?

A. It means that the broadcast beam signal has different broadcast beams, one for each sector, sent by its own antenna.

Q. And collectively what are the broadcast beams sent from each antenna called in the '931 Patent?

A. The '931 Patent calls that as the broadcast beam signal.

Q. What is the next part of the TDD frame shown here?

A. The next part of the TDD frame is the downlink portion and is there where the schedule for the downlink transmissions called direct scanning beam signals are sent.

Q. And what is shown in this next animation?
A. So this shows that all these broadcast beams, as -- which are part of the broadcast beam signal, have common information, they have common synchronization information as we heard from the deposition testimony. They all march to common information which is the system frame number and several other pieces that I will talk about.
So initially the broadcast beam signal tells all the -- all three sectors that this is the sort of schedule that's going to be happening and all of them are able to then coordinate and avoid interference.
Q. And I see here we have system frame number, the first one is 0. Usually when I count, I do 1, 2, 3. Why is 0 first here?
A. Zero engineers use 0 to start with because that's the engineering convention.
Q. Okay.
A. But it's just as good to be 1 or 2.
Q. Okay. But using the engineering convention, what happens in system frame 0 after the broadcast beam?
A. So then you have the downlink portion, which is the next portion of the frame, and this is, again, a schedule. So you have downlink beams going through various sectors, and all these downlink beams are coordinated. So they are all controlled by the base band unit, and that shows that they are

all following a common TDD frame.

Q. And, finally, what happens at this portion of the TDD frame?

A. So now you have the uplink in light blue, and as you can see, the problem of collisions and interference goes away because you have this claim TDD frame. So this is the sort of short form of the claim that we will discuss that shows why it is so powerful.

Q. All right. Now, I'd like to talk about infringement.

What is shown here?

A. Yes. So the claim -- we will focus on a couple of the claims. The first is the claim 29. It has what are called as a number of limitations, and it's a dependent claim which means that it depends on another claim called claim 19. So I introduced claim 19 on the top right.

So claim 29 depends on claim 19. So I will cover claim 29 and include the limitations of claim 19 within it. And I will go through each step.

Q. Okay. And to aid our discussion, I'm going to put up a board with claim 29 as well. And before we get into the detailed infringement analysis, Doctor Madisetti, I do want to first clear up one issue that came up during openings yesterday. Were you here for Verizon's opening statements?

A. Yes.

Q. And did you hear their argument that Verizon does not

infringe because in their system a different, quote unquote, TDD frame is sent to each sector? Do you recall that?
A. I recall that.
Q. Do you agree with that?
A. No.
Q. Why not?
A. First of all, the TDD frame is just a schedule. It's a timetable, so you don't send the timetable along with the communications. The claim does not require that you send a TDD frame.
Q. What does the claim require actually be sent?
A. The claim looks complex, but I will simplify it. If you look at step No. 19[d].
THE COURT: Mr. Knobloch, why don't you move that forward some. I'm concerned the podium's blocking the jury's view of it and turn it at least enough this way so the witness can see it. That's probably good. Thank you.
MR. KNOBLOCH: Thank you, Your Honor.
Q. (BY MR. KNOBLOCH) And you were saying 19[d]?
A. Yes. So the first thing that is sent is a broadcast beam signal to wireless access devices. So that's the first thing that is sent in 19[d]. And in 19[f], you have the second thing that is sent. It's called a directed scanning beam signal.
THE COURT: And, Mr. Rosenthal, if you can't see

this demonstrative fully, you certainly have leave to move across the room where you can.

MR. ROSENTHAL: Thank you, Your Honor. I can see it.

THE COURT: All right.

THE WITNESS: So the two things that are sent are the broadcast beam signal and the directed scanning beam signals.

Q. (BY MR. KNOBLOCH) Is there anything in the -- in claim 29 of the '931 Patent that requires sending a TDD frame?

MR. ROSENTHAL: Objection, Your Honor. This is outside the scope of the report.

THE COURT: What's your response?

MR. KNOBLOCH: Your Honor, I believe this is addressed squarely in the report around paragraph 345.

THE COURT: Counsel, this is the first of two volumes of his report. I certainly don't have it memorized. I'm happy to go through these competing paragraphs with you, but I'm going to send the jury out of the courtroom to do that if that becomes necessary.

MR. KNOBLOCH: I have a copy of it right here that I'm happy to hand up and show the Court the relevant paragraph.

THE COURT: All right. Well, we'll take it up. I'm going to let the jury recess to the jury room before we get

into it.

Ladies and gentlemen, I need to take this up with counsel. I'm not going to require you to be present. I'll let you know what my decision is when you get back. If you will simply leave your notebooks in your chairs, follow all the instructions I've given you, and I guess you can consider this an early recess. I'll have you back in here as soon as I can.

The jury's excused to the jury room.

(Whereupon, the jury left the courtroom.)

THE COURT: All right. Be seated.

Counsel, I've got volume 1. Is this the correct volume? And where in the report do I need to be looking?

MR. KNOBLOCH: So, Your Honor, I believe volume 1 is correct. It is the opening expert report of Doctor Madisetti on infringement and technical benefits. Paragraph 345 starts -- is on page 114 of that report.

THE COURT: Okay.

MR. KNOBLOCH: And in that section he squarely addresses -- that is a start of a section of the report addressing the different TDD frames per sector which is exactly the issue we were discussing.

THE COURT: Tell me why these paragraphs don't address this issue, Mr. Rosenthal.

MR. ROSENTHAL: Yes, Your Honor. The specific

question and the line of questioning was whether or not the claims require sending a TDD frame or not. I didn't -- the question was not about whether there has to be a different TDD frame per sector. The question was whether the claim requires sending a TDD frame. I have never seen in any of Doctor Madisetti's report that subject addressed, and it is not addressed in this section.

THE COURT: What's your response to that, Mr. --

MR. KNOBLOCH: Your Honor, two responses. Number one, this is -- that's very -- it's a small difference between sending a different TDD frame per sector and sending a TDD frame. That's -- I think that's the same subject, first of all.

Second of all, the entire issue of sending what Doctor Madisetti was explaining was what the patent requires about sending downlink signals and broadcast signals. That's discussed throughout the report, extensively throughout the report, including, for example, in paragraph 185 of the report where he talks about --

THE COURT: Let me get over to paragraph 185. Okay.

MR. KNOBLOCH: Actually I may actually go a little bit earlier, Your Honor, to paragraph 178 which starts this discussion of element 1[b] which is the corresponding element from claim 28 where he sets up the section discussing about transmitting a broadcast beam signal.

THE COURT: It works better if you wait until I get there before you start telling me what he says.

MR. KNOBLOCH: I'm sorry, Your Honor.

THE COURT: All right. Paragraph 178.

MR. KNOBLOCH: Doctor Madisetti discusses there -- begins his discussion there, this element 1[b] which is the corresponding element of the broadcast beam signal being transmitted, goes on to explain how that's transmitted at a start of a TDD frame, and explains in great detail what is the transmission that's required by the claim and that is used in Verizon's network.

THE COURT: Is there a place in here that you can point me to where he specifically says transmitting the TDD frame is not required?

MR. KNOBLOCH: I don't believe those exact words are used, Your Honor, but the -- but what he does say, as I said, he does focus on what is required and then in paragraph 345 in that whole section discusses this whole issue of whether there is different TDD frames in each sector or just one.

THE COURT: You know, folks, I would prefer that we don't have people coming and going through that side door. You can't open it and close it without it making serious noise.

MR. DACUS: We'll take care of that, Your Honor.

THE COURT: If you are going to come and go, I

prefer you come and go through the back of the courtroom.

MR. DACUS: Yes, Your Honor.

THE COURT: There was a time when the jury box was on this side of the room and that was the door through which the jury came into the courtroom. Why they left the door there when they moved the jury box I don't know, but that's a remnant of an earlier time, and it's just a very noisy way to come in and out of the courtroom. I prefer we not use it unless we need to for some reason.

All right. What else do you have for me, Mr. Knobloch?

MR. KNOBLOCH: That's all, Your Honor.

THE COURT: What do you have additionally, Mr. Rosenthal?

MR. ROSENTHAL: Your Honor, this is a concept that I understand where Mr. Knobloch is going. He is saying with the witness that the TDD frame is not a thing, it doesn't have to be sent. That concept is not in any of the paragraphs that were just recited which have to do with Ericsson's infringement and Verizon's infringement.

There is not a thing in this report that suggests in any way what is now being suggested, that the TDD frame doesn't need to be sent at all, and that's what I'm hearing.

THE COURT: All right. To the extent the objection goes to the particular question of whether the claim at issue requires the transmission of the TDD frame itself, I don't see

that that is specified within the report in any of the sections relied on by Plaintiff, and I'll sustain the objection as to that.

I don't find that the objection goes beyond that very focused subject, so I'm going to do this. I'm going to tell the jury when they return that they should ignore Doctor Madisetti's answer as to that particular question, and then we'll proceed. And I'm going to allocate the time necessary to deal with this objection to the Plaintiff.

All right. Let's bring the jury back in.

(Whereupon, the jury entered the courtroom.)

THE COURT: Welcome back, ladies and gentlemen. Please have a seat.

The objection raised to the Court was with regard to one specific question that was addressed to the witness by Plaintiff's counsel, and the question and the response from Doctor Madisetti was that this claim language does not require the transmission of the TDD frame itself. That, in the Court's view, is beyond what Doctor Madisetti opined about in his written reports.

Expert witnesses are required to fully set out their opinions in writing before the trial so that the other side knows what to expect, and this goes slightly beyond that, although he does cover the general subject matter in significant detail.

So to the extent of that one question, I'm going to instruct you not to consider Doctor Madisetti's answer. That does not affect any of his other testimony he's given so far.

So with that, you may proceed, counsel.

MR. KNOBLOCH: Thank you, Your Honor.

Q. (BY MR. KNOBLOCH) Doctor Madisetti, what in claim 29 must be transmitted?

A. Okay. As I discussed in my reports, the two things that must be transmitted are the broadcast beam signal and the directed scanning beam signal.

Q. Is there anything else that was required to be transmitted by the elements and language of claim 29?

MR. ROSENTHAL: Objection, Your Honor. This is just getting at the same -- it's a different way of asking the same question. It's beyond the scope.

MR. KNOBLOCH: Your Honor, it is not the same question.

THE COURT: I'll allow this question.

MR. ROSENTHAL: Thank you, Your Honor.

Q. (BY MR. KNOBLOCH) Doctor Madisetti, is there anything else beside the broadcast beam signal and the directed scanning beam signals that is required to be transmitted by the elements and language of claim 29?

A. No.

Q. Now, starting with -- and you mentioned at the beginning,

Doctor Madisetti, that claim 29 is a dependent claim. Can you explain again to the jury, what does that mean?

A. Yes. As His Honor had explained to you the two types of claims, there are independent claims and dependent claims. A dependent claim is one that relies on an independent claim and adds some more limitations.

Q. In this example, what does claim 29 depend on?

A. It depends on claim 19.

Q. And at a high level then, what is the first limitation of claim 29?

A. It describes a method which is a procedure.

Q. And at a high level, how does the method of claim 19 operate?

A. Yes. So the method has two transmitting steps.

Q. What is the first transmitting step of the method described in claim 19?

A. It says that at the time -- at the start of a TDD frame, a broadcast beam signal is sent.

Q. And what is the second transmitting step?

A. It says that it transmits in the downlink portion a first downlink data traffic using a directed scanning beam signal. So the two steps are transmitting a broadcast beam signal and transmitting a directed scanning beam signal.

Q. Now, in -- all right. Let's move to the first element then of claim 19, which is the dependent claim.

Does -- is Verizon's wireless access network -- is Verizon's 5G network a wireless access network?

A. Yes. So now I will go through each claim limitation one by one. And we are looking at 19[a], and it is a wireless access network because, as seen on this website, they have extensive 5G and 4G -- 5G network all over the USA.

Q. Does that network comprise a plurality of base stations?

A. Yes. As per Exhibit No. PX 122, we have seen that they have 75,000 5G TDD base stations spread all over the U.S.

Q. Is there any dispute as far as you know that Verizon's network -- 5G network is a wireless access network comprising a plurality of base stations as required by claim 19[a]?

A. Between the parties?

Q. Yes.

A. No, there's no dispute between the parties that 19[a] is practiced.

Q. Now, before we move on from this element, did the term -- did the Court provide a construction of the term 'wireless access network'?

A. Yes.

Q. What is the Court's construction of a wireless access network?

A. As described here, the Court has asked me to -- asked us to apply a plain and ordinary meaning.

Q. And this is just an excerpt from the claim construction

chart that is in the juror notebooks as well. Can you tell the jury, Doctor Madisetti, does the plain and ordinary meaning of the term 'wireless access network' include both mobile and fixed networks?

A. Yes.

Q. And as far as you know, does Doctor Andrews, Verizon's expert, agree with you about that?

A. Yes.

Q. We talked about the plurality of base stations. Are there actually a plurality of base stations here in Marshall?

A. Yes.

Q. And what does this slide show?

A. So I requested a survey of the local 5G TDD base stations, and here are three examples on -- of Verizon 5G TDD base stations on Sue Belle Lake Road, Notch Road, and the Belle cut off road. That's how they look like.

Q. And are these photos representative of Verizon TDD 5G base stations?

A. Yes.

Q. Now, considering all the evidence that you've considered, what did you conclude about element 19[a]?

A. That this element 19[a] is present and practiced by the Verizon's 5G accused products.

Q. Okay. Let's turn to element 19[b]. In element 19[b], is there any dispute that Verizon's base stations are capable of

bi-directional time division duplex communication?
A. No. And I cite to Verizon's corporate representative that we heard from, Ms. Dong, and she confirms that they are TDD, both for the C-band as well as for the mmWave.
Q. Now, what are the -- who are the companies that supply the equipment used in Verizon's 5G TDD network?
A. If you go to the next slide, they will be two companies. One of them is Ericsson.
Q. And what is the other one?
A. Samsung.
Q. Okay. And what does Ericsson say about TDD and 5G?
A. They confirm that the C-band here, we're talking about the C-band, Exhibit JX 10 at page 33 confirms that the 5G C-band is in TDD, or time division duplexing.
Q. Now, element 19[b] also requires that the base station be capable of bi-directional communication with wireless access devices disposed as a plurality of subscriber premises. Do you see that?
A. Yes.
Q. And what are subscriber premises?
A. The Court has construed subscriber premises as buildings, places and buildings or like of a subscriber.
Q. And what is this still image from a Samsung advertisement? What does this show?
A. This shows that subscribers are beamforming -- they

receive beamform transmissions when they are located in buildings, places and buildings or like. So you can see skyscrapers and other buildings on different floors and so on.

Q. Is there any dispute in -- as far as you know from Verizon that its base stations are capable of bi-directional TDD communication with wireless devices disposed at a plurality of subscriber premises as described in element 19[b]?

A. There's no dispute.

Q. And what does Mr. Jager have to say about that?

A. We heard from Mr. Jager yesterday, and he's a corporate designee of Verizon, and he confirms that the cellular network is capable of servicing mobility devices and fixed wireless devices alike.

Q. And what did all this evidence lead you to conclude about element 19[b]?

A. That element 19[b] is practiced by Verizon's 5G accused products.

Q. All right. So let's move on to element 19[c]. Element 19[c] refers to a first said plurality of base stations. What is a base station?

A. A base station is essentially something like an -- on the top of a cell tower that has a baseband unit, it has antennas, it has radios, and it's the master controller for all the sectors.

Q. And what are the types of base stations accused of infringement in this case?
A. There are effectively two types based on the frequency bands. The C-band is a lower frequency between -- usually between one gigahertz and seven gigahertz, and then there is a mmWave which is about 28 gigahertz, 27, 28, gigahertz range.
And the C-band takes 90 percent of Verizon's TDD network traffic, Exhibit JX 58, and the mmWave is more for urban areas and that takes about 10 percent Verizon's TDD network traffic, JX 45.
Q. And what is summarized for the jury on this next slide?
A. Yeah. We mentioned there were two suppliers, Ericsson and Samsung. Exhibit PX 122 confirms that the cell and Verizon users in these base stations, the various baseband units, the radios, antennas, both for C-band and mmWave that are identified here.
Q. And what did all this evidence lead you to conclude about element 19[c]?
A. That this element is present in the accused products.
Q. Okay. Let's move on to element 19[d]. This is the first of the two transmitting steps. Right?
A. Yes.
Q. And this element requires transmitting a broadcast beam signal to wireless access devices. Right?
A. Yes, within more than one of a plurality of sectors.

Q. Now, has the Court construed the term 'wireless access devices'?
A. Yes.
Q. And what is that construction?
A. It should be the plain and ordinary meaning.
Q. And in your view, does the plain and ordinary meaning include -- what is the plain and ordinary meaning of wireless access devices?
A. It can -- examples of wireless access devices would include both fixed access devices as well as mobile access devices like mobile phones.
Q. Now, did you hear yesterday during opening statements from Verizon statements about the '931 Patent being all about fixed and not mobility?
A. Yes.
Q. Do you agree with that?
A. No.
Q. Does Verizon's own expert, Doctor Andrews, also agree with you that wireless access devices in the '931 Patent include both mobile and fixed devices?
A. Yes, he does.
Q. You also heard from Verizon's lawyers yesterday -- actually let's -- we'll move on.
All right. What does this next slide show, Doctor Madisetti?

A. This is the limitation of transmitting at a start of a TDD frame a broadcast beam signal to wireless access devices within more than one of a plurality of sectors within the associated cell site.

Q. What is the broadcast beam signal used in Verizon's 5G TDD base stations?

A. It is the -- as I identify here, it is something called an SSB. The SSB is transmitted in each sector as a broadcast beam, and all the three sectors have -- each of them has a broadcast beam. The combination of the broadcast beams in each sector is the broadcast beam signal.

Q. Is this description of the SSB as a broadcast beam that the -- like the red rectangle around those words, are those your words or are those Ericsson's words?

A. Those are Ericsson's words from JX 40 on page 10.

Q. Does Samsung also, the other supplier to Verizon, describe the SSB as a broadcast?

A. Yes. And this is the exhibit that I've shown here with Bates No. 686. It also confirms that the synchronization block, SSB, is broadcast. So this is additional confirmation.

Q. All right. So now I'd like to dive into the SSB, or the synchronization signal block. What is shown in the right-hand side on this slide?

A. Yes. So, first of all, if you go back a couple of slides, the SSB is transmitted at the beginning of the

broadcast beam signal, so I show that in blue. So you have a typical frame that SSBs are typically transmitted once every 20 milliseconds. You can see the blue at the beginning, so that's at the start of the frame.

And then we go back to your slide 54. So the SSB has a number of components that are sent and broadcast via broadcast, and these components are the PSS, PBCH, SSS, and PBCH again. So I specifically talk about the synchronization signal block as the broadcast signal sent to all users in a cell site, and it includes identical information in each sector.

Q. Let's take a look first at the PBCH. What is the PBCH?

A. The PBCH, as the name indicates, is a physical broadcast channel. So it is also broadcast and it's part of the SSB. It includes and provides all users in all sectors with the system frame number.

Q. Now, we're going to be talking about the system frame number a little bit more soon. Can you tell the jury what is a system frame number?

A. A system frame number is an identifier that is -- tells the UEs the ability to synchronize with a common timetable. So it tells them that you are in this particular system frame, so, therefore, this is sort of the schedule you can expect can go uplink or go downlink. So that ties all three sectors in Verizon's base stations to a common time frame which is the

TDD frame.

Q. At the beginning of a TDD frame, does the SSB transmit the same system frame number to users in multiple sectors?

A. Yes. In all sectors the SSB is sent by the respective antenna for that particular sector under the control of a single transceiver, which the Court has construed to be one or more transceivers. So the combination of the three radios from Samsung or Ericsson together send the SSB to each of the sectors through sector specific broadcast beam per the combination of the three beams is the broadcast beam signal that contains SSB.

Q. And what -- and, again, is it the SS -- what is the SS -- sorry. What is it that transmits the system frame number to users in multiple sectors?

A. The respective antenna for that particular sector as required by the Court's construction.

Q. And what did Mr. Jager have to say about the system frame number transmitted on the SSBs?

A. He confirmed that the system frame number is received by the users in all sectors which confirms that the broadcast beam signal is sent to a plurality of sectors. In his deposition, he confirmed that the system frame number is obtained by the UE from the SSB.

Q. And the SSB is sent to users in multibillion sectors. Right?

A. Yes.
Q. Okay.
A. So that confirms that the SSB is a broadcast signal -- broadcast beam signal as claimed because it's sent to devices within more than one sector.
Q. Now let's move on to the SSS. What is that?
A. SSS is a specific portion of the SSB. It is called a cell group ID. That is an identifier of the base station.
Q. And what does that mean, an identifier of a base station?
A. So, again, it is sent to all users, all using wireless access devices in all sectors because it identifies the base station to which that sector belongs to. So each base station has three sectors. So this is an additional information that is common and sent and broadcast to all sectors.
Q. And do the standards support your view about the cell group ID?
A. Yes.
Q. What do the standards have to say about that?
A. Yeah. This is a document that I cited. I believe that this document -- I was challenged in the opening that I didn't have a document that I cited. This is one of the documents, and this is a standard, ETSI standard that confirms that the cell group ID is used to identify a cell group, which is the base station, and this is received by all UEs. So, therefore, all UEs in all sectors receive the cell group ID as a part of

the SSB.

So there is a broadcast beam signal and there is a document that I provide that supports my opinions. This is JX 11 at 1153.

Q. Thank you.

Doctor Madisetti, finally, we've talked about the PBCH, we've talked about the SSS. There is one more component of the SS block. What is that?

A. That is called the primary synchronization sequence. It's called PSS. That identifies the particular sector, and it's a sector specific part of SSB that provides additional confirmation that there is a sector specific part and then there is part that is common across all sectors because it's a comprising claim.

Q. Okay. And what does this next slide -- on this next slide, tell the jury what is the information on the left-hand side. What is that?

A. So that's the information on the left side, things like the system frame number, the SSS, the physical cell ID, the DMRS, and the ConfigSIB1 are sent as part of the broadcast beam signal to multiple sectors.

Q. Is all this information broadcast to all sectors at the start of the TTD frame in Verizon's network?

A. Yes. As construed by the Court, the broadcast beam signal is sent by the respective antennas to each sector and

the broadcast beam is created by the transceiver that comprises of the three different radios, one per each sector.

Q. Is all of this information identical in all the sectors?

A. In all cases, yes. With respect to the physical cell ID, it is different because it has the particular sector ID.

Q. And is that relevant, in your opinion, the fact that it's not -- the physical cell ID is not identical in all the sectors?

A. That does not affect my opinion.

Q. Why not?

A. Because it's a comprising claim, for example, it -- all the other fields like the system frame number, the SSS, the DMRS, and others are the same. So the fact you have other information with it does not show that you don't meet that limitation.

Q. And you were here for the Court's instructions in the beginning of the case. Right?

A. Yes.

Q. And do you recall what the Court explained to the jury about comprising claims?

A. Yes.

Q. And what was that?

A. An example was that a comprising claim could have additional features. For example, if you had a table and the claim covered a table, if it was a table with wheels it would

still infringe because the wheels were just additional unrelevant -- not relevant portions. So just because you added some additional information doesn't mean you haven't got all the common information.

Q. Is the claim -- are the claims asserted in this case comprising claims?

A. Yes.

Q. And I'm just going to walk over and highlight some of that.

How do we know that this is a comprising claim?

A. It's written there in limitations. So if you look at the limitation 19[a].

Q. Go ahead, Doctor Madisetti.

A. Yeah. If you look at limitations 19[a] and 19[c] and -- is there any other? I can't see that.

Q. I can pick it up.

A. Yeah. And also 29[b].

Q. And in all of those circumstances, the word 'comprising' is used to introduce the limitations of the claim?

A. Yes.

Q. Is there any dispute in this case that the claims asserted by General Access against Verizon are comprising claims?

A. I don't believe so.

Q. And so going back to your chart, the next column is common to all sectors. What does that means?
A. It means it's a common type of information, so the type of information is common in addition to the values.
Q. And you checked common for physical cell ID. Can you explain why, even though that information is not identical, it is still common?
A. It is still useful information of the same kind. So it's like the name of a person. Two people can have different names, but the information is still a name type.
Q. And can you explain the next column?
A. It also confirms we have confirmed through documentation and deposition testimony that this is used for synchronization.
Q. And how about the next column, transmitted by all sector antennas at a base station? What does that mean?
A. That means that each sector has its own antenna and, as required by the Court's construction, the broadcast beam is sent by the sector antenna, and together these three broadcast beams are the broadcast beam signal that is broadcast by the transceiver that consists of the three radios and the baseband.
Q. And can you explain the final column here?
A. The claim also requires that it be sent at a start or beginning of the frame, and on all cases it is sent -- the SSB

is sent at the start or the beginning of the frame, which is the period or the schedule.

Q. Okay. So what is shown in this graphic?

A. So this shows pictorially that at the start of the frame, the yellow broadcast beam signal is sent within each sector by its own antenna as a broadcast beam, and together these broadcast beams comprise the broadcast beam signal.

Q. All right.

A. And this is received by the plurality of sectors.

Q. And, again, the plurality of sectors, what does that mean?

A. It means more than one. It means all sectors receive it.

Q. All right. So I'm just going to show it one more time so you can summarize for the jury. What do we see here?

A. All the fields that are discussed from the table, all of them are sent to all of the sectors.

Q. Now, we just showed three phones in this diagram. In Verizon's network, how many users would receive this information on the broadcast beam signal from one base station?

A. Usually hundreds.

Q. Now, we've been looking at broadcast beam signals that go to the entire sector. Is there actually, though, two ways to broadcast?

A. Yes.

Q. And what are those?
A. As confirmed by the documentation and Mr. Jager, one way is to send the broadcast as a single message.
Q. What's the other way you can send a broadcast?
A. You can send it as essentially slices that cover the entire sector, and then they cover multiple sectors.
Q. When you send the broadcast beam signal using what you call slices, is that still a form of broadcast, in your opinion?
A. Yes.
Q. Do the standards agree with you?
A. Yes. So the ETSI standard, which is the 5G standard, ETSI TSEs 138, which is JX 11 at 2327, confirms that this is broadcast in the entire coverage of the area of the cell either as a single message or by beamforming different BCH instances. So this confirms that it is sent, and as we know, each -- the entire base station which covers multiple sectors receives the BCH and, therefore, the broadcast beam signal limitation is practiced.
Q. So in the Verizon C-band base stations, which comprise like 90 percent of the network traffic, how is the broadcast beam signal sent?
A. The broadcast beam signal is sent to each sector by its own broadcast beam. The combination of them is the broadcast beam signal like is shown here.

Q. Sorry. Is the C-band broadcast sent on one wide beam or slices?
A. It's sent on wide beams.
Q. So is that what we show here?
A. Yes.
Q. Okay. How about in mmWave?
A. In mmWave, for example, shown on JX 40, it is sent in this case in eight slices. So you have little portions sent, one in each direction.
Q. And what is shown in this next graphic?
A. So this is an example of how the sliced wide beam is sent across to all sectors.
Q. I'll just show that one more time. Is this what's referred to as beam sweeping?
A. Yes.
Q. Now, we've been talking a lot about sectors and I just wanted to make sure this was very clear. What is shown here?
A. You are showing that the Court has construed that a sector is an area defined by an arc around the cell site, for example, 120 degrees, each covered by its own antenna.
Q. And so what do we show -- what is highlighted in red here?
A. Red is sector 2 that is covered by the red antenna on the left.
Q. And what about here?

A. That's sector 3 covered by its own antenna.
Q. And finally here?
A. That's sector 1 covered by its own antenna.
Q. And under the Court's construction of sector, which you applied for your analysis, how is a broadcast beam signal transmitted from a base station to users in multiple sectors as described in claim 29?
A. Yes. As I explained, there is a baseband and three radios. These are the transceivers. This is the transceiver. The transceiver transmits after creating the broadcast beam signal, and the broadcast beam signal then is composed of three different broadcast beams, one for each sector that is transmitted through its own antenna for that sector.

So, therefore, you have three broadcast beams together forming the broadcast beam signal to three different sectors.
Q. And is that, in fact, exactly how Verizon's network works?

MR. ROSENTHAL: Objection; leading.

THE COURT: Sustained.

Q. (BY MR. KNOBLOCH) How does Verizon's network --
A. In exactly the same manner.
Q. And what do we show here?
A. That's what is happening--that each sector has its broadcast beam and together they form the claimed broadcast beam signal that is sent by a transceiver that consists of

these three radios.
Q. You heard in opening, I believe, that Verizon argues that a broadcast beam cannot go to more than one sector. Do you recall that?
A. I heard that.
Q. Even if that were true, does that change your opinion here?
A. No.
Q. Why not?
A. Because the broadcast beam -- the claim doesn't say broadcast beam. It says broadcast beam signal that has a common coordinated broadcast beam signal that is sent by the transceiver, which is three radios, and it consists of these three broadcast beams, one for each sector sent by its own antenna.
Q. So if Verizon or Ericsson brings some witnesses here to court to testify that a broadcast beam is limited to the coverage area of its own sector, would that change your conclusion about Verizon's infringement of claim 29?
A. Not at all. It confirms what I'm saying--that a broadcast beam signal consists of three different broadcast beams, one for each sector sent by its own antenna.
Q. As far as you know, does Verizon or its experts dispute that each sector in a 5G TDD base station is covered by its own antenna?

A. They don't.
Q. Does Verizon dispute that each sector antenna transmits a broadcast beam?
A. They don't.
Q. Does Verizon dispute that those broadcast beams are time synchronized in each of the sectors?
A. They don't.
Q. Does Verizon dispute, as far as you know, that those broadcast beams are all transmitted within the same system frame number?
A. They don't.
Q. Given all of this agreement that we have, what does that lead you to conclude about Verizon's infringement of claim 29?
A. We have not completed claim 29, but 19[d] is practiced.
Q. Thank you, Doctor Madisetti.

Now, I actually --

MR. KNOBLOCH: Actually, Ms. Brunson, if we could switch to Mr. Svenson's computer briefly.

Mr. Svenson, could we pull up figure 13 of the '931 Patent, please? It's JX 1.15.1.

Q. (BY MR. KNOBLOCH) What is shown here, Doctor Madisetti?
A. It's a figure from the specification that is an example.
Q. And what is this an example of?
A. It's an example of I believe a beam.
Q. And does -- what -- an example of what kind of beam?

A. It's a broadcast beam.
Q. Is the patent limited -- and did you see yesterday Verizon's counsel showed this image, this figure, to Mr. Struhsaker?
A. Yes.
Q. And is the '931 Patent limited to this example?
A. No. My understanding from a technical point of view is that patents provide examples and examples do not limit the claims.
MR. KNOBLOCH: And, Mr. Svenson, can we go to JX 1.22.2, please?
Q. (BY MR. KNOBLOCH) And what does this portion of the '931 specification explain about figure 13?
A. It describes here that figure 13[a] is an exemplary broadcast patent according to one embodiment of the present invention, which means it's just one example. It does not mean that the claim only covers or is limited to such an example.
Q. Do other portions of the specification actually show a broadcast beam signal being sent to multiple sectors?
A. Yes. There are many other portions -- figure 14, for example, is an example.
Q. Why don't we turn to figure 14.
MR. KNOBLOCH: I believe that's on page 16 of Joint Exhibit 1. Page 16, not column 16. Sorry. Did I give you

the wrong page? My -- no. So it should be figure 14.

MR. ROSENTHAL: Objection, Your Honor. Given the last question, I know what the next question is and I object that this question is outside the scope of his report.

THE COURT: Say that again?

MR. ROSENTHAL: Yes. The answer is outside the scope of the report, and the follow-up question that is about to happen is outside the scope of the report. I just don't want anything to be blurted out here that is outside of the report.

MR. KNOBLOCH: I don't believe anything is going to be outside of the report, Your Honor.

MR. ROSENTHAL: The --

THE COURT: Approach the bench, counsel.

(The following was had outside the hearing of the jury.)

MR. ROSENTHAL: Sorry for the awkward --

THE COURT: Your crystal ball is better than mine. I generally don't sustain objections until the question has been asked.

MR. ROSENTHAL: I'm in a situation where the last answer -- he just asked, is there an example in the spec where there are multiple broadcast beams going or a broadcast beam going to multiple sectors, and he said figure 14 is such an example. So that is outside the scope of his report, and he's

about to follow up and show him figure 14.

So I -- the answer itself is outside the scope which is why I objected. I didn't want to wait until we actually have him pointing to it and saying it so that we then have to instruct the jury not to -- he is about to testify that figure 14 shows an example of a broadcast beam signal going --

THE COURT: You are telling me he just said that.

MR. ROSENTHAL: He did indeed.

THE COURT: What's your response to that?

MR. KNOBLOCH: Your Honor, he says in his report that the figures and specification of the patent show broadcast beam signals to multiple sectors. He says that in his report.

MR. ROSENTHAL: Your Honor, he never --

THE COURT: You know, I'll send the jury out as many times as it takes to get through every squabble over what the expert does or doesn't say, but we're going to -- you're going to eat up all your trial time with me flipping through this 18-page or 18-inch thick report that I've got up here.

MR. KNOBLOCH: We can move on, Your Honor.

THE COURT: All right. You want me to rule on the objection that you've lodged or do you withdraw it?

MR. ROSENTHAL: I would like to -- I'd like to restate it with respect to the last -- I can move to strike instead. I'll withdraw the objection, and I'll move to strike

the last answer.

MR. KNOBLOCH: The last answer was not --

THE COURT: That puts us right back in the same position, but that's your objection. Do you want to do that or should we move on?

MR. ROSENTHAL: I would like a ruling that what he just testified is not in his report. So if he wants to withdraw the last question and answer, I'm fine with that. Otherwise, I move to strike.

MR. KNOBLOCH: I don't.

THE COURT: All right. Return to your places.

MR. ROSENTHAL: Thank you, Your Honor.

(The following was had in the presence and hearing of the jury.)

THE COURT: I understand you'd like to restate your objection, Mr. Rosenthal.

MR. ROSENTHAL: Yes, Your Honor. I move to strike the last answer as being outside the scope of Doctor Madisetti's report.

THE COURT: All right. Ladies and gentlemen, this is another instance where I'm going to need to ask you to return to the jury room so I can work through the substance of this dispute in light of the lengthy reports I have to review.

If you'll simply just leave your notebooks in your chairs, follow all my instructions, and I'll have you back in

here as soon as possible.

The jury should retire to the jury room.

(Whereupon, the jury left the courtroom.)

THE COURT: Be seated, please.

Mr. Knobloch, let me hear from you in response to that objection.

MR. KNOBLOCH: Thank you, Your Honor.

If you turn to paragraph 142, it's on page 41 of Doctor Madisetti's opening report.

THE COURT: All right. I'm there.

MR. KNOBLOCH: In the last sentence of that paragraph, he explains that "In light of the Court's construction of 'sector', the example broadcast beam signal described in the specification must include the combination of multiple sector antennas transmitting to users in multiple sectors."

And this is almost verbatim to the question I asked him, Your Honor.

THE COURT: All right. What's your response to that, Mr. Rosenthal?

MR. ROSENTHAL: Your Honor, my specific motion to strike has to do with the witness' reference to figure 14. At no point during his expert reports does he ever point to figure 14 as being an example of a broadcast beam signal going to multiple sectors.

THE COURT: So am I supposed to determine whether figure 14 is captured within the concepts described in the specification as is spelled out in the expert's reports? Is that really what this comes down to?

MR. ROSENTHAL: Your Honor, I know from what happened after the reports that Doctor Madisetti intends to testify and has just testified that if you look at figure 14, there is a part of figure 14 that he believes shows two sectors. That is what Doctor Madisetti just referred to, that figure 14 is an example of that, and it's simply not in his report.

So in my view, Your Honor, it is incumbent upon the Plaintiff, if they are going to solicit and elicit that testimony, to show where that opinion about figure 14 is expressed anywhere in this report.

MR. KNOBLOCH: The question I had asked him was whether there was anything in the specification that showed broadcast beam signals to users in multiple sectors. That is -- I believe that's almost exactly the question. I don't have the transcript, but I believe that was it. And that is almost verbatim what's in paragraph 142.

MR. ROSENTHAL: And, Your Honor --

MR. KNOBLOCH: One second.

MR. ROSENTHAL: I'm sorry, sir.

MR. KNOBLOCH: And in paragraph 137, just the

previous page, there is an explicit discussion of figure 14 which describes its use of the broadcast signal. It uses the term 'broadcast signal' right underneath the figure as shown above and in other example frames depicted in the specification, "individual frames are bounded by broadcast signals." That's explained on page 40, paragraph 137.

And then just the very next page is that statement I had just quoted to the Court earlier about explaining how under the Court's construction in the specification the broadcast beam signals are sent to users in multiple sectors.

MR. ROSENTHAL: Your Honor, may I respond because that's --

THE COURT: Briefly.

MR. ROSENTHAL: That's exactly the point. In paragraph 137, it says the opposite. It says figure 14, and I quote, "shows individual frames are bounded by broadcast signals that convey timing and control information to all the users in a sector." He is now going to -- just testified to the opposite.

MR. KNOBLOCH: No. Those are building blocks, Your Honor. Both things are true. It's not either/or. The broadcast beam is transmitted to everyone in a sector. That is true. That's paragraph 137.

It is also true, as explained in paragraph 142, that those broadcast beams are transmitted to users in multiple

sectors. It's not either/or; it's and.

THE COURT: All right. I am going to overrule the objection. I think paragraph 142 makes it clear that the broadcast beam signal described in the specification must include the combination of multiple sector antennas transmitting to users in multiple sectors.

This is not a case of the Defendant doesn't understand what the Plaintiff's position is; this is -- and it hasn't been put on adequate notice vis-a-vis the report. This is a case of Defendant effectively trying to cross-examine the witness by objecting to the report and trying to hinder the direct testimony.

You should certainly attack this, Mr. Rosenthal, in your cross examination, but you should do it from the podium during cross examination. He gets to tell his story. You may vehemently disagree with it and your expert may just as vehemently disagree with it, but that's what this is all about.

This is an issue of notice, and I think based on what I've seen here that the notice provided to the Defendant in this section of the report is adequate so that you should not be surprised by what you just heard.

MR. ROSENTHAL: Your Honor, may I seek clarification on that just because I don't want to get up and object in just a moment? I understand fully that ruling and that Doctor

Madisetti is free to testify that this is happening in multiple sectors and, therefore, I believe that there's a broadcast beam signal.

THE COURT: And I understand this is a big point and that this is -- you know, this is largely what Mr. Krevitt talked about in his opening. And this may be -- this may be the critical point, but each side gets to put on their theory and the jury decides which one is most believable and credible.

MR. ROSENTHAL: Totally understand. Your Honor, my point of clarification is this. I do not see in here anything that says that figure 14 actually depicts multiple sectors, and that is the testimony that I believe is coming.

I'm happy to wait and have the jury go out again, but I would like to know if Plaintiff intends to elicit the testimony that figure 14 itself shows a picture of a broadcast beam going or a broadcast beam signal going to multiple sectors, because that is not in his report.

THE COURT: Well, certainly that doesn't change my ruling, but in an effort to streamline a very cumbersome process, can you address that at this point, Mr. Knobloch?

