

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

1

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VOLKSWAGEN GROUP OF AMERICA, INC.

Petitioner

v.

CARUCEL INVESTMENTS, L.P.

Patent Owner

Case No. IPR2019-01102

U.S. Patent No. 7,848,701

and

Case No. IPR2019-01103

U.S. Patent No. 7,979,023

DEPOSITION OF SCOTT ANDREW DENNING

Thursday, January 16, 2020

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

2

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4
5 VOLKSWAGEN GROUP OF AMERICA, INC.

6 Petitioner

7 v.

8 CARUCEL INVESTMENTS, L.P.

9 Patent Owner

10
11 Case No. IPR2019-01102

12 U.S. Patent No. 7,848,701

13 and

14 Case No. IPR2019-01103

15 U.S. Patent No. 7,979,023

16
17
18 DEPOSITION OF SCOTT ANDREW DENNING

19 Washington, D.C.

20 Thursday, January 16, 2020

21
22
23 Job No. 134483

24 Pgs. 1 - 145

25 Reported by: Cindy L. Sebo, RMR, CRR, RPR, CSR,

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

3

1 January 16, 2020

2 9:16 a.m.

3
4
5
6 Deposition of SCOTT ANDREW DENNING held at:

7
8
9
10 Sterne, Kessler, Goldstein & Fox P.L.L.C.

11 1100 New York Avenue, Northwest

12 Suite 600

13 Washington, D.C. 20005
14
15
16

17 Pursuant to notice, reported
18 stenographically, before Cindy L. Sebo, Registered
19 Merit Court Reporter, Certified Real-Time Reporter,
20 Registered Professional Reporter, Certified
21 Shorthand Reporter, Certified Court Reporter,
22 Certified LiveNote Reporter, Real-Time Systems
23 Administrator, LiveDeposition Authorized Reporter
24 and Notary Public in and for the District of
25 Columbia.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

4

A P P E A R A N C E S:

On behalf of the Petitioner:

RYAN C. RICHARDSON, ESQUIRE
LAUREN C. SCHLEH, ESQUIRE
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 New York Avenue, Northwest
Washington, D.C. 20005
(202) 772-8729
rrichardson@sternekessler.com
lschleh@sternekessler.com

On behalf of the Patent Owner:

ELVIN E. SMITH, ESQUIRE
LAW OFFICES OF ELVIN E. SMITH, PLLC
307 Dartbrook
Rockwall, Texas 75087
(972) 722-2475
esmith@eeslaw.com

-and-

SANFORD E. WARREN, JR., ESQUIRE
WARREN | RHOADES LLP
1212 Corporate Drive, Suite 250
Irving, Texas 75038
(972) 550-2955
swarren@wriplaw.com

ALSO PRESENT: MARK LANNING, Expert witness

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

5

C O N T E N T S

| | |
|--------------------------------------|----------|
| EXAMINATION OF SCOTT ANDREW DENNING: | PAGE |
| By Mr. Smith | 9, 82 |
| By Mr. Warren | 102, 138 |
| By Mr. Richardson | 123 |

E X H I B I T S

| | | |
|-------------|--|------|
| EXHIBIT NO: | DESCRIPTION: | PAGE |
| Exhibit 1 | Patent Owner's Notice of Deposition of Scott A. Denning, IPR2019-01103 | 13 |
| Exhibit 2 | United States Patent 7,979,023 B2 | 14 |
| Exhibit 3 | Declaration of Scott A. Denning, IPR2019-01103 | 15 |
| Exhibit 4 | Scott Andrew Denning, Curriculum Vitae | 15 |
| Exhibit 5 | United States Patent 5,276,686 | 28 |
| Exhibit 6 | United States Patent 5,109,390 | 38 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

6

E X H I B I T S (Continued)

| EXHIBIT NO: | DESCRIPTION: | PAGE |
|-------------|---|------|
| Exhibit 7 | United States Patent 5,481,533 | 43 |
| Exhibit 8 | United States Patent 5,504,786 | 49 |
| Exhibit 9 | United States Patent 4,001,692 | 62 |
| Exhibit 10 | Article | 68 |
| Exhibit 11 | United States Patent 5,559,865 | 71 |
| Exhibit 12 | United States Patent 7,848,701 B2 | 101 |
| Exhibit 13 | Declaration of Scott A. Denning, IPR2019-01102 | 101 |

** Exhibits Attached to Original Transcript.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

7

P R O C E E D I N G S

Washington, D.C.
January 16, 2020; 9:16 a.m.

- - -
SCOTT ANDREW DENNING,
after having been first duly sworn, was
examined and testified as follows:

- - -
MR. SMITH: Before we get started,
we're here this morning for the deposition
of Mr. Denning in two separate IPR
proceedings. That's IPR2019-01102, which
is related to Patent 7,848,701, and IPR
proceeding -- IPR2019-01103, related
to Patent 7,979,023.

We've agreed that we'll have a single
transcript for both IPR proceedings, and it
will be usable in both of the two
proceedings.