MR. KNOBLOCH: I don't intend to ask the question of is there a picture in Exhibit 14 -- in figure 14 of a transmission to multiple sectors, but I do intend to ask whether figure 14 and the other figures of the -- and the

teaching of the specification teaches transmitting to users in multiple sectors.

MR. ROSENTHAL: I think that's consistent with your ruling, Your Honor. If it goes beyond that, I will have to stand up. Thank you.

THE COURT: All right. Then I assume we both know where everybody is.

MR. KNOBLOCH: I believe so, Your Honor.

MR. ROSENTHAL: I believe so, Your Honor.

THE COURT: All right. Let's bring the jury back in.

(Whereupon, the jury entered the courtroom.)

THE COURT: Welcome back, ladies and gentlemen. Please have a seat. Thank you for your patience.

I am overruling the Defendants' objection to that last issue that was raised before you left the courtroom, and at this time we will continue to proceed with direct examination by the Plaintiff of Doctor Madisetti.

MR. KNOBLOCH: Thank you, Your Honor.

Q. (BY MR. KNOBLOCH) And, Doctor Madisetti, before the break we were looking at -- or we were about to look at figure 14. Right?

A. Yes.

Q. And in your opinion, does the teaching of figure 14 and the specification of the '931 Patent inform a person of

ordinary skill in the art of transmitting a broadcast beam signal to users in multiple sectors?

A. Yes. As construed by the Court.

Q. How so?

A. Because it is describing, for example, as I describe in my reports, a broadcast beam signal comprising of multiple broadcast beams, one per each sector, transmitted by its own antenna as construed by the Court. A transceiver is one or more transceivers.

So, therefore, the combination of three Ericsson radios or three Samsung radios together is a transceiver that generates that broadcast beam signal that is sent with common information, identical information to all sectors at the beginning of a frame.

Q. And that image from figure 13 that we looked at earlier of a broadcast beam going to just one sector, is that the only place in the specification talking about broadcast beams?

A. No, there are other places. And even if it goes to one sector, it still comprises a part of a broadcast beam signal. So it is one example, but even that example shows that the specification covers all aspects of the claim.

Q. In your view, does the '931 -- is the '931 Patent limited to transmissions in just one sector as Verizon's counsel argued yesterday in opening?

A. No.

Q. All right.

MR. KNOBLOCH: Now, Mr. Svenson, if you could please turn to column 16, lines 4 to 8. It's JX 1.24.

Q. (BY MR. KNOBLOCH) And, Doctor Madisetti, what is shown here on the specification of the '931 Patent?

A. Yes. As I described earlier, a key aspect of the invention of the '931 is that the timing of the downlink and uplink portions of each TDD frame must be precisely aligned in order to avoid interference between the sectors within the same cell and/or to avoid interference between cells.

Q. What does interference between cells mean?

A. The term 'cell' here is used to describe a base station, and each cell here has many sectors, either four or three. In the case of the accused products, a cell, if it means a base station, would have three sectors.

Q. And what is the '931 Patent specification explaining here about the issue of interference between sectors and between cells?

A. It is showing that the timing and -- of the downlink and uplink portions of each TDD frame must be precisely aligned so it's actually describing the control and timing of the entire base station sectors, and all of them or a plurality of them, not just one sector.

MR. KNOBLOCH: Now, Mr. Svenson, can you please pull up column 16, just a little bit lower, lines 20 to 38?

Q. (BY MR. KNOBLOCH) What is the solution, Doctor Madisetti, that the '931 Patent comes up with for addressing this problem of interference both between sectors and between cells?
A. It comes up with a precise highly accurate distributed timing architecture to align the start points of the downlink transmissions, both within sectors and across cell sites.
Q. In the context of claim 29, what is the highly accurate distributed timing architecture?
A. It is embodied by the TDD frame, which is the schedule or common timetable that is carried out by the base station across all sectors.
Q. In the context of the '931 Patent, how are transmissions to multiple sectors coordinated?
A. They are coordinated by this baseband unit that controls the three different radios, whether they are Ericsson radios or the Samsung radios, the common code that controls the timing.
Q. Now -- all right.
MR. KNOBLOCH: Thank you, Mr. Svenson.
Ms. Brunson, if we could switch back to my computer, I really appreciate your help.
Q. (BY MR. KNOBLOCH) There is one part of 19[d] that I want to talk about which is the start of a TDD frame. In what part of a TDD frame is the broadcast beam signal transmitted?

A. It's at the beginning or the start, and here Mr. Jager is confirming that when you are transmitting an SSB, it's all concentrated in slot 0, which we discussed earlier. Slot 0 is the beginning. And he confirms that that is correct.

Q. And to remind the jury, what is C-band again?

A. C-band is the lower band, which is the mid band which is between one and seven gigahertz that 95 percent of Verizon's traffic flows through.

Q. Is it also true for mmWave is that broadcast is sent at the start of a TDD frame?

A. Yes. And, again, that's confirmed by Mr. Jager.

Q. And what is shown here?

A. Again, this is an animation that summarizes that -- how it happens. So you have the broadcast beams that are composed of individual broadcast -- you have the broadcast beam signal that is composed of individual broadcast beams, and it's done at the start of the frame as required by the claim limitation, and it's sent to multiple sectors.

Q. All right. We'll just -- and based on all this evidence that you've reviewed and considered, what do you conclude about element 19[d]?

A. Again, based on the evidence that is shown -- and also I believe I cited to deposition testimony from two witnesses who will be speaking here, so I was not able to cite them. So based on all that information, it is my opinion that 19[d] is

present.
Q. Okay. So I think we're about halfway through claim 29. I have a little bit more to go?
A. Yes.
Q. Let's move on to 19[e]. What does Mr. Jager have to say about 19[e]?
A. 19[e] is that the broadcast beam signal comprises a start of the frame field capable of synchronizing receivers. And the Court has construed the 'start of the frame field' as a field to indicate the start of the frame, and Mr. Jager confirms here that this information is for frame synchronization and for synchronization receivers.
Q. Is there any dispute that -- in your -- to your understanding that the synchronization signal block transmitted to users in multiple sectors at the start of the frame is capable of synchronizing receivers?
A. There's no doubt. It's supported by the documentation, the code, as well as the deposition testimony, and it synchronizes all users in all sectors.
Q. And so what did you conclude in element 19[e]?
A. That this limitation 19[e] is practiced by the accused Verizon 5G TDD base stations.
Q. Okay. Let's move to 19[f]. This is the final limitation of the independent claim 19 on which claim 29 depends. Right?
A. Yes.

Q. Okay. So let's go through this. What is the second -- what is the final limitation of claim 29 -- I'm sorry, claim 19 -- element 19[f]?

A. Yes. It says transmitting in a downlink portion of said TDD frame. You're actually now transmitting the first downlink data traffic using something called a directed scanning beam signal. So these are the blue lines that, after you tell everyone in all sectors to synchronize, you're actually sending them the music or the downlink data that they are waiting for.

Q. Now, in the context of the independent claim 19, how many sectors receive downlink data traffic -- sorry. Just in a TDD frame?

A. In the case of claim 19, just one.

Q. And is that -- that's what's shown here that with the blue line going to just the sector 2 phone?

A. Yes. You're only receiving the directed scanning beam in claim 19[f] for sector 2. Only one sector.

Q. Is there any dispute that Verizon transmits downlink data traffic using directed scanning beam signals?

A. No. Mr. Jager has confirmed that. You're always transmitting these downlink data to users in narrow beams.

Q. And is this true for both C-band and mmWave?

A. Yes.

Q. Does Ericsson agree that downlink data is sent on

directed scanning beam signals?
A. Yes. JX 47 at page 2 confirms that Ericsson implements user specific beams containing user specific information which are the directed scanning beam signals.
Q. And what does all of this evidence and testimony lead you to conclude about element 19[f]?
A. That it is practiced by the accused Verizon base stations.
Q. And so now I see you added a checkmark to 29[a] Can you explain that to the jury?
A. Yes. So I first focused on the independent claim 19, and now I will focus and show that it's practiced in claim 29 which includes the claim 19 and depends on it, has been satisfied, so I'll go to the specific limitations of claim 29 that go beyond what claim 19 has claimed.
Q. Okay. So starting with the first additional limitation of claim 29, which we've labeled 29[b], what -- we heard from Mr. Fortes this morning. What does Mr. Fortes' testimony -- how is that relevant to this element?
A. Yes. Mr. Fortes construed the said downlink portion of said TDD frame as the same downlink portion of the TDD frame. Mr. Fortes, who is an Ericsson corporate designee, confirms that multiple beams are transmitted at the same time from Ericsson's equipment on Verizon's 5G TDD network, and transmitted with the same system frame number so that means

they're transmitted in the same scheduled time frame. And he confirms that that's his understanding, yes.

Q. Do you agree with Mr. Fortes that when beams are transmitted from a base station in Verizon's network at the same time, those beams going to different sectors are all part of the same system frame number?

A. Yes.

Q. All right.

MR. KNOBLOCH: Your Honor, before I show this next slide, Ericsson has requested we seal the courtroom.

THE COURT: All right. To protect confidential information and based on counsel's request, I'll order the courtroom sealed at this time.

If you're present and not subject to the protective order in this case, you should excuse yourselves until the courtroom is reopened and unsealed. That obviously won't cover Ericsson's personnel because it's their confidential information.

MR. KNOBLOCH: I'm just --

MS. FAIR: We're conferring as to whether or not our corporate representative may remain in the courtroom.

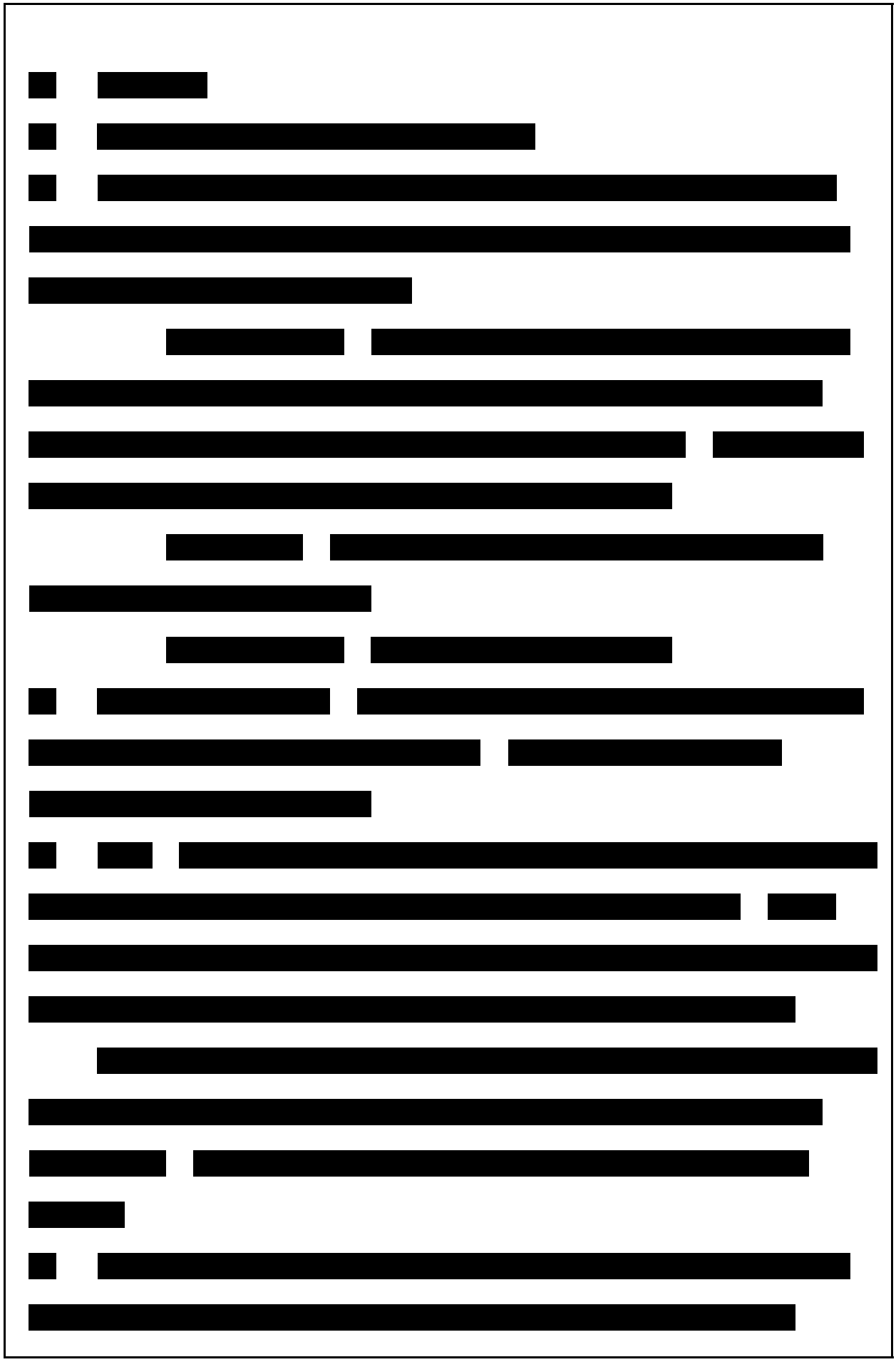
THE COURT: All right.

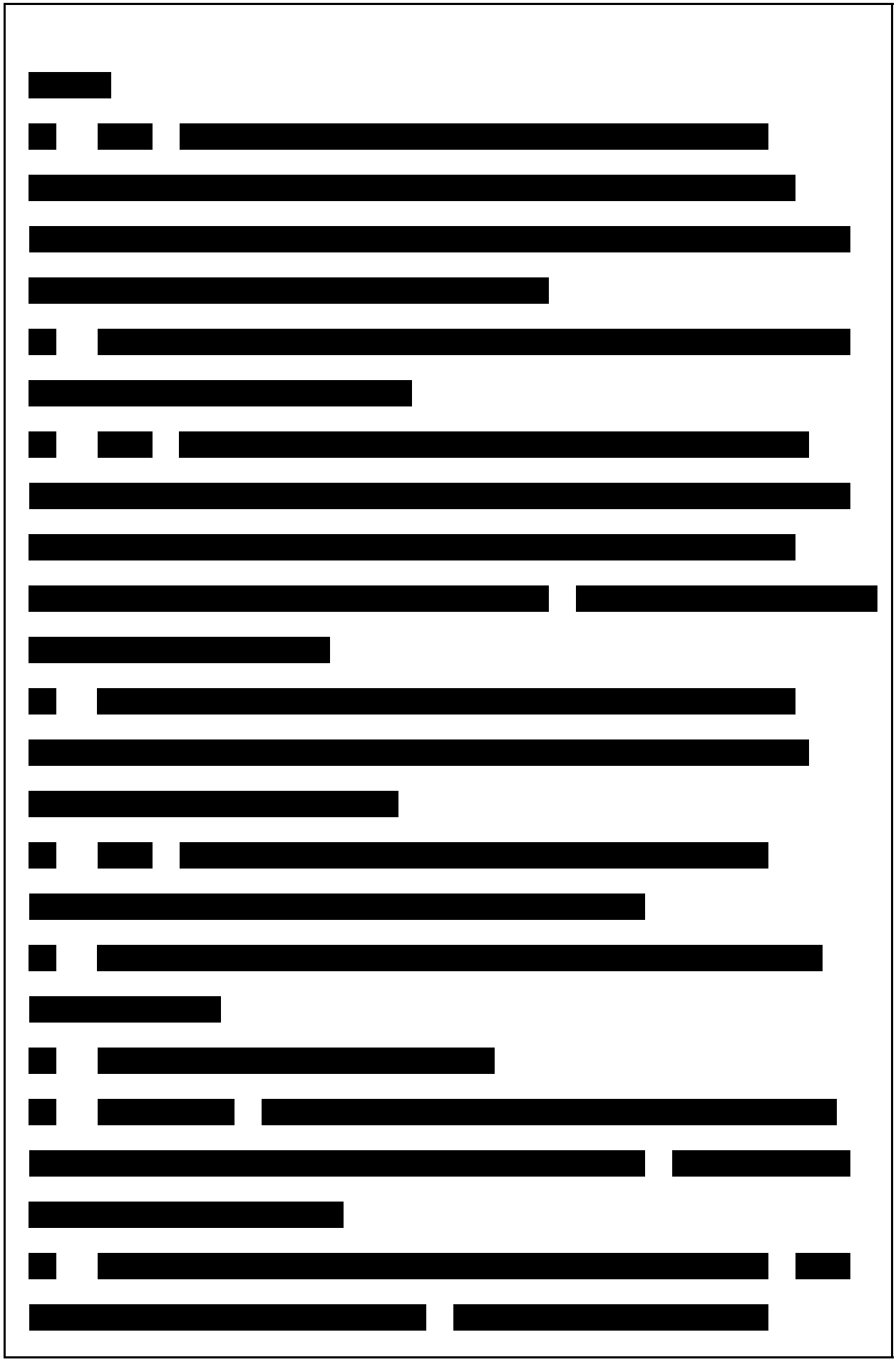
MR. KUBEHL: Your Honor, we're fine for Mr. Hynek to stay for this slide.

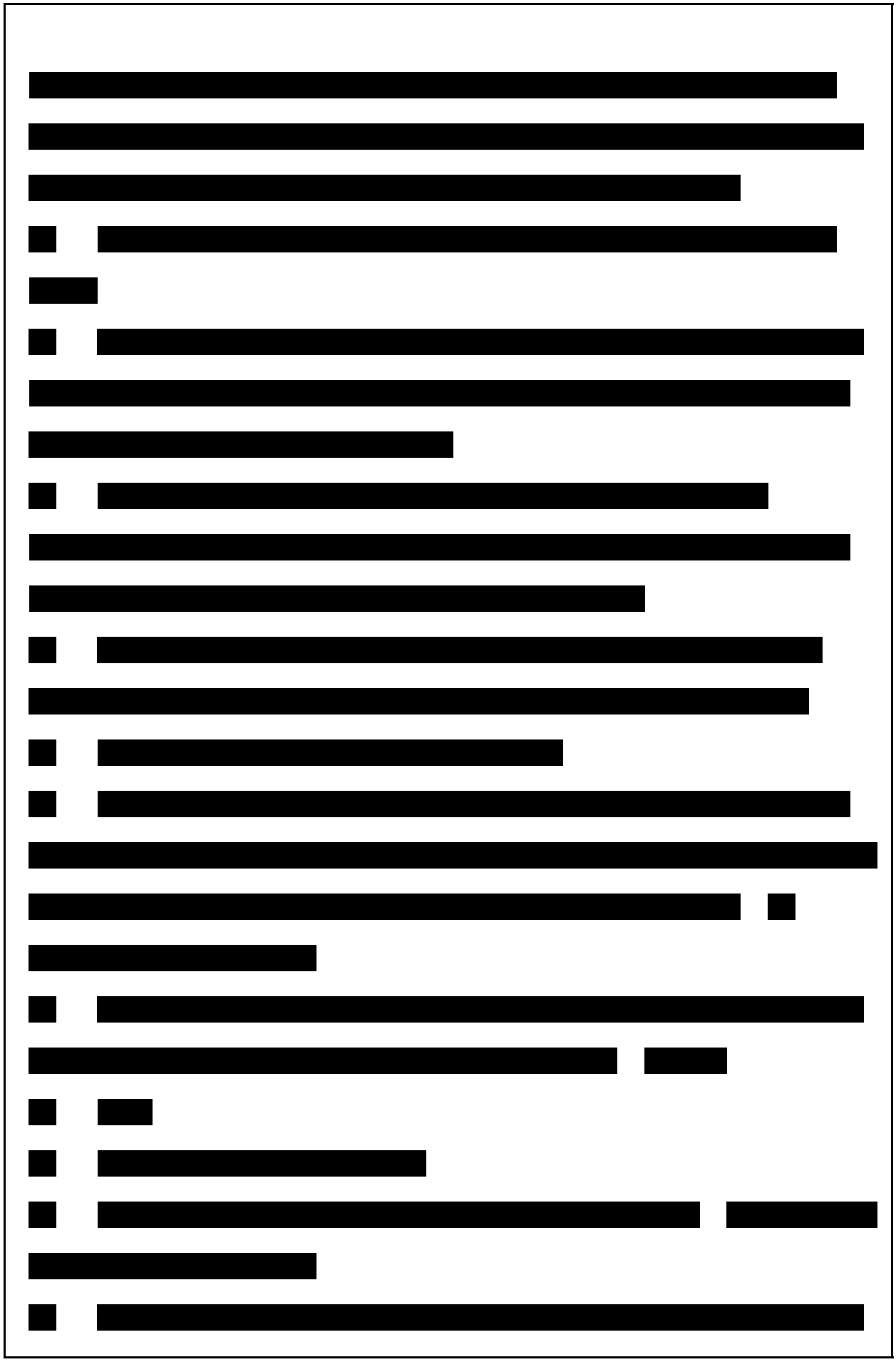
THE COURT: All right.

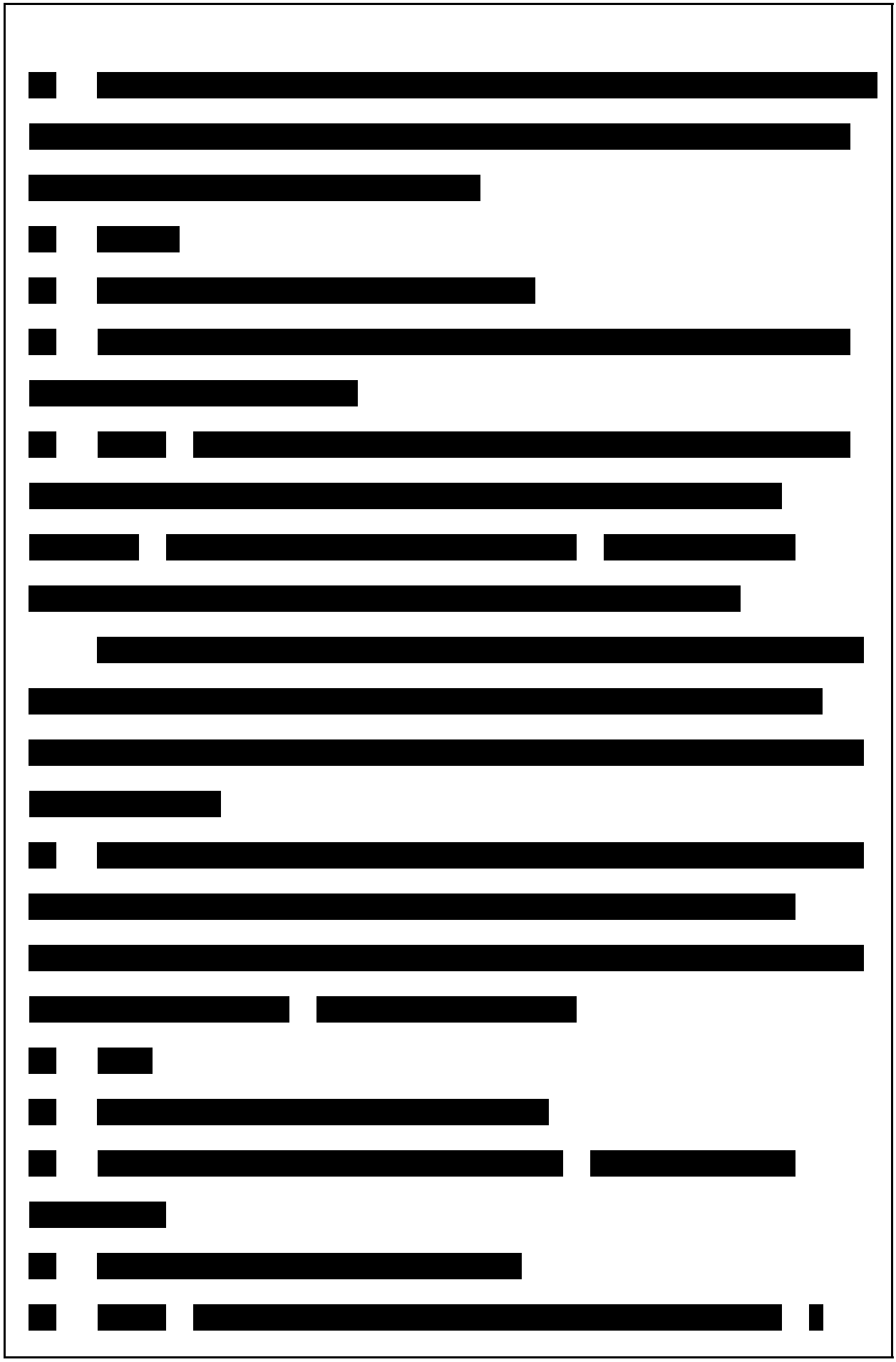
(Courtroom sealed).

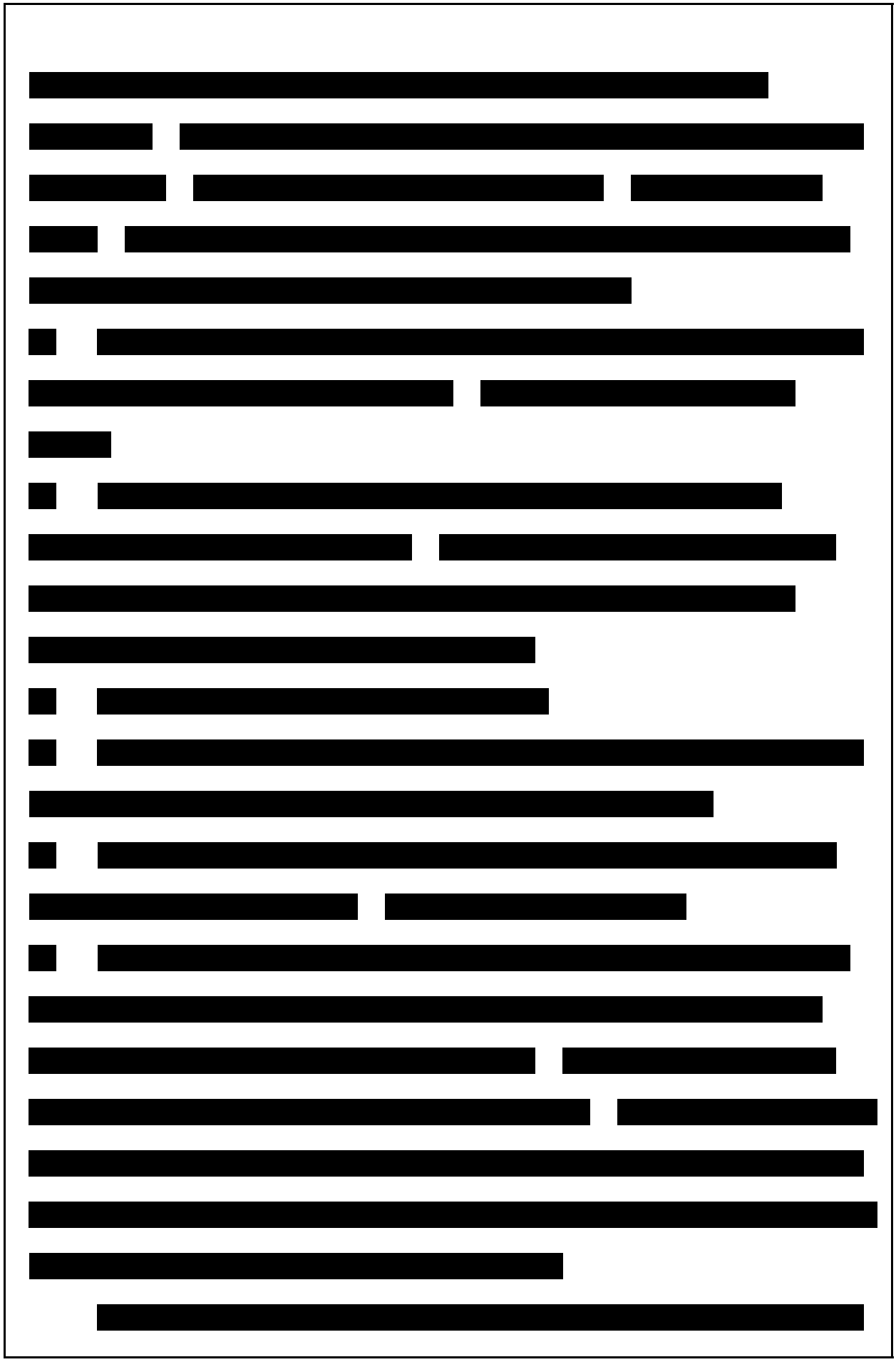
[redacted]











[redacted]

(Courtroom unsealed.)

MR. KNOBLOCH: And we have --

THE COURT: Just a minute, counsel.

MR. KNOBLOCH: Sorry, Your Honor.

THE COURT: Let's let everybody get back in the courtroom.

All right. You may proceed.

MR. KNOBLOCH: Thank you, Your Honor.

All right. So we've talked about claim 29. And this is -- we've been using this format to kind of label things and walk through it, but what you see on your screens now is how claim 29 looks in the patent itself which you have in your notebooks.

THE COURT: Is that a question or is that a speech to the jury?

MR. KNOBLOCH: I'm sorry, Your Honor.

Q. (BY MR. KNOBLOCH) Doctor Madisetti, claim 28 is the other claim that we are going to be talking about in the '931 Patent.

A. Yes.

Q. And what does this slide show?

A. I have gone through claim 29 in great detail, and I want to now go next to claim 28. But to maintain a shortage of time, I identified the common portions of the two claims in green. So the evidence that I use for claim 28 will be the evidence I use for claim 29 for the portions in green.

The only portions of claim 28 that are different are those shown in yellow. So I will cover the yellow portions for claim 28 with the understanding that the green portions would rely on claim 29 evidence for support.

Q. And are we going to go through everything we just went through for claim 29 all over again?

A. No, no.

Q. Okay. Good.

And starting at the very beginning, what is the difference you highlighted here between claims 29 and 28?

A. From a technical point of view, one of them is a method which is defining a number of steps in a comprising way, and the other one is called an apparatus claim, which is defining the structure or the architecture of the claim 28, which includes a transceiver and transmit path circuitry that operate in a particular way.

Q. And -- okay. And so what does this slide show here?

A. I have now taken claim 28 and I've check-marked all the portions that I've already discussed with respect to claim 29, so all we have to do is focus on those that are not checked.

Q. Okay. And starting at the very first one, you mentioned transceiver. Has that term been construed by the Court?

A. Yes.

Q. And can you explain how Verizon's 5G base stations include a transceiver?

A. Yes. The Court has construed a transceiver as one or more transceivers. So Verizon's base station transceiver is the combination of the three different radios and the baseband units, both for the Ericsson and the Samsung products.

Q. And just to -- this -- I think the jury knows this already, but what is a transceiver?

A. A transceiver is something that transmits and receives.

Q. Is there any dispute that the antennas and base stations in Verizon's network transmit and receive?
A. No.
Q. Okay.
A. The baseband units, the radios, and the antennas transmit and receive.
Q. And as shown here, there's also no dispute that there is a plurality of base stations with transceivers in Verizon's network. Right?
A. There is no dispute. There are 75,000 such base stations.
Q. So what did that lead you to conclude about elements 28[a] and 1[a.3]?
A. That that limitation is present in the accused products.
Q. And moving on then to the final element we need to look at in the '931 Patent, the transmit path circuitry limitations, [1b] and 28[b], what does this document show?
A. This document shows, for example, the two documents here, one is JX 52 at 3, JX 48 at 7, and there is a Samsung document with Bates number 2130 at 32, they show on the left there is a baseband unit which is shown on the left. It's BB 6648 as an example. And on the right in the middle of the figure is the AIR radio interface unit or the AIR unit that consists of the radios and the antennas.
And similarly for Samsung, on the right you have a

baseband unit as well as the radios and the antennas AIR? That's the said transmit path circuitry of claim 28.

Q. And this transmit path circuitry is part of a transceiver. Is that right?

A. Yes.

Q. And going back, just because I need to -- I want to make sure this point is clear. Under the Court's construction, does a transceiver in Verizon's 5G TDD base station send a broadcast beam signal to more than one sector?

A. Yes.

Q. How so?

A. Because the transceiver is the combination of the three radios and the baseband units and the antennas that send through each antenna a broadcast beam for each sector, and together these three broadcast beams comprise the claimed broadcast beam signal.

Q. Okay. And so then -- and what is shown in this Ericsson document?

A. This is additional confirmation that these are transceivers that they have beamforming and they have that -- they are fully capable of beamforming.

Q. And what does this slide show?

A. It shows, again, the Court's construction of the sector, that each sector is covered by its own antenna.

Q. And how does the transmit path circuitry in Verizon's 5G

base stations operate?
A. It operates through the user of a baseband unit that controls the radios, the three radios, one for each sector, and each of these radios as a part of the transceiver transmits to its respective sectors. These radius beams specifically the directed scanning beam signals with data for the UEs in all the sectors.
Q. And what did all this evidence lead you to conclude about claim 28?
A. That claim 28[b] is present and all the limitations are present, so that was the completion of claim 28.
Q. And, Doctor Madisetti, what is your opinion about the Verizon's infringement of claims 28 and 29?
A. For the reasons that I cite with the evidence I cited for support. It's my opinion that claims 28 and 29 are practiced by Verizon's 5G TDD base stations.
MR. KNOBLOCH: Now, Ms. Brunson, if I could just have the monitor turned off, I'm going to switch to the '794 Patent next.
Q. (BY MR. KNOBLOCH) Doctor Madisetti, while I'm switching my presentation to the '794 Patent, can you please tell the jury what is the '794 Patent?
A. Okay. The '794 Patent is the hotspot, mobile hotspot that connects the mobile internet to a number of users like a wireless access point.

Q. And what do we see here on this slide?
A. This is the cover page of Exhibit 2, which is the '794 Patent. The inventor again is Paul Struhsaker.
THE COURT: Counsel, as you get into the '794 Patent, could I suggest you take this huge board down off the easel --
MR. KNOBLOCH: Yes, Your Honor.
THE COURT: -- on the '931 Patent.
MR. KNOBLOCH: Thank you, Your Honor.
THE COURT: I don't want it to fall over and injure some of my staff. Thank you. Let's continue.
MR. KNOBLOCH: Thank you, Your Honor.
Q. (BY MR. KNOBLOCH) And can you explain to the jury at a high level how the '794 Patent operates?
A. Yes. So on the left you have the base station. On the right you have a number of mobile stations that don't have internet, for example, an iPad or a laptop. In the middle you have the claimed device which could be a mobile hotspot in a smartphone or it could be a dedicated home router.
Q. And how does the device -- well, which is the relevant device for purposes of the '794 Patent?
A. The one in the middle.
Q. And how does that device operate to couple a base station and mobile station?
A. It operates in the claim manner so it acts like a bridge,

it acts like a router, it acts like a -- it measures a lot of signal characteristics, it converts two different protocols to each other. So the claim describes the invention.

Q. Now, you use the term 'router' and I think the jury's heard the term 'route' and 'router' throughout this case already. Is that just your word or does Verizon also use that word?

A. I believe it's -- Verizon uses it as well. JX 29 and page 2, Verizon's own website, it describes these as mobile hotspots that function as wireless routers.

Q. And in your view, do Verizon's accused products for the '794 Patent function as wireless routers?

A. Yes.

Q. Does Verizon agree with you?

A. I think Verizon does, but it's expert doesn't.

Q. And what does Verizon's expert say?

A. He says it -- I don't -- I think he says it doesn't route.

Q. Okay. And we'll hear from him soon, I'm sure.

All right. So going through then, starting with the '794 Patent, we are -- we have -- how many claims in the '794 Patent to cover?

A. We are covering three claims.

Q. Okay.

A. We are covering one investment claim 1 and claims 2 and

5, I believe, or 2 and 5, yes.
Q. And starting with claim 1, we're just going to march through it. Element 1[a.1]. Is there any dispute that that the accused products are wireless communication devices?
A. No. The Court has construed a wireless communication device to take the plain and ordinary meaning, and it covers both fixed wireless devices and mobile devices.
Q. And what do we see here in this example, which -- is this a fixed device or a mobile device?
A. The accused Verizon phone in this case is a wireless communication device that's mobile or a mobile device.
Q. How about in this next example?
A. This is a fixed wireless access device which is accused, 5G home router.
Q. And does Verizon market and sell hotspots?
A. Yes. JX 29 at 2.
Q. And what is shown here?
A. These are different examples of the accused products for the '794. They include smartphones on the left from Samsung and Apple, for example. They include home routers. They include internet and home phones. They also include their MiFi products.
Q. And what is shown in the next slide --
A. These are examples of some of the other suppliers of the wireless communication device.

Q. For purposes of the '794 Patent, do all of these different devices made by all of these different suppliers work differently from each other?
A. Based on my analysis, they work the same way.
Q. And based on all of that, what did you conclude then about element 1[a.1] of the '794 Patent?
A. That 1[a.1] is present.
Q. Moving on to element 1[a.2], can you explain this element to the jury?
A. Yes. This says here that you have a first transceiver that communicates -- that's operable to communicate with a base station. So the first transceiver on the mobile phone, which is the accused device, is having a 5G or a 4G modem that communicates with the 5G or 4G base station.
Q. Is there any dispute in this case that Verizon's accused products have a first transceiver that communicates with the base station?
A. No.
Q. And we heard from Mr. Gamboa this morning. How is his testimony relevant?
A. He confirms this is a cellular radio that talks to a cellular network. That confirms that this limitation is met.
Q. And what did that lead you to conclude then about element 1[a.2] of the '794 Patent?
A. That this limitation is met by the '794 accused products.

Q. All right. Moving on to 1[a.3], can you please explain this element to the jury?
A. Yes. This says here that the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area communication protocol.
Q. And what is shown in this animation?
A. So what we are seeing here is that the base station is talking to a number of other mobile stations as well as this mobile station, and it is using a wide area wireless communication protocol. An example of a wireless communication protocol is a 4G or 5G.
Q. Any dispute in this case that the base stations with which Verizon's accused products communicate operate using a wide area wireless communication protocol?
A. No.
Q. And what -- just so we can explain it a little bit more, what is shown here?
A. Here is an example from some documents from Verizon, JX 27 on page 24. It confirms that Verizon also agrees that WAN, or a wide area network, is on the right side of the device, which is the gateway here. So it confirms that Verizon also agrees that this is a wide area wireless communication protocol.
Q. And in this example from Verizon's document, they've

flipped the orientation of the device. Right? So that the wide area network is on the right and the local area is on the left. Right?

A. Yes.

Q. In our graphic, we've been using it the other way around. Right?

A. That is right.

Q. Does that change your opinion at all?

A. No.

Q. Okay. And what did -- what does this next slide show?

A. This is Mr. Gamboa, who is Verizon's corporate designee, confirms that they operate according to the wide area protocol which in this case is a 5G protocol, so it has a dedicated 5G chipset.

Q. And what did all the evidence and testimony and everything you considered lead you to conclude about element 1[a.3]?

A. It is met by the accused Verizon cellular hotspot.

Q. All right. So now we've talked about the first transceiver. Why don't you explain this next element to the jury?

A. Yeah. The second transceiver is coupled to the first wireless transceiver and operable to directly communicate with the first mobile station and the second mobile station. So as you can see here, your hotspot is able to talk to an iPad on

the top or a laptop below using a second protocol, and it's the second wireless transceiver.

Q. Now, is there any dispute in this case that the Verizon accused products include both a first transceiver and a second transceiver?

A. No.

Q. Is there any dispute in this case that the first transceiver communicates with a wide area network and that the second transceiver communicates with first and second mobile stations?

A. No.

Q. What did Mr. Gamboa explain?

A. He confirmed that there is a separate radio for WiFi, which is the local area protocol.

Q. And which of the two transceivers is this separate radio?

A. This is the second transceiver, second wireless transceiver.

Q. And what did all of this evidence lead you to conclude about element 1[b.1]?

A. That it is also practiced.

Q. Moving on to element 1[b.2], can you please explain this element to the jury?

A. Yes. It says here that the second wireless transceiver should communicate according to a local area wireless communication protocol, and we point to the WiFi standards as

an example of the local area wireless communication protocol.
Q. And do the second transceivers in Verizon's accused products operate using WiFi protocols?
A. Yes. The different standards of the WiFi protocols.
Q. What is this document an example of?
A. This exhibit PX 199 is an example of a Verizon requirements document that confirms that for their products the device shall support an embedded 802.11 BG WiFi hardware solution.
Q. So is this a document that Verizon provides to its suppliers?
A. That's my understanding.
Q. And by its suppliers, are we referring to those -- that big list of companies we saw early on in the presentation?
A. Yes.
Q. And what does Verizon tell those suppliers about the second transceiver in the devices?
A. That it should support a local area wireless communication protocol such as WiFi.
Q. What is shown in this next slide?
A. So here is another example of the feature lockdown sheets which show additional examples of WiFi standards, for example, for Samsung phone, PX 199, which identifies other IEEE standards like 802.11 2007, 802.11n 802.11ac, and others.
Q. What did all this evidence lead you to conclude about

Verizon's -- about element 1[b.2]?
A. That it is practiced by Verizon's cellular hotspots.
Q. All right. Moving on the element 1[c.1], can you please explain that element to the jury?
A. Yes. So here you are receiving a first -- at the first wireless transceiver from the base station a first downlink signal intended for a first mobile station. So you are receiving from the base station in blue, say, music from the internet and you want to play that on your iPad. So you receive it first at the first transceiver.
Q. What is the first -- what happens after the first transceiver receives that signal?
A. It sends it and provides it to the second wireless transceiver shown on the right in pink.
Q. Is there any dispute that when a base station sends the accused product a signal to the first transceiver, that that signal is then provided to the second transceiver?
A. There's no dispute.
Q. And can you explain -- this is a long colloquy, but can you explain Mr. Youtz's testimony on this issue?
A. We saw Mr. Youtz today in his deposition testimony, and he confirms that the cellular modem, which is the first wireless transceiver, passes the packets from the base station to the WiFi access point, which is the second wireless transceiver, and, therefore, it provides the downlink signal

as required in the claim.

Q. What did all this evidence lead you to conclude about element 1[c.1]?

A. That 1[c.1] is also present.

Q. Moving on to element 1[c.2], can you please explain this element to the jury?

A. Yes. So here it says that the "wherein the second wireless transceiver receives the first downlink signal and retransmits the first downlink signal to the first mobile station."

So what is happening here is that you are forwarding it and you're retransmitting the downlink signal, so if you receive music from the internet, the two transceivers exchange that information and send it as a second downlink signal to the iPad on the top.

Q. And what is shown on the pink -- the pink line going from the device to the sort of iPad or tablet at the top?

A. That that information is now reformatted according to a local area wireless communication protocol that is the WiFi protocol shown in pink.

Q. Now, I'd like to -- what does this next graphic show about the retransmission of information?

A. Yes. There is some dispute between the parties with 'retransmit', so I want to explain it a little more in detail. And here I'm showing --

Q. I'm sorry. What's the first step here?
A. The first step is you are receiving a first downlink signal according to a 4G or 5G protocol, and then you are retransmitting it as a second downlink signal in a different protocol which is, in this case, the WiFi.
Q. And is this how all WiFi hotspots work?
A. All cellular WiFi hotspots from Verizon work.
Q. And what is shown here?
A. It is shown here that you have a music song that is in the blue -- that is in blue first, and then where it's sent from the first wireless transceiver to the second one as a retransmission, it is then to the second WiFi protocol in pink, and then sent over the WiFi link to the iPad.
Q. And is there any dispute that functionally this is exactly how Verizon's accused products operate?
A. There is no dispute.
Q. And, in your opinion, does that meet the 'retransmits' limitation of claim element 1[c.2]?
A. Yes, because the claim itself requires it to be reformatted into a second local area wireless communication protocol, which is WiFi. So the form may change, but the content remains the same; it's just reformatted.
Q. And so what happens to the music -- just to summarize, the music that goes from the base station, summarize the steps from the base station to the iPad.

A. From the base station to the iPad, it first goes using cellular protocols like 5G, then it gets converted to a WiFi protocol, and then it's played at the iPad after being received as a WiFi protocol.

Q. Is the same music that was sent from the base station ultimately received by the mobile station?

A. Yes.

Q. And can you please explain Mr. -- the relevance of Mr. Youtz' testimony?

A. Yeah. Mr. Youtz confirms that, that this is the mobile phone's hotspot's functionality, that packets are sent from the network to the cellular modem, the cellular modem forwards these packets to the WiFi access point, and the WiFi access point forwards these packets on to the LAN-side device, which is the iPad.

Q. Do the requirements documents you mentioned earlier also address this point?

A. Yes. The PX 199, Verizon's own requirements, they say that it "shall send any data received on the 3G and 4G network to the appropriate mobile phone hotspot connected client on the WiFi local area network." So it does routing in that manner and retransmits it.

Q. I'm sorry.

And then is the -- do other examples in the lockdown sheets also include this requirement?

A. Yes.
Q. And what did all of this evidence lead you to conclude, then about element 1[c.2]?
A. 1[c.2] is also practiced by the accused products.
Q. All right. Moving on to element 1[d.1], can you please explain this element to the jury?
A. Yes. So here it says that the second transceiver monitors the first signal characteristics of the second downlink signal of the first mobile station and monitors the second signal characteristics of the second mobile station.
Q. And how does that work?
A. So when it receives some data from the base station, it forwards it on to the mobile station, and then it -- the mobile station here, for example, provides the signal characteristics, or the received signal strength indicator that we heard in the deposition today, back to the hotspot.
Q. Now, in this example--and I want to show it again--in this example is the second transceiver the one that measures the signal characteristics?
A. It monitors it because the claim requires monitoring. So it measures the value of the signal. It also monitors it by obtaining the measurements of the signal measured at the iPad.
Q. In your opinion, does receiving and monitoring signals that were measured -- signal characteristics measured by the mobile station meet the limitations of limit 1[d.1]?

A. Yes. A monitor means that you are monitoring something. You don't have to necessarily measure it. You can measure and monitor, and --

Q. And does the second transceiver also monitor signal characteristics of the second mobile station?

A. Yes.

Q. And how does it do that?

A. Again, by the same means. It can measure both the received signal. It can also obtain the measurements of the received signal strength indicators and other characteristics from the mobile station and monitor it that way. So my doctor, for example, monitors my blood pressure even though the nurse may be measuring it.

Q. And functionally is there any dispute between General Access and Verizon that this is how its transceivers operate?

A. No.

Q. What did -- can you please explain the relevance of Mr. Gamboa's testimony?

A. Mr. Gamboa confirms that the hotspot can monitor the transmit signal from the client devices, and using reciprocity, this means that the signal is the same, the channel conditions are the same, it's an indicator of the signal of the channel, and it also allows you to monitor the first signal characteristics in the same manner.

Q. And what did all of this evidence lead you to conclude

then about element 1[d.1]?
A. It's met in many different ways by Verizon's cellular hotspots.
Q. All right. Moving on to the final element of claim 1, element 1[d.2] -- before we discuss the element, can you please explain to the jury that -- which term has been construed by the Court?
A. Yes. The Court has construed the term 'routing information to the first mobile station and second mobile station, respectively' as 'directs information through a specified path to the first mobile station and the second mobile station, respectively'.
Q. And as shown in this diagram, what is the specified path through which information is transmitted from the second transceiver to the mobile stations?
A. The path can be in many different ways. I show several scenarios.
Q. And what is the one shown here?
A. In this case it is -- it could be a direct beamforming path where you can send a beam or it would send a signal.
Q. Now, what is shown in this example of 'routing'?
A. In this particular example, you are sending a signal measuring the signal characteristics, and if the signal characteristics are good, you are choosing the path to send the information to the mobile station. So, therefore, it

satisfies the Court's construction of 'routing'.
Q. And what is shown here?
A. So this is shown for the first mobile station where it's receiving the music signal if the strength is good.
Q. And does that happen to the second transceiver as well?
A. Yes.
Q. What is shown here?
A. That second transceiver signal characteristics are measured, the downlink ones, and then your routing information based on that.
Q. What is the information that's being routed to the two mobile stations here?
A. It's the music here.
Q. And what is the specified path through which the information is transmitted?
A. In this case it's a network path.
Q. Is there another way that information is routed to the first and second mobile station?
A. Yes.
Q. And what is that?
A. That can be done through beamforming.
Q. And the jury's heard about beamforming already. How does it work in this context?
A. In this case, for example, if the iPad is not -- is moving or it's located at a particular portion, you monitor

the signal characteristics and the signal shows red, which means only one bar, so what the smart beam -- what the smart beamforming hotspot does is it changes the beam characteristics and then sends the music to the right direction where the mobile station or the iPad is located.

Q. And what -- and what -- did you do any testing to confirm that beamforming works in this way?

A. Yes.

Q. All right. And before we get to the testing--sorry--what is shown here?

A. It is shown here that the music is sent in the right path. So what happens is it sends a sounding signal. The sounding signal is to measure the quality of the connection. Based on that, it then changes the direction and sends it to your iPad in the right location. And we tested it to confirm this --

Q. And I had messed up the sequence in there, so why don't we do this one again just to walk through the steps briefly.

What is this step?

A. Yeah. This is the -- the first step is sending some sort of sounding signal to figure out the signal characteristics, and it tells that mobile hotspot that it's not perfectly received because it shows red.

Q. So then what happens next?

A. Then the beamformer then chooses the right angle, and

then provides the music on the correct high quality path with good signals.

Q. And is that what's shown here in the final step?

A. Yes.

Q. All right. And so let's talk about the testing that you did.

What is shown here? What is this a picture of?

A. Yeah. So I asked for this test to be done by Mr. Ron Murias. And he lives in Canada, and he did this in I believe in Alberta, so you can see mountains -- the Canadian mountains there. So he did it on a long mountain road where he was close to a base station and the hotspot was in a car, and he then kept moving the iPad to confirm that this actually is happening.

Q. Now, how many devices did Mr. Murias test?

A. He tested two.

Q. And what kinds of devices were they?

A. They were I believe Samsung devices.

Q. And for this type of routing, what are the devices that actually perform this beamforming type of routing?

A. They follow an IEEE WiFi standard which is 802.11, particular versions of that--AC/DC.

Q. And so walking through testing here, what's the first step shown here?

A. The first step is you receive the signal from the base

station intended for the iPad.
Q. What happens next?
A. Then you are sending this sort of non-data packet called NDP, and that tells the (unintelligible) that is received by the iPad. The iPad then provides a signal characteristic about the quality of that signal.
Q. And so what is shown here in this next step?
A. That's the packet that gives you the sounding dialogue. So it's checking for the quality, and those are the signal characteristics that are then used by the hotspot, which is the iPhone in this case.
Q. And what is shown on the bottom left here in the white sort of table?
A. Yeah. That's for that particular time, which is 74 seconds. It has -- it measures the signal characteristics.
Q. Are those an example of signal characteristics that were actually measured and reported in the test?
A. Yes, for the first downlink signal. For the downlink signal.
Q. And what happens next?
A. And then what happens is that you send the signal using a beamform path, which is the specified path of the claim and which satisfies the construction of routing by the Court.
Q. What happens next here in the text?
A. Then what Ron did was he moved --

Q. Sorry. Mr. Murias?
A. Sorry. Mr. Murias moved away from the car and moved in a slightly different direction, and then a new set of signal characteristics was measured and sent back.
Q. And then what happened after that?
A. Then a new beam was created along a different specified path and information -- the music was routed that way.
Q. So in this example how was the device responsive to the signal characteristics?
A. It chose a different path.
Q. And what did all this evidence lead you to conclude about element 1[d.2]?
A. This is the final limitation, so this evidence confirms that all limitations of the '794 Patent, claim 1, are practiced.
Q. Okay. Moving on to claim 2 of the '794 Patent, what is the additional limitation required by claim 2?
A. Yes. Claim 2 is satisfied because claim 1 is satisfied. In addition, it adds that the second wireless transceiver is coupled to the first wireless transceiver by a wireline connection.
Q. What is a wireline connection?
A. It means there's a wire that connects the two chips. It's not a wireless connection with the phone within the smart hotspot.

Q. Is there any dispute that the two transceivers in Verizon's accused products are connected by wires?
A. There's no dispute. I reviewed the schematics that confirm that these are wires.
Q. And so then what did that lead you to conclude about claim 2?
A. That claim 2 is also practiced.
Q. Finally, claim 5 of the '794 Patent. Could you explain this final claim?
A. Yes. It says here that you have -- in addition to claim 1, you are also adding the limitation that the first wireless transceiver and the second wireless transceiver are part of an integrated device. As you can see from the photographs themselves, all these devices are integrated together in one package, so all the accused products are satisfying claim 5.
Q. Are -- in the Verizon accused products, are the first and second transceiver all contained within the same device?
A. Yes.
Q. Is there any dispute in -- to your understanding that -- by Verizon that its accused products include two transceivers as part of an integrated device?
A. No, there's no dispute.
Q. What does all that lead you to conclude about claim 5?
A. That claim 5 is also practiced.
Q. Thank you.

MR. KNOBLOCH: All right. Ms. Brunson, if I may just have the blank slide for a second. I'm just going to move on to the next topic.

Q. (BY MR. KNOBLOCH) Doctor Madisetti, in addition to discussing the issue of infringement, were you also asked to discuss -- to address and analyze another issue?

A. Yes.

Q. What is the other issue you were asked --

A. I was asked to analyze the technical benefits provided to Verizon through the use of the '931 and '794 Patents, the asserted claims.

Q. And did you conduct an analysis of the technical benefits that Verizon enjoys from its infringement of the '931 -- of the asserted claims?

A. Yes, I did.

Q. And, in summary, can you explain to the jury what those benefits are?

A. Yes. With respect to the '931 Patent, asserted claims 28 and 29, the technical benefits are the '931 is a foundational patent that allows efficient practical and synchronized use of beamforming in a sectored TDD cellular network.

Q. And, in your opinion, could a TDD cellular network practically incorporate beamforming and TDD without the '931 Patent?

A. No, it could not.

Q. Why not?
A. Because there is a problem with the coordination, and there's a lot of interference and other issues that I will discuss.
Q. And what is, in a summary, your opinion about the technical benefits of the -- of Verizon's infringement of the '794 Patent?
A. Yes. With respect to the '794, it allows a user of a cellular WiFi hotspot that effectively serves more than one device, so it provides nice portable cellular hotspot that could work anywhere and efficiently with more than one device. So these would be the sort of diagram of the benefits.
Q. In your opinion, could a cellular hotspot effectively serve more than one device without using the '794 Patent?
A. No.
Q. All right. So let's start with the '931 Patent benefits. What does this slide show?
A. This shows that -- assuming that this is the current representation of the Verizon's base station -- TDD base station network, the benefit that Verizon gets is that you have a gain of downlink data throughput of 32 percent, according to my analysis.
Q. What is downlink data throughput?
A. That means the amount of data that is sent on the downlink as a part of the base station network of TDD base

stations for 5G.
Q. From your analysis, what is the average amount of additional downlink data throughput that Verizon is able to enjoy because of its infringement of the '931 Patent?
A. Of 32 percent. That's almost a third.
Q. Now, what sort of information did you analyze in order to reach that conclusion?
A. I did a lot of analysis and I did analysis of the best non-infringing alternatives. I analyzed three different alternatives, and then apportioned the benefits. I looked at non-infringing alternative 1, which is using 4G's LTE TM3, which is non-beamforming option from 4G. I looked at non-infringing alternative 2, which is a non-coordinated beamforming where there's no use of common TDD frame schedule. I also looked at FDD, which is a frequency division duplexing as a non-infringing alternative 3.
Q. So just taking a step back, what is a non-infringing alternative?
A. So the idea is that you will have to look at potential alternatives that Verizon could use if it did not want to infringe the patents, so I looked at what are the options it has if it doesn't want to use the patents, so, therefore, you can focus on the benefits it gets from using the patents.
Q. Now, before we talk about the non-infringing alternatives, I just want to make one thing very clear. Are

the benefits that you're analyzing, are they attributable to claims 28 and 29, or to claims 1 and 19?

A. Only to claims 28 and 29. I don't have -- in my opinion, claims 1 and 19 do not have much value.

Q. And why is that?

A. Because they only address a point-to-point connection. They don't address a practical use of beamforming; they are only addressing a point-to-point connection between a base station and device in one sector.

Q. And so what is shown here in this graphic?

A. So without the asserted claims you could not handle -- you could only look at one sector. With asserted claims 28 and 29, you could not handle multiple sectors, multiple users, and the interference that the inventors of the '931 recognized can happen when you have uncoordinated beamforming.

Q. How about with the asserted claims 28 and 29?

A. With these claims you can have 32 percent more downlink throughput.

Q. Okay. So turning to the analysis of non-infringing alternatives, what was the first non-infringing alternative that you considered?

A. Yes, I looked at, as I mentioned, LTE.

And if you go to the next slide.

I looked at 4G's LTE, something called transmission mode 3, that does not use beamforming in the base stations.

Q. And so what is shown in this graphic?
A. Here is an example where it just transmits all information without beaming. So it doesn't use beamforming.
Q. And so is LTE transmission mode 3, aside from the beamforming being turned off, otherwise very similar to how Verizon's network works?
A. Yes.
Q. And how come you didn't just analyze the effects of turning off beamforming in Verizon's 5G network?
A. Because Verizon's 5G network always uses beamforming.
Q. And how about -- and so -- and what does this testimony explain?
A. Ms. Dong and Mr. Jager confirm in the deposition that they use beamforming in 5G, so you cannot turn it off.
Q. How about 4G?
A. In 4G you can use transmission mode 3, which does not have beamforming, and there's a transmission mode 8 that uses beamforming.
Q. And so in the context of 4G, were you able to directly compare the benefit of having the beamforming with the asserted claims enabled versus having beamforming turned off?
A. Yes, because I was able to do an apples-to-apples comparison, and it was also conservative because 4G has less capability in terms of throughput, so, therefore, it met both the conservative requirements and also was an apples-to-apples

comparison because, as I said, I analyzed the claims in the context of 4G as well.

Q. In your view, would turning off beamforming in 5G have a smaller or greater effect than the effect observed when beamforming was turned off in 4G?

A. It would have a much greater effect to the positive and, therefore, my analysis with 4G was conservative.

Q. Now, did you personally test the benefits of turning on beamforming in 4G?

A. I looked at what was a report from a company called Signals Ahead that both Verizon and others rely upon as well as a part of the normal course of business.

Q. And what is this Signals Ahead report -- and is this an excerpt from that report?

A. Yes. It's Exhibit PX 64 at page 3. It's called "Eight is Enough," and it was testing specifically in a Sprint network two different scenarios in a TDD network, transmission mode 8 and a non-transmission mode 8, which was TM3.

Q. And what did Signals Ahead conclude was the average downlink throughput improvement of TM8 over TM3?

A. They concluded that it was improvement of 44 percent in terms of an average downlink throughput improvement or TM3.

Q. And did other data confirm that the effect of turning -- of going from TM8, which uses beamforming, to TM3, which does not, would be very significant?

A. Yes. I looked at additional independent studies. For example, PX 181 is a study by Chen and published in IEEE wireless communications. It confirms that the improvement is actually much larger because it doubles it in terms of the throughput when you compare TM8 with TM3.

Q. And did Ericsson itself also analyze the effect of having beamforming enabled in 4G systems?

A. Yes. PX 55 on page 5 is an LTE study from Ericsson, and it confirms that TM8 is about 73 percent better than TM3 in Poor RF and 60 percent better in TM3 in medium RF. So this is, again, even more optimistic than the signals in the report that I rely upon which, is 44 percent.

MR. KNOBLOCH: Your Honor, there's an issue I would like to raise with the Court. May I briefly approach?

THE COURT: Approach the bench.

(The following was had outside the hearing of the jury.)

MR. KNOBLOCH: I was told -- my colleagues sent me a note --

THE COURT: I saw it.

MR. KNOBLOCH: -- to approach the bench before eliciting an opinion that Sprint's 4G LTE network in the TM8 with beamforming infringes the asserted claims.

THE COURT: And are you at that juncture now?

MR. KNOBLOCH: I am at that juncture.

THE COURT: All right. And we are at 10 minutes until noon. I assume you have material amount of additional information to cover.

MR. KNOBLOCH: It's hopefully not very long at this point, but between 20 minutes, I think; maybe 25.

THE COURT: Okay. Let's continue. I'll probably stop at noon or shortly before, but we'll at least go another 10 minutes or so, and you can finish after lunch.

MR. KNOBLOCH: And may I elicit that opinion?

THE COURT: Yes, but I'm going to give the jury the instruction that we discussed earlier.

MR. KNOBLOCH: Okay. Thank you, Your Honor.

(The following was had in the presence and hearing of the jury.)

THE COURT: Ladies and gentlemen, you're about to hear as part of this witness' testimony about infringement of Sprint's 4G network and how that relates to the amount of damages that Plaintiff contends it's entitled to in this case. I'm instructing you to consider this information about Sprint's 4G network only for the issue of how that impacts the amount of damages that might be owed to the Plaintiff concerning infringement of Verizon's 5G network.

I'm also instructing you that this testimony has nothing to do with whether or not Verizon infringes the asserted claims. This only relates to damages; it does not relate to

the issue of infringement or liability here.

But with that, I've given counsel permission to go into this information concerning Sprint's 4G network, but again, it's only to be considered by you with regard to the issue of damages, if you reach it, as to an appropriate award for infringement of Verizon's 5G network. It has nothing to do with whether or not Verizon actually infringes or not. All right?

Proceed, counsel.

MR. KNOBLOCH: Thank you, Your Honor.

Q. (BY MR. KNOBLOCH) Doctor Madisetti, in your opinion, does Sprint's 4G network when it -- when using transmission mode 8 practice the asserted claims of the '931 Patent?

A. Yes. Based on my review, yes.

Q. Does Sprint's network, when transmitting in transmission mode 3 practice the asserted claims of the '931 Patent?

A. It does not.

Q. And how is that relevant to your analysis here about the benefits in Verizon's network of practicing the asserted claims?

A. It provides a conservative estimate because you cannot turn off TDD, you cannot turn off beamforming in the Verizon network. And 5G's superior to 4G, and -- but at low bands the operation is somewhat similar, which is C-bands. So there is some comparison, it uses similar technology in a similar way,

so I could get a conservative estimate that is a solid basis for my analysis.

Q. Did Sprint's network that was tested in Signals Ahead, what sort of equipment was used in that network?

A. It actually used equipment from the same suppliers.

Q. And how is that relevant to your analysis of the benefits to Verizon of practicing the asserted claims?

A. Because both Ericsson and Samsung support Sprint and they also support Verizon, so, therefore, it would be technically likely that they would operate in a similar manner.

THE COURT: Doctor Madisetti, if you'll speak up a little bit.

THE WITNESS: Yes. Sorry, Your Honor.

THE COURT: It may be me, but I'm having a harder time hearing you.

Let's continue, please.

MR. KNOBLOCH: Thank you, Your Honor.

Q. (BY MR. KNOBLOCH) And so, in the end, what did you conclude about the relative benefit of multi-sector beamforming with the asserted claims versus using a non-beamforming alternative?

A. That the improvement is 1.44, so it's a 44 percent improvement with respect to non-infringing alternative 1.

Q. All right. What is the next non-infringing alternative you considered?

A. The next alternative is what I called non-coordinated beamforming or slotted ALOHA, which is recited in the specification itself as an example of a non-infringing set-up.
Q. And how does slotted ALOHA differ from -- at a high level from the asserted claims?
A. Because there's no coordination between the radius portions of the TDD frame.
Q. And what is shown in this graphic here?
A. Here is an example of what could happen in slotted ALOHA where there's a lot of interference between the parties and a poor utilization of the resources.
Q. And what is the relative throughput of a system that uses slotted ALOHA instead of using the protocols of the asserted claims?
A. It -- again, I did some analysis in my reports and I also looked at this book, the exhibit that I've shown, which is the book by Brand and Aghvami. This confirms there's a maximum throughput of 0.37 for normal assumptions made for this sort of multiple access protocols.
Q. And so what did that -- how does that compare then to the 1.44 number for multi-sector beamforming with the asserted claims?
A. It results in a .53 number, so that's a significant drop.
Q. In your opinion, is -- which would be better--beamforming without the asserted claims or simply just turning beamforming

off?
A. Turning beamforming off seems to be better.
Q. How much better?
A. Again, compared to related performance of 1, non-coordinating beamforming results in a .53.
Q. What was the final non-infringing alternative considered?
A. That was something that was also proposed by Verizon in this matter, and it's FDD.
Q. And we've talked about FDD a little bit already. What is shown in this graphic?
A. That FDD means you're sharing the frequencies, so you're not sharing the frequencies; you're reassigning frequencies to each channel.
Q. And, in your opinion, how -- what would be the impact of -- to Verizon if it switched from the TDD protocol it currently uses and went to use FDD instead?
A. There are a number of problems, but the main problem is that TDD has a better performance by 66 percent. FDD can also not support as many users. So there are a lot of problems that can happen if you shift from TDD to FDD in addition to repurposing the spectrum.
Q. And what does this exhibit here show?
A. This is a paper that compares FDD with TDD with respect to beamforming, and it shows that there is a 66 percent improvement of the blue over the red.

Q. And as compared to multi-sector beamforming, how would switching to FDD instead of to the TDD system it currently uses impact Verizon's network?
A. Almost 66 percent improvement, which I have seen.
Q. And so, Doctor Madisetti, what -- which of these options did you ultimately select for purposes of your analysis of the benefits to Verizon of infringing the asserted claims?
A. Yes. I chose the most favorable option which was using 4G LTE TM3.
Q. Most favorable to who?
A. To Verizon.
Q. And what is the difference between -- the throughput improvement difference between using multi-sector beamforming in accordance with the asserted claims and 4G LTE TM3?
A. It was a throughput improvement of 44 percent using the multi-sector beamforming approach of the asserted claims.
Q. Now, did you do another step to further apportion the benefits of the '931 Patent?
A. Yes.
Q. Could you please explain that next step?
A. Yes. So as we go to the next slide, I apportioned it during my discussions with Mr. Kennedy, and what I did is that I looked at beamforming with the asserted claims and beamforming without the asserted claims, and I identified the relative benefits, and I found that the apportioned benefit is

73 percent of 44 percent, which is the 32 percent number.
Q. And does that 32 percent number represent, in your opinion, the apportioned benefit to Verizon of infringing the '931 Patent?
A. Yes, based on the coordination and other steps that are introduced by the asserted claims.
Q. Now, Doctor Madisetti, if Verizon were to actually have -- turn off beamforming, have to actually suffer the improved -- the throughput improvement effect of turning off its infringement, what would it have to do to its network?
A. It would have to either purchase more spectrum or it would have to add more base stations.
Q. And what does this document from Ericsson explain about how -- about what you have to do if you have inadequate throughput at your base stations?
A. You would have to increase what is called site density or add more base stations that improve both coverage and capacity.
Q. And what is shown in this graphic here?
A. So here is an example of the base stations, the network or base stations. So if you look the improvement due to claims 28 and 29, if you don't have that you would have to add more base stations.
Q. Is that what's shown there?
A. Yes.

Q. How -- what percentage more base station equipment would Verizon need to deploy if it chose to stop infringing the asserted claims of the '931 Patent?

A. The number that I came -- the apportioned number is 32 percent.

Q. Are there other benefits that Verizon enjoys other than throughput improvements from its infringement of the '931 Patent?

A. Yes.

THE COURT: Let me interrupt. It is 12:00, and the jury's been in and out of the courtroom a couple of times. All the rest of us have been here since about 8:30. We are going to break for lunch at this juncture. This direct examination still has some additional time to go, ladies and gentlemen.

If you will close your notebooks but take them with you to the jury room over the lunch break, I expect that Ms. Clendening, in her usual efficient way, will have lunch waiting for you. We'll take about 45 minutes, give or take, and then we'll be back in the courtroom to continue with this examination of Doctor Madisetti.

Please remember to follow all the instructions I've given you about your conduct.

And with that, the jury's excused for lunch.

(Whereupon, the jury left the courtroom.)

THE COURT: All right. Be seated, please.

Counsel, for your information, we've used a total of 3 hours, 18 minutes, and 20 seconds today. As of right now, the Plaintiff has used 4 hours and 20 minutes, with that leaving the Plaintiff 6 hours and 40 minutes of remaining trial time. The Defendants have used a few seconds short of two hours exactly, which leaves the Defendants 9 hours of remaining trial time.

Is there anything that needs to be raised with me before we break for lunch, counsel?

MR. KREVITT: Nothing for Defense, Your Honor.

MR. KNOBLOCH: Nothing I'm aware of, Your Honor.

THE COURT: All right. We stand in recess for lunch.

MR. KNOBLOCH: Thank you.

(Lunch recess.)

THE COURT: Be seated, please.

Mr. Knobloch, are you prepared to continue with your direct?

MR. KNOBLOCH: Yes, Your Honor.

THE COURT: All right. If you'll return to the podium.

And, Mr. Barnett, if you'll bring in the jury, please.

(Whereupon, the jury entered the courtroom.)

THE COURT: Welcome back from lunch, ladies and

gentlemen. Please have a seat.

We'll continue with the direct examination of Dr. Vijay Madisetti by Plaintiff's counsel.

Mr. Knobloch, you may continue.

MR. KNOBLOCH: Thank you, Your Honor.

Q. (BY MR. KNOBLOCH) Good afternoon, Doctor Madisetti.

A. Good afternoon, sir.

Q. Did you enjoy your lunch?

A. Yes.

Q. Good.

A. Thank you.

Q. Now, I'd like to pick up where we left off, and in your opinion, without the '931 Patent and the benefits provided by the asserted claims, what would Verizon have to do to its network?

A. It would have to put 32 percent more 5G TDD base stations in its network.

Q. Now, we've been focused on the downlink throughput benefits of Verizon's infringement. Are there other benefits as well?

A. Yes.

Q. And what are some of those?

A. For example, as I list here, that include network coverage, user throughput, you have less interference, longer distance.

Q. Did you separately quantify the economic benefits to Verizon of things like increased coverage and capacity?
A. I did not. I was very conservative.
Q. And what does this next slide show?
A. This shows an Ericsson's document which is JX 10 at page 138. It shows how beamforming improves downlink and uplink coverage by maximizing the region where the users get access to superior performance.
Q. And we just animated this part of the document which is in the original. What does that show?
A. That shows an increase in coverage. So you have more coverage.
Q. And in the bottom, the orange, which of the portions of the network is that addressing?
A. That's the C-band or the mid band.
Q. And how about up here in the blue?
A. That's the high band which is the mmWave, which is about 27 gigahertz.
Q. Does beamforming with the asserted claims improve the coverage in both the C-band and mmWave portions of Verizon's network?
A. Yes, as used in the claims.
Q. And what does Ericsson's document here say?
A. It talks about the improvement of capacity and increasing its SNR.

Q. And what SNR?
A. Signal-to-noise ratio with beamforming so that corresponds to a direct capacity gain.
Q. And what about this portion of Ericsson's document? What benefits does that address?
A. This talks about spectral efficiency, so it allows you a better use of your existing spectrum, JX 10 at 136.
Q. And in your opinion, Doctor Madisetti, are all the things we just looked at examples of benefits that come from Verizon's infringement?
A. Yes, benefits accrued due to the claims.
Q. Now, were there also some non-infringing alternatives proposed by Verizon?
A. Yes.
Q. Did you analyze those?
A. I did.
Q. And what does this chart show?
A. This summarizes some of the non-infringing alternatives proposed by Verizon.
Q. What was the first one they proposed?
A. FDD.
Q. Did you consider FDD as one of the alternatives?
A. Yes.
Q. What was your conclusion about FDD?
A. That it reduces performance by 66 percent. I've shown

that data, and it's -- I believe that it's still --
Q. What was the -- what was the next alternative proposed by Verizon?
A. This should say non-infringing. FDD should say non-infringing.
Q. Oh, I'm sorry. There's a mistake in my slide. That's my mistake.
MR. KNOBLOCH: If you give me a moment, Ms. Brunson, I'll correct the slide.
Q. (BY MR. KNOBLOCH) Thank you for that correction, Doctor Madisetti. Okay?
A. And the other one was to move the location of the SSB. I said it would still infringe and it will add a significant complexity.
Q. And why is it that moving the location of the SSB would still infringe?
A. Because the claim does not require the SSB to -- does not specify that the SSB -- the start of the claimed TDD frame schedule need not start at a point in time that 5G prescribes; it can start at the point where the SSB starts. So, therefore, it would still infringe.
Q. Is there also an efficiency problem with moving the location of the SSB?
A. Yes, because you -- the UE would have to wait longer to get its synchronization information. It would be a little

more complex. It will add to the search complexity.
Q. What was the next non-infringing alternative -- allegedly non-infringing alternative proposed by Verizon?
A. Transmitting SSB on narrow beams.
Q. And, in fact, that was one of the alternatives that we also -- that you also considered?
A. Yes, the beam sweeping. I believe it still infringes because their own documentation says that it can also be used in wide beam.
Q. And to remind the jury, which portion of Verizon's network uses beam sweeping?
A. The mmWave which is just five percent of the network.
Q. Were there any efficiency problems in your analysis of beam sweeping?
A. Yes. It adds overhead because of the large number of smaller beams.
Q. What was the next non-infringing alternative allegedly proposed by Verizon?
A. It's called XDD. It seems to be more a concept. I don't think there are any commercially level systems. So I say we don't know what it is that they're proposing, and it's not commercially viable.
Q. And how about this next option, different TDD frames per sector?
A. As I said, it's not clear what it means and how it's

implemented. As I said, the TDD frame is a schedule, and as long as it follows the claims schedule, it will still infringe and this adds complexity and interference.

Q. And what was the final alternative proposed by Verizon?

A. SSB not at the start of a frame. And, again, it's not clear what that means, and I believe that will reduce throughput again.

Q. So after all of this analysis of both the alternatives you considered and the alternatives that Verizon proposed, what is your conclusion about the apportioned benefit to Verizon of infringing the asserted claims of the '931 Patent?

A. It's my opinion that from technical point of view the -- Verizon's apportioned benefit is that the base stations downlink data throughput have a gain of 32 percent using the asserted claims 28 and 29, and this is what I communicated to Mr. Kennedy.

Q. Did you also analyze the technical benefits of Verizon's infringement of the '794 Patent?

A. Yes.

Q. All right. So let's move on to that. What does this slide show?

A. This is the old way. If you didn't have a mobile hotspot, you would have to have some sort of modem from Comcast or someone like that that would be wired to the wall, and then you'd share your internet connection that way.

Q. How are the accused products different from the old way of doing things?
A. They allow you to have a cellular hotspot that you can move around and it's convenient and it allows you to have an efficient cellular WiFi hotspot.
Q. And in your view -- and what does this slide show?
A. This is an example using a 5G home router.
Q. And what would be, in your view, a non-infringing alternative -- well, let me ask a different question.
Doctor Madisetti, in considering the benefits of Verizon's infringement of the '794 Patent, what did you consider?
A. I looked at the claims. And if you go to the next slide, the only possible non-infringing alternative is if they use it only with one mobile station as opposed to more than one.
Q. And why is that a non-infringing alternative?
A. Because the claims require two mobile stations or more.
Q. Did you then go on to analyze the economic benefits of -- of only being able to transmit to one mobile station?
A. No. I discussed this with Mr. Kennedy. I believe he's the one who is proposing and providing an economic analysis.
Q. And what is shown in this next image?
A. This is what I call as a non-infringing alternative.
MR. KNOBLOCH: I pass the witness, Your Honor.
THE COURT: All right. Cross examination by the

Defendants.

MR. ROSENTHAL: Just one moment, Your Honor.

THE COURT: If there are binders to distribute, let's get that done.

MR. ROSENTHAL: Thank you.

May I approach, Your Honor?

THE COURT: You may. All right. Counsel, you may proceed with cross examination.

MR. ROSENTHAL: Thank you, Your Honor.

CROSS EXAMINATION

By Mr. Rosenthal:

Q. Good afternoon, Doctor Madisetti. Good to see you again.

A. Good afternoon, sir.

Q. You are a professional expert witness. Correct?

A. I am a professor.

Q. You are also a professional expert witness. Correct?

A. I'm not sure what you're asking, counsel.

Q. You have testified in court in 40 to 50 cases as an expert witness. Correct?

A. Over the past 10 years, yes.

Q. Yes. And you have been engaged on well over 100 patent cases as an expert. Correct?

A. Over the past 20 years.

Q. Okay. And you are being paid today for your work at the rate of $650 per hour. Correct?

A. Yes.
Q. And you have worked over 600 hours on this case, so by my math you've been paid about a half a million dollars or more. Is that fair?
A. 350-, 400-, I think.
Q. Okay. Now, you said that you are a professor. You actually receive only about five percent of your income from your work as a professor. Correct?
A. I said I had -- I don't know the exact number, but that's the rough number, yes.
Q. Okay. Now, you have also worked as an expert on many, many, many patent disputes in front of the Patent Office. Correct?
A. Yes.
Q. In fact, you've worked on, by the Patent Office website, 284 separate cases you've been hired as an expert. Is that correct?
A. I don't know, counsel.
Q. In fact, you are the second most frequently hired expert in the entire United States at the Patent Office for Patent Office disputes. Isn't that right?
A. I don't know.
Q. Can you take a look at your binder and take a look at tab A?
A. Okay.

Q. Do you see tab A, sir?
A. Yes.
Q. And this is a report from a patent case tracking website that profiles you, Doctor Madisetti. Correct?
A. Yes, that's what it appears to be.
Q. And do you -- does this refresh your memory?
MR. KNOBLOCH: Objection, Your Honor. There is no evidence here that he's ever seen this or that there's no foundation for this document at all.
MR. ROSENTHAL: Happy to lay that foundation.
THE COURT: I'll allow you an opportunity to do that.
Q. (BY MR. ROSENTHAL) I have shown you a report just like this in the past, have I not, sir?
A. You showed me at the deposition in another case.
Q. Yes. So you have seen this before. Correct, sir?
A. I don't remember, but something similar you showed me in another case.
Q. And does this refresh your memory, sir, that you are --
MR. KNOBLOCH: Objection, Your Honor. Again, there is no foundation. He's just going to recite the document into the record.
THE COURT: He's entitled to use it to refresh his recollection. If it doesn't refresh his recollection, it doesn't refresh his recollection. He's not going to sponsor

it as probative evidence, but he's entitled to use it for purposes of refreshing his recollection.

Q. (BY MR. ROSENTHAL) Does this refresh your memory, sir, as to where you rank in the United States as to the most hired experts at the Patent Office?

A. I don't remember seeing these pages. But, again, they look similar to something you showed me before.

THE COURT: Wait a minute. That's not the question, Doctor Madisetti. He asked you if you knew that you had been hired on 284 cases and that you were the second most hired expert in disputes before the Patent Office.

You said you didn't know.

He's showing you a report. The question is, does this refresh your recollection so that you can either agree or disagree with his earlier question. If it does, fine; if it doesn't, fine. But the question is, does this refresh your recollection?

THE WITNESS: Yes, it does.

THE COURT: All right.

Q. (BY MR. ROSENTHAL) And you are, in fact, the second most hired expert in the United States for patent disputes before the Patent Office. Correct, sir?

A. This document seems to say that.

Q. All right. Now, you have offered yourself in this case as an expert in wireless technology. Correct?

A. Yes.
Q. Now, you have actually offered yourself as an expert in a lot of different technologies over the years. Fair?
A. Yes, in electrical engineering and computer science.
Q. Okay.
MR. ROSENTHAL: So if we could, please, bring up my demonstrative.
Q. (BY MR. ROSENTHAL) This is a list that I have compiled of areas that our research shows you have been an expert in. Can you take a look at this list and please confirm that you have offered yourself as an expert in each and every one of these areas?
A. Yes, related to the electrical engineering and computer science aspects of these topics.
Q. So you have proclaimed yourself to be an expert in digital cameras. Correct?
A. Yes.
Q. And you have been an expert in medical devices. Correct?
A. Yes.
Q. You have been an expert in, you know, when you go to the hospital and get a little clip on your finger and it tells you your blood oxygen level and your pulse rate. Are you familiar with that? It's called a pulse oximeter.
A. Yes, I was in the same case as you, I believe.
Q. I remember it well. And you were an expert in that one

as well. Correct?
A. Yes, sir.
Q. And you have been an expert in virus detection. Right?
A. Yes, computer science, yes.
Q. You've been an expert in hard drives. Right?
A. Yes.
Q. You've been an expert in mobile apps like I see on my phone. Right? I can go to an app; you've been an expert in that?
A. Yes.
Q. You've been an expert in gaming -- peer-to-peer gaming video games. Right?
A. Yes, for Motorola, yeah.
Q. You've been an expert modems and DSL. Right?
A. Yes.
Q. You've been an expert in image processing, 3-dimensional graphics. Correct?
A. Yes.
Q. And goes on and on. Right?
A. Yes. All in case -- in all these cases it was based on electrical engineering and computer sciences.
Q. Now, in the many cases that you --
MR. ROSENTHAL: You can take that down, Mr. Eaton.
Q. (BY MR. ROSENTHAL) In the many cases that you have held yourself out as an expert in, you have found on many occasions

that the patents you are looking at are invalid. Correct?
A. In some -- some cases.
Q. So you agree that --
THE COURT: Just a minute. Doctor Madisetti, you're going to have to speak up.
THE WITNESS: Yes, in some of the cases.
Q. (BY MR. ROSENTHAL) And in other words, you agree that just because a patent is issued doesn't mean that it is valid. Correct?
MR. KNOBLOCH: Objection, beyond the scope. We have not addressed validity in Doctor Madisetti's direct.
THE COURT: Well, he's asking for a legal conclusion. I am not going to let the witness testify as a essential conclusion even though that's not your objection.
Let's move on.
Q. (BY MR. ROSENTHAL) I want to talk about the '794 Patent, sir. This was the patent that you addressed this morning, the second patent of the two that is asserted in this case. Correct?
A. Yes, sir.
Q. Okay. Now, I'd like to bring up your slides, and I'm going to use the numbering of the slides that you've -- that were disclosed to us yesterday.
Let's take a look at slide 9. And you had a sampling of Verizon products that you say infringe the '794 Patent.

Right?
A. Yes.
Q. Now, these are products that have something called WiFi capabilities. Correct?
A. They have the hotspot capabilities.
Q. Now, just to be very clear, Mr. Struhsaker did not invent hotspots. They existed before. Correct?
A. I would disagree. I believe these are the -- these hotspots are of a particular kind.
Q. Yes. I'm not talking about the kind in the claims. Right? There were other kinds of hotspots other than what's claimed in the '794 Patent --
A. Yes.
Q. -- before Mr. Struhsaker. Correct?
A. Yes.
Q. So he did not invent the idea of a WiFi hotspot. Correct?
A. Yes, not at a general level.
Q. No. He invented and wrote down in his claims and the Patent Office granted a very specific WiFi hotspot that works in a specific way. Fair?
A. Yes.
Q. All right.
MR. ROSENTHAL: Let's go to the next slide, please.
Q. (BY MR. ROSENTHAL) Now, you had a slide here where you

have a list of companies. These are the companies that actually make the products that you're accusing of infringement. Correct?

A. I believe so.

Q. Verizon doesn't make those products. Right?

A. I'm not sure, but I believe these are the companies that make the products.

Q. Now, I'd like to take a look at the '794 Patent, claim 1.

MR. ROSENTHAL: If we could please bring that up, Mr. Eaton.

Q. (BY MR. ROSENTHAL) This is the claim, and we have boards and stuff about this, but this is the claim that is claim 1 of the '794 Patent. The other two claims in the '794 Patent depend on this one. Right?

A. Yes.

Q. Okay. Now, you agree that in order to prove infringement, General Access and you have to show evidence of every single one of these claims elements, requirements, literally in the accused product. Correct?

A. From a technical point of view, yes.

Q. Okay. And it is not -- this is not a game of horse shoes. Close is not enough. You've got to show every single one. Correct?

A. Yes.

Q. And so if it is the case that Verizon's products do many

of these things because they're hotspots but they don't do one of the limitations, there's no infringement. Right?

A. Yes.

Q. Okay. And so you agree that as an expert you've got to show evidence of each one of those requirements. Fair?

A. Yes.

Q. All right. Now, you understand that General Access in this case is seeking approximately $270 million just for this patent. Correct?

A. That's what I heard in the courtroom.

Q. So you would agree that it is important to show evidence of infringement of each one of these requirements. Fair?

A. Yes. I believe I did.

Q. Now, I want to focus on one of these requirements for a moment, and that requirement is at the very last limitation, the last requirement.

Do you see where it says, "The second transceiver monitors first signal characteristics of the second downlink signal"? Do you see that?

A. Yes.

Q. That's what I want to focus on for a moment. You understand that Verizon has argued in this case that we do not -- Verizon's products do not do that requirement. Correct?

A. Yes.

Q. And so you agree it is important for you to show evidence that we do do that requirement. Fair?
A. Yes.
Q. Now, this requirement has a little history, doesn't it? In the filing of this patent, the original claims that were filed in this patent didn't have that requirement in them, did they?
A. I'm not sure what you're asking.
Q. Okay. Let's take a look. You did analyze the prosecution history, as any expert would, of this '794 Patent. Right?
A. Yes, I looked at it.
Q. Okay. And it's one of the things that you analyzed. Right?
A. Yes.
MR. ROSENTHAL: Let's take a look, please, at DX 8.
Q. (BY MR. ROSENTHAL) This is the prosecution history of the '794 Patent that you looked at. Right, sir?
A. Yes.
MR. ROSENTHAL: And I'd like you to turn, please, to page 181, which is the page that ends 180.
Q. (BY MR. ROSENTHAL) And this is something called a claim amendment. Do you see that?
A. Yes. It's titled Amendments to the Claims.
Q. Now, I'm not going to walk through the entire file

history. This is the last amendment that was made. But I want to go right to the bottom of this page, and do you see here that "General Access added to the claims of the second downlink signal." Do you see that?

A. I see that.

Q. That's what the underlining means. It means it was added. Right?

A. That's my understanding.

Q. Okay. And so originally the claims did not require that you actually monitor the second downlink signal. After this amendment, they do require that you monitor the second downlink signal. Correct?

A. Again, I cannot say that yes or no. I have to look at the application.

Q. You don't have an opinion on that? You didn't look at that question?

A. It still says you are to monitor the first signal characteristics of the second downlink signal. It still says signal characteristics.

Q. Yes. But before the amendment, it doesn't say anything about the downlink signal characteristics. After the amendment, that's the requirement--you've got to look at the downlink. Fair?

A. Yes, yes.

Q. Okay. So the Patent Office rejected the claims. The

response by General Access was, okay, well, what if we add "of the second downlink signal" and the result of that was the claims were finally allowed. Correct?

A. I think so, but I would take your word for it.

Q. Let's not take my word for it. Let's go to the page that ends 197. And if you can look at page -- sorry. 196. It says a notice of allowability. Do you see that?

A. Yes.

Q. And it is responsive to the communication dated January 1st, 2014. I'll represent that's the one that we were just looking at. Okay?

A. Okay.

Q. All right. And do you see where it says the allowed claims are 1-5? Do you see that?

A. Yes.

Q. So the result of General Access adding this downlink signal characteristic is the claims are finally allowed. Right?

A. I would have to look at the notice of allowability below.

Q. Okay. Let's go to the next page. There's no comments. I'm sorry. There are comments here. My apologies. I was remembering something else.

Take a look at No. 2. Do you see the response to the arguments?

THE COURT: Mr. Rosenthal, could you slow down a

little bit?

MR. ROSENTHAL: Yes. I'm so sorry.

THE COURT: You speak like a machine gun in bursts. You pause between the bursts, but it would be better if you paused a little more often.

MR. ROSENTHAL: I'm going to write that one down for my wife. Thank you. I will do my best. Thank you, Your Honor.

THE COURT: I just want to make sure the jury follows you. That's all.

MR. ROSENTHAL: Thank you, and I appreciate that.

Q. (BY MR. ROSENTHAL) So my question is this, Doctor Madisetti, and then we can move on from the file history. You agree that the addition of the second downlink characteristics led to the allowance of these claims. Correct?

A. I don't. I see there is a lot of other reasoning here.

Q. You agree that they amended the claims and then they were allowed?

A. Yes. That was the time sequence, but not necessarily the causality.

Q. Okay. Let's please look at your slide 50.1. I want to look at what you said about that limitation, that requirement that was added. Okay?

MR. ROSENTHAL: Mr. Eaton, if you could bring up slide 50.1.

Q. (BY MR. ROSENTHAL) Okay. Now, as part of your presentation today, what I saw you do is you went through every subsection of the claim and you put up some slides. Do you remember that?

A. Yes.

Q. And so one of those that you put up is this slide where you highlight the second transceiver.

Now, you don't highlight "first characteristics of the second downlink signal." Right?

A. At least in this slide. I did talk about it.

Q. Okay. Let's talk about it. The only piece of evidence that you put up for this requirement is on the next slide. Let's go to the next slide. Sorry. This wasn't evidence yet.

This was -- just to be clear these are pictures you made. Right? This isn't a Verizon document or Verizon testimony. Right?

A. These are my pictures.

Q. That's your pictures.

MR. ROSENTHAL: So let's go to the next slide. One more slide. One more slide. One more slide.

Q. (BY MR. ROSENTHAL) Okay. Now, this is the only piece of evidence that you put up on the screen with respect to this requirement. Correct?

A. No. I provided other documents in the slides before this.

Q. No, you did not, sir. Well, let me say it differently.

Those were slides that were withdrawn. You did not present the slides that were just up on the screen. Isn't that correct, sir?

A. I did talk about the requirements documents from Verizon.

Q. Let me do this. Sir, when you put up your presentation, you had a section that dealt with this requirement of the claim. Correct? Is that right, sir?

A. Yes.

Q. Okay. And the testimony that you put up was this testimony on slide 53. Correct?

A. I did talk about this slide.

Q. Okay. Now, what I recall is that we saw a deposition clip of Mr. Gamboa this morning. Right? You watched that.

A. Yes.

Q. And that's the same testimony that you're quoting here. Correct?

A. Yes.

Q. And Mr. Gamboa is talking about the fact that the hotspot can monitor information coming from the client devices. Correct? That's what he says.

A. Yes, that's one of the things he says.

Q. That's what he says in the answer that you highlighted. It says, "The hotspot can monitor the transmit signal from the client devices." Correct?

A. Yes.
Q. That is the uplink. Correct?
A. It represents the downlink as well.
Q. Sir, that is the uplink. Correct?
A. It is the uplink.
Q. Okay. And, in fact, the testimony that Mr. Gamboa gives, in particular, you are referring to the accused devices monitoring the uplink channel from the mobile station to the accused devices, aren't you, sir?
A. Yes.
Q. Okay. Now, the claim requires monitoring the downlink. We just saw that. Right, sir?
A. Yes.
Q. Okay.

MR. ROSENTHAL: Now, let's go to the -- let's bring that slide down.

Q. (BY MR. ROSENTHAL) Now, the claim also requires that the downlink signal characteristic is used to then route information to the first and the second mobile devices. Correct?
A. Yes.
Q. And the only characteristic that you pointed to, the only actual characteristic was something called the RSSI. Correct?
A. It's not the only thing. I did testing as well, so I had pointed to RSSI, my own testing, with Mr. Murias.

Q. Sir, in the section that you addressed in your testimony with respect to this claim element, which is monitoring signal characteristics, the only characteristic you identified was the RSSI based on Mr. Gamboa's testimony. Correct?
A. I believe I cited Mr. Gamboa and RSSI.
Q. Yes. And, now, you did not in any way provide an opinion that the RSSI specifically is used to route, did you? I mean today in your testimony.
A. That was the next limitation.
Q. That was the next limitation. So let's look at your slides that you said in the next limitation.
MR. ROSENTHAL: So if we could, please, Mr. Eaton, take a look at slide No. 56.
Q. (BY MR. ROSENTHAL) So you put up this next limitation which requires routing based on the first signal characteristic and the second characteristics. Right?
A. Yes.
Q. That's what it requires. And I'm going to flip through your slides here. You don't mention the RSSI on slide 56. Correct?
A. I show the indicators of the bars and others.
Q. I see the pictures that you drew?
A. Those are the RSSI.
Q. You didn't provide any document, any evidence, any source code, any testimony at all that the RSSI is used in any way to

perform this so-called routing, did you?
A. I think I relied on the deposition testimony, I relied on the use of the RSSI, for example through Mr. Gamboa, and the use of the reciprocity.
Q. You don't show any evidence on this slide of any of that, do you, sir? This is a picture you drew?
A. Can we go to the next slide?
Q. Okay. Let's go to the next slide. The next slide is another picture you drew?
A. Okay. The next one.
Q. Let's go to the next slide one. This is another picture you drew?
A. The next.
Q. This is another picture which you drew?
A. Yes. The next one.
MR. ROSENTHAL: Let's go to the next one. Sorry, this slide was not shown today. Please go to the next one.
Q. (BY MR. ROSENTHAL) Okay. And then you talk about scenario 2.
A. Yes, but I rely on evidence from the RSSI and Gamboa.
Q. So you're saying you relied on that testimony, that one page of testimony, from Mr. Gamboa when he said that the hotspot receives the RSSI. Correct?
A. Yes.
Q. And that testimony, sir, did not say anything about

routing based on the RSSI, did it? We can go back to the slide.

A. It describes the receiving -- the monitoring the characteristics. And then I say that, based on the characteristics, based on the WiFi standard, it would not route signals if they were not of adequate strength.

Q. I know what you said, sir. I'm asking about evidence that you put on the slide.

Did you put any evidence before this jury other than this testimony that said that we receive an RSSI, any evidence that that RSSI is used for anything?

A. I believe I did.

Q. Show me where it is, please. Which slide would you like to go to?

A. I believe I said that based on the signal strength that we measured earlier, you were routing to that client device, which is the mobile station based on the signal strength.

Q. I remember you saying that.

A. Yeah.

Q. I remember you put a slide up with a picture you drew that said that. My question is, did you show any evidence of that, show any evidence of it?

A. I believe that my testing shows that.

Q. Your testing had to do with beamforming, sir, didn't it?

A. Yes, it did, but --

THE COURT: Just a minute, gentlemen. I'm all for robust cross examination, but we're going to do it the right way. You're not going to talk over each other. And when a question is asked, the witness is going to respond to that question, not use that as an opportunity to just say whatever he wants to in support of his position.

Plaintiff's counsel's going to get a chance to redirect the witness and can ask any follow-up questions, Doctor Madisetti, that Mr. Knobloch thinks are appropriate, but you need to focus on the questions asked and limit your answers to those questions.

And that's how this cross examination is going to go forward. So do not speak over each other. You both are charged with responsibility of making sure the other one is finished before you begin to speak.

All right?

MR. ROSENTHAL: My apologies, Your Honor. Thank you.

THE WITNESS: Yes, Your Honor.

Q. (BY MR. ROSENTHAL) Doctor Madisetti, you did not put on your presentation or show to the jury any documents or testimony that the RSSI is used in any way to route. Correct?

A. I think I did, but --

Q. Please show me. Which slide would you like for me to go to?

A. I'd have to look at my statements.

Q. Your slides are right here. I'm happy to flip through. If Mr. Eaton would like to advance the slides, we can go through the slides and you can tell me where is the evidence showing me the evidence that you showed to the jury that you think has anything to do with using the RSSI to route. Okay?

MR. ROSENTHAL: Let's go to the next slide.

THE COURT: Let me just be clear with both of you on something. As you both know, these are demonstratives. They are not evidence. The witness' sworn testimony, while the demonstrative is displayed and about the topics covered in the demonstrative, is evidence, but it's the testimony of the witnesses that's the evidence, not the slide, not the picture, not the drawing.

So I don't want any confusion on the part of the jury that somehow these slides that you're using to prompt each other and prompt your witnesses about topics that are at issue are themselves evidence.

Only the exhibits are evidence, ladies and gentlemen, not these demonstratives. And in a trial like this, it's very common for almost every question to have a corresponding demonstrative that illustrates it, and that's fine, and that's good practice, but those demonstratives are not evidence. It's the witnesses' testimony.

So, Doctor Madisetti, you don't have to point out a slide

to prove evidence and what you've testified to is evidence.

So, counsel, I think it's inaccurate to basically say you have to show me a slide to prove you put on any evidence, and I don't want any confusion on the jury's part.

MR. ROSENTHAL: Thank you, Your Honor. Understood.

Q. (BY MR. ROSENTHAL) Doctor Madisetti, did you identify any document?

A. I don't remember, counsel. I would have to look at my testimony.

Q. Okay. Now, I'd like to talk to you about beamforming. One of the things that you did describe is beamforming. Correct?

A. Yes.

Q. Now, at the very beginning of your presentation on the '794 Patent, you testified that you didn't see any differences among all of the various accused products in the '794 Patent. Do you remember that testimony, sir?

A. I was referring to the various manufacturers.

Q. That's right. You put up a list of manufacturers.

MR. ROSENTHAL: Maybe we can put that slide up. It was slide 10, Mr. Eaton.

Q. (BY MR. ROSENTHAL) You put this slide up and you were asked, Did you see any differences among all of these various products that are relevant to your analysis?

And you said, Nope. As far as my analysis goes, they're

all the same.

Remember that?

A. With respect to the claims, they satisfy the claims. That's what I meant.

Q. Now, that's -- there is a significant difference between these products with respect to beamforming, isn't there, sir?

A. Oh, with respect to beamforming. I was referring to the behavior with respect to the claims, that they all practice the claims.

Q. Well, one of the things you point to, sir, with respect to routing, I recall, is you say that these products beamform WiFi signals to different mobile devices. Do you remember that testimony?

A. Yes. I clarified that with the --

THE COURT: Doctor Madisetti, when you said yes, you answered his question. You need to limit your answers to the questions asked.

THE WITNESS: Sorry, Your Honor.

THE COURT: If he wants an explanation, he'll certainly ask you for it.

Q. (BY MR. ROSENTHAL) And you talked about testing in Canada in Alberta by your colleague with respect to beamforming. Do you recall that?

A. Yes.

Q. The vast majority of the products accused of infringement

do not even do beamforming. Isn't that right, sir?
A. I would have to look through them, but I don't know for the vast majority, but I have to look through them.
Q. You accuse about 275 products of infringement. Isn't that right, sir?
A. I believe that's the number.
Q. And only 25 of those do beamforming. Isn't that right?
A. I didn't count, but I think it depends on the standards supported. But as I said, I have not counted.
Q. Okay. Let's take a look. You have reviewed Doctor -- Mr. Kennedy's report in this case. Right?
A. I discussed with Mr. Kennedy. I don't think I reviewed his report.
Q. You discussed with Mr. Kennedy -- excuse me for one second. And you reviewed his expert report and his exhibits, didn't you, sir?
A. I may have done that, yes.
Q. Well, let's take a look. Can you please look at your expert report? It's in your binder of expert reports. And take a look, please, at Exhibit D of your opening report and turn to page 16 of that exhibit, please.
A. Okay.
Q. Let me know when you are at page 16. Okay?
A. Okay.
Q. The second to last item of your list of materials

reviewed and considered is the expert report and exhibits -- I'm sorry. Does that refresh your memory, sir, of whether you, in fact, reviewed Doctor -- Mr. Kennedy's report?

A. Yes.

Q. So you looked at his report. Correct?

A. Yes.

Q. Now, his report is actually also contained in your binder, so could you please look at the binder that I provided to you of your expert reports, and in the back there there is a tab, a little flag.

A. Yes.

Q. All right. And that is one of the exhibits from Mr. Kennedy's report, 7A. Do you see that?

A. Yes.

Q. And so you see that he reports a number of units accused for the '794 Patent all the way on the right of the screen, all the way on the right of the page, of 94.6 million. Do you see that number?

A. Is it Exhibit 7A?

Q. Exhibit 7A. It's where the little flag is. On the right side of the page, there's a red number that says 94.6. Do you see that?

A. Yes, I see that. It's in the bottom of the middle of the page.

Q. Yes. And then go to Exhibit 7B, please.

A. Okay.
Q. And this is his schedule of the number of products that use WiFi beamforming. Do you see that?
A. That's what he titled it, yes.
Q. And go to the far right, similar place on the page as the last exhibit, and you see the number there is 5.2 million. Do you see that?
A. Yes.
MR. ROSENTHAL: Let's put up my demonstrative, please, Mr. Eaton.
Q. (BY MR. ROSENTHAL) So I'm putting up a demonstrative here. On the left side of the screen is all the products you accuse of infringement that do not do beamforming, and on the right is all the products that you accuse of doing beamforming.
And based on Mr. Kennedy's tabulations, you would agree, sir, that only approximately 5 percent of the products that you accuse of infringement perform that beamforming. Correct?
A. Under the beamforming cases, that's what it appears to be, but again, Mr. Kennedy's -- these are Kennedy's numbers.
Q. Okay. You reviewed these numbers. Right?
A. Yes.
Q. All right. Let's take a look now at the '931 Patent. Oh, I'm sorry. One more question about the '794.
You agree, sir, that the '794 Patent requires two mobile

devices?
A. Yes.
Q. Okay. One mobile device, that's not what the patent is about. It's about two. Correct?
A. Yes.
Q. Let's go to the '931 Patent. You testified, sir -- I'm sorry. Let me ask a different question.
You were here when Mr. Struhsaker testified yesterday that the claims 28 and 29 of the '931 Patent were added by amendment during prosecution. Correct?
A. Yes.
Q. All right. And you also agree that Mr. Struhsaker did not invent beamforming, per se. Correct?
A. Beamforming as a general concept, no.
Q. And he did not invent TDD frames. Correct?
A. As a general concept, no.
Q. But we're talking about how great beamforming is and how great TDD frames are. That's not what he invented. Right?
A. No.
Q. Okay. So let's talk about what the claims actually say. When you were talking about the claims, claims 28 and 29, which are the issued claims that are at issue in this case, have a number of requirements. One of those requirements is a broadcast beam signal that goes to multiple sectors. Correct?
A. Yes.

Q. And another one of those requirements is a TDD frame that goes -- that has directed beams going to multiple sectors. Correct?

A. I don't see it saying that a TDD frame should go anywhere. A TDD frame is just a schedule.

Q. What I asked was it requires a TDD frame within which there are two directed beams, one directed beam going to one schedule -- one sector and one directed beam going to another sector. You agree with that, sir. Right?

A. I wouldn't use that language, sir.

Q. Isn't it true that the claims require -- let me be very specific. The claims require that within the same TDD frame, you have to have directed scanning beams that go to two different sectors?

A. Again, I would defer to the language of the claim. I would not agree with your language.

Q. All right. Let's talk about sectorization. You agree, sir, that the Verizon network, the 5G network, is, in fact, sectorized. Correct?

A. Yes.

Q. In other words, each one of the base stations has three different sectors. Right?

A. Yes.

Q. Okay. Now, one of the main points of sectorization is to create the ability to transmit different signals to users

located in different sectors at the same time. Right?
A. No. You would send different data signals.
Q. Sir, you disagree with my statement?
A. Yes, because it's too broad.
Q. Okay. Well, let's take a look. You submitted a report in this case. Could you please turn to your rebuttal report?
A. Okay.
Q. Okay. Please turn to paragraph 339. And while you're looking there, you, in fact, wrote your rebuttal report--right?--to write down all your opinions. Fair?
A. Yes.
Q. Okay. Let's take a look at paragraph 339. Let me know when you're there?
A. I'm at 339.
Q. Okay. Six lines down, I'd like you to read the sentence that begins "one of the main points."
A. Yes. What is it --
Q. Let me know when you're done and I'll ask you a question.
A. Yes.
Q. I'll ask you again, isn't it true that one of the main points of sectorization is to create the ability to transmit different signals to users located in different sectors at the same time?
A. That's the sentence in the paragraph, yes, but there are other sentences.

Q. Sir, my question is if you agree with what I just said.
A. I agree that that sentence is in this paragraph.
THE COURT: That's not the question. He didn't ask you is the sentence there. He asked you, do you agree that one of the main points of sectorization is to create the ability to transmit different signals to users located in different sectors at the same time. Do you agree with that substantively --
THE WITNESS: I agree.
THE COURT: -- Doctor Madisetti?
THE WITNESS: I agree with that.
THE COURT: Okay.
Q. (BY MR. ROSENTHAL) And isn't it true that a person skilled in the art would understand that sectorized system would be set up to transmit different signals to the different sectors?
A. Yes, as I said right here.
Q. Okay. And isn't it also true, sir, that it would make no sense to create a sectorized base station and then transmit the same signals to users located in all the sectors?
A. In this context, yes.
Q. Okay. So isn't it true, sir, that within a Verizon base station, there is an SSB for each sector?
A. No.
Q. Sir, an SSB includes sector-specific information, doesn't

it, sir?
A. I wouldn't agree with that. It would have some sector-specific information.
Q. Do you agree that the SSB in Verizon's network is a cell-defining signal? In other words, it defines the sector.
A. That's one of the objectives, yes.
Q. And one of the objectives is to identify the sector with something called a cell ID. Correct?
A. That's one of the features.
Q. And the cell ID is different for each sector, isn't it, sir?
A. Yes.
Q. Okay. So if I've got three cells in a sector, the SSB that goes to this sector has one cell ID, the SSB that goes to this sector has a different cell ID. Correct?
A. Yes, with respect to the cell ID.
Q. And they're not the same. Right?
A. The cell IDs are not the same.
Q. And the cell ID is part of the SSB. Correct?
A. Yes.
Q. So the SSB is not the same. Right?
A. The SSB, as I'm pointing to it, is the same.
Q. Even though it's different?
A. I'm not sure what you're asking. The portions of the SSB that I point to are the same.

Q. So you're saying because some portions of the SSB are the same, the SSB is the same. Is that right?
A. The broadcast signal -- no, that's not what I said. I said the SSB -- because some portions of the SSB are the same, it satisfies the requirements of the broadcast signal.
Q. Your name is Madisetti, my name is Rosenthal. Right?
A. Yes.
Q. Okay. We don't have the same name. You agree with that?
A. I agree.
Q. Some portions of our name are the same. We both have an A in our name, we both have an E in our name. I'm going to stick with -- I think there's one more, but we both have those letters. Right?
A. Yes.
Q. There is another one. There's a third one. That doesn't mean our names are the same. Right? Just because we have some common information, common parts of our names, that doesn't mean we have the same name, does it?
A. As I said, we are not talking about names. But with respect to names, the answer is, yes, we are different. But with respect -- I wouldn't extend that to the SSB.
Q. Well, that's not the only difference among the SSBs that go to each sector, is it? There are other differences. Isn't that true?
A. Yes, there are some, but --

Q. For instance, the SSB that goes to sector 1 is scrambled in a different way than the SSB that goes to sector 2. Isn't that true, sir?
A. There is scrambling.
Q. And it's different between the sectors. Right, sir?
A. The scrambling is different.
Q. And, in fact, the SSB could be in different times in between the sectors. The SSB could be sent in one slot in sector 1, it could be sent at a different time in sector 2. Right?
A. In some cases.
Q. Okay. And yet even though the SSB can be sent at different times with different information scrambled with a different scrambling sequence from different antennas to different areas, you're saying it's the same signal. Is that right, sir?
A. I wouldn't agree with your characterization.
Q. Okay. Sir, you have examined a lot of evidence in this case. Correct?
A. Yes.
Q. And you actually have a slide, slide 11 --
MR. ROSENTHAL: If we could bring that up, Mr. Eaton.
Q. (BY MR. ROSENTHAL) -- where you identified all of the evidence that you looked at with respect to your analysis in

this case. Do you recall that?
A. Yes.
MR. ROSENTHAL: Let's bring that up on the screen. It's No. 11. Thank you.
Q. (BY MR. ROSENTHAL) So you looked at 48,000 Verizon documents, 32,000 Ericsson documents, 5,000 Samsung documents. Right?
A. As I said, I had help from a few others who helped me look for these documents at my direction.
Q. I understand. But you looked at it, looks like, you and your team looked at 85,000 documents.
A. I mean view search as well. So they would look for the relevant sections and relevant documents.
Q. But my point is you had access to a lot of confidential technical documents under the procedures of the Court under the appropriate protections to take a look so that you could find any documents that actually show an SSB going to multiple sectors. Is that fair, sir?
A. Yes.
Q. Okay. Now, Mr. Krevitt in his opening statement said that you will not see a document in this case that actually shows an SSB that goes to multiple sectors. Do you recall that?
A. Yes, in his opening, yes.
Q. Yes, he did. And you said, well, actually I have shown

that.
A. Yes.
Q. Okay. Well, let's take a look at what you actually showed. If we look at the -- what you showed, let's start with slide 52, please, sir.
This is one of the documents that you said, oh, here's a document. This shows -- do you remember this?
A. Yes.
Q. Now, this is an Ericsson document. Right, sir?
A. Yes.
Q. And this is showing an SSB, and it says it is intended to cover the whole cell. Do you see that?
A. Yes.
Q. Now, that doesn't mean the whole cell site. Right? You know that. That means the whole sector. Right, sir?
A. It means the sector. But as I said, it covers the entire -- all the sectors.
Q. I understand your opinion. I'm asking about what the document shows. In the document that you excerpt on this slide, there is a picture of where the SSB goes. Do you see that?
A. Yes.
Q. That little hexagon there is a sector. Right?
A. Yes.
Q. That's not a cell site. Right?

A. It's not.
Q. Okay.
MR. ROSENTHAL: Let's go to slide 66, please.
Q. (BY MR. ROSENTHAL) This is another document. You pointed to this document JX 40 as support. And let's see. This is what you said was a different way of sending an SSB. And, again, this document shows an SSB going to a sector. Right, sir?
A. Yes, in this figure.
Q. It doesn't show an SSB going to the whole cell site, does it, sir?
A. For this figure, it shows to a single sector, yes.
Q. Okay. Now I'd like to take a look at something else.
MR. ROSENTHAL: Let's take a look, please, at slide 54.
Q. (BY MR. ROSENTHAL) Now, here is a slide in a moment. This is a slide you showed that actually says an SSB is broadcast to all users in a cell site. Do you see that?
A. Yes.
Q. But that's not a Verizon document, is it, sir?
A. I believe I -- it's not from a Verizon document.
Q. No. You typed this up and put it on the screen?
A. Yes, based on my review.
Q. I understand. But we're talking about what documents show. This is -- I just want to be clear. This is not a

document that you reviewed; this is your characterization of what you've seen. Correct?

A. Yes.

Q. All right.

MR. ROSENTHAL: Let's take a look at 61.3, Mr. Eaton.

Q. (BY MR. ROSENTHAL) Now, you showed this, and I think you had it animating where you say that the SSB goes to the whole cell site. You remember this?

A. Yes.

Q. And it animated and it went all out. Right?

A. Yes.

Q. That's also not a Verizon or an Ericsson document. Right?

A. It's a demonstrative.

Q. Exactly. You made the demonstrative to show it. I just want to be clear about what's a document in this case and what you have generated. This is one that you generated. Right?

A. Yes.

Q. All right.

MR. ROSENTHAL: So let's take a look at slide No. 58.

Q. (BY MR. ROSENTHAL) I remember you pointed to this at your counsel's questioning and said, oh, here's another document, that I met the challenge and I showed a document

with an SSB going to multiple sectors. Do you remember that?
A. Yes.
Q. This says, first of all, it talks about a cell group ID. Do you see that?
A. Yes.
Q. Do you see anything in here that says that an SSB goes to multiple sectors in the text that's on this slide?
A. Yes, because it's talking about a cell group ID with just the base station ID. So this would show that it goes to every UE in the cell site, the whole base station site, including all sectors.
Q. The document doesn't say that. That's your conclusion. Correct?
A. I believe that one of ordinary skill would understand this document to say that.
Q. And take a look right here. You see it says, broadcast beam signal transmits same cell group ID to all sectors. That's your text; that's not from the document. Right?
A. That's my text based on the understanding of the document.
Q. Let's take a look at the documents you did cite.
MR. ROSENTHAL: Could we please bring up my demonstrative, please?
Q. (BY MR. ROSENTHAL) Sir, you cited in your analysis many actual documents from Verizon and from Ericsson and from

Samsung that actually depict where the SSB actually goes, didn't you, sir?

A. I'm not sure what you mean by actually and so on.

Q. You don't -- let me try to rephrase it. You excerpted and relied on documents that show where the SSB goes in this case. Right?

A. Yes.

Q. Okay. And each one of these pictures that I've put on this slide are documents that you actually cited and excerpted in your expert report. Isn't that true, sir?

A. Yes.

Q. And each one of these documents, the actual documents, show that an SSB goes to a sector. Isn't that right? This one, this one, this one, this one, and this one.

A. I would disagree. I believe that the top right would show that it's going -- it's a UE specific beam, and the UE can be in any cell site, any of the sectors.

Q. Oh, I understand that that's what you believe. I'm talking about what the document shows, sir. The document depicts a beam going to a sector. Correct?

A. I believe it does more than that.

Q. Okay. You see that angle? Do you see that angle that defines the area that the blue is in right here?

A. Yes.

Q. Is that a cell site or is that a sector, sir?

A. That portion shows a sector, but the language shows that it is the cell site.
Q. Okay.
A. The whole base station site.
Q. That's your interpretation of the document. Is that right, sir?
A. Yes.
Q. All right.
MR. ROSENTHAL: You can bring that down, Mr. Eaton. Thank you very much.
Q. (BY MR. ROSENTHAL) Now, the claim has language in it that requires two downlink directed beams. Correct?
A. It's more than that.
Q. I understand it's more than that. I'm trying to shorthand it. The claim requires that there's two directed beams and that those two beams be within a single TDD frame. Right?
A. It's more than that.
Q. The Court has construed the claim to mean that the two directed beams must be in the same downlink portion of the same TDD frame. Isn't that true, sir?
MR. KNOBLOCH: Objection, Your Honor. Mischaracterizes the claim language and the Court's construction.
MR. ROSENTHAL: I just read it.

THE COURT: Unless you're going to tell me he misread the Court's claim construction, I don't know what the basis of your objection is.

MR. KNOBLOCH: My objection is the way he's summarizing the claims and putting it into his own words and suggesting that that is the Court's construction is improper.

THE COURT: Either side may refer to the Court's construction. Those references are limited, however, to only the actual adopted interpretations or constructions the Court has rendered, period. That's what's in the juror's notebook--the adopted constructions. That's all either side is going to talk about as far as claim construction goes.

I don't find that there's been any intentional misconstruing of what the Court's construction was. You can cite it in your redirect, he can cite it in his cross examination, but you can only cite what the Court has actually construed.

Objection's overruled.

MR. KNOBLOCH: Thank you, Your Honor.

MR. ROSENTHAL: I think I can do this quickly. Let's go to slide 93 of Doctor Madisetti's report.

Q. (BY MR. ROSENTHAL) In order to show -- and by the way, the Court's claim construction is right here on your slide. Right? In the same downlink portion of the same TDD frame. I didn't misquote that, did I, sir?

A. No, you did not.
Q. Okay. That's what the Court construed, that's what you followed, that's what you have to show. Right?
A. Yes.
Q. All right. Now, in order to show that, you cited the testimony of Mr. Fortes from Ericsson. Do you recall that?
A. Yes.
Q. And that's because you relied on what he said. Right?
A. Yes.
Q. And that's because he knows how the system works. Right?
A. Yes.
Q. And now what he testified to is not that there is a single TDD frame, is it?
A. I think he did because --
Q. Sorry.
A. I think he did because he talks about a common system frame number.
Q. So he says that there is the same frame number. Right? He certainly says that, doesn't he?
A. Yes.
Q. Now, you don't cite the rest of his deposition transcript, but you reviewed it. Right?
A. Yes.
Q. Mr. Fortes explicitly stated just a short period later that while the same frame number is used, it is not the same

TDD frame, didn't he, sir?
A. I'm not sure.
Q. Let's take a look. Could you please look at tab J in your binder?
THE COURT: Counsel, I don't know how you are going to impeach this witness with a statement from a third party.
MR. ROSENTHAL: I'm not going to impeach him. I'm going to ask if this refreshes his memory --
THE COURT: All right.
MR. ROSENTHAL: -- because he reviewed this transcript.
THE COURT: You can proceed to attempt to refresh his recollection.
MR. ROSENTHAL: Thank you. And I should lay a foundation.
Q. (BY MR. ROSENTHAL) You, in fact, reviewed the transcript of Mr. Fortes that you cited in your slide. Correct?
A. Yes.
Q. Okay. And let's please take a look at that transcript that you reviewed at page 165.
A. Which exhibit is it?
Q. It's got a J on the tab. It's the last lettered tab.
A. Okay.
Q. I'm sorry. I had a technical difficulty. The wrong portion of the transcript is there so I'm going to have to

come back to this. My apologies.

All right. Do you recall whether Mr. Fortes, in fact, testified whether or not there are multiple TDD frames or a single TDD frame going to multiple sectors?

A. I don't specifically recall.

Q. All right. Now, if Mr. Fortes, in fact, testified --

MR. KNOBLOCH: Objection, Your Honor. Counsel seems to be preparing to just recite hearsay into the record.

MR. ROSENTHAL: I'll move on.

THE COURT: Well, as I've said earlier today, I don't rule on objections where the question hasn't been asked yet. If there's a question that's asked that calls for a hearsay response, I'll certainly hear your objection. But you might think he's going to ask a question that calls for a hearsay response and, surprise, he may not. So let's wait until the questions are asked.

MR. KNOBLOCH: Thank you, Your Honor.

Q. (BY MR. ROSENTHAL) I'd like to move, sir, to your technical apportionment and valuation opinions. Okay?

A. Okay.

Q. You testified that you believe that the '931 Patent brings an advantage of 32 percent in throughput gains. Correct?

A. Yes.

Q. And you understand that that number feeds directly into

General Access' damages case in this case. Right? They have calculated damages based on that number.

A. Yes. Mr. Kennedy did.

Q. And based on that number, entirely on that number, he has come up with a damages calculation of $500 million just for the '931 Patent. Correct?

A. Yes.

Q. All right. So if that number's wrong, that calculation's wrong. Fair?

A. I know my number, but I can't say much more.

Q. All right. Now, it's important that you use reliable methodology to get to that number. Is that fair?

A. Yes. I believe I did.

MR. ROSENTHAL: Mr. Eaton, can you bring up my demonstrative of the claims 28 and 29? Thank you.

Q. (BY MR. ROSENTHAL) Now, I want to ask you about something that you did not testify about in your direct with respect to these claims.

Now, claims 28 and 29, you said, are dependent claims, meaning that they include all this stuff from the independent claim and then they include some extra. Correct?

A. Yes.

Q. Isn't it true, sir, that everything written down in claims 1 and 19 have been dedicated to the public?

MR. KNOBLOCH: Objection, Your Honor. May I

approach?

THE COURT: Approach the bench.

(The following was had outside the hearing of the jury.)

MR. KNOBLOCH: This is a transcript of the pretrial conference, Your Honor, and this is Your Honor's statement right here: There's going to be no mention prior to presentation of the damages case down to the damages experts that claims 1 and 19 have been dedicated to the public.

This is not a damages expert.

MR. ROSENTHAL: Your Honor, he just had a whole damages section and that's why we talked about 4G Sprint infringing because he said that he'd move on to his damages presentation. And now I'm in the section talking about technical valuation.

THE COURT: Well, I mean, a portion of this witness' testimony relates solely to the infringement case, but a portion of it relates solely to the damages case. Obviously he's not the damages expert. But to the extent he has testified about specific aspects of the damages case, I don't see that that creates a problem in at least indicating that claims 1 and 19 are within the public domain.

Now, that's the extent to which they can be characterized and you've not exceeded that at this point.

But I don't find that the timing at which you've raised

it is objectionable.

MR. KNOBLOCH: Thank you, Your Honor.

MR. ROSENTHAL: Thank you, Your Honor.

(The following was had in the presence and hearing of the jury.)

Q. (BY MR. ROSENTHAL) Doctor Madisetti, you agree, sir --

MR. ROSENTHAL: You can bring that back up, Mr. Eaton.

Q. (BY MR. ROSENTHAL) You agree, sir, that everything written down in claim 1 and everything written down in claim 19 is dedicated to the public. Correct?

A. As I said in my deposition, I don't know.

Q. You don't know. Now, isn't it true, sir, that when you are coming up with the valuation of claims 28 and 29--those are the ones that are actually asserted--you have to consider what is the extra value above and beyond what's written down in those independent claims of these additional limitations?

A. I did.

Q. And you have opined and you've testified that you don't think there is any value in claims 1 and 19. Right? You think they are valueless.

A. I said they were valueless to Verizon because it was a point-to-point network.

Q. And so let me ask you this. If you were going out and trying to sell these patents, those wouldn't be the two claims

that you would focus on. Right?
A. I'm not sure what I would do.
Q. All right. Now, you did not compare a system that uses claims 28 and 29 to a system that only uses claims 1 and 19, did you, sir?
A. As a part of my non-infringement analysis, I did include claim 1 and 19 in my analysis.
Q. That's not what I asked.
A. Uh-huh.
Q. When you were determining the value of 28 and 29, which you just spent some time doing this morning, you did not compare what's the performance of a system using 28 and 29 versus the performance of a system using all of this public technique of claim 1 and 19, did you, sir?
A. I believe I did.
Q. What you did, sir, is you compared the performance of 4G using beamforming to 4G using non-beamforming. Isn't that right?
A. That's one of the three.
Q. Now, 4G, to be clear, is not accused of infringement in this case. Correct?
A. It's not.
Q. Okay. You did not perform an analysis of what is the benefit of beamforming in the 5G network. Correct?
A. I'm not sure what you're asking.

Q. You did not compare what would 5G performance be like without beamforming versus what would 5G performance be with beamforming. Correct, sir?
A. I believe I was being conservative because 5G performance, that was much larger improvement.
Q. My question, sir, was: Did you perform an analysis and comparison of what it would be like to use 5G with beamforming versus 5G without?
A. I don't think I presented that analysis.
Q. All right. Instead you did an analysis based on 4G, and then you said, I think it would be more in 5G. Fair?
A. Yes.
Q. Okay. Now, that's not all you did. You also compared a system that used beamforming with another system called S-ALOHA. Correct?
A. Yes.
Q. And that's because you believe that S-ALOHA is the best available non-infringing alternative approach to management of beamforming in a TDD cellular network. Correct?
A. Yes.
Q. Okay. Now let's take a look, please, at what -- well, let me just ask you first. S-ALOHA, the system that you compared to, is a protocol from 1972 from the University of Hawaii. Correct?
A. Yes. It's a fundamental protocol.

Q. Okay. It's from more than 50 years ago.
A. Yes.
Q. That's a long time in telecommunications. Right?
A. Yes.
Q. Now, you decided to use S-ALOHA I think because you said the patent refers to it. Right?
A. Yes.
Q. The patent refers to a lot of technologies that are alternative, doesn't it?
A. Again, it speaks for itself.
Q. Well, I'm asking because the jury hasn't all read the patent. The patent describes a lot of technologies other than S-ALOHA that are alternatives. Right, sir?
A. I would say some.
Q. Okay. For instance, it describes 802.11 WiFi from 1997. Right, sir?
A. I believe so.
Q. It describes the digital cordless telephone standard from 1992. Right?
A. Yes.
Q. It describes ETSI HiperLAN from 1997. Right?
A. Yes.
Q. It describes WiMAX which we heard Mr. Struhsaker testify about from 2001. Right?
A. Yes.

Q. It describes PMRA from 1997. Right?
A. Yes.
Q. It describes all these solutions from the 1990s, and the one that you chose to compare to as the next best alternative was the one from 1972?
A. Because it was the most relevant one.
Q. Sir, the one you chose to compare to was the one from 1972?
A. Yes.
Q. All right. So --

THE COURT: Counsel, if the witness is not responsive to your question, rather than ask it three times, raise the objection with the Court. The Court will deal with the witness that's non-responsive. But telling him that's not my question or going back to the well over and over is not an efficient way to do this.

MR. ROSENTHAL: My apologies, Your Honor.

Q. (BY MR. ROSENTHAL) All right. I have just one more line of questioning on this issue.

MR. ROSENTHAL: Could you please bring up my demonstratives, my last demonstratives?

Q. (BY MR. ROSENTHAL) Sir, 4G LTE was introduced in 2010-ish. Right?
A. Roughly, yes.
Q. Okay. 5G was in the late 2000s. Fair? 2010s. Fair?

5G was introduced in the late 2010s. Fair?
A. I'm not sure what you're asking, counsel. You mean the concepts or the commercial embodiment?
Q. The standards were finalized in the late 2010s. Correct?
A. Yeah, that's right.
Q. Okay. And commercial embodiments started coming out around 2019?
A. That's right.
Q. Okay. And you're trying to figure out what is the value of these patents in 5G. Right?
A. Yes.
Q. Okay. So 4G exists. 3G was introduced back in 2001. Right?
A. Yes.
Q. 2G was introduced back in 1991. Right?
A. Yes.
Q. 1G, the very first cellular standard was introduced back in 1979. Right?
A. Yes.
Q. You didn't use any of these as the next best alternative. You went all the way back to 1972 to the University of Hawaii to find out what the next best alternative to 5G was. Is that right?
A. It's more than that, but I based it on that.
Q. You based it on that. Now, did you know, sir, that the

very first mobile phone wasn't even introduced yet until 1973?
A. Yes.
Q. And that the first personal computer wasn't even out until 1974?
A. Yes.
Q. So the protocol that you chose as the next best alternative to 5G was from before mobile phones existed.
A. Again, I said I modified it to apply it to beamforming uncoordinated. So you're not right. I mean, I wouldn't agree with that.
Q. Sir, you have testified that you thought S-ALOHA was --
MR. KNOBLOCH: Objection, Your Honor.
THE COURT: What's your objection?
MR. KNOBLOCH: Counsel is about to recite the testimony of the witness.
MR. ROSENTHAL: From a moment ago.
THE COURT: Overruled.
Q. (BY MR. ROSENTHAL) You have testified, sir, that S-ALOHA is the next best alternative to 5G. Correct?
A. No. I said I modified it to include beamforming.
Q. Sir, is it your opinion that S-ALOHA represents the best available non-infringing alternative approach to management of beamforming in a TDD cellular wireless network?
A. Yes. You said beamforming.
Q. Okay. I'm sorry. I thought 5G did beamforming. Doesn't

it?

A. Yes. I added beamforming to ALOHA.

Q. Okay. Now, you understand, sir, that the mobile phone was introduced in 1972 by Motorola. Right?

A. Yes.

MR. ROSENTHAL: Let's go to the next slide.

Q. (BY MR. ROSENTHAL) It was by a game named Marty Cooper. Right? You remember this story?

A. Yes.

Q. That's what the mobile phone looked like back then. Right?

A. Yes.

Q. Now, if I wanted to compare -- I've got an iPhone with iPhone with -- what's it called? IOS 12. I have an iPhone 12. If I want to compare my iPhone 12 to see how good is the new technology in the iPhone 12, a good thing to compare it against might be the iPhone 13. Fair? I did that completely wrong.

If I have an iPhone 12 and I want to see how good is the new stuff, I would compare it to the iPhone 11. Right?

A. As I said, I mean, you can -- it depends on what you're trying to do.

Q. It does depend on what you're trying to do. If I want to make it look accurate, I might compare it to the iPhone 11 or even the iPhone 10 to see what's the new stuff giving me, how

much is that new stuff helping. Fair?
A. No. As I said, it depends on what you're trying to compare it with. In that case, I was doing something specific with beamforming.
Q. Yes, that's right. So if I really wanted to make the iPhone 12 look great, if I really wanted to overvalue and overstate how great it is, a really good way to do that would be to compare it to the 1972 first mobile phone. Then this would look pretty darn good, wouldn't it?
A. As I said, counsel, I won't agree with that.
Q. Okay.
MR. ROSENTHAL: I have no more questions. I pass the witness.
THE COURT: All right. Is there redirect?
MR. KNOBLOCH: Yes, Your Honor.
THE COURT: Let's proceed with redirect.
Proceed when you're ready, Mr. Knobloch.
MR. KNOBLOCH: Thank you, Your Honor.

REDIRECT EXAMINATION

By Mr. Knobloch:
Q. Doctor Madisetti, you were asked some questions about a system that used only claims 1 and 19. Do you recall that?
A. Yes.
Q. In your view, how would Verizon's network function if, instead of using claims 28 and 29 of the '931 Patent, it used

only claims 1 and 19?
A. It would render the network non-functional because you would only have one sector and a point-to-point communications.
Q. And so by -- and so you chose, instead, to compare Verizon's actual network which does infringe claims 28 and 29 to other alternatives that would perform better or worse than just using claims 1 and 19?
A. That would perform much better. Indeed Verizon's own documents and Ericsson's documents show that 4G and low versions of the 5G are very comparable in terms of performance. So I took a conservative approach that would still be fair and understood to be representative of 5G.
Q. Had you, instead, done an analysis that compared the throughput benefits of using a Verizon system that actually uses claims 28 and 29 to a system that only used claims 1 and 19, would that number have been higher or lower than the 32 percent that you concluded in your analysis?
A. It would be very, very high. It will be unfair to Verizon if I compared it to claim 1 because claim 1 would render the network unfunctional.
Q. Now, in addition to comparing -- now, you were also asked some questions about why you -- about the fact that you compared the beamforming with the asserted claims against a system that does not beamform in 4G versus -- instead of 5G.

Do you recall that?
A. Yes.
Q. Why is it that when isolating and analyzing the benefit of using beamforming with the asserted claims you focused on 4G and not on 5G?
A. Because it allows you to compare apples with apples. You have 4G with beamforming and 4G without beamforming, and the TM8 as analyzed practiced the claims 28 and 29. So it was a conservative, accurate, reliable comparison that could be verified with anyone, and indeed I verified it with five other references.
Q. Are -- is it possible to do this testing on Verizon's 5G network, like this sort of direct comparison, beamforming to not beamforming?
A. No, because they have turned on beamforming.
Q. Is it -- do they ever turn off beamforming?
A. I don't believe so.
Q. And so is that why you focused on 4G to do this comparison versus 5G?
A. Yes.
Q. In your opinion, if Verizon were to enable the feature of just turning off beamforming in 5G, would the relative impact of that be bigger or smaller than the impact that was measured when beamforming was turned off in 4G?
A. Much bigger if you did it with 5G.

Q. Now, Doctor Madisetti, you've been qualified as an expert witness in wireless communications in this case. Right?
A. Yes.
Q. In fact, many courts have qualified you as an expert on topics relating to computer science and electrical engineering.
A. Yes. Yes.
Q. Has the Patent Office also qualified you as an expert?
A. Yes.
Q. Has the Patent Office also relied on your testimony?
A. Yes.
Q. All right.

MR. KNOBLOCH: Give me a moment here, please.

Q. (BY MR. KNOBLOCH) Now, you were asked a lot of questions about the evidence that you showed in connection with the '794 Patent. Do you recall that?
A. Yes.
Q. I want to just review some of the evidence that you showed in connection with the '794 Patent.

Now, obviously some of the evidence that you presented to the jury was in the form of testimony. Right?
A. Yes, deposition testimony by sworn witnesses.
Q. And your own opinion testimony, that was also evidence presented to the jury today. Right?
A. Yes, based on my education, training, and experience.

MR. KNOBLOCH: And I want to turn to slide -- if you could enable my presenting. I'm connected, is it not? Okay. Sorry. I'm just having a technical difficulty here. Hopefully we can get this working in a moment.

Q. (BY MR. KNOBLOCH) Okay. This slide includes an excerpt from Verizon's website. Right?

A. Yes.

Q. And is this website one of the exhibits that the jury will have for its consideration?

A. Yes.

Q. Does this exhibit support your opinions on the '794 Patent?

A. Yes, it does, because it discloses routing that these mobile hotspots route.

Q. Now, I'm turning to slide 38. Slide 38 is an example of testimony from Mr. Youtz. Right?

A. Yes.

Q. That is evidence from Verizon's own witness. Correct?

A. Yes.

Q. This is evidence that the jury heard this morning?

A. Yes.

Q. Does Mr. Youtz's testimony support your view about how Verizon's products use the '794 Patent?

A. Yes.

Q. Now, you were asked a lot of questions about the monitors

limitation specifically. What evidence does -- did you show the jury about the monitors limitation?

A. I believe I showed -- I don't remember the exact sequence, but I believe I cited to deposition testimony as well as some of the testing and others.

Q. Does Mr. Gamboa's testimony support your opinion that in fact the second transceiver monitors the first characteristics of the downlink signal of the mobile station?

A. Yes. Because what it's trying to say is that if you monitor the signal on a channel that comes from the mobile station because of reciprocity and it's the same channel that monitors the signal that carries the signal the other way, the quality of the channel can be recognized by either things that are coming this way or that way. So measuring one is an indicator of measuring the value of other.

THE COURT: Doctor Madisetti, when you're asked, Does the testimony of this witness support your opinions, and you answer yes, that's a complete answer. If counsel wants you to explain why you believe it supports your opinion, he'll ask you. But you're just volunteering the why without being asked.

THE WITNESS: Sorry, Your Honor.

THE COURT: You're answering completely when you say, yes, it supports my opinion, because that's the question tendered to you. You need to limit -- even though this is

redirect, you need to limit your answers to the questions asked. Counsel's fully capable of asking you every question he wants you to answer. All right?

THE WITNESS: Sorry, Your Honor.

THE COURT: Thank you.

Q. (BY MR. KNOBLOCH) Turning to slide 38, how does this testimony from Mr. Youtz support your conclusion about the '794 Patent?

A. This confirms that they are routing based on the WiFi standards and the WiFi standards as one of -- as anyone familiar with the art would know that the WiFi standard based the routing on signal strength and other signal characteristics.

Q. And does PX -- what does PX 199, which is an exhibit admitted in this case, tell you about Verizon's use of the WiFi standards you just talked about?

A. It says that you have to use WiFi local area network standards.

MR. ROSENTHAL: Move to strike the answer, object to this line of questioning. It's outside the scope of the report.

THE COURT: What's your response to the objection?

MR. KNOBLOCH: I don't believe it's outside the scope of the report, Your Honor, and I believe it is squarely within the scope of the report. He talks -- Doctor Madisetti

talks in his report about the use of the standards.

MR. ROSENTHAL: May I be more specific in my objection but still general? My objection is he never links any of this evidence to the routing or monitoring limitations in his report, which is what the questioning is doing.

MR. KNOBLOCH: That was not my question, Your Honor.

THE COURT: Well, the witness is going to have to testify within the scope of his report, but I agree that probably wasn't the question you asked.

I'm not going to send the jury out at this point. We're going to continue. But you can reurge that objection if the witness testifies contrary to his report whether or not the question calls for that answer or not. Okay?

MR. ROSENTHAL: Thank you, Your Honor.

MR. KNOBLOCH: Thank you, Your Honor.

Q. (BY MR. KNOBLOCH) Now, we also talked about some testing that you did, and this testing specifically addressed both the monitoring and the routing limitations of the claim. Right?

A. Yes.

Q. And what did the testing show about the monitoring of signal characteristics?

A. As I described, there is a null packet sent and that packet quality is measured and the signal quality is sent back as signal characteristics that I point to.

Q. Are those -- how are those signal characteristics

measured?
A. They are measured by the -- by the iPad, which is the mobile device, the first mobile station. They are measured there, and then they're sent back to the device, which is the hotspot router.
Q. Are there other -- besides beamforming characteristics, are there other characteristics that are measured and reported back in the context of a WiFi transceiver like this?
A. Yes.
Q. Can you give the jury any examples?
A. These are things like the number of errors, received signal strength, things that show the quality of the signal received.
Q. Now, in response to the received information -- so -- so let me -- let me break it down. Sorry.
What actually measures those signal characteristics?
A. It's the transceiver on the mobile station that receives it.
Q. And then does the second transceiver that's in the phone, in the -- where it says -- next to the phone where it says next to car, that one, does that then monitor those signal characteristics?
A. Yes.
Q. How so?
A. Because it receives that reports back from the mobile

device or the mobile station.
Q. How does the second transceiver in the phone then respond to the information it receives from the mobile station?
A. It then decides whether it should send the packet or not. So that's an example of routing.
Q. Now, one example of the way it can change the routing is through beamforming. Right?
A. Yes.
Q. And I just want to be really clear about something. Counsel showed you a figure about the percentage of time or percentage of devices out of the total devices accused of the '794 infringement that use beamforming. Do you recall that?
A. Yes.
Q. To be very clear, what percentage of Verizon's accused base stations -- the ones accused of infringing the '931 Patent, what percentage of those use beamforming?
A. All of them.
Q. And for the purposes of the '794 Patent, is beamforming required to infringe?
A. No.
Q. You have shown other examples of infringement of the '794 besides beamforming. Right?
A. Yes.
THE COURT: Doctor Madisetti, pull the microphone closer, please.

THE WITNESS: Yes, Your Honor.

THE COURT: Thank you.

Q. (BY MR. KNOBLOCH) Now, Doctor Madisetti, you were asked on cross a number of questions about the SSB. Do you recall that?

A. Yes.

Q. And we talked a lot about the SSB during your direct testimony as well. Do you recall that?

A. Yes.

Q. Okay. In fact -- well, one of the questions that Mr. Rosenthal asked you about the SSB had to do with the timing. Do you recall that?

A. Yes.

Q. And he suggested that the SSB is sometimes sent at different times. Do you recall that?

A. He -- yeah, he said that.

Q. In fact, in Verizon's 5G TDD network, is the SSB sent at the same time to users in different sectors or at different times?

A. At the same time.

Q. And that's true in both C-band and mmWave?

A. Yes.

Q. Now, Mr. Rosenthal also focused a lot on the fact that the SSB includes within it a physical cell ID. Do you recall that?

A. Yes.
Q. What is the physical cell ID?
A. It's the ID of that particular sector.
Q. And so, in fact, the SSB includes a sector identifier. Right?
A. Yes.
Q. What else does the SSB include?
A. As I showed in my table, if you can show me my table.
Q. If you'll give me a moment.

MR. KNOBLOCH: Ms. Brunson, I'll let you know when I'm ready. I'm sorry.

Q. (BY MR. KNOBLOCH) Is this the table you were referring to?
A. Yes.
Q. Other than the physical cell ID, what else is transmitted as part of the SSB?
A. Yes. The system frame number, the SSS, which is the cell group ID which is the ID of the base station itself; the DMRS type A position; the PDCCH ConfigSIB, and these are all part of the PDCH. So there's a lot of information that's identical across the SSBs, and they're all sent as part of the broadcast signal.
Q. Now, do you recall here --

MR. KNOBLOCH: And, Your Honor, may I bring up the board that we used during the direct?

THE COURT: You may.

MR. KNOBLOCH: Thank you, Your Honor.

Q. (BY MR. KNOBLOCH) So, Doctor Madisetti, during your direct examination, you recall that we underlined the comprising language in the claims. Do you recall that?

A. Yes.

Q. In claim 29 at least?

A. Yes.

Q. And claim 28 is also a comprising claim. Right?

A. Yes.

Q. How is the fact that it's a comprising claim relevant to your analysis with regards to the SSB?

A. It shows that if I have identified system frame number, SSS, DMRS, and PDCH as being part of the claimed broadcast signal -- broadcast beam signal, the fact that there is other information, the physical ID that is different, does not affect infringement because it's a comprising claim.

So if the table infringes, the table with wheels also infringes. The fact that because it has wheels and another table doesn't have wheels doesn't allow you to avoid infringement.

Q. Now, you were here for openings. Right?

A. Yes.

Q. And do you recall that during openings Mr. Krevitt showed an image of a Verizon base station with each sector around the

base station in a different color. Do you recall that?
A. Yes.
Q. And he used that to suggest and argue to the jury that, in fact, in Verizon's base stations the sectors are -- are separate somehow. Right?
A. Yes.
Q. Did that document -- did that figure come from any Verizon document?
A. No, and it's not technically correct.
Q. That was an image that was generated by counsel for this case, as far as you know. Right?
A. I think so, yes.
Q. There wasn't -- in all the documents you reviewed from Verizon, there was not a single document -- was there any document that actually showed sectors with different colors like the ones that Mr. Krevitt showed?
A. I don't recall any.
Q. Does it matter to your analysis that the SSB -- I'm sorry. Let me ask a different question.
Is there any actual factual dispute that the SS block is transmitted in all the sectors of every Verizon TDD base station at the same time?
A. No. There is a transceiver that is the three radios controlled by a baseband processor that generates SSB and it's sent to all sectors with this identical information that I've

identified through the antenna that corresponds to that sector. And that's the broadcast beam signal.

MR. KNOBLOCH: I pass the witness, Your Honor.

THE COURT: Is there further cross examination?

MR. ROSENTHAL: No, Your Honor. Thank you.

THE COURT: All right. Mr. Knobloch, if you'll take the board down, please.

MR. KNOBLOCH: Yes, sir.

THE COURT: You may step down, Doctor Madisetti.

THE WITNESS: Thank you, Your Honor.

THE COURT: You're welcome.

Call your next witness, Plaintiff.

MS. FAIR: Your Honor, the Plaintiff calls Mr. Michael Skip Hynek.

THE COURT: All right. Mr. Hynek, if you'll come forward and be sworn by the Courtroom Deputy, please.

(Whereupon, the oath was administered by the Clerk.)

THE COURT: Please come around, sir, have a seat on the witness stand.

All right. You may proceed with direct examination, Ms. Fair.

MS. FAIR: Thank you, Your Honor.

MICHAEL SKIP HYNEK,

having been duly sworn, testified under oath as follows:

DIRECT EXAMINATION

BY MS. FAIR:

Q. Good afternoon.

A. Good afternoon.

Q. I know we've heard your name already, but would you introduce yourself to the jury, please?

A. Certainly. My name is Michael Hynek, but I go by Skip.

Q. And how is it that we get Skip out of Michael?

A. I don't think that you really do. But my mother wanted to call me Skip since I was born, but she didn't think it was a proper name, so she named me legally Michael.

Q. And, Mr. Hynek, we've seen you sitting at this table for the last couple of days. Can you tell us, are you here today as the corporate representative of the Plaintiff General Access?

A. I am.

Q. When did you first become involved with the company we've been introduced to called Raze?

A. I would have been introduced to Raze or its predecessor entity in the year 2000, probably around the June or July time frame.

Q. How was it that you got introduced to Raze?

A. I was on an advisory board for an investment entity, and

through that process I was introduced to Raze.
Q. And what was that investment entity doing with respect to Raze?
A. The entity was formed to make investments into start-up companies at the time primarily in the technology industry.
Q. What was it they intended to do with Raze?
A. After going through a pretty extensive due diligence process, that investment entity made a commitment to the company to provide its initial funding.
Q. Did it meet that commitment?
A. It did not.
Q. So what did you do about that?
A. Well, through my experience of doing the due diligence for this particular company, I obviously had an opportunity to meet Mr. Struhsaker and some of his other founders and hear the presentation about what they were trying to do, and I as a well as all the other board members were very intrigued with the opportunity.
Q. Do you have a background in technology that, when you heard these presentations about what Mr. Struhsaker was intending to do, you could evaluate it yourself?
A. Absolutely not.
Q. What's your background?
A. I have a college degree, a Bachelor of Science in civil engineering.

Q. What is civil engineering?
A. I think the best way to describe civil engineering would be to say anything that's built on the earth, in the earth, or with the earth, primarily buildings and structures, things made out of concrete and steel.
Q. You said that the people that were involved in Raze also had impressed you, Mr. Struhsaker. Can you tell us a little bit about what it was you found impressive about them?
A. Well, I think everybody's heard him testify. Mr. Struhsaker is a very impressive and accomplished individual. I have the highest respect for him.
Q. At the time, what did you know that he had already done before Raze?
A. I can't imagine somebody being in college being recruited by the National Security Agency, but somehow that happened. He was an accomplished engineer. He'd been with a couple of start-ups already, very instrumental leader in developing the technology that we know of as WiFi today. He had successfully deployed commercial products already. He just -- he checked all the boxes and then some.
Q. Was there anybody else working with him at the time?
A. He did -- he had a couple of other founders, but he had also presented he had commitments from other very accomplished individuals who were planning to join the company once it obtained its original funding.

Q. Were you able to meet the commitment that the investment firm was not able to meet?
A. I was over time.
Q. Did you do it by yourself?
A. Absolutely not.
Q. So we heard in opening -- you were here for that. Right?
A. I was.
Q. Mr. Krevitt painted a picture that Mr. Hynek invested some money and you got everything, including the patents, and it's not true that there was a group of investors invested in Raze.

What is the truth, Mr. Hynek?

A. The truth is I relied on my network of business relationships and personal relationships because I was just a believer in the opportunity. I went out to my network and then the people that I knew extended and went out to their network, but we bootstrapped this thing.

In hindsight, we probably got in a little over our head in terms of the financial -- the amount of money that would be needed to see this project through, but I was fortunate enough to have the backing of the business partners that I had at the time.

Q. And how many people are behind this partnership? Is it just a handful?
A. At that time I think there was probably 50 limited

partners, primarily made up of families and individuals.
Q. And how much was it was the commitment that you-all were able to pull together over an extended period of time?
A. The original commitment that was made by the investment entity was $12 million, and we met that commitment over a period of time.
Q. How long was that period of time?
A. I think we did that probably -- it probably took about a year and I don't know how many presentations, probably 30 or 40 presentations.
Q. What were these presentations?
A. Basically, you know, I had to pull Mr. Struhsaker and his co-founders, you know, out, and they would go through their business plan and talk about the technology. But going through the due diligence, we also had hired some technical consultants to do a pretty thorough technological review of what Mr. Struhsaker was trying to do as well.
Q. And what was their reaction to what Mr. Struhsaker and his colleagues were doing at Raze?
A. I don't think I ever had anybody question the inability or -- or just doubt that he didn't have some very, very unique ideas.
Q. Who were these technical experts, by the way? Just give us a sense of what their -- what their jobs were day-to-day.
A. The only -- the one that I remember the most was a

gentleman by the name of Dr. Hal Soble. I believe he was a college professor. He had all the credentials that a technologist that would want to review this technology needed to have, and we trusted his opinion very much.

Q. Was there a point at which you became more than just somebody who had gotten a bunch of people together to help support Mr. Struhsaker's business, got more involved?

A. Yes. Probably I think it was late in 2001 we needed to do a reorganization. The group of people that I put together did not specialize in making start-up investments, and we were spending money at a pretty good rate.

Mr. Struhsaker's team was making progress and developing the technology, but had probably in hindsight undertaken a tremendous technological project. They were trying to do something that I am not aware of any other start-up at the time in this industry was trying to do.

It was a key part of their business plan, and so after the reorganization, in order to try to minimize the expenses that we were -- we were spending, I stepped in as the CEO to run the company.

Q. Did everybody agree with the reorganization to kind of control the expenses a little bit from what had been a pretty capital-intensive endeavor?

A. Well, the way the reorganization happened, just prior to the reorganization there were some board members who

had -- they didn't -- they didn't agree with what I had proposed we needed to do.

Q. And so were your supporters, the people behind this who had pulled together this amount of money, willing to continue funding a venture that would be pursuing three different technical areas at the time?

A. So one of the things that I'm humbled by is my partners trust me very much. They do expect me to work very hard and research the opportunities, so I had the full support of all the partners in my entity.

Q. After the reorganization, you said that your level of involvement had changed, you became the CEO. What was your life like at the time? How much time were you spending with Raze?

A. Well, sometimes I refer to those as the dark years. I was, with no exaggeration, working 16- to 20-hour days every day. I had some young kids at home. I had three children, and didn't get -- sorry. Didn't get to spend a lot of time with them.

Q. What was your -- how was it that the company was able to keep going after the reorganization and fund the more limited development that you were undertaking?

A. So my group continued to make another investment. We extended the commitment past the $12 million. We were willing to put in another $4 million. But I had to communicate to Mr.

Struhsaker and the other founders that there was a limit to how much money we could put in, that we were -- we were getting way, way over our skis on this investment, but it just did not seem right at all to -- to stop.

Q. To stop at the 12 million, you mean?

A. That's correct.

Q. After the reorganization when you were working with Raze, what was it that Raze was doing to seek outside investment since your group had already really kind of reached its limits?

A. That was one of the responsibilities that I really had to get very much involved in. So we were talking with all kinds of professional investment entities, venture capitalists, people who invested money in the start-ups for a living.

Q. Did you meet with any companies that were in the telecommunications industry?

A. We did. We had occasion -- sometimes we met with those types of companies as customers, and then other times we met with people that were -- would have been more of a strategic relationship.

Q. The telecommunications -- are there any meetings with these telecommunication companies that stand out in your mind?

A. I do remember one in particular. Mr. Struhsaker and I went to -- I believe it was somewhere in New Jersey. At the time AT&T had invested, I think, about a billion dollars into

a fixed wireless network that they had deployed to residential neighborhoods. So it was similar to what Raze was trying to do.

But their system didn't work, and they were in the process of shutting it down. And somehow we got on their radar screen, and they wanted to talk with Mr. Struhsaker. So the two of us went out to -- I think it was somewhere around Middleton, New Jersey, to -- it might not have been an AT&T facility. It may have been a Bell Labs facility, Bell Labs kind of being the technical arm of AT&T as I understood it.

Q. And who was it that was there at that meeting to talk to you and Mr. Struhsaker about what it was Raze could offer?

A. I'm uncertain as to the number of people that were there, but I think it was at least 30. There might have been 50 people there. It's my understanding that they were very, very credentialed people, lots of Ph.D.s, many smart guys.

Q. How did the conversation go from your civil engineering background standing back and watching this go down?

A. I wish I could tell you. They were talking English, but there was nothing that they said that I understood. It was extremely technical. And for my opinion, it appeared when the meeting started that these guys were -- they were ready to really challenge Mr. Struhsaker. They had a lot of questions. You know, why do you think that you can do something that all of us collectively couldn't do?

And as the conversation went on, my read of the body language was he had a lot of great ideas that they might not have anticipated.

Q. So having these great ideas and meeting with these companies, were you-all able to find investments outside of your group of people?

A. The short answer is no.

Q. From your vantage point, what did it seem like was the issue with getting these investments?

A. The parties that we were talking to were -- were very sophisticated in what they were doing, and it became clear that the customers that we would be selling into were either going to be smaller people out in the rural areas that the -- that the bigger service providers were not ready to move to this level of increase in technology.

At that time the 3G had just recently come out, and the major service providers had spent billions of dollars upgrading their -- their networks, and they weren't really -- they were reluctant to kind of go and say, all right, let's go spend a bunch more billions, because this, as I understood, it would have required -- it's not like it was a software upgrade. You had to spend a tremendous amount of money to -- to upgrade these networks, and they hadn't really recouped the investment they got in 3G. So they didn't have the incentive to do that.

And then as I understand it, there were just a lot of technical issues, too, with trying to -- I mean, we've seen -- we've seen our customer premise equipment. I think you've seen that, that big piece of equipment. At that time people weren't willing to run around with a mobile phone that looked like that.

So the technology hadn't evolved to a point that it would have made efficient use of what we were trying to do. But also the iPhone didn't come out until 2007. So we're 2001, 2002. So without smartphones, there really wasn't the demand on the -- on the wireless communication networks that there is certainly today. But even in -- it wasn't until 2007 that there was really that kind of robust demand, and we thought that that would happen, you know, 2003, 2004 maybe at the latest.

Q. I want to visit a little bit about something we heard yesterday with Mr. Struhsaker. We heard about this Navini system, some telecommunications conference that you went to. Do you remember that?

A. I do remember that coming up. I truly have no recollection of being in Atlanta, but certainly Paul's notes had me being there, but --

Q. Mr. Struhsaker?

A. I'm sorry. I'm sorry. Mr. Struhsaker. If I was there, I just don't have much recollection of being there.

Q. From your view as somebody who had a background in civil engineering, not an electrical engineer, not a technologist in this, do you think somebody who'd spent time with the NSA would be sending--no offense, Mr. Hynek--but would be sending you to come back and explain to Mr. Struhsaker how the technology worked? Does that make sense to you?
A. No offense taken, but no.
Q. What was it that you would have been able to even understand as to what was happening with Navini?
A. I don't know. But to be fair, I -- you know, I had a -- I was responsible to a lot of people for having a lot of money invested in this, and it was my job to know, you know, what potential competitors were doing and staying up with the market. So I obviously would spend a lot of time trying to educate myself on that.
Q. So you weren't able to get more investments from these telecommunication companies or other larger entities that could invest more in Raze. What was it that you-all ended up having to do in 2002?
A. I'm not certain of the timing, but sometime late in 2002, we had to lay off the employees.
Q. And Raze effectively ceased operations?
A. I believe that's correct, yes.
Q. And so when that happened, did your -- did your group of people, did they decide, you know what, just forget it, we're

throwing in the towel, forget all that happened, we're not doing anything else. Is that what they said?

A. No, they didn't. They continued to stand with me and -- and support me. That happened in 2002. That was 22 years ago now.

Q. And before Raze had had to shut down, had you-all done anything, had Raze done anything to protect the ideas that Mr. Struhsaker had had, whether they were technology that you were actually working on commercializing or inventions that you hadn't been able to commercialize yet? Had you-all done anything to protect that?

A. Yes. I think their -- the patent process, us applying for patents and securing patents, was always part of the business plan for Raze Technologies.

Q. Did you-all continue pursuing protection for Mr. Struhsaker's ideas after Raze ceased operations?

A. Absolutely.

Q. Now, we heard in opening that it sounded like Mr. Krevitt was saying you -- I think he said, then Mr. Hynek hired some lawyers to go out and continue prosecution. Did you go out and find new lawyers to pursue these patents?

A. I did not.

Q. Where did the lawyers come from who continued the prosecution efforts of what Mr. Struhsaker had started in 2001?

A. They were the same lawyers that had been involved with the patent applications from the very beginning.
Q. Did Mr. Struhsaker--you heard his testimony yesterday--continue to have some involvement with those lawyers throughout the years?
A. He did. I know that he did. But there was -- there were some times after -- after we shut down Raze, Mr. Struhsaker I believe went to work for Texas Instruments, and then after that, he went to Motorola. And I mean he went to Comcast. He was a senior technologist for these companies at the highest level. And there were times when he was doing very similar work to what he was doing at Raze Technologies. And if he was doing similar work to Raze Technologies, it was not right for him to be trying to continue with the inventions that he had done. There was some conflict there that apparently would put some of our patents at risk if he participated while he was also participating with some of these other high technology companies.

But I am uncertain as to what times he was working with some of those companies and when he wasn't. So I -- there -- I don't recall what the dates are. So, in other words, was it from January 2003 to, call it, July of 2004, any of those dates I don't recall. I just know that from time to time Mr. Struhsaker was not available to talk with the attorneys that were prosecuting our patents.

Q. And these are the same attorneys that had met with him years earlier when he first had the inventions and had had meetings with him to know what it was that he had invented?

MR. KREVITT: Objection, Your Honor; leading.

THE COURT: Sustained.

Q. (BY MS. FAIR) Were these different lawyers from those who had met with him early on and understood his inventions to file the applications in the first place?

A. They were not.

Q. Why was it important to your group to continue pursuing patent protection for what Mr. Struhsaker had invented?

A. Clearly, I mean, that's -- we had to protect and support that intellectual property that people had worked hard for and we obviously wanted to protect our investment that we had made into the company.

Q. Was there a point at which it became clear to you or you felt like that you-all had made the right decision to keep pursuing patent protection?

A. There was, but it was a very, very long time, much longer than I would have ever thought.

Q. So tell us about what led you to this sense that you had, in fact, made the right decision.

A. I'm reminded of the Grinch that stole Christmas and the Grinch puts his ear and he hears this little faint sound, but probably sometime in the late 2000s -- well, I'd always had

very smart people that I trusted validate the technology. They believed in the technology, they believed that it was unique, that it was fundamental.

These weren't just little inventions that, you know, were meaningless; that everybody that I ever talked to said these were really, really fundamental patents in technology.

Q. Were there any people who were beyond the circle that you already knew who at some point started validating your belief that this was -- this was something important?

MR. KREVITT: Objection, Your Honor. It clearly calls for hearsay. I didn't want to stand up earlier and interrupt, but we're right into hearsay at this point.

MS. FAIR: Your Honor, Mr. Hynek is the corporate representative of the company that is at the hypothetical negotiation, and so his understanding of what people viewed as the importance of the technology is relevant beyond just for the truth of the matter asserted.

MR. KREVITT: Your Honor, that's the subject of expert testimony. To the extent the experts have relied on anything Mr. Hynek had to say, they would have already done so. At this point Mr. Hynek is just being asked to offer hearsay that is not challengeable. We obviously have no ability to challenge anything Mr. Hynek is saying on the stand.

MS. FAIR: Your Honor, they have the documents to

cross-examine him if they want from these same people.

THE COURT: Well, I've heard enough, counsel. I'm going to sustain the objection. It is clearly hearsay, and I don't see that even with the documents Defendant has a fair opportunity to fully cross-examine what this witness may or may not say about what other people told him.

I think it's clearly within the hearsay rule, and I'm going to sustain the objection.

Q. (BY MS. FAIR) Mr. Hynek, what was your view of the value of these patents for a short term sale versus a long term licensing?

A. Probably 12 years ago there was a value that I came to understand that was literally pennies on the dollar compared to what it would be if we did a licensing campaign.

Q. What were those amounts that were pennies on the dollar?

A. Again, this was probably 10, 12 years ago. It would be in the tens of millions.

Q. And what about licensing? What was your understanding of what it would look like to license these patents?

A. I came to understand that they were -- some people were telling me hundreds of millions and other people were telling me billions.

Q. Mr. Hynek, did the market end up getting where 24 years ago you and the others backing Raze believed that it would?

A. I'm sorry?

Q. Did the market, the technology market, end up getting where you and the other people supporting Raze believed that it would?

A. It did.

MR. KREVITT: Objection, Your Honor. It again calls for hearsay and there's no foundation as to what any of these other people thought. Again, we're just incapable of challenging the premises that are the foundation of these questions.

THE COURT: All right. I'll allow the question to the extent it relates to what Mr. Hynek thought the technology would get to. He certainly knows what he thought himself.

MS. FAIR: Yes, Your Honor.

MR. KREVITT: Thank you, Your Honor.

THE COURT: Rephrase it to that extent, counsel.

MS. FAIR: Yes, Your Honor.

Q. (BY MS. FAIR) Mr. Hynek, did the market that wasn't ready for Raze in 2001, 2002, ultimately get to where you believed it was going to get 22 years ago?

A. It did, but it took -- it took much longer than I -- I thought, and it was very --

THE COURT: Mr. Hynek, you've answered the question.

THE WITNESS: Thank you.

THE COURT: She'll certainly ask you follow-up questions.

THE WITNESS: All right.

Q. (BY MS. FAIR) Did you think it would take that long?

A. Absolutely not.

Q. Tell us about what you thought was going to happen and what turned out happening.

A. I mean, obviously we felt that the company, because they had undertaken such a very complex project, maybe they would have taken three, four years to develop their products and their technology, and then, you know, customers would come in and we'd have an operating business.

In hindsight looking at it now, we were truly 10 to 15 years too early, which is just amazing to me to think that Mr. Struhsaker would have these relative novel ideas 24 years ago.

Q. Before you filed this lawsuit, before General Access filed this lawsuit, did you pick up the phone and call Verizon?

A. I did not.

Q. Why not?

A. I came to understand that that was -- that there was some risk involved with that, and literally everybody advised me that they wouldn't talk to me. They had no interest in even knowing that I existed.

Q. What had been your experience in meeting with companies like Verizon over the years?

A. My personal experience?

Q. Yes.

MR. KREVITT: Objection, Your Honor. I don't know what companies like Verizon means in this context. I don't know if we're asking about Verizon or other companies, and it's also hearsay.

THE COURT: Well, your first objection is overruled. She can ask a question about whatever she wants to ask about, and if you want to clarify it, you can do so on cross examination.

What's your response to the hearsay portion of the objection, Ms. Fair?

MS. FAIR: Your Honor, I'm asking about his experience, not what anybody has said to him.

THE COURT: He can testify about his own personal experience. I'll overrule that. He can't testify about other people's experiences or their communications to him.

Let's proceed.

Q. (BY MS. FAIR) Mr. Hynek, what had been your experience in negotiating with companies like Verizon?

A. I don't get any attention from companies like that.

Q. How long have you and Mr. Struhsaker been friends?

A. I believe we were friends from soon after we met in 2000.

Q. And so what's it like today to be testifying in front of this jury about what Mr. Struhsaker and you had started working on 24 years ago?

A. I stand here proudly to, you know, share this courtroom with him. I'm a 62-year-old man. 24 years ago I was in my late 30s. This -- this experience has, you know, been the greatest part of my career.

MS. FAIR: I'll pass the witness, Your Honor.

THE COURT: All right. Ladies and gentlemen, it's been about two hours since we came back from lunch. We're going to take a short recess. We'll cross-examine the witness after recess.

If you will simply close your notebooks and leave them in your chairs, follow all my instructions, including not to discuss the case among yourselves. And we'll be back shortly to continue with Defendants' cross examination of the witness.

The jury's excused for recess.

(Whereupon, the jury left the courtroom.)

THE COURT: The Court stands in recess.

(Brief recess.)

THE COURT: Be seated, please.

MR. KREVITT: Your Honor?

THE COURT: Yes, Mr. Krevitt.

MR. KREVITT: I don't know if you were about to say something.

THE COURT: No. I was going to ask you if you were prepared to proceed with cross examination.

MR. KREVITT: Thank you, Your Honor. There is an

issue we'd like to address before we bring the jury in.

THE COURT: Tell me about it.

MR. KREVITT: So, Your Honor, as you'll recall from the direct testimony of Mr. Hynek, he was asked a question to suggest that I hadn't told the truth in opening about the lawyers. He was asked a question, Mr. Krevitt told you that you went out and hired some lawyers, and Ms. Fair --

THE COURT: You did say that's not true in your opening several times.

MR. KREVITT: Yes. That's right. I did. The truth is it wasn't the same lawyers, Your Honor. And there was a MIL that the door has now been opened and we have to examine.

What happened, in fact, is while these patents were being prosecuted, while they were still pending, Mr. Hynek had a lawsuit with his lawyers. You may recall this was the subject of a MIL.

THE COURT: I remember.

MR. KREVITT: And Your Honor was very clear that we couldn't get into it. And it was in this regard that Your Honor's admonished all the parties, But doors that are closed can be opened and everybody needs to be careful about what they say because doors can be opened.

It's hard to imagine a clearer case of a door being opened than counsel trying to elicit testimony from a corporate representative to call into question what the lead

counsel has said. And in any event, Your Honor, we need to question --

THE COURT: Other than you being personally offended by what's happened, which is apparent, what actually is the question and answer that opened the door, in your view?

MR. KREVITT: The question and answer is, Was it the same lawyers?

Yes, of course it was the same lawyers, the same lawyers we had had for years.

It wasn't the same lawyers. It was a different law firm, Your Honor, because the same lawyers, the original lawyers quit when Mr. Hynek wouldn't pay them and then sued him.

THE COURT: And I don't see any problem with you cross-examining the witness about there being different lawyers and at what point in time did the different lawyers take over. That doesn't mean that I believe the door's been opened to you going into why the prior lawyers are no longer participating. I think that's highly prejudicial, and I don't see anything that's justified that kind of prejudice in response.

But from a factual standpoint, if the witness said they're the same lawyers that carried it all the way through, and you think you can show that that's not true and that you can establish factually that a different set of lawyers intervened and took over the patent prosecution process, you

can do that without going into why the law firms might have changed. And I don't see anything to justify allowing you to go into the lawsuit between Mr. Hynek and prior prosecution counsel.

There are some sensational things that happened that we all know about that really don't have any relevance to this lawsuit, and I'm not persuaded that what's happened -- I certainly think the door is opened to the extent it's not always open for you to vigorously cross-examine factually --

MR. KREVITT: Of course, Your Honor.

THE COURT: -- but I don't think it's opened to violate the MIL and go into the employment disputes and litigation between those lawyers and this company.

MR. KREVITT: Well, to be clear, Your Honor, if I may.

THE COURT: Please.

MR. KREVITT: What we are requesting is quite limited. So Your Honor is exactly right--the MIL that we are speaking about was far broader. There was litigation with employees, there were fraud allegations. As Your Honor said, quite salacious.

We listened carefully and we talked among ourselves in different contexts about whether doors have been opened or haven't been opened and promised ourselves and promised this Court we were not going to come and suggest that a door had

been opened when a door had not been.

This, Your Honor, respectfully, on the narrow question of the context with respect to the lawyers is different. This is important. Mr. Hynek just testified to the jury, talked about all the wonderful things he's done. This was just a straight continuation of these patents, it was -- and he testified, Your Honor may recall, that, Well, of course these lawyers could do it because Mr. Struhsaker had been working with them.

And it puts us in a substantial disadvantage not to be able -- on the narrow question of what happened with these lawyers to be able to explain to the jury the context of why the lawyers moved on.

It's not something, Your Honor, that we would dwell on. I'm happy to confine myself to one or two questions. I'm certainly not going to get into the allegations, the back-and-forth, the lawsuits filed, the resolution reached, but simply establish that it wasn't the same law firm. I know, Your Honor, of course has allowed me to do that, but also, Your Honor, very briefly that, in fact, it's because there was allegations, a lawsuit, and the parties went their separate ways.

THE COURT: What's your response to this, Ms. Fair?

MS. FAIR: Your Honor, first of all, the '931 Patent is untouched by all of this. The change in lawyers happened after that patent had issued, so this is only with respect to

the '794 Patent.

The prosecution history is in evidence. It is quite fair, I think, for Mr. Krevitt to get up here with the prosecution history and point out which lawyers filed what and when. For him to then get into why that change happened and say something like the original law firm fired General Access, and even worse, to get into why they fired them is a complete sideshow in front of the jury only intended to unfairly prejudice General Access.

So they can right the wrong that they think has happened with something that's not prejudicial and that is in evidence and totally fair game, but to get into the lawsuit, why the change in counsel happened, any of that is, in our view, irrelevant and unfairly prejudicial under Federal Rule of Evidence 403.

MR. KREVITT: Your Honor, as I said, Your Honor, to address that, we have no intention, certainly not in light of Your Honor's inclination, to get into any of that at all, the why, any of that. There was a dispute between Mr. Hynek and his law firm, a lawsuit was filed, they went their separate ways. We have no intention of getting into any of the allegations that were made either way; just the fact that there was a dispute and, in connection with that dispute, the law firm and Mr. Hynek separated.

THE COURT: All right. I've heard enough.

Here's what we're going to do. You are certainly entitled to use the prosecution history and the record to show that with regard to at least one of these patents prosecution counsel changed and when it changed and who it changed to from who it changed from. That's all factual information in the record.

I'm going to substantially leave the MIL ruling in place. However, in light of the direct testimony conveying a warm and fuzzy relationship that continued unbroken, I am going to allow you this tiny little bit of leeway to ask the witness when the law firms changed, when you shifted from one firm to another, did you part company with your prior firm on good terms. That's all. Not why or who was good, who was bad--did you part on good terms. And that's the extent to which I'm going to give you any latitude over the limine ruling. All right?

MR. KREVITT: All right, Your Honor. Thank you.

THE COURT: All right. Let's bring in the jury. And I'll charge this time to both parties equally.

(Whereupon, the jury entered the courtroom.)

THE COURT: Please be seated, ladies and gentlemen. Welcome back.

We're going to continue with the cross examination of Mr. Michael Skip Hynek by Defense counsel.

Mr. Krevitt, you may proceed where cross examination.

MR. KREVITT: Thank you, Your Honor.

We have some binders.

THE COURT: Please pass those out.

MR. KREVITT: May I approach, Your Honor?

THE COURT: You may approach.

MR. KREVITT: Thank you, Your Honor.

THE COURT: Please proceed.

CROSS EXAMINATION

BY MR. KREVITT:

Q. Good afternoon, Mr. Hynek.

A. Good afternoon.

Q. I'm Josh Krevitt. I want to follow up with you on a few things you discussed with Ms. Fair.

First, it is true that General Access, or another group you controlled, I think LM Wireless was the name, that's the only group of investors that's ever invested in Raze. Correct?

A. In the corporate entity, yes.

Q. Okay. So if someone like me had said there weren't a lot of investors out there, it was just a group controlled by Mr. Hynek, that's accurate. Correct?

A. Not necessarily.

Q. What's inaccurate about that?

A. Well, I do control some of the decisions, but there are other decisions that are controlled by the other partners as

well.
Q. You control General Access. Right?
A. I'm the general partner.
Q. You control General Access.
A. The general partner has some level of control, and then there's other decisions that would take a vote of the partners and it would have to meet a certain threshold.
Q. Can you turn, sir, to your binder? There's a deposition marked January 24, '24. It should be at the back. And let me know if you have trouble finding it. And when you do find it, if you could turn to page 12.
A. I think I have it.
Q. Okay. Can you look at lines 5 and 6 and read those to yourself for the moment, please?
A. Okay.
Q. So, Mr. Hynek, let me ask you again, you control General Access. Right?
A. I do.
Q. Thank you.
And when you invested, your group invested in General Access, when you first got involved, you were the only group that invested in General Access. Correct?
A. That's correct.
Q. Okay. And at that time Raze was looking for other investors, but nobody invested.

A. I'm sorry. What time are we talking about?
Q. When you invested, sir.
A. No, that's not true.
Q. No? Raze wasn't looking for other investors?
A. They were looking for other investors for an entire year.
Q. Okay. And that included that time, didn't it?
A. I'm sorry. I'm confused.
Q. It included the time, sir, that you invested.
A. What included the time that I invested?
Q. When Raze was looking for investors.
A. We were raising money. Raze was looking for investors over about a year period of time, and so we continued to add investors into my partnership that continued to fund the company.
Q. Right. And at some point Raze decided to get more serious about trying to raise money and hired an investment bank to help. Isn't that right?
A. I believe that's correct.
Q. Okay. And the investment bank -- do you recall the name of the investment bank?
A. I believe it was maybe Hoak Breedlove.
Q. Yes.

If you could turn Your Honor -- Your Honor. If you could turn, Mr. Hynek, to what has been marked DTX 25.

MR. KREVITT: And if we could pull this up. Thank

you. If you'll go down a little bit, you'll see at the bottom -- yeah.

Q. (BY MR. KREVITT) Does this confirm your understanding --

A. Yes.

Q. -- that Raze -- okay. Sorry.

And Raze -- this is -- you've seen this document before.

A. I may have. I'm sure I did.

Q. Okay. And it's a long document that describes in detail Raze's business, and it's a private placement memo intended to drum up interest in the company for investors. Correct?

A. Again, I'm -- if I've seen it before, it's been a long time, so I'm not real familiar with it, but I will take your word for it that that's what it is.

Q. Okay. And if we could go to -- and we'll work off the exhibit number at the very bottom, sir, in the middle. If you'll go to 9.

MR. KREVITT: And go to the top. If we could highlight--thank you--the very first sentence.

Q. (BY MR. KREVITT) Headquartered in Plano, it's developed a proprietary class fixed broadband wireless access system. Do you see that?

A. Yes.

Q. And that was Raze's business--a fixed wireless business. Correct?

A. Yes.

Q. And that's the product Raze was developing?
A. Yes.
Q. And that's what Raze was trying to sell to customers and what Raze described in this document as a sales pitch to get investment. Right?
A. I believe that's correct.
Q. And if you go down a bit in the page, you see a heading that says the fixed broadband wireless access market?
A. I see that heading, yes.
Q. And that's because you're describing to potential investors what the market is in which you operate, in which Raze operates. Correct?
A. At that time, correct.
Q. Okay. Did there ever come a time when that isn't the case, when Raze had a business other than fixed wireless, sir?
A. Not that I'm aware of.
Q. Yeah. And if you could go to the next page. In the middle of the page, it says right above the heading The Raze Solution, do you see it says, In order for the fixed broadband wireless access market to realize its potential, a new FEWA platform is needed, and then it goes into the Raze solution. That's where it's being -- did I lose you?
A. You did. I'm sorry. I saw the Raze solution, but then I didn't see where you went to after.
Q. Okay. I was sort of hoping you'd read my mind on that

one. If you go right above the Raze solution --
A. Okay.
Q. -- you see the sentence, In order for the fixed broadband wireless market to realize its potential, a new platform is needed.
A. I'm sorry. I don't see that.
Q. It's highlighted on your screen, sir.
A. Oh, it's a sentence. Okay. I was looking at the paragraphs. I'm sorry.
Q. No, I should have been clearer. And then underneath that, it says the Raze solution. Do you see those two things?
A. Hold on just a second. Yeah. Okay. I'm sorry. I just read that.
Q. Okay. And so what this document is saying is there is a gap in the fixed wireless market and Raze is going to fill it and now we're going to go on and describe the Raze solution. Right?
A. Okay. Yes, right.
Q. Right. And if you go to the next page, and I promise I'm not going to take you through the whole document, but then it has a picture of the Raze solution and provides all kinds of details about what the Raze solution is. Do you see that?
A. I see that.
Q. And I believe you said on direct testimony, quote, no one doubted we had great ideas. Do you remember saying that?

A. I do.
Q. Okay. Do you recall how many people received this private placement memo?
A. Not offhand.
Q. Do you think it was 5, 10, a hundred? What's your best guess?
A. I'm sure it was quite a few. I mean --
Q. More than a hundred?
A. It could have been.
Q. Would it surprise you that it was 270?
A. No.
Q. Would it surprise you it was the most sophisticated technology companies in the world?
A. Would it surprise me that what?
Q. That the most sophisticated technology companies in the world received this?
A. I'm not familiar with everybody that received it.
Q. And venture firms, firms that -- whose job it is to invest in start-ups. That wouldn't surprise you. Right?
A. No.
Q. And those firms look for opportunities, technology they believe in, and they put money in because they hope that it will then go to the moon and they'll make a lot of money. Right?
A. I think so.

Q. Okay. And do you recall how many people invested in Raze after receiving this private placement memo? Do you remember what the number was, sir?

A. There weren't any.

Q. I'm sorry?

A. There were not any.

Q. Zero? Is that right?

And did they tell you why they weren't invested? Let me ask it this way. I believe Mr. Struhsaker suggested that 9/11, the World Trade Center attack, had something to do with why Raze failed. Do you remember that?

A. I do remember that.

Q. Okay. This private placement memo was actually before that. Right? In August?

A. I think that's correct, yes.

Q. And Raze had been trying to raise money for some time before that. It never was able to get any investment before 9/11. Correct?

A. It's not true.

Q. Other than -- I'm sorry. You're right. Other than you and your group, Raze wasn't able to get any money before -- any investment before 9/11.

A. Other than my group, correct.

Q. And it wasn't able to get any money after 9/11?

A. Depends on how we're talking about Raze now. Is this

after the reorganization?
Q. I'm saying either Raze, other than groups that you controlled, Raze didn't get funding before 9/11, Raze didn't get funding after 9/11?
A. Other than groups that I controlled, correct.
Q. Okay. And if we could turn, sir, to DTX 9. It's in your binder. They're not organized in the best way, but they do have label tabs. Do you see that?
A. I think so. DTX 9?
Q. Yes, please. And it's a 14-page document or so, and it's says HBW Contact at the top. And this is a list of people that this investment bank, HBW, contacted. Correct?
A. I would assume so, yes.
Q. Okay. And these are providing some of the reasons that people didn't want to invest. Right?
A. I see that in the -- under the comments.
Q. Okay. Would it surprise you to learn that 9/11 isn't mentioned, the World Trade Center's not mentioned?
A. What's the date of this document?
Q. This document I believe is October. I'll withdraw the question, although you can accept my representation.
The reason at least some people weren't interested in Raze was because they weren't interested in a fixed company. Right? They weren't interested in investing in a fixed wireless company. Isn't that right?

A. No.
Q. That's not right?
A. I don't believe so.
Q. Okay. Why don't we look at just a few so we don't take up too much time.
MR. KREVITT: If we could go to BA Venture Partners.
Q. (BY MR. KREVITT) If you look, these are alphabetical, sir, at page 9.
MR. KREVITT: Did I -- yes, up above a bit. Nope. It's -- well, I think it's that one. Maybe I'm wrong. It's one of Battery Ventures or BA -- it's hard to tell which.
Q. (BY MR. KREVITT) But do you see, sir, it says, very cautious about fixed broadband wireless technology. Do you see that? Do you see that?
A. I see that. I'm sorry. I might have misunderstood your previous question.
Q. Okay. And pass means that this company has responded to the investment bank and they've said, we're not interested in Raze, we're out, we're passing. And the reason they gave is because we're very cautious about this fixed stuff. Right?
A. That's what it says.
Q. Okay. You don't have any reason to doubt it, do you?
A. No, I don't.
Q. Okay. And if we could go to Fidelity Investments.
A. Can you point me to a page, please?

Q. I'm going to, yes. It's page 10. And, again, these are I think mostly alphabetical, but I will, sir.

MR. KREVITT: But if you go to Fidelity Investments, do you see there right -- yeah, it's the one below that, Mr. Eaton, if we could highlight. Yeah.

Q. (BY MR. KREVITT) So here's another company that says, pass, we're out, not investing in fixed wireless space. Right?

A. Okay.

Q. You see that. Right?

A. I see that.

Q. No reason to doubt it?

A. No.

Q. And if we go now to Invesco, same thing. Right? Pass, we're out, not interested in the fixed broadband wireless access market. Right?

A. That's not what it says.

Q. It says, We're worried about the fixed broadband market --

A. That is what it says.

Q. Sorry. And so as a consequence, we pass?

A. I see that.

Q. Okay. And if we go to the next one, MEVC Draper--passed. See that?

A. I do see that.

Q. All right. And Paladin? Do you see where it says under Paladin, I can't get my --

A. Are we on the same page? I'm sorry.

Q. Oh, no. If you switch to the page with Ps, it's page 12, I can't get my partners too excited about fixed wireless at this time. Do you see that?

A. I do see that.

Q. Okay. And if you go to TA Associates, and maybe we should -- we'll stop. Maybe just a couple of more. If we go to TA Associates: Too many dead bodies in the fixed RF wireless market to get comfortable with. See that?

A. I do see that.

Q. Thomas Weitzel: Passed on Raze, fixed broadband wireless, not in focus.

A. I'm sorry. Can you please tell me what page you're on now?

Q. Yes, 13.

A. Okay.

Q. Thomas Weitzel.

A. Weitzel. I don't see that.

Q. With a T. It's --

A. Oh.

Q. Yeah. Passed on Raze. See that? Fixed broadband wireless, not in focus.

A. I see that.

Q. And maybe to spare everyone, just do one more, the U.S. Ventures Partners. Actually maybe we can put up that and Vantage Point because they're right next to each other.

And then you see these two: Passed on space, extremely concerned that fixed broadband wireless access market not a proven opportunity --

THE COURT: Slow down, counsel. Your reading is too fast.

MR. KREVITT: I'm sorry, Your Honor.

Q. (BY MR. KREVITT) And passed, couldn't sell the idea to his partners, concerned over potential slowness in the fixed broadband wireless access rollout. Do you see that?

A. I do see that.

Q. So they told you why they were passing. They were passing because they weren't interested, at least these companies, in what you-all were selling in a fixed broadband wireless access product. They weren't interested in the fixed market. Correct?

A. You -- you put a couple of things in that question. One said that they weren't interested in our product. But as I read it, to me it seems like it was the market that they were concerned with.

Q. Okay. That's fair.

And if you look back, sir, quickly to Exhibit 25, the private placement memo, and you flip to page --

A. Which ones --
Q. DX 25.
A. Okay.
Q. And you flip to page 41 of the document, but 55 as it's marked. Yes. And, in fact, this -- if you -- the second heading, this was something that you-all --
A. I'm sorry. I'm not with you. You said -- you said two page numbers, and then I'm trying to figure out which one. Is it DTX page number or a page number on the documents?
Q. Let's go with the DTX page number.
A. Which number is it?
Q. 55.
THE COURT: Why don't I suggest that the witness refer to the monitor. That's what the jury is seeing, that's what the Court is seeing. And if you have a problem with that, you can revert back to the hard copy at any time. That would be more efficient.
MR. KREVITT: I should have suggested that. Thank you, Your Honor.
Q. (BY MR. KREVITT) And if you can see --
MR. KREVITT: If we highlight, Mr. Eaton.
Q. (BY MR. KREVITT) -- the private placement that Raze put out identified this as a real concern, that the company will not succeed if the market does not accept fixed wireless technology. That's what Raze was, that's what Raze was

selling, that was what Raze was doing. Right?
A. That's what they were doing at that time, yes.
Q. All right. So nobody invested, and then at some point the company, as you said, shuts down. And you said there's a reorganization, and there's another Raze. And at some point that shuts down, and there's no more operating Raze--first Raze, second Raze, any Raze. Correct?
A. I think that's correct, yes.
MR. KREVITT: You can take this down, Mr. Eaton. Sorry.
Q. (BY MR. KREVITT) And you said earlier, we -- we had our patents and we wanted to continue with those because we wanted to protect our intellectual property. Do you remember that?
A. I do.
Q. Okay. And what you really wanted is you wanted patents because you could monetize the patents. Nothing wrong with that, but that's what you wanted is patents so that one day you might be able to make money from them. Right?
A. There were inventions that were owned by Raze then ultimately General Access, and, of course, we were wanting to protect our intellectual property.
MR. KREVITT: Your Honor, move to strike for not responsive.
THE COURT: Well, it's at least partially responsive and partially non-responsive. The part you didn't answer,

Mr. Hynek, is did you want those patents with an idea to make money from them. Can you answer that part of the question?

THE WITNESS: I think that was certainly part of the reason for the patents.

THE COURT: All right. Let's move on.

MR. KREVITT: Thank you, Your Honor.

Q. (BY MR. KREVITT) And one question I meant to ask you. Other companies were getting funding. You heard talk yesterday of Navini, for example. Right?

A. I heard talk of that.

Q. And I'm -- I don't want to take our time to go back to that document, but would it surprise you to learn that at least a couple of the companies that passed on Raze said they were passing because they were already investors or were interested in Navini?

A. Not necessarily.

Q. Okay. And you were here when Mr. Hynek talked about -- Struhsaker talked about sending you in to spy on what Navini was doing.

A. I heard that.

Q. And you were asked about it by Ms. Fair today.

A. Yes.

Q. You don't have any reason to believe that Mr. Struhsaker is not telling the truth when he said that he sent you in to spy on what Navini was doing, and you don't have any reason to

believe Mr. Struhsaker wasn't telling the truth in his contemporaneous notes about the meeting in which he said he was sending you in in spy mode disguised as a well-healed real estate investor interested in wireless technology. You don't have any reason to believe he wasn't telling the truth then when he said you were in spy mode and yesterday when he said you were in the spy mode, do you?

A. I understand what the document says.

Q. I'm asking you, sir, if you have any reason to believe that Mr. Struhsaker was not telling the truth yesterday and was not telling the truth when he wrote down the same thing 20 years ago.

A. I do not.

Q. Okay. So at some point we said Raze shuts down and you have the patent applications. Correct?

A. No, it's not.

Q. General Access has the patent applications?

A. They do.

Q. Okay. If I slip and I say 'you', that's fine to correct me, but I'm mean General Access. I understand that General Access is the party that had the patent applications.

And you want to continue to prosecute the patents because the goal is to get patents so that we can make some money. Right?

A. I've already answered the question. That's part of the

reason.
Q. Okay. And do you recall Ms. Fair asked you about the lawyers involved in the patent prosecution?
A. I do.
Q. And do you remember Ms. Fair referred back to something I said in the opening when I said that you used different lawyers or -- I don't think I said that, but it was some comment about lawyers Ms. Fair referred to. And then you said No, we used the same lawyers. Do you remember that?
A. Today. You're talking about your testimony or my testimony?
Q. I don't get to testify, sir.
A. Your comments or my testimony?
Q. Let me back up and make it clear. I'm sorry.
Ms. Fair asked you a question about the lawyers you used. She teed off something I said in opening, and you testified, No, it was the same lawyers, we used the same lawyers to prosecute these patents. Do you remember that?
A. I do.
Q. And that wasn't true.
A. Well --
Q. Sir, I'm asking 'yes' or 'no'. That was not true. Correct? Can you not answer that 'yes' or 'no'?
A. Depends on which patent we're talking about.
Q. Okay. It wasn't true that the same lawyers prosecuted

both patents. Correct?
A. That's correct.
Q. And it wasn't true that the same lawyers prosecuted the '794 Patent.
A. That's correct.
Q. And, sir, in connection with moving on to a different law firm, you went -- you moved onto a different law firm. Did you part ways with the first law firm on good terms?
A. From my perspective, I was fine with it. I can't speak for them.
Q. Okay.
MR. KREVITT: Your Honor, may we approach?
THE COURT: Approach the bench.
(The following was had outside the hearing of the jury.)
MR. KREVITT: Your Honor, it's -- he was here for the entire argument --
THE COURT: I know.
MR. KREVITT: -- so there's no question about what is going on here. I mean, all the man had to say -- you fed him what to say--just ask one question did it end on good terms, and all the man had to say was no, and I asked the question exactly as Your Honor posted.
THE COURT: What are you proposing?
MR. KREVITT: I think I have to be able--this is now

the second time--I have to be able to get into the circumstances under which this man and that law firm parted ways. He didn't pay the bills, he was sued. At a minimum I have to be able to say to the jury that he was sued. He just said, It was fine from my perspective. That is -- it -- I don't want to characterize that. That is hard to stomach, especially, Your Honor, in light of what happened. He stood there -- or sat there, rather, during our argument. I have to be able to get into this, Your Honor.

THE COURT: You know, Mr. Krevitt, you always have told me what you have to do --

MR. KREVITT: I'm sorry, Your Honor.

THE COURT: -- and you only have to do what I'm going to allow you to do.

MR. KREVITT: I understand, Your Honor. And every time I say it, that's precisely the way I mean.

THE COURT: Well, that's not precisely the way you say it.

MR. KREVITT: Okay. Far enough.

THE COURT: Ms. Fair, he did have the benefit of hearing the argument --

MS. FAIR: Your Honor --

THE COURT: -- he did have the benefit of simply saying 'no', and it's hard for me to believe he didn't consciously say, It's fine as far as I'm concerned.

MS. FAIR: Your Honor, he asked about when they finally parted ways, and what ended up happening is there was an agreed judgment so it all worked out in the end. And so this idea that this is going to open the door to some other lawsuit and what happened in the other lawsuit, and then we have to go down this path to show --

THE COURT: I don't want to go down the --

MR. KREVITT: And I asked the wrong question.

THE COURT: Wait a minute.

I don't want to go down this path, but when your witness got sued by this prior firm and tells the jury in response to a very limited question, I was fine with us parting company, that's disingenuous, to say the least.

MR. KREVITT: Yes.

THE COURT: And that opens the door further. But my fear is the door's going to come off the hinges if your witness continues to try to run away from it and you continue to push to put every dirty little fact you can in front of the jury, and that's not what this trial is about.

MR. KREVITT: I have very limited questioning, Your Honor, that, in fact, there was a lawsuit, it involved General Access' failure to pay the bills, and the lawsuit eventually resolved itself. I am not looking, I promise Your Honor, without further door opening, to get into salacious details. And there are some in that lawsuit. We'd love to tell the

jury more about that lawsuit, of course, and other lawsuits.

THE COURT: Well --

MS. FAIR: Your Honor?

THE COURT: Yes.

MS. FAIR: They're criticizing this company for failing, and now they're going to criticize them for not paying their attorneys' fees and try to make it out like there's some conspiracy here with some new lawyers coming in and pursuing claims.

I mean, I just don't know that it matters what the reason for the change in law firms was. It doesn't affect the validity of these claims, it doesn't have any bearing on infringement --

THE COURT: It goes to the credibility of the witness. And if he had said on direct that, We changed law firms at least as to one of the two patents, we wouldn't be here, but he said something that's factually inaccurate, and the other side's entitled to challenge it. And then when I give them the least little bit of latitude, your gentleman, who has the benefit of hearing the colloquy, clearly gives a disingenuous answer to shield himself from it, and now we're back again. That's how we got here.

Mr. Krevitt, I'm going to allow you to ask the witness to reaffirm in his view the prior law firm and his company parted on good terms, and if he does that you can simply say, Isn't

it true, sir, that there was a lawsuit between the prior law firm and your company, and hopefully he's not going to deny that and we have to go down to DefCon 4. But that's all. And I'm very, very tailored and specific here.

MR. KREVITT: Your Honor, I will stick entirely to what Your Honor said.

THE COURT: I expect you to hue --

MR. KREVITT: Of course. If I may, I'm going to ask him that same question or --

THE COURT: Mr. Hynek, you just told me that when your company changed law firms with regard to patent prosecution that, in your view, you and that prior law firm parted on good terms. Is that right?

And if he says yes, then you can ask him, Isn't it true, sir, that there was a lawsuit between your company and the law firm, and that's all.

MR. KREVITT: Him personally?

THE COURT: The lawsuit between the company and the law firm.

MR. KREVITT: Okay. Thank you, Your Honor.

THE COURT: Let's hope that's the end of it.

MR. KREVITT: Yes.

(The following was had in the presence and hearing of the jury.)

THE COURT: Let's proceed.

MR. KREVITT: Thank you, Your Honor.

Q. (BY MR. KREVITT) Mr. Hynek, we were talking about the law firms in the prosecution, and I just wanted to confirm that, in your view, from your perspective you -- the company General Access parted company with the law firm on good terms.

A. We parted amicably.

Q. Isn't it true, sir, that you were sued by that law firm?

A. Yes.

Q. And it's your view that that's an amicable parting of the ways?

A. Well, I understood your question as ultimately. We settled that and everything was taken care of.

Q. So --

THE COURT: All right. Let's move on. We've covered this enough.

Q. (BY MR. KREVITT) So at some point, as we said, Raze is shut down, General Access has the patents, and you're in charge of prosecuting the -- not prosecuting as the lawyer but you're in charge supervising the prosecution.

A. My responsibilities at General Access included the patent prosecution, yes.

Q. And on direct examination you said that Mr. Struhsaker had these amazing novel ideas. Do you remember saying that?

A. I do.

Q. But the truth is that the patents Mr. Struhsaker filed

were rejected by the Patent Office because they were not novel. Right?

A. I don't believe that's so.

Q. You don't believe that when a patent claim is rejected as anticipated by prior art, meaning there's prior art out there, the Patent Office is not saying that the claim is not novel?

A. This question you said 'patent claim'. In the original question you just said 'patent'.

Q. Okay. Thank you for that clarification.

You understand that the Patent Office said that the patent claims that Mr. Struhsaker filed were not novel. Correct?

A. Correct.

Q. And they rejected those claims.

A. I think that's correct, yes.

Q. And then you had some lawyers--right?-- that filed changes to the claims, made amendments to the claims. Correct?

A. Can you clarify what you say when -- what you mean when you say I had some lawyers? Like I directed the lawyers?

Q. You were in charge -- that was part of your responsibility was the prosecution of the patents.

A. That's correct.

Q. Okay. And in connection with that, you had lawyers, once the patents had been rejected, try to get patents by amending

the claims. Isn't that right?
A. I just want to be clear about when you say patents and patent claims, because I understand them to be two different things.
Q. Right. And your lawyers amended the claims so that the Patent Office might allow a patent to issue. Correct?
A. I believe that's correct.
Q. And ultimately that's what happened--your lawyers amended the claims and the Patent Office then allowed those claims. Correct?
A. I think that's correct.
Q. And with respect to the '931 Patent, the things that your lawyers -- General Access' lawyers added, those amendments, those were the things we've been talking about here over the last couple of days, those elements. Correct?
A. I think that's correct.
Q. So at some point you get the patents and then you decide you want to sell the patents. Right?
A. No.
Q. You never come to the view, I want to sell the patents?
A. No.
MR. KREVITT: Okay. So if we could turn to DX 56. Sorry--67.
Q. (BY MR. KREVITT) And, sir, if you could turn to --
A. Wait. Is it going to be up here?

Q. It's JX. I think I said DX. Sorry. It's JX. JX 56.

MR. KREVITT: Yeah. You had it right Mr. Eaton. Yeah. And if you could go to the page working off the JX number that ends in 11.

MS. FAIR: I'm sorry, Your Honor. I don't have JX 56 in here.

MR. KREVITT: 67. Sorry.

THE COURT: One more time. What is it?

MR. KREVITT: 67, Your Honor. Sorry about that.

Q. (BY MR. KREVITT) Are you with me, sir?

A. Yes. I'm actually looking at the monitor now.

Q. That's fine.

Do you recognize this document?

A. I believe so, yes.

MR. KREVITT: Why don't we go to the page, just to button everything up, that ends at 18.

Q. (BY MR. KREVITT) That's your signature. Right?

A. That is.

Q. Okay.

MR. KREVITT: And if we go to the first page.

Q. (BY MR. KREVITT) This is a patent brokerage agreement in which you're signing an agreement with a patent broker --

MR. KREVITT: Not this -- not this page. I'm sorry. Page 11.

Q. (BY MR. KREVITT) With a patent broker to sell your

patents. Correct?
A. Yes, it is. Yes, it is.
Q. So a moment ago when I asked you if you were trying to sell your patents and you told me, No, that's not true -- we have a -- we actually have an agreement that you signed with a patent broker, and you're identified--and by 'you', here again, I mean General Access. At the time your name was Access Solutions as the seller. Do you see that?
A. Yeah, but that's not what your question -- you didn't say what you just said.
Q. Okay. I -- okay. So maybe you're right. I don't know.
You were trying to sell the patents. Correct?
A. I was trying to sell the patents.
Q. Okay. And we have an agreement here with a broker that you hired to do just that. Correct?
A. That's correct.
Q. All right. And if you go, for example, at the next page, page 12, it says under "Brokerage services," "During the term of this agreement, broker shall, as a representative of seller hereunder, seek potential purchasers of seller's patents."
Do you see that?
A. I do see that.
Q. And that is why you hired them--to sell your patents. Correct?
A. No.

Q. You didn't hire them to sell your patents?
A. I hired them to try to see if these patents were available to sell. They were not -- it wasn't, I'm going to sell them at any price.
Q. I didn't ask you that. And the patents were available to sell. You owned them you were available --
A. You asked me two different questions.
THE COURT: All right. Wait a minute, gentlemen. We've had enough of this. You didn't say what you said before and I didn't hear what you said; I mean, you're both entitled to tell the other one, I don't understand, but you're not entitled to comment or editorialize about what the other one did or didn't do in asking or answering a question. All right?
MR. KREVITT: Yes, Your Honor.
THE COURT: And there's going to be a clear break between a question asked and an answer given. This is not going to devolve into a back-and-forth conversation. This is a cross examination in a United States District Court, it is not a conversation on the street corner. We are going to go forward pursuant to the rules. All right?
THE WITNESS: Yes, Your Honor.
MR. KREVITT: Yes, Your Honor.
THE COURT: Let's proceed on that basis.
Q. (BY MR. KREVITT) You see in this agreement, sir, that

you signed, that it says, "During the term of this agreement, broker shall, as a representative of seller hereunder, seek potential purchasers of seller's patents."

A. I do see that.

Q. Okay. And, in fact, ICAP, the entity that you hired, is a well-known patent broker. Right?

A. I think that's correct.

Q. And they try to sell patents for people. That's their business. Like a real estate broker tries to sell houses; they try to sell patents.

A. I think that's correct, yes.

Q. And one point, because this term will come up, you were trying to sell -- or at least the agreement discusses a portfolio. Are you familiar with the term 'a portfolio of patents'?

A. I think so, yes.

Q. And what does that mean to you?

A. The collection of patents; the patents that we own.

Q. Right. So just to take the real estate broker analogy, if you had, say, 20 properties, a house in Plano, a ranch over here, and you owned all of that, that might be your portfolio of property. Correct?

A. I think that's correct, yes.

Q. And under certain circumstances you might try to sell your portfolio. So let's call it 20 properties. You might

try to sell your portfolio. Right?
A. Right.
Q. And in other instances you might just want to sell house 18.
A. Okay.
Q. Is that right?
That's consistent with your understanding?
A. Yes.
Q. Okay. And you hired ICAP as the seller for the portfolio of patents that you had. Correct?
A. I think that's correct.
Q. All right. And did ICAP sell the patents?
A. They did not.
Q. Did they, to your knowledge, ever even get an offer, say, on the '931 Patent?
A. I don't have much recollection about this particular brokerage agreement, but -- I'm sorry. You asked if they got an offer? I'm uncertain.
Q. Okay. And -- but -- they don't sell the patents, but you still want to sell the patents. So you enter into another agreement -- because it's been two years, no luck selling these patents, so you enter into an agreement with RSL. And that's another patent broker. Right?
A. I entered into another brokerage agreement with RSL.
MR. KREVITT: And before we turn to that, if you

could put up 19 from this document.
Q. (BY MR. KREVITT) Do you see Schedule 1? This is what I meant with a portfolio. This is the collection of patents, as you said, that you're trying to sell. Correct?
A. Correct.
Q. And you see here--we'll get to it near the bottom--there the '931 was one of those patents. Right?
A. I see that.
MR. KREVITT: Yes. And the next page, if we highlight -- yes, exactly, Mr. Eaton.
Q. (BY MR. KREVITT) That's the application that eventually became the '794, the other patent in this case. Right?
A. I'll take your word for it.
MR. KREVITT: Okay. And then if we go to page -- I'd like to turn to the RSL agreement, which is at page 22.
Q. (BY MR. KREVITT) Do you see this?
Now, it's two years later. The other agreement was dated 2009, we're now in 2011, and you're signing a patent broker agreement with another company. Right?
A. Yes.
Q. And these companies, these patent brokers, much like a real estate broker, they make money when they sell your patents.
A. Correct.
Q. They get a commission on that.

A. Correct.

MR. KREVITT: And, in fact, if you turn to page 14 of the -- of this exhibit, page 14 of this exhibit. Nope. DX -- JX -- no luck? All right. No shot? All right. We'll move on.

If you go to -- well, am I going to be able to go to any page, Mr. Eaton, or we're out? This is the same exhibit we're in--67. Okay. For some reason this doesn't have JX numbers so if you -- okay.

THE COURT: Let's take a minute.

Counsel, why don't you consult with your IT folks rather than have a conversation across the courtroom.

MR. KREVITT: I understand, Your Honor, and I apologize for the delay.

THE COURT: I mean, if you want to discuss it or --

MR. KREVITT: Why don't I move on, Your Honor.

THE COURT: You can move on.

MR. KREVITT: Yeah. And if that can be found at some point, I don't know how to work with this document because --

Q. (BY MR. KREVITT) You have, sir, at the bottom JX numbers, JX 67.

A. So I should go back to the binder now --

Q. Yes. JX 67.

A. I see JX 67, yes.

Q. Okay. And if you could turn to page -- if you could turn to page 14, the one that at the bottom right ends in a 14. Do you see that?

A. I do. I think I do.

Q. Okay. And it says --

MR. KREVITT: Perfect. Thank you, Mr. Eaton.

Q. (BY MR. KREVITT) And it says, "sale transaction fee." Do you see that?

A. I do see that.

Q. So this sets the commission. This is the percent. And if seller -- you're agreeing to pay 20 percent of the first $5 million -- if you get $5 million for this portfolio, you'd pay 20 percent of that to the broker. Right?

A. That's correct.

Q. All right. And then the next agreement, RSL, it's two years later, and it's the same type of agreement. Right? You're doing a patent broker agreement. They're going to be out there trying to sell your patents. Right?

MR. KREVITT: You can take this down.

THE WITNESS: Okay. This --

Q. (BY MR. KREVITT) All right. Why don't we do this. We're having trouble with that document, obviously, so why don't we do this. If you would flip to JX 8.

A. Okay.

Q. All right. So you've now engaged -- you engaged the

first brokers in '09, you've engaged the second brokers RSL in 2011, and now RSL is out trying to sell your patents. Correct?

A. Yes, I think that's correct.

Q. All right. And so this document is an example -- it was sent to you. You see that. Right?

A. I do.

Q. And it's from RSL.

A. Yes, it is.

Q. And it says, "Per the call today, attached is one of the four business cases."

A. I see that.

Q. Okay. And it's on a portfolio. That's what we were talking about earlier--a collection of patents. Right?

A. That's correct. Well, that's what it says.

Q. All right. And if you go to the next page, this is the business case for purchase of General Access patent assets on added mobility capabilities. Do you see that?

A. I see that.

Q. And this document was sent to potential purchasers. Correct?

A. I would assume so.

Q. You don't know the answer?

A. I did not send it to potential purchasers.

Q. I understand that, Your Honor. My gosh. I understand

that, Mr. Hynek.

Did you understand this to be one of the business cases that RSL would be providing to prospective buyers that have been contacted by RSL?

A. I did.

Q. Okay. And if you flip to page 7. I'm going by the DX pages. About the middle do you see where it says "the Raze product"?

A. I'm sorry. I don't have DX pages now.

Q. JX.

A. Okay. What was the number?

Q. No. 7. But you can look at the screen. That's probably the easiest way.

A. Thank you.

Q. Do you see where it says, "The Raze product provided a complete and flexible infrastructure of fixed broadband voice and data"?

A. I do see that.

Q. And that was the Raze -- that's what Raze was doing?

A. That's correct.

Q. All right. And then if you go to page 5, at the bottom you see the '931 Patent was one of the patents in this portfolio. Do you see that?

A. I do see that.

Q. And now the sales pitch, what RSL is telling the world to

try to drum up interest in these patents is that this covers beamforming and wireless. Do you see that?

A. I see that under the subject.

Q. Yes. So that's what -- that's the pitch now--beamforming in wireless.

A. I do see that.

Q. Okay. And if you go to page 8, at this time the sales pitch is that they've -- RSL has hired technical experts, legal experts, if you look at the middle bullet, and they've determined that these early patents apply to LTE. Do you see that?

A. Yeah, but just for clarification, Mr. Krevitt, are we -- oh, it is on 8. Okay. I'm sorry. There's a 7 up there, too, so...

Q. It's confusing.

A. I'm sorry. I do see what you highlighted on the screen.

Q. Okay. So now, again, RSL is out there talking to potential purchasers. They're trying to drum up interest. They're saying, We've got these dynamite patents that cover beamforming and wireless and it could cover LTE. Do you see that?

A. I do see that.

Q. All right. And then if we go to page -- if we go to page 12--do you see this?--this is a list of claims, specifically claims for each of the patents in the portfolio that RSL is

touting. Right?
A. I see that.
Q. You should buy this portfolio, you should spend a lot of money on this portfolio, we have these dynamite patents, and look at these claims, these claims are dynamite, and so you should buy our patents. Right? Do you see that?
A. They were marketing the patents, yes.
Q. Okay. And do you notice for the '931 the claims that are identified?
A. I see that.
Q. Were you here -- I know you were here. Were you paying attention when Doctor Madisetti said that the claims identified here are useless, they have no value? Do you remember he said that?
A. I think he said something along those lines.
Q. So RSL -- and claims 28 and 29, the claims at issue in this case, the claims that Doctor Madisetti said have all the value, they were in the patent at the time; they could have been identified here. Right?
A. I'm sorry. One more time with the question.
Q. At the time RSL sent this out, at the time RSL tried to hock the patents and identified these claims as the reason people should be excited about these patents, claim 28 and 29 were also in the patents; they could have also identified those claims. Correct?

A. I -- that could be correct, but what I don't understand, because I'm not a technical person, is we've got LTE, we've got WiMAX, and 5G. I don't even know if it existed at the time that this document was produced.

Q. Okay. You agree, though, just based on your experience in life and investing, that if you want to sell something, you emphasize the good stuff. Right? You emphasize what makes it valuable.

A. I would agree with that.

Q. Okay. And you don't ignore the stuff that makes it valuable. You don't bury that. Right?

A. I would -- that's right.

Q. All right. And if you go to page 4, RSL is telling the world, We've got these blockbuster patents, they cover beamforming and mobile, LTE is going to infringe, and they tell the world at this bullet where it says the business case that there are billions of dollars to be made here. Do you see that?

A. I do see that.

Q. So they are really selling these patents. There is billions to be made here.

And if you go to the last bullet, what's the price? What are they selling them for? Because they've got these patents that are supposedly worth billions of dollars, these patents that you said on direct examination you heard from people over

and over again we're worth billions or hundreds of millions, what is RSL, the experts, after their lengthy legal and technical analysis setting as a purchase price?

A. They expected the range to be 8- to $12 million.

Q. And do you know how many patents were included in this portfolio?

A. I think it says five.

Q. Okay. So do you -- just -- and I know it doesn't work exactly like this, but do you know what that math breaks down to on a per-patent basis would 8 and 12 divided by 5?

A. I don't know how they delineated the value between the patents.

Q. I had to do the math. Would it surprise you that it's 1.6- to 2.4 million a patent?

A. If you divided that number by five, no, it would not surprise me.

Q. All right. And did anyone take RSL up on this offer, this amazing offer to get these patents for this price?

A. They had some interest, but no, I don't think that anything was reduced to a formal offer.

Q. At any price. Right?

THE COURT: Well, if somebody else bought them we wouldn't be here today.

MR. KREVITT: Understood, Your Honor.

THE COURT: Let's move on. Okay?

MR. KREVITT: Yes.

Q. (BY MR. KREVITT) And if you would turn to JX 21. Do you see the list? It's just a three-page document.

MR. KREVITT: You can keep it here, if you want.

Q. (BY MR. KREVITT) This is a list of companies that RSL reached out to that it was trying to sell these patents to. Do you see that?

A. I do.

Q. And this -- these are -- these are seriously sophisticated technology companies. Do you agree?

A. I do.

Q. Apple, AT&T, Cisco, Dell. I mean, these are companies that know what they're doing from a technological perspective. Right?

A. I'm not familiar with every single company, but I'm not going to doubt you.

Q. Okay. And so if the patents -- if the sales pitch were right, if these patents were really worth billions and you could get them for the price of $8 million somebody probably would have bought them, don't you think?

A. Not necessarily.

Q. Okay. And this list doesn't just include companies, meaning technology companies; it includes companies whose sole purpose is looking for patents that they can buy so that they can try to make money from them. In other words, take a

patent from you so that they can then try to either license it or sue people or do whatever they need to do to make some money. That's their job is finding patents at a low price that then they can make a lot of money. Right?

A. And you're saying that on this list?

Q. I'm asking you if you are aware of that.

A. Am I aware that there's companies like that?

Q. Let's start there. You're aware there's companies like that.

A. Yes.

Q. And are you aware that they're on the list?

Let's take the top one. Are you aware that's what Acacia is?

A. I think that that could be their business, or part of their business. I'm not real familiar with everything that Acacia does.

Q. Okay. So RSL can't sell the patents. And you were working with a fellow named Francis Rushford. Correct?

A. That's correct.

Q. And you had been working with him for years trying to sell these patents. Right?

A. Can you quantify the number of years?

Q. Four.

A. I think that's correct, yes.

Q. And he was in the hole hundreds of thousands of dollars,

having spent the time working, analyzing, marketing these patents unsuccessfully. Correct?

A. He had invested several hundred thousands of dollars in doing the analysis of the portfolio. Correct.

Q. And at some point he cries uncle and he says, No more, I can't do this, I've been doing this for years, we thought we could get some money for these patents, we thought we could get 25- 30 million for these patents; it ain't happening. Do you remember that?

A. I don't remember him crying uncle.

Q. You don't remember him saying, We need to make a new arrangement, I can't keep doing this?

A. He certainly could have, but I'm sorry, I don't recall that.

Q. No problem.

MR. KREVITT: Let's turn to DX 19. And if we go to the bottom.

Q. (BY MR. KREVITT) This is an email from Francis Rushford. Do you see that?

A. I see that, yes.

Q. Okay. And so this is 2014. You entered into the RSL agreement in September 2011. So this is two and a half years after you're trying to sell the patents with the second broker. And it's a year after that sales pitch went out and there's no takers. And so he says to you, if we highlight,

for example, "we all saw," "We all saw this portfolio as worth 25- to $30 million, but the market has changed."

Do you see that?

A. I do.

Q. And then the next paragraph, "we've sunk $300,000 in" -- excuse me. "We have $300,000 in sunk costs."

Do you see that, too?

A. I do see that.

Q. And if you go to the bottom of this email, he says to you, "Our goal at this point is recovery of the $300,000 and a reasonable percent of any revenue," but he needs to make a new arrangement. Do you recall that?

A. Does it say this in this document?

Q. It does in the first sentence, Your Honor -- Mr. Hynek, if you want to go to the first sentence. "We have been thinking through various alternatives for a proposal to you that will create flexibility that you need and protect our position." And the position he's talking about is the $300,000 they've spent. Right?

MS. FAIR: Your Honor, may we approach?

THE COURT: Approach the bench.

(The following was had outside the hearing of the jury.)

MS. FAIR: Your Honor --

THE COURT: I really wish you'd quit calling the

witness 'Your Honor'. It's about the third or fourth time.

MR. KREVITT: Trust me, nobody wants to more than me. I'm terribly embarrassed, and I'm sorry.

THE COURT: All right. What is it, Ms. Fair?

MS. FAIR: Yes, Your Honor. Our Motion in Limine No. 2, I feel we're getting dangerously close to it, and I just don't want Mr. Krevitt to inadvertently violate it or otherwise.

Our Motion in Limine No. 2 concerns the failure to pay back employees, lawyers, and it includes brokers. And so I'm reading from page 251 of day 1 of the pretrial transcript, and the Court ruled that it was highly prejudicial that General Access raise or their principals did not treat fairly or fail to pay creditors, lawyers, employees, or brokers.

THE COURT: I'm aware. I'm aware of not only what it says and the reasons behind it.

MS. FAIR: And so, Your Honor, my fear is what Mr. Krevitt is doing is trying to make the point that RSL had invested $300,000, never made their money back, and that this was all Mr. Hynek's intent to go make money for himself instead of pay back the brokers.

THE COURT: Where are you going with the rest of this?

MR. KREVITT: I have one more question. Mr. Hynek had no obligation to pay that 300,000. This was not a failure

to pay anything he owed. I would never suggest it. It's not true. The reality is Mr. Rushford has not recovered that money because he didn't participate in the deal. That's all. I was -- I would never suggest -- it's clear and I would never suggest that Mr. Hynek did anything wrong in not paying. Mr. Hynek had no obligation to pay. Mr. Rushford said he had no obligation to pay.

MS. FAIR: Then why are we making the point that he didn't pay --

MR. KREVITT: Because this is how much time and effort has been made to sell a portfolio that is claimed, one patent of which, to be worth almost a billion dollars.

THE COURT: Okay. I'm satisfied that we're not on the verge of a MIL violation.

You said you had one more question on this?

MR. KREVITT: I will confine it to one.

THE COURT: Yes, let's do that and move on.

MR. KREVITT: Okay.

(The following was had in the presence and hearing of the jury.)

THE COURT: All right. Let's proceed, please.

Q. (BY MR. KREVITT) As to that $300,000 of sunk cost that Mr. Rushford was talking about, he's never recovered that money, has he?

A. No.

Q. And if you go to the top of this document, it's your response. And remember, Mr. Rushford has said, We thought this was 25-, $30 million, and at the top you say in the second sentence, "You and I have had a lot of conversations on this in the past and generally we are in the same page -- on the same page."

Do you see that?

A. Yeah, but can we go down to the first email again? I didn't get the chance to see everything because I'm trying --

THE COURT: Just a minute. Mr. Hynek, the lawyer gets to decide what to ask questions about, the witness doesn't. Ms. Fair can certainly cover anything else on redirect she wants to. But the lawyers direct the examination, not the witnesses.

THE WITNESS: I'm sorry.

THE COURT: You may want to go back to the prior document, but unless the lawyer directs you back there, we're not going to do that.

THE WITNESS: Is this document in this book?

Q. (BY MR. KREVITT) Yes.

A. Can you tell me where it is?

Q. Yes, but I'm done with the questions on this document, sir.

THE COURT: Ask the next question, counsel.

MR. KREVITT: Yes.

Q. (BY MR. KREVITT) So RSL has not sold the patents, and you still want to sell them so you engage in a third patent broker agreement. Correct? And that is --
A. No.
Q. That's not true?
MR. KREVITT: Okay. If we go to JX 67.
Q. (BY MR. KREVITT) Right at the top, sir -- remember the first agreement was 2009, second agreement 2011, it's now September 2014, and we've got another agreement that you've signed that is a patent brokerage agreement that identifies General Access Solutions as the seller. Correct?
A. That is correct.
Q. All right. Before you entered into this agreement, though --
MR. KREVITT: I'm sorry. If you go to the end of this agreement.
Q. (BY MR. KREVITT) It's signed by Michael Hynek?
A. Yes.
Q. And Dean Becker?
A. Yes.
Q. And Dean Becker is identified as the CEO of ICAP?
A. That's correct.
Q. All right. And you were introduced to Dean Becker by a fellow named Frank Maggio. Correct?
A. No.

Q. Okay. You had met Mr. Becker before that.
A. That's correct.
Q. All right. And at some point Mr. Maggio sometime later puts you in touch with Mr. Becker?
A. Correct.
MR. KREVITT: All right. And if you turn to DX 10, and if we go to, Mr. Eaton, page 33 at the bottom.
Q. (BY MR. KREVITT) A partner of yours, Marc Footlik, had reached out to Mr. Maggio to try to set up a meeting. Do you recall that?
A. I do.
Q. All right. And this is in August 2014, so it's roughly two and a half weeks before you sign that patent broker agreement with ICAP, the third patent brokerage agreement you've signed.
A. Two and a half weeks before. Right?
Q. Yes.
A. Okay.
MR. KREVITT: And if we go up to the email above this.
Q. (BY MR. KREVITT) It's now September 2, 2014, and you get an email, and Marc is the fellow that's your partner, and you get an email from Frank Maggio that says, "Hello, Skip and Marc, are you free for a call this morning?"
Do you see that?

A. I do.
Q. And he goes on to say, "I've reached out to Dean and ICAP and believe things are set up to move forward."
Do you see that?
A. I do.
Q. You had already spoken to Mr. Maggio by this point because he's telling you he set up a meeting or is setting up a meeting with Dean Becker. Correct?
A. I'm not certain that it was me. It could have been Marc Footlik. I'm not certain.
Q. Okay. And in that meeting that -- I'm sorry. You don't recall speaking with Mr. Maggio at this time?
A. I'm just uncertain if I did. I could have, but I'm not certain.
Q. Okay. All right. In the -- but you're trying to set up a call. And the next line says, "I would like to review the non-confidential components of your former listing with Francis and the law firm, if possible."
Do you see that?
A. I see -- yes, I see those words, yes.
Q. And Francis is Francis Rushford with whom you've been working for four or five years unsuccessfully to sell the patents. He's the fellow we looked at the email a moment ago?
A. I believe that's correct, yes.
Q. And you're now thinking with going with a different

broker, and these people are asking you, Maybe we could get some of that information so we could get a head start. Is that right?

A. I think that's correct.

Q. And the law firm is a firm called Huntman Williams. Do you remember that?

A. I mean, I think we're confusing a couple of parties here.

Q. Okay. Then we can move on.

Did you have a law firm at some point also trying to sell patents for you?

A. Yes, but I don't think it had anything to do with this exhibit, this language here.

Q. Okay. All right. So he suggests --

MR. KREVITT: And if we go, then, to the next paragraph.

Q. (BY MR. KREVITT) This is what I want to focus on for a moment. It says, "Skip, you were also going to let me know about the lowest range of offer when we speak next, as well as a buy now number which ICAP does not need to share."

Do you see that?

A. I do see that.

Q. So this is reflecting obviously that you did have a conversation with Mr. Maggio because he's saying to you, Hey, Skip, following up, you were going to let me know about the lowest range of offers when we speak next. Right?

A. And you're saying that it was a conversation -- like on the phone or by email?
Q. I don't know. I don't know what it was. But you obviously had some prior communication. Correct?
A. I would think that that would be correct.
Q. And in the prior communication he had asked -- or you had agreed that you were going to give him the lowest range of offer when you speak next as well as a buy now number. Do you see that?
A. He had asked. Never did I agree.
Q. Okay. But you see that at least he's saying, Skip, you are going to get me the lowest range of offer when we speak next and a buy now number.
A. It does not say 'are', it says 'or'.
Q. Okay. And lowest range of offer would mean the lowest range of offer that General Access would accept; what's the lowest number that we would be willing to take? Right?
A. I would assume that's correct.
Q. And buy now is maybe a little higher. That's if we get this offer, let's sell this; we're not waiting for anymore offers, this is good enough to go. Right?
A. I think that's right.
Q. And he's telling you that you agreed to give him that.
A. No, I don't believe -- it says what it says.
Q. All right.

A. I do think that he asked me.
Q. Okay. And so when he says to you, You were going to get me this information, did you write back, No, I didn't, or, What are you talking about? Did you say anything like that? Do you recall?
A. I don't believe I did.
Q. Okay. In fact, what you said was, "Works for me." If we go to the next email right above, "Works for me."
A. What works -- I don't see the information what I'm replying to.
Q. Okay. You were replying to that email.
MR. KREVITT: And then if we go up to the email that begins "Frank."
Q. (BY MR. KREVITT) "Frank, why don't you call me at"--and I assume this is your phone number--"I can be flexible at time, but will be waiting to speak with you at 10:00 eastern." Do you see that?
A. Mr. Krevitt, I'm going to have to go into this document, because when you said "Works for me," I have no idea what I was replying to.
Q. Okay. Let's forget it. If Ms. Fair wants to address it, she can address it with you.
But you see this email that says -- I don't know; at least on my screen it's blocked, but it says, Why don't you call me, I can be flexible, but I'll be expecting to hear from

you at 10:00 a.m. eastern. Do you see that?
A. I see that.
Q. All right. And then the very next email above is an email from Mr. Hynek--excuse me--to Mr. Hynek from Frank Maggio. And do you see the time is 12:00 noon eastern? That's the uniform time clock. Are you familiar with that?
A. I've heard of it. I don't know that I necessarily know it, but --
Q. You can take my word for it--it's five hours ahead of Texas; it's four hours ahead of --
A. I will definitely take your word --
Q. All right. So this is new. And this is two hours after the call that you're going to have with Mr. Maggio.
A. Okay.
Q. And he's now writing you an email. And he says, "Thank you for your time today, Skip. I have forwarded the vital information on to Dean via email and ask that he try to reach you."
Do you see that?
A. I do.
Q. Okay. And then at the last line he says, "I'm excited about this portfolio that's the patent portfolio, and hope it gets into the right hands at the right place."
A. I see that.
Q. Okay. So he's telling you, Thanks for the call,

appreciate the information, I've forwarded it on to Dean, and hopefully you guys will connect.

A. The email says what it says, yes.

MR. KREVITT: All right. And then if you go to DX 10. We are in DX 10, so don't go anywhere. If you stay in DX 10, and you go to the first page of this, Mr. Eaton.

Q. (BY MR. KREVITT) This is now an email to Dean Becker from Frank Maggio. Do you see that?

And do you see the time stamp?

A. I do.

Q. So this is precisely seven minutes earlier, seven minutes before he sends you a note saying, "Thank you, Skip, for the information. I have forwarded that information to Dean," seven minutes before he sends that to you we have an email to Dean from Frank forwarding the information. Do you see that?

And it begins, "Hello, Dean. I have had an opportunity to follow up with Skip Hynek, and believe it looks very good that his group would list with ICAP."

Do you see that?

A. I see that.

Q. And, in fact, you did list with ICAP just on September 14th we saw, so less than two weeks later. So they're trying to get you to list with ICAP.

And Dean Becker is the CEO of ICAP. Right.

A. That's correct.

Q. And this is the information that Mr. Maggio told you seven minutes later, I forwarded on to Mr. Becker, following his phone call with you about a buy now number and the lowest sale number. Right?

A. I have no idea what we talked about.

Q. Okay. But at least he sends an email to Mr. Becker right after your call in which he forwards the information that you provided. Correct?

A. I don't know what information I provided, but that's what he said.

Q. Okay. And if we look at what he actually said, he said -- if we go up maybe under -- he stated -- it says, "For your information I'm attaching the portfolio overview."

There are significant claim charts. Claim charts are where somebody who's trying to sell a patent might actually map where the claim element is in an accused product. Right?

A. I'm sorry. One more time with the question. I was reading.

Q. That's okay. A claim chart is where somebody trying to sell a patent would map the elements of the patent to an accused product to try to say this product has a problem, this product infringes.

A. That's my understanding.

Q. And those were the claim charts we saw; not the actual charts, but the listing in that RSL document of the claims

that were charted when we saw 1, 10, 19 earlier. Do you remember?

A. I do.

Q. All right. And if you go down to where it says "likely patent buyers" right there, it says "pricing confidential." So this is the pricing that you discussed with him--18 patents, 4 open -- just to be clear, '4 open' means they're still applications?

A. You just made a statement that I discussed pricing with him, and I do not believe that's accurate.

Q. So Mr. Maggio is -- Mr. Maggio sent you a note saying, I want to discuss pricing, you had a call, he sends you a note saying, Thanks, Skip, for the information on pricing, I have forwarded it onto Dean, we're looking at an email he sent seven minutes earlier to Dean with pricing information, but you're saying he just made it up?

A. I never gave any pricing to anybody, including Mr. Maggio.

Q. Okay. So if he says it here, he just made it up.

A. What is he saying?

Q. Okay. So when we look now under pricing, it says "minimum $15 million. I believe this is fairly firm." So he just made these numbers up?

A. He did not get those numbers from me.

Q. So he had the phone call with you, told you, Thanks for

the information, gives information to Mr. Becker, but he just made them up.

A. I never gave anybody --

Q. Okay.

A. -- pricing on the portfolio, ever.

Q. Okay. So when Mr. Rushford said, I know we were looking for 25 to 30, he also made that up?

A. He didn't make up anything.

Q. But he didn't get that from you.

A. He did not get that from me.

Q. And when you wrote back, We've had many conversations and we're generally on the same page, that -- you weren't talking about the fact that he was telling you about the pricing?

A. I apologize, Mr. Krevitt. I mean, we went through -- I didn't get to read those emails to understand what all -- the context of all these questions were.

Q. Okay. That's fine.

A. I know that I never gave any pricing ever to anybody.

Q. Did you -- when you saw the RSL document that had 8- to 12 million for the portfolio of the -- at -- not the whole portfolio but the five patents, do you recall calling RSL and saying that these numbers were wrong, that that doesn't work for you?

A. No.

Q. Okay. And he -- so he says a minimum. He's telling

Mr. Becker -- I understand you're saying he didn't get it from you, but he's telling Mr. Becker that the minimum is $15 million, net of commissions; I believe this is fairly firm. You see that. Right? And then he has a buy now number of $30 million.

A. I see that.

Q. All right. And then he says you turned down some soft offers under 7 million in the past years. Do you see that?

A. I do.

Q. All right. And you then --

MR. KREVITT: If you would turn to DX 11. And if we go to the bottom email, please. I'm sorry. That one. Go up. The middle one. I didn't realize there was a bottom one. The one "Hi, Skip." Thank you.

Q. (BY MR. KREVITT) This is an email the next day. So the conversation that you had with Skip -- with Frank Maggio was on September 3rd. His email was on September 3rd in which he wrote the terms to Mr. Becker seven minutes before he wrote you an email saying, I've given him the terms we discussed. And now it's the next day, and he sends you an email and he says -- he's talking about the commissions and he said, if you look, "So if you know ICAP takes 15 percent, and you must net around $15 million," which is exactly the same number, that low sales number. Remember? The $15 million, the lowest sales number that he told Mr. Becker you told him, that's the

same number. 15 and 15 are the same number. Right?
A. I can read what it says right here.
Q. Okay. So it says, "So if you know ICAP takes 15 percent and you must net around $15 million, I suggest you tell him $17 million."
Do you see that?
A. I do see that.
Q. And the next line says, "IMO" -- I think from my kid, that's 'in my opinion'. Does that seem right to you?
A. I think.
Q. All right. In my opinion, "if he brings you a buyer for $15 million, which is close to $1 million per patent, you should snatch it up." He says, In my opinion, "if he brings you a buyer for $15 million, which is close to $1 million per issued patent, that is at the high side of values, and you should seriously consider the deal regardless of commission."
Do you see that?
A. I do see that.
Q. So did you write back, Frank, you're nuts, where did you get this $15 million, that's crazy? Did you do that, sir?
A. I don't believe so.
Q. Did you write back politely, Frank, I don't know why you're saying $15 million, I wouldn't do $15 million? You didn't do that either, did you?

A. I don't believe so.
Q. Did you write back, I get it, thanks?
A. I don't know. It said that. I saw an email above that --
Yeah. So let's look at that. You wrote back, "I get it. Thanks, Frank! I mean, thanks, exclamation point. Do you see that?
A. I see that.
Q. Okay. And you signed the agreement a week later with ICAP, the third time, third agreement. Right?
A. I believe so.
Q. And as Chief Judge Gilstrap pointed out, we're here so we know that the third time was not the charm; you weren't able to sell the patents with ICAP the third time. Right?
A. Correct.
Q. All right. And you're aware that patents issued -- United States patents are public. You can go on Google and get the patents. Are you aware of that?
A. You mean and see the patents?
Q. Yeah. I mean see the patents or get the patents. You can get the patents. Right?
A. You can own them?
Q. No, no, I don't mean you can own them. You can go on Google and you can get the patents.
A. I understand.

Q. I know. I know you do. And you can go on Google and get the patents. Right?
A. You can see the patents, yes.
Q. Okay. And so anybody who got the General Access sales pitch in any of those years, at any of those prices, could look at what you were saying the patents covered, how amazing these patents were, they could look at that, that's the sales pitch, but they could also just go and look at the patents themselves. Right?
A. I think so.
Q. And any company that is inclined to spend any money for a patent, any meaningful money, would do that. Nobody's going to buy a patent based on a sales pitch. Correct?
A. That may be correct.
Q. That wouldn't be a smart thing to do. If you're going to buy a patent, you're probably going to look at it. Right?
A. Yes, I would assume so.
Q. So all of those companies over all of those years that got all of these sales pitches, they were able to actually look at the patents and see whether the General Access sales pitch was right; whether these patents were really so blockbuster or whether they were not. Correct?
A. Those companies could do their due diligence.
Q. And would. They would.
A. I would expect that they would.

Q. And so now we're here. You didn't sell the patents. As His Honor said, we're here and we're looking at the patents. The jury's not going to decide this based on a sales pitch. This is a patent case and what matters is the patents. Do you agree?

A. I agree.

Q. What matters is what the claims said. Right?

A. Right.

Q. What the requirements are.

A. Right.

Q. And if the jury looks at those claims with those requirements and concludes that Verizon does not do what the claims require, you agree that Verizon owes you nothing.

A. If this jury decides that Verizon and/or Ericsson do not infringe, that -- I would have to agree with that.

Q. Okay. Thank you.

MR. KREVITT: I have no further questions, Your Honor.

THE COURT: You pass the witness?

MR. KREVITT: Yes.

THE COURT: All right. Is there redirect, Ms. Fair?

MS. FAIR: Yes, Your Honor.

THE COURT: Proceed with redirect.

REDIRECT EXAMINATION

BY MS. FAIR:

Q. Mr. Hynek, I want to start kind of where we left off talking about all of these companies that had done analyses of your patent portfolio.

Did you go out and find all of them, or were they finding these patents themselves and approaching you?

A. I did have a number of people who contacted me because first they found the patents and recognized that they were truly fundamental patents as the technology was being developed.

MR. KREVITT: Objection, Your Honor; hearsay.

THE COURT: Any reason that's not hearsay, Ms. Fair?

MS. FAIR: Your Honor, he knows how these companies found them to approach him. Mr. Krevitt just asked him about whether or not patents are public and whether or not companies could find the patents, and Mr. Hynek knows there are companies that found these patents and through that found him.

MR. KREVITT: That's not the objection, Your Honor.

THE COURT: Let me say it this way. If the witness is testifying about what he knows, that's fine. If he's going to testify about what third persons communicated to him, that's probably hearsay, unless there's an applicable exception.

Why don't you rephrase the question.

MS. FAIR: Yes, Your Honor.

Q. (BY MS. FAIR) Did all of the companies and people that

you have communicated with over the years, did you find them or did some of them find you from having found the patents themselves?

A. Some of them found me.

Q. Going back to Raze and the original business that you and Mr. Struhsaker were working on together, Mr. Krevitt asked you a lot about some of the most sophisticated tech companies in the world, and venture firms looked at Raze's commercial products. Do you remember that?

A. I do.

Q. And from your experience with Raze, and even from the documents you were seeing, were those companies ready for the technology that Mr. Struhsaker had come up with?

MR. KREVITT: Your Honor, objection.

THE COURT: State your objection.

MR. KREVITT: I'm sorry, Your Honor. I can't imagine a foundation for this question of -- the witness has testified he doesn't have a technology background, and we're hearing about whether companies were ready for this new technology.

THE COURT: Go ahead.

MS. FAIR: Your Honor, the documents that Mr. Krevitt was asking Mr. Hynek about expressed why these companies were not willing to invest in Raze, and Mr. Hynek knows that because he was working for Raze full time at the

time.

THE COURT: Well, the question as phrased calls for speculation from the witness. If you want to refer the witness to admitted documents and talk about language that's in there, I think that's fair given what's been presented by the other side, but a global question about was the market ready for this technology is calling for speculation, and I'll sustain that.

Q. (BY MS. FAIR) Mr. Hynek, do you remember seeing that some of the companies in these documents were not interested in the fixed wireless broadband product that Raze had?

A. I do.

Q. And I believe we saw language about these companies being cautious about the fixed wireless that Raze had. Do you remember that?

A. I do.

Q. In your experience, are people cautious with something that is new and innovative, or are they cautious with something that's well-established and easy to invest in and really not all that risky?

A. I think the first alternative that you suggested.

Q. So based on your experience with Raze, was -- what was the state of the market as it related to what Mr. Struhsaker had come up with?

A. Are we talking about the market for fixed broadband

wireless or for raising capital for companies like that?
Q. For fixed broadband wireless.
A. It was a very difficult market. And, in fact, that was the same concern that we had as the partners that were supporting Raze, was that clearly there wasn't the spectrum available to deploy this technology in, and it was going to clearly be later. That's the reason why we suggested the reorganization to focus on just one product instead of all three products. And it all interrelates. That's why we were in that situation. So I respect that it was a very difficult environment to raise money in because of the nature of the fixed broadband wireless market.
Q. And from your experience on the ground with Raze in the fixed commercial environment they were in, was the market even ready for a mobile product like Mr. Struhsaker had thought of?
MR. KREVITT: Your Honor, objection; speculation, foundation.
MS. FAIR: Your Honor, Mr. Hynek was CEO of the company and was --
MR. KREVITT: It's the same --
THE COURT: He can testify from what he knows from his experience. It's going to have to be limited to that, and that's what the question calls for, so I'll overrule the objection.
Q. (BY MS. FAIR) Mr. Hynek, from your experience working

day in and day out with Raze, what was the market like as it related to mobile data? Was it ready for what Mr. Struhsaker had?

A. I'm going to estimate that we probably had more than 20 competitors, and it could have been 40, and I know of nobody that was doing mobile.

Q. What types of cell phones -- what types of mobility was there in 2001, 2002?

A. I think the best that was available was something called nomadic.

Q. Were there iPhones?

A. No.

Q. Did people have internet browsers on their phones?

A. They did not.

Q. Was Mr. Struhsaker thinking ahead to when people would be needing that type of data?

A. And much more.

Q. I want to fast forward a little bit. We heard about some interactions that you had with various patent brokers over the years.

Had -- let's start with Mr. Rushford. We saw emails about whether or not you were on the same page.

Having been the person who was part of those communications, what was it that you were on the same page about?

A. Well, what I couldn't say from the question of Mr. Krevitt is that Francis Rushford was actually the person that I dealt with at ICAP, and then he left ICAP and started RSL. So I look at that as a continuation of a same relationship.

Mr. Rushford is somebody I respect deeply, I believe we have a very good relationship, and he worked very hard to market the patents. But what Francis Rushford understood, and the reason that I was answering the question that I didn't sign the agreement to sell the patents, I was exploring the value of the patents. I didn't know what I'd be looking at at an outright sales versus a licensing campaign. And by licensing campaign, something that -- this is the first time -- you know, it was I think, whatever, 2009, 2012, 2014, more than 10 years later I'm finally at the courthouse on the first campaign.

MS. FAIR: Can we please get JX 8, Mr. Svenson?

Q. (BY MS. FAIR) And if we look at the top, this is one of the exhibits that you talked about with Mr. Krevitt.

What's the date of this email?

A. May 28th, 2013.

Q. And having sat here in this courtroom, you understand that Verizon didn't roll out its 5G network until 2018-2019?

A. I believe that's correct.

Q. And so when RSL had done this analysis that we looked at,

all of the infringement that we're talking about in this case, had any of it even began at that time?

A. Not to my knowledge.

Q. And so had the assertions of claims 28 and 29, were they even part of the discussion at that time?

A. They were not.

MS. FAIR: And if we can please go to page 4 of this exhibit.

Q. (BY MS. FAIR) So even before 5G, even before claims 28 and 29 being part of this case, what was it that RSL was already seeing in the value of these patents?

A. $4.4 billion.

Q. And that would be from licensing?

A. I believe that's correct, yes.

Q. And in your experience, has the demand for cell phone coverage and the cellular market, has it decreased or increased since 4G?

A. I believe it's increased.

Q. And we see at the bottom that there is an estimated selling price of 8- to $12 million, and we've heard some other similar numbers in this time period. Why, in your experience, is the sale price so different from the licensing value?

A. Because it is overwhelmingly time consuming and expensive to try to enforce your patents.

Q. You were pretty emphatic that you did not give a sale

price to anyone through any of this process.
A. Yes, I was.
Q. Why?
A. Because I know that to be a fact.
Q. How do you know that with such certainty?
A. Because that was the whole purpose of what I was trying to do for about a 10-year period, and I never would have given a price.
Q. Why --
A. It's just not the way that I would ever operate. And I was very up-front with Mr. Rushford as well.
MS. FAIR: Thank you, Mr. Svenson. Can we please go to DX 10?
Q. (BY MS. FAIR) And feel free to look in your notebook, Mr. Hynek, if you'd like to look at the whole thing.
MS. FAIR: Can we please go to page 32, Mr. Svenson?
Q. (BY MS. FAIR) And those are the page numbers in the middle at the bottom, Mr. Hynek.
A. Okay.
Q. And at the bottom Mr. Krevitt was pointing us to where you said "Works for me."
Do you see that?
A. I do see that.
Q. If we turn to the next page, which is the email immediately preceding that, there was a lot of emphasis I

believe on the second paragraph about you giving a buy now price. But can you tell us, Mr. Hynek, what was the first question and the last question in Mr. Maggio's email to which you were responding?

A. Thank you for pointing that out, because I was very confused, and I didn't even have an opportunity to see this. But yes, when I responded --

THE COURT: Mr. Hynek, you don't need to comment on the question or thank the lawyer for asking it or explain why you were confused earlier; you just need to respond substantively to the question that's asked. All right?

THE WITNESS: I'm sorry, Your Honor.

THE COURT: Let's do it going forward.

THE WITNESS: Okay.

Yes, my response was to "Are you free for a call in the morning or how do you look around 10:00 a.m. eastern time?"

MS. FAIR: Thank you, Mr. Svenson.

Q. (BY MS. FAIR) After having all of these people that had told you about the value of these patents, what was your takeaway about what Mr. Struhsaker had invented all those years ago?

A. I think I became much more confident as time went on during this period of time that this technology was fundamental, valuable, and it just really validated all the sacrifice that a lot of people gave to create this technology.

Q. So why didn't you sell these patents over the last 10 years for 15-, 20-, $25 million? Is that something you would have been willing to accept?

A. It was not.

Q. Why?

A. It just didn't make sense. It wasn't prudent.

MS. FAIR: I'll pass the witness, Your Honor.

THE COURT: Is there further cross examination?

MR. KREVITT: Your Honor, may we approach the bench?

THE COURT: You may approach the bench.

(The following was had outside the hearing of the jury.)

THE COURT: What is it, Mr. Krevitt?

MR. KREVITT: Your Honor, the witness gave a self-serving speech about its 10 years later, I've been working so hard, and I'm at my first campaign.

Putting side the Sprint litigation, which I understand is a third rail, that answer was untruthful. In 2016 in this court, Judge Schroeder sitting, General Access filed a lawsuit against two other parties on a patent that is related to one of the patents in this issue, and that patent was declared invalid and the lawsuit went away.

We have a witness -- I'm sure I don't need to spell it out for Your Honor, but we have a witness who just gave a speech about the struggle and the work and the effort and the

blood, sweat, and tears and I'm finally here, and it is untrue.

I have to be able to get into -- oh, my gosh. I'm sorry. I think I should have an opportunity to get into that, Your Honor but, of course, I didn't want to do that without raising it with you first. I have -- I'm sure -- I know you have a access to the transcript, too, of course, but he specifically said --

THE COURT: If you want to quote that statement back to him and ask him what he meant by it, you can do that. He offered it voluntarily. But we're not going down the path of other litigation without some compelling reason to do so. It's probably the most prejudicial thing I can think of and there's not any way to undue that prejudice. If the conduct and the statements and admissions of parties require it, that's fine, that's why with regard to that earlier episode I let the rope out in the smallest little amounts I can --

MR. KREVITT: I understand, Your Honor.

THE COURT: You can ask him what he meant by it. He can answer --

MR. KREVITT: May I ask if that statement about first campaign is true? Because -- let me. I'm sorry. Let me just explain why. If I say, What did you mean by it, I'm going to get another speech that says this same thing, and then I don't know how many times I have to ask, What did you

mean by it before he realizes we have a problem.

The man said something that is false on the stand in connection with a summation. It's just not true. He filed a lawsuit in this court and lost. And it's a related patent, Your Honor. I don't know if I mentioned that--it's related to the '794.

MS. FAIR: Your Honor, I think you hear how prejudicial it is to try to tie a related patent's invalidity to this case and another lawsuit. I mean, I don't think the jury thinks of a campaign as a series of lawsuits --

MR. KREVITT: He said, I'm here for the first time in this court.

THE COURT: Let her talk, please.

MS. FAIR: That is the first time that he has testified in this court, so I don't know that it's fair for him to open his own door into an invalidation in another case.

MR. KREVITT: May I make a suggestion, Your Honor?

THE COURT: I don't know how well he listened to your preparation before he got on the stand today. I can't believe he wasn't adequately prepped. He seems to be under his own direction to a large extent, but that's neither here nor there. Sometimes witnesses are like that.

He made a statement. You can ask him what he meant by it, but I'm not going to allow him to go any further, depending on what I hear from --

MR. KREVITT: May I make a suggestion?

THE COURT: You may.

MR. KREVITT: May I ask, instead, that he testified to what he testified and, in fact, there was a prior lawsuit in this court?

THE COURT: No. We aren't --

MR. KREVITT: Okay.

THE COURT: -- going to go into a prior lawsuit unless there's more compelling reason --

MR. KREVITT: Okay. That's fine. I just -- you understand I wasn't suggesting the validity or the related patent or anything like that. I just didn't want Your Honor to think that's what I was suggesting.

THE COURT: He made the statement, it was not solicited by his counsel, it was voluntary. If you want to query the witness on what he intended or what he meant by that, that's perfectly fine. Depending on what his answer is, we'll decide whether there's any further development of that or not.

MR. KREVITT: Okay. It's very troubling, Your Honor.

MS. FAIR: I understand the Court's ruling; I just fear we are allowing Mr. Krevitt to try and --

THE COURT: I don't know how I can keep him --

MS. FAIR: I understand.

THE COURT: -- from talking about something your guy just voluntarily --

MR. KREVITT: And I'm not -- and I'm actually -- don't have an -- my concern, Your Honor, is that by asking that question, I'm just inviting another speech. I don't know how that helps me.

THE COURT: Well, there's another way to handle it. The other way to handle it is to leave it alone and save it for your closing argument; then you can tell the jury what you think it means, but that's -- I'm not here to discuss strategy with you-all.

MR. KREVITT: I'm allowed to tell the jury about the prior litigation?

THE COURT: No, no. You're entitled to tell the jury what he meant when he testified.

MR. KREVITT: My concern is what he meant isn't clear. What he meant was totally clear. My concern is it's not truthful. My concern is that it is untrue under oath. My concern is that it's not unclear; I think it's totally clear I. Think the testimony is dynamite for him.

THE COURT: All right. What were you going to say?

MS. FAIR: I was just going to say that I think impeachment on ancillary issues on this with extrinsic evidence is not permissible under the rules. This is far --

THE COURT: I haven't permitted that. All I've

permitted him to do so far as to ask the witness to clarify what he meant by that statement, and I'll allow you to do that if you choose to. I'm not giving you leave to do anything further at this juncture. All right?

MR. KREVITT: Yes.

Your Honor, may I just confer for 30 seconds with my colleagues?

THE COURT: It's your time. Go ahead and use it.

(The following was had in the presence and hearing of the jury.)

MR. KREVITT: We have no further questions, Your Honor. Thank you.

THE COURT: I'm sorry?

MR. KREVITT: No further questions.

THE COURT: All right. Then you may step down, Mr. Hynek.

Am I correct, Plaintiff, you have an additional deposition witness at this time? Is that right?

MS. FAIR: Yes, Your Honor.

THE COURT: Please call your next witness by deposition.

MS. FAIR: Your Honor, the Plaintiff calls Mr. Louis Ambio. He is associate vice president corporate finance at Verizon. And this deposition clip is 9 minutes and 32 seconds.

THE COURT: All right. Please proceed with this deposition witness.

LOUIS AMBIO

BY VIDEO DEPOSITION

Q. Can you please state and spell your name for the record?

A. Louis Ambio. L-O-U-I-S, and Ambio is A-M-B-I-O.

Q. How long have you worked at Verizon, Mr. Ambio?

A. Twenty-two years.

Q. What's your official title?

A. Associate vice president, corporate finance.

Q. You understand, Mr. Ambio, you're testifying today in part as a corporate representative of Verizon?

A. Yes.

Q. You understand that means your testimony is attributable -- attributable to Verizon. Right?

A. Yes.

Q. Is this document Verizon's 2022 annual form 10-K?

A. Yes, this is Verizon's submitted form 10-K for 2022.

Q. Did you help to prepare this document?

A. I did not.

Q. Would you agree that Verizon's 10-Ks are reliable?

A. I would believe that Verizon -- Verizon makes every attempt to have the information accurate, and they have an independent auditor audit it -- audit the financial in it to support that accuracy.

Q. Okay. I'd like to direct your attention to the heading "Wireless Network Reliability and Build-out" I just highlighted.

Do you see that?

A. I do see that.

Q. The first sentence under that heading reads, "We consider the reliability, speed, capacity, and coverage of our wireless network to be key factors for our continued success."

Is that right?

A. Yes. That's what it says.

Q. Could you please explain what this means?

A. It's -- I mean, I guess it's going to be hard to use different words in some cases, but it's describing our -- you know, our wireless network, which is obviously the -- you know, the largest product in Verizon's portfolio; and it's suggesting that we expect to be successful because it of its, you know, reliability, speed, capacity and coverage, so -- which are four of the ways that people evaluate the quality of a network.

Q. Okay. I'd like to direct your attention to the last sentence of this paragraph, beginning with, "We utilize."

Do you see what I've highlighted here on the screen?

A. I do see it.

Q. That sentence reads, "We utilize three strategies to maintain the quality of our network; increasing the density of

our network elements, deploying new technologies as they are developed, and putting additional wireless spectrum into service."

Did I read that sentence correctly?

A. Yes, you did.

Q. Can you please explain what this sentence means?

A. So, I mean, I would think quality is, again, how we were kind of measuring it up above that we spoke about. So, you know, reliability, speed, capacity, and coverage are all measurements of quality. And it's saying to accomplish that, we either implement more network assets so that it -- so it's denser, we put in new technologies that have -- that may be more efficient as an example.

So, you know, moving up in, you know, technology, or in the case of -- we were talking about the C-band and the population coverage earlier, and in that case that allows us to expand, you know, wireless and improve the quality. So those are the -- kind of the three that it's referring to.

Q. Okay. I'd like to move to page 9. And do you see -- you see these bullet points on page 9?

A. I do.

Q. The first bullet point, "network reliability, speed, capacity and coverage." This reads, "We consider networks that consistently provide high-quality, fast and reliable service to be a key differentiator in the market and driver of

customer satisfaction."

Did I read that correctly?

A. Yes, you read that correctly.

Q. Why is reliability one of the most important competitive factors for Verizon?

A. Like, it's -- you know, customer needs isn't -- isn't what I'm -- you know, isn't my job, but as a consumer, I know that, you know, using -- you know, that's an important selection process because I know I want my phone to work when I want to use it.

But I'd only be inferring more as a customer. It's not -- you know, it's not what I do here.

Q. Why is speed important to Verizon?

A. Speed is -- without a certain throughput, applications -- certain applications require certain throughput, so speed allows you to leverage more applications as an end consumer.

Q. Why is capacity important to Verizon?

A. I mean, at the simplest explanation, because our customers want to use our network at the same time, so it's important that we, you know, do more than, you know, buy and sell increased capacity (unintelligible) to serve more customers at the same time.

Q. All right. The next sentence, "With the development of 5G technologies, wireless service providers are increasingly focusing their marketing efforts on network quality, speed,

and coverage, sometimes directly targeting customers of Verizon."

It goes on one sentence later to say, "We and other network-based providers must ensure that our networks can meet these increasing capacity usage requirements and offer highly reliable national coverage."

Did I read those two sentences correctly?

A. Yeah, you read the -- those two sentences correctly.

Q. Why is it important that Verizon's networks generally can meet increasing user capacity coverage requirements?

A. Because our -- not only do we hope to increase our customer base, but our customers do consume more and more data each year; applications leverage more data and customers use our products more.

Q. Why is it important that Verizon's networks can offer highly reliable national coverage?

A. We believe it's a key decisionmaker for -- for customers. And that's -- I mean, that's -- at the end of the day we want to acquire customers and retain them.

Q. I'd like to direct your attention to the last sentence of this paragraph beginning with "we anticipate cash." Do you see that?

A. I do see that sentence, yes.

Q. And that sentence reads, "We anticipate cash requirements for our 2023 capital program to be between $18.25 billion and

$19.25 billion, inclusive of the final $1.75 billion of the incremental $10 billion related to our accelerated C-band deployment program."

Did I read that sentence correctly?

A. Yes, you read that sentence correctly.

Q. What is the accelerated C-band deployment program?

A. So we talked about the C-band investment a few questions ago earlier, and so when we made that large spectrum purchase in -- I think it was announced early in 2001, we were committing over $50 billion to buy spectrum. To roll it out more quickly and get the -- and allow our customers to experience it quicker, the CFO and the CEO approved, basically, a $10 billion overlay on top of our usual capital expenditure to support this program that would be spread out over multiple years.

Q. Does Verizon expect the need for network capacity to grow in 2014?

A. Yes, Verizon would expect increased -- increase in -- increased demand for network capacity in '24.

Q. Does that include an increased demand for 5G network capacity in 2024?

A. My statement would be inclusive of -- yes, it was inclusive of all wireless usage.

Q. Would you say which carrier can offer the best 5G coverage is a competitive point in the industry?

A. Yes. Carriers are competing on the quality of 5G coverage, yes.

Q. Do you know if wireless consumers today expect that their smartphones will be able to support hotspot connections with other devices?

A. I don't -- again, I'm not an -- I'm not an expert on consumer behavior or consumer expectations. I can tell you I would expect it.

Q. Would you expect that your hotspot in your mobile phone could connect to other devices wirelessly?

A. I would expect that the hotspot in my mobile phone would connect to other devices wirelessly.

Q. Would you expect that your smartphone will support fast, reliable WiFi connections with other devices?

A. I do expect that my smartphone would connect fast, reliable connections with other devices.

Q. Do you expect that the hotspot capabilities of your smartphone will allow you to connect multiple devices to it at the same time?

A. I do.

THE COURT: Does that complete this witness by deposition?

MS. FAIR: Yes, Your Honor.

THE COURT: All right. Counsel, approach the bench, please.

(The following was had outside the hearing of the jury.)

THE COURT: All right. Mr. Kennedy is next. Is that right?

How long do you expect your direct to go?

MR. SUMMERS: Forty-five minutes; perhaps a little longer. Forty-five is our goal.

THE COURT: We can at least get him started. I doubt we'll reach cross today.

Okay. Let's go.

(The following was had in the presence and hearing of the jury.)

THE COURT: Plaintiff, call your next witness, please.

MR. SUMMERS: Your Honor, at this time the Plaintiff calls Mr. David Kennedy.

THE COURT: All right. Mr. Kennedy, if you'll come forward and be sworn, please.

(Whereupon, the oath was administered by the Clerk.)

THE COURT: Please come around and have a seat on the witness stand, sir.

DAVID KENNEDY,

having been duly sworn, testified under oath as follows:

DIRECT EXAMINATION

BY MR. SUMMERS:

Q. Good afternoon, Mr. Kennedy.
A. Good afternoon.
Q. Could you please introduce yourself to the jury?
A. My name is David Kennedy. I'm managing director with Berkeley Research Group.
Q. And where are you from, Mr. Kennedy?
A. Which wife and I live about 45 minutes north of town in Cass County, and then in the summertime we've got a little cabin in Montana where we escape the heat.
Q. What's your role in this case?
A. I'm here to determine a fair amount that Verizon should pay for its use of General Access' technology.
Q. Is there a term that refers to a payment made for the right to use a patent?
A. Yes. It's called a royalty.
Q. What is a royalty or a patent license to which it attaches? Please explain those concepts very briefly.
A. So it's the -- it's an agreement that lets you use somebody's technology. It's like leasing a farm--you get to use the land, farm it, but you don't own it. It's the same with a patent license agreement.
Q. Mr. Kennedy, I understand you prepared some slides to help guide the discussion.
A. Yes, I did.
Q. Okay. I'm going to go ahead and advance the slides.

Can you please describe your educational background for the jury.

A. Sure. I graduated from the University of Georgia with a degree in accounting, and I'm also a certified public accountant.

Q. Do you have any experience directly relevant to the licensing of patents?

A. Yes, I do.

Q. Can you please describe it?

A. Sure. I've negotiated over 200 license agreements in the real-world outside of the courtroom where I'm sitting at the table negotiating the license agreement.

Q. Now, I see on this slide that you refer to something called the IAM organization or the IAM Strategy 300. Can you please describe what that is?

A. Sure. It's Intellectual Asset Management. They've -- I've been honored to be named one of the world's leading IP strategists for the last 12 years.

Q. And I see you've done some work for the Military. Can you just very briefly describe that for the jury?

A. Sure. The Navy and the Marines and the Air Force had hired me through the DOJ to determine what an appropriate royalty rate was for technology that the government was using in national defense, so I had to determine what was fair for the government to pay the inventors of the technology.

Q. Can you please tell the jury about some of the companies you've worked with, either negotiating for or against over the years?
A. Sure. These are some of those companies. It's been hundreds, but I've negotiated against Samsung, Intel, Sprint, AT&T, Broadcom. Those are some of the companies that I've negotiated against and reached an agreement with.
Q. Have you testified in other patent infringement cases such as this?
A. Yes; many.
Q. For plaintiffs or defendants?
A. Both.
Q. Are you compensated for your work?
A. My firm is.
Q. And how does your firm get paid?
A. Based on the number of hours worked by myself and my staff.
Q. Does the compensation either to you or to your firm depend on the outcome of the case in any way?
A. Not at all.
Q. Now, Mr. Kennedy, have you reviewed various materials in preparation for your testimony today?
A. I have.
Q. Can you please --
A. Some of those are listed on this slide here.

Q. Can you please just briefly describe them?
A. Sure. There were a lot of Verizon financial records, sales data, records related to base stations, how much they cost. I reviewed deposition testimony of about a dozen different witnesses in this case, both fact witnesses for Verizon and for General Access. And I looked at the license agreements that were produced and other emails and the General Access documents and patents.
Q. Basically all the sorts of things that are on the screen?
A. Yes.
Q. Was there any financial data in particular that you found to be insightful?
A. Yes.
Q. Can you please just describe it at a high level?
A. Two categories particularly. One was it was I believe over 20,000 entries, financial entries of money that was spent on equipment by Verizon for their base stations, and then also I had access to all of the financial records related to the device sales, cell phones and mobile hotspots and the wireless devices in the home.
Q. Is that information contained in Plaintiff's Exhibit 122?
A. Yes.
Q. I don't have it on the screen just -- did you also review information about General Access's ownership of the patents-in-suit?

A. I did, yes.
Q. And did you see documentation of that?
A. Yes. And that's on JX 13.
Q. Okay. Thank you.
Did you do all of your work -- did you do all of the work in this case by yourself?
A. No. I have a sizable team that helps me; people with specialized expertise in this area.
Q. Can you give the jury an example of someone with specialized expertise who assisted you in connection with your work in this case?
A. One is on the slide here, Dr. Andreas Groehn. He is an economist that works with me at Berkeley Research Group, and he does conjoint surveys, and he did one for me in this case. He's an expert at that.
Q. Are there any legal principles that guided your work in this case?
A. Yes. So when looking at damages, I follow the patent statute, and that's the law that dictates what damages should be based on. And one very important part of that that I always focus on is that in no event should a reasonable royalty be less than the -- in no event less than a reasonable royalty for the use made of the invention by the infringer. So it's looking at the use made of the technology by Verizon.
Q. So the infringer here--alleged infringer for now--is

Verizon?
A. Correct.
Q. And the use would be of the two patents that are asserted in this case?
A. Or the -- yes, the asserted claims within those two patents.
Q. Okay. Thank you.
And I may refer to the patents or the '931 or '794. Will you understand when I do that that's just for simplicity that we're referring to -- specifically to the asserted claims of each of those patents?
A. Yes.
Q. Because not all of the claims are asserted. Correct?
A. Correct.
Q. By the way, while we're here looking at the statute, does the statute say anything about the importance of patent brokers many, many years ago and their unsolicited opinions of the value of the patents? Is that a relevant thing under the law?
A. No.
Q. Let me move on.
Is there a framework that you and other patent damages experts use to try to determine what a reasonable royalty should be for the use of an invention?
A. Yes.

Q. What is it?
A. I've depicted it here on this screen. It's called a hypothetical negotiation.
Q. And what is the hypothetical negotiation?
A. It's what experts use to try to determine what would have been the result of a negotiation if Verizon and General Access had sat down back at the time of the first use or infringement of the patents and came to an agreement.
Q. Now, is this the sort of negotiation where Verizon can come in and say, you know, We don't think these patents are valid, we think they're totally different from what we do and we don't think we infringe them? Can they do that in this hypothetical negotiation?
A. No. There's three rules, and that is one of them--you have to acknowledge or assume that the patents are valid and infringed.
Q. Can they maybe pretend they don't use the invention so much?
A. No. In the hypothetical negotiation, you know the full extent of the use. You have had access to their confidential financial documents that show that through the discovery process or an assumption in the hypothetical negotiation.
Q. Can they say, We just -- we're not going to take a license, we're just not going to do it, we don't believe in your case? Can they do that?

A. No, that's another rule is, unlike in the real world, you have to reach an agreement. So when you're deciding what these damages are, you have to reach an agreement; nobody can walk away.

Q. Mr. Kennedy, what's your understanding as to why the hypothetical negotiation is so different than a negotiation that might take might happen in the real world between these parties?

A. Sure. So as a damages expert I have to assume the patents are valid and infringed, and --

Q. Why is that? Just let me pause. Why is that?

A. Well, you'll see when you get the verdict form, you will answer certain questions about infringement and validity before you ever get to damages, and so you will have already determined that they're valid and infringed before you assess the value of them.

Q. So if the jury gets to the question of infringement -- of damages, validity and infringement will have been settled and, therefore, it's a fair construct. Is that your testimony?

A. Correct.

Q. When does the hypothetical negotiation take place?

A. You're supposed to assume it takes place at the time of first infringement.

MR. SUMMERS: Your Honor, if I may approach the flip chart.

THE COURT: You may use it.

Q. (BY MR. SUMMERS) Mr. Kennedy, do you recall the dates of the hypothetical negotiations? Strike that. Do you know the dates of first infringement in this case?

A. Yes. For the '913 [sic], it was the 2018-2019 time period; and for the '794, it was I believe around August of 2016.

Q. Okay.

A. Or in the 2016 time period.

Q. Very good. Thank you; just so we have a basic idea of when these would have occurred.

So if someone were to come in now and say, Well, we have a solution now, we've got a way to avoid infringement, what would be the relevancy of that information at the time of the hypothetical negotiation?

A. Well, you have to understand what was available at the time, and the parties would have to come -- have to -- you have to decide what they would have agreed to at the time.

Q. Now, I see we have different dates -- different hypothetical negotiation dates for each of the patents. Does that mean we have two different hypothetical negotiations?

A. Yes, basically.

Q. One for each patent?

A. Correct.

Q. Now, is there any other construct or guidepost or factors

that you're supposed to consider when doing an analysis such as the one you performed in this case?

A. Yes, there is.

Q. What are they called?

A. I've got them on the screen here. They're called the *Georgia-Pacific* factors.

Q. What are the *Georgia-Pacific* factors?

A. They are 15 factors that originated out of a famous patent case that experts follow to make sure that they are calculating the proper amount of damages and considering all of the right considerations in the hypothetical negotiation.

Q. Do all of the *Georgia-Pacific* factors apply equally in every case?

A. No.

Q. Why is that?

A. Depending on the facts and circumstances of the case or the information available, you may not have enough information to analyze one of the factors, or it just might not be applicable. So you always consider all of them, but you don't always use all of them.

Q. Were there any factors that you found to be particularly relevant to this case?

A. Yes. The ones I have on the slide here.

Q. Why did you find them to be especially important in this case?

A. Well, if you look at the highlighted words, it's because these factors deal specifically with the value of the use of the technology by Verizon, so they're very applicable. And in this case I had available information, financial data, and opinions from the technical expert and inputs from reviewing the documents that allowed me to address all of these points.

Q. And what was the valuation methodology that you applied specifically to do your work in this case to determine the economic value of the inventions?

A. The cost approach.

Q. Okay. Can you just very briefly explain what the cost approach is?

A. Sure. It's one of the three accepted valuation approaches that valuation professionals use, and in -- it looks at what Verizon saved by using the technology versus its next best non-infringing alternative.

Q. Now, were you able to quantify in this case the amount of money that Verizon saved by infringing the asserted claims of the '931 Patent?

A. Yes.

Q. And -- I'm sorry. Well, I've advanced the slides.

How much was that?

A. So they saved or got economic benefits of $1.69 billion; roughly $1.7 billion.

Q. And from that have you been able to calculate a

reasonable royalty to General Access for Verizon's infringement of the '931 Patent?

A. Yes. My ultimate answer is $583 million, which we'll -- I'll explain how I get there as we go through this.

Q. Okay. Let's turn very briefly to the '794 Patent.

Can you please explain your approach for the '794?

A. It's basically the same approach, the cost approach, and so I'm measuring the cost of Verizon switching to the non-infringing alternative that Doctor Madisetti testified to.

Q. And using that approach, were you able to quantify the economic benefit to Verizon of infringing the '794?

A. Yes. It delivered roughly $3 billion in economic benefits to Verizon, and I'll walk through the details of that with you later.

Q. And from that, were you able to derive what you believe would be a reasonable royalty to General Access?

A. Yes.

Q. And what's that amount?

A. $264 million for Verizon's infringement and use of the patent.

Q. By the way, I'm sure we'll get to this at the end, but did you -- have you been able to figure out what that would be on a per-unit basis, per infringing device?

A. Yes.

Q. What's that amount?

A. $2.89 or $2.79. I have it later. I'll bring it back up.
Q. Okay.
A. But it's roughly less than $3 per unit.
Q. Okay. Let's dig into your analysis a little bit deeper. We'll focus on the '931 Patent to begin.

Is there anything special about the '931 Patent that informs your analysis in this case or that you felt was notable?
A. Yes.
Q. Please explain.
A. I -- we heard Doctor Madisetti's testimony that this is a foundational patent in this field, and it really was based upon his technical analysis, a very valuable and important patent to providing beamforming in the 5G TDD area, and without that patent you could not provide it the same level of quality.
Q. Now, what's your understanding as to when or how Verizon infringes the '931 Patent? And I don't want you to do what Doctor Madisetti did; just when an act of infringement or how an act of infringement would occur.
A. It's really any time they're offering that service on their network to consumers.
Q. And would it include when they're actually providing that service to consumers?
A. Yes. Correct.

Q. Now, we've seen a slide in this trial. It's taken from the Verizon website. It's actually animated like this on their website and it shows their 5G coverage across America. And we've been hearing about 75,000 or more 5G TDD base stations. Were you in your work able to estimate the number of infringing 5G TDD base stations in Verizon's network?

A. Yes, I was.

Q. And what conclusions did you reach?

A. Based on looking at all of the money they spent on equipment, various equipment that goes into base stations, I could tell that it was 75,000, or probably a good bit more than that, but a minimum of 75,000 base stations.

Q. Now, Mr. Kennedy, what are your understandings as to the technical benefits of the '931 Patent? What benefits do you understand that it provides to Verizon?

A. So there's five here on the screen, but if you look at the speed and the coverage and the user experience, these are benefits that help Verizon keep their customers and attract new ones. Without that, their whole business could be at stake.

And then also it conserves, as we heard from Doctor Madisetti, the valuable spectrum. And we heard about the billions of dollars that had been spent on spectrum. This '931 Patent gives the technical benefit of conserving spectrum.

And then the remaining one is increasing the throughput and capacity, and that helps them basically get more out of their base stations; do more with less. They don't have to spend as much on base stations.

Q. Did your analysis quantify the benefits of all of these or -- in terms of their economic value to Verizon, or did you focus just on certain of them?

A. I addressed all of them, but I only calculated the value of the one that's highlighted, the increased throughput and capacity.

Q. Okay. Why have you focused on that particular benefit?

A. Well, based on the documentation that was available, it was a number that could be quantified, and I think conservatively to come to a benefit that is supported by Verizon's own documents and their own spending.

Q. And how did you go about measuring that benefit? First, were you here for Doctor Madisetti's testimony?

A. Yes, I was.

Q. And have you taken that into account in your analysis?

A. Yes, I did.

Q. And can you explain how his analysis, then, feeds into yours and assists you in reaching your conclusions?

A. Sure. His opinion is for that one benefit is that the overall cell throughput gain is 32 percent, and that without -- he also opined that without the '913 -- '931 asserted

claims, Verizon would need 32 percent more 5G TDD base stations.

Q. And did you then figure out what it would cost Verizon to build out those 32 percent of additional base stations?

A. Yes.

Q. And how exactly did you do that?

A. So as I mentioned earlier, I had access to the Verizon financial documents that were produced in this case, and I also mentioned there were over 20,000 different spending items in that -- the documents produced just during the damages period. So I looked at what I call the network, their infrastructure costs, and was able to determine exactly what they spent on base stations during that time period.

Q. I see -- we have something here on the screen. What do we see on the screen?

A. So these -- this is an excerpt from PX 122, and it is a summary of their spending on base stations and related expenditures to build these base station towers.

Q. What were the total costs for Verizon to build out its infringing 5G TDD base stations?

A. So the total costs were over $5 billion. I believe I have a slide on that coming up.

Q. Okay. And did you calculate what it would cost -- there we have it. Sorry. I'm just behind you.

Do we see here on the screen the total costs to build out

that 5G TDD network?
A. Yes. This is a summary of those 20,000 entries that I mentioned. It's roughly $5.3 billion that was spent.
Q. And you mentioned earlier that the date of first infringement was late 2018/early 2019. Would that be from then to now?
A. That's correct.
Q. From an economic perspective, what does that number represent to you?
A. Well, it represents the amount of infrastructure they had to -- or they bought while they were getting the benefit of the '931 patent.
Q. Okay. What was the next step in your analysis?
A. So what I did then was to look at that number and factor in Doctor Madisetti's opinion about how much more they'd have to buy to get the same coverage that is very important to them for their customers at 32 percent, and so the total additional infrastructure purchases if they did not have the '931 Patent would be $1.7 billion, $1.693 billion.
Q. And I see references here to C-band and mmWave. Would that include both of those things?
A. That is correct.
Q. From there where -- how did your analysis proceed? What did you do next?
A. So although the $1.7 billion is the fully-apportioned

technical value, fully-apportioned technically to just the claims that are asserted, according to Doctor Madisetti's opinion, I then went further and tried to think about and analyze what the parties would have agreed to in the hypothetical negotiation, which would be a hard-fought negotiation, it's a lot of money and even for Verizon, so they would be negotiating hard for this.

Q. And what was your first step in this apportionment analysis?

A. So you see that first line item, it's called an ecosystem apportionment, and what that represents is the argument that Verizon's not the only company that benefits from this better network; the handset manufacturers also benefit from it. And so I think it's reasonable for Verizon to argue that they shouldn't maybe have to pay the whole amount; some of that ought to be apportioned out because the handset manufactures are also making money off of this better network. And so that's what I did with the apportionment adjustment.

Q. Okay. And that's the economic apportionment--I'm sorry--the ecosystem apportionment you referred to?

A. Correct.

Q. What did you do after that?

A. So then -- well, that ecosystem apportionment is based on the relative profits between Verizon and the handset manufactures.

Then I did an additional apportionment that I call a bargaining split, and that's where you assume that Verizon's going to be saying, Hey, we provide -- we've got this market power in our brand, we provide value, and we ought to share in this benefit that you're calculating. And General Access is saying, But you're already saving $1.7 billion, so they're negotiating hard for that.

And the way I determine the bargaining split is using metrics that I use in real-world negotiations, and that is to look at -- for Verizon I looked at their wireless margin, what they make on these products, how much profit do they normally make, assuming -- the patent royalties assume to be a cost, how much would they make. And then I also looked at their return on equity, what they normally earn for their shareholders, and I took an average of those two and that resulted in a bargaining split of 44.3 percent, which means General Access would only keep 44.3 percent of the total savings.

Q. And who would get the balance of the economic benefits? If General Access is getting 44 percent, who gets the rest in this analysis?

A. Verizon, out of that negotiation where both parties would be negotiating hard for their position.

Q. And what are your ultimate conclusions about the result of the hypothetical negotiation over the '931 Patent?

A. That Verizon is getting a $1.7 billion cost savings and they would pay $583 million as a reasonable royalty, and that's about 35 percent of their benefits from the '931 Patent.

Q. And am I correct, the 35 is different than the 44. Is that because first you had that ecosystem adjustment and then the 44 percent bargaining split?

A. That's correct.

Q. The multiple layers of adjustment?

A. That's correct.

Q. Okay. Now let's move on.

You mentioned that the focus of that analysis. The cost savings analysis was the throughput and capacity gains attributable to the '931 Patent. Does that account for all of the benefits that Verizon realizes from the '931.

A. No.

Q. What does it not include?

A. Well, a couple of things that I mentioned. It doesn't quantify the customers that they would lose by having less capacity or not the kind of quality in the calls or data transfers, but it also conserves valuable spectrum. We heard Doctor Madisetti testify about that. And that's another huge benefit.

Q. Why is conserving spectrum a huge benefit?

A. Well, it's really expensive, incredibly expensive.

Q. As part of your work, did you determine how much Verizon spent, for example, on its C-band spectrum?
A. Yes, I did.
Q. How much has Verizon spent in the last few years on its C-band spectrum?
A. Well, just at one purchase, they purchased -- they spent over $50 billion just in one acquisition of spectrum from the FCC.
Q. Let me go ahead and advance to your next slide.
Can you tell us what we see here?
A. Yes. This is from Verizon's website, so it's their document, I guess, you would say, and it shows that they paid $52.9 billion just recently--and this is in 2021--to get that additional spectrum.
Q. And then I see at the bottom you've underlined in red that the additional spectrum will provide, quote, more capacity, close quote. Was that significant to you?
A. Yes, it is. More capacity -- they wouldn't spend $52 billion if more capacity wasn't valuable to them, and more -- so with more spectrum you get more capacity.
Q. And do you recall what the total expenditures were on C-band spectrum from -- during the relevant time period, the damages period?
A. It was over a hundred billion dollars; somewhere close to that.

Q. Does your calculation of the value to Verizon of infringing the '931 Patent include anything for the fact that it conserves spectrum?
A. No, it does not.
Q. And is that something that would have been factored into the hypothetical negotiation?
A. Absolutely. If General Access would have pointed that out, and if you look at $50 billion, if you can save one percent of that that's $500 million, and that certainly would be something that General Access would negotiate with at the hypothetical.
Q. Are you saying that even if the '931 Patent only increased spectral efficiency by one percent, that would provide half a billion dollars in value to Verizon?
A. Yes. It would basically double my damages number because it's separate; it's a separate benefit.
Q. Have you seen evidence regarding the demand for mobile traffic or mobile data over time?
A. Yes.
Q. And what have you seen?
A. This is one of the documents that I've seen. It's an Ericsson mobility report.
Q. Wait, wait, wait. You said this is an Ericsson document?
A. Yes.
Q. Okay. And what does it show?

A. It shows that the demand for 5G is always increasing. You look at the--is that purple--the line at the top, it's increasing and it's going up over time.

Q. Have you seen any relevant deposition testimony?

A. Yes, I have.

Q. Can you please describe it?

A. Sure. Mr. Ambio testified by video deposition just before I came to the stand.

Q. Is that the one that was so hard to hear?

A. It was a little hard to hear in places.

Q. Okay. But his testimony, is this a reprint of it?

A. A portion of it, yes.

Q. Okay. And did he testify that Verizon's customers consume more and more data every year?

A. He did, yes.

Q. Have you seen any other information indicating that during the relevant time period, during the damages period between, let's say, 2019 and the present, that Verizon didn't have all sorts of excess capacity to fall back on?

A. Yes, I have.

Q. What have you seen?

A. This slide is an email, but back -- if -- we all remember in March of 2020 when COVID hit, everybody was at home, people were working from home and using their cell phones more for work at home, and this is an email from Verizon's lawyers to

the government, to the FCC --

Q. Just to pause you there, I see fcc.gov. Is that the Federal Communication Commission?

A. Yes, that's correct. And they're requesting emergency additional spectrum to handle that surge in demand.

Q. So when the increased demand occurred with COVID, Verizon didn't have enough capacity to just go on through it; it needed some sort of emergency relief. Is that what you're saying?

MR. DACUS: Objection to leading, Your Honor.

MR. SUMMERS: I'll withdraw the question, Your Honor.

THE COURT: Counsel, approach the bench.

(The following was had outside the hearing of the jury.)

THE COURT: I'm ready to let the jury go. I don't want to stop you mid-sentence or mid-thought. Can you find a good place --

MR. SUMMERS: Yes, Your Honor. How fast would you like me to wrap up?

THE COURT: Next three or four minutes max. Just nod at me when you're there.

MR. SUMMERS: Yes, sir.

THE COURT: All right.

(The following was had in the presence and hearing

of the jury.)

THE COURT: Let's proceed.

Q. (BY MR. SUMMERS) And, you know, we're at a pretty good stopping point; almost at a good stopping point.

I just want to ask you, Mr. Kennedy, how did this sort of information that -- the fact that there were these issues of spectral efficiency that weren't included in your analysis and the fact that capacity -- or use was going up constantly, how did that impact your ultimate conclusions as to the reasonableness of your reasonable royalty for the '931 Patent?

A. Well, all of that tells me that my approach is well-founded in the right economic benefit area, and it's also very conservative.

Q. Okay. Thank you.

THE COURT: All right. Ladies and gentlemen, we're going to recess at this point. This examination has some additional time to it and then we have cross examination by the Defendant, and it is a few minutes after 6:00. I'm not going to keep you any longer today.

As you leave in just a few minutes, if you will, take your notebooks and leave them in the jury room. Please follow all my other instructions, particularly let me remind you one more time, as you would expect me to remind you, don't discuss the case in any way with anybody, including the eight of yourselves.

Let me thank you for being prompt this morning, and I'm going to ask you to be back so we can start again at 8:30 tomorrow morning. Please make your plans accordingly. Have a good evening.

And with that, ladies and gentlemen of the jury, you're excused until tomorrow morning.

(Whereupon, the jury left the courtroom.)

THE COURT: Be seated, please.

Counsel, for your information, we've used 11 hours and 9 minutes and 28 seconds today of designated trial time. I'm sorry. I misread that. 8 hours, 7 minutes, and 52 seconds of designated trial time today. Considering the amount of time we had on the record yesterday, that brings us to 11 hours, 9 minutes, and 28 seconds of total trial time used, leaving us just 10 hours and 51 minutes of total remaining trial time. Of that total, the Plaintiff has 4 hours and 20 minutes of remaining trial time and the Defendant has 6 hours and 31 minutes of remaining trial time.

Also, counsel, I've reviewed the most recent submission to the Court regarding a proposed final jury instruction and verdict form. In light of when that was tendered and where the case has progressed since then, I think the Court would benefit materially by a more current joint submission regarding the proposed charge and verdict form, and I'm going to order the parties to meet and confer and prepare and submit

to the Court by 2:00 tomorrow afternoon an updated and more current proposal regarding the final jury instructions and verdict form. Those should be delivered to the Court by way of email to my law clerks, and it should be sent to us in Word form.

Are there things on the minds of either side that we need to otherwise discuss before we recess for the day?

MR. SUMMERS: Nothing from the Plaintiff, Your Honor.

MR. KREVITT: Nothing for Defendant. Thank you, Your Honor.

THE COURT: I would briefly like to see lead and local counsel in chambers after we recess.

Court stands in recess.

(The proceedings were concluded at 6:10 p.m.)

I HEREBY CERTIFY THAT THE FOREGOING IS A CORRECT TRANSCRIPT FROM THE RECORD OF PROCEEDINGS IN THE ABOVE-ENTITLED MATTER. I FURTHER CERTIFY THAT THE TRANSCRIPT FEES FORMAT COMPLY WITH THOSE PRESCRIBED BY THE COURT AND THE JUDICIAL CONFERENCE OF THE UNITED STATES.

S/Shawn McRoberts 06/25/2024

_____DATE_____
SHAWN McROBERTS, RMR, CRR
FEDERAL OFFICIAL COURT REPORTER

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Concordance

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