I will be starting, and I will be
asking questions with respect to the '023

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

8

1 patent, which is 01103, and then Mr. Warren
2 will follow up on the '701 patent after I'm
3 done.

4 We'll do our best not to duplicate
5 any of the questions. And when we're
6 asking about a specific declaration or
7 claims related to one of the
8 specific patents, we'll try to identify
9 which specific one we're referring to so
10 that it's clear on the record.

11 All agree?

12 MR. RICHARDSON: That works for us.

13 MR. SMITH: All right.

14 MR. RICHARDSON: Before we go on,
15 we'll put our appearances on the record.

16 MR. SMITH: Absolutely.

17 MR. RICHARDSON: So for Petitioner's
18 side, Volkswagen Group of America, my name
19 is Ryan Richardson from the law firm of
20 Sterne, Kessler, Goldstein & Fox.

21 And here with me is Lauren Schleh,
22 also from Sterne, Kessler, Goldstein & Fox.

23 MR. SMITH: All right. And I am
24 Elvin Smith with Carucel. And with me is
25 Mr. Sanford Warren, who is also

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

9

1 representing Carucel. And then we have our
2 expert, Mark Lanning, L-A-N-N-I-N-G.

3 - - -

4 EXAMINATION BY COUNSEL FOR PATENT OWNER

5 - - -

6 BY MR. SMITH:

7 Q. Mr. Denning, you've had your deposition
8 taken before, correct?

9 A. Yes.

10 Q. Ballpark, how many times?

11 A. I think this is the eighth.

12 Q. Okay. So you understand the testimony
13 you're giving here today is under oath?

14 A. Yes.

15 Q. And you're doing a good job of this --
16 sometimes I don't do as well -- but the court
17 reporter has to try to take down what we both are
18 saying. So if you'll let me finish my question,
19 I'll try to let you finish your answer so that we're
20 not talking over each other.

21 Is that fair?

22 A. Yeah, that's fair.

23 Q. All right. And if at some point in time
24 I ask a poor question and you don't understand the
25 question, can you ask me to rephrase it so that I

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

10

1 can presume that if you've answered the question,
2 you understood what it was that I was asking?

3 A. Sure.

4 Q. When were you first contacted with
5 respect to IPR-1103 for the '023 patent?

6 A. I don't recall the exact date. It seems
7 like it was March or April or sometime in that time
8 frame; it could have been somewhat earlier.

9 Q. Do you remember who contacted you?

10 A. I'm pretty sure that it's the
11 salesperson at Thomson Reuters that I work with.

12 Q. Okay. And what were you asked to do
13 with respect to IPR-1103?

14 A. Do you mean by the person that contacted
15 me?

16 Q. Yes.

17 A. I'm pretty sure that he sent over one of
18 the patents and asked me to take a look at it and
19 see if it was within my technical domain.

20 Q. All right. And I presume, since you're
21 here today, you told him that you believed that it
22 was?

23 A. Yes, that's right.

24 Q. And then what happened next?

25 A. I guess papers were signed and a call

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

11

1 was set up with Lauren.

2 Q. Okay. What was the first thing Lauren
3 asked you to do?

4 MR. RICHARDSON: And I'll caution the
5 witness not to reveal any attorney-client
6 privileged or product information.

7 BY MR. SMITH:

8 Q. Yes. And I'm not asking for that.
9 That's not the intent of any of my questions. So to
10 the extent that it may appear to call for that, I'm
11 not asking for it; don't give me that.

12 A. As I recall, there were several patents
13 that were given to me. He asked me to read those
14 and just let him know what I thought about -- if
15 there was any prior art issues with them.

16 Q. With respect to the prior art that is
17 referenced in your declaration, did you find all of
18 those references? Were some of those references
19 given to you? How did that process play out?

20 A. These references were all given to me.

21 Q. All right. And was that by Lauren or
22 people associated with Lauren?

23 A. Yeah, it was people associated.

24 Q. When you do declarations like this, is
25 this solely your work product, or are there other

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

12

1 **people at, basically, your shop that help you with**
2 **doing these reports -- these declarations?**

3 A. In this case, because there's a lot of
4 work going into it, a lot of different materials
5 being brought in -- I typically work with this team
6 here that -- we have quite a few calls to discuss
7 all the art, all the nuances of the technology, and,
8 you know, really make sure that we all understand or
9 are on the same page.

10 I believe the actual preparation of the
11 declaration happens by a paralegal here who takes my
12 notes and -- and -- and copies and pastes it
13 together into what you see there.

14 Q. All right. So I just want to make sure
15 that I understand the full -- when you're talking
16 about "here" and you're talking about "team" and on
17 the call, is there anyone not working for -- at
18 Sterne Kessler who is part of that process? Or was
19 that just you on the outside?

20 A. Only me on the outside.

21 Q. Okay. So you don't have an assistant?
22 You don't have somebody who helps do drafts for you
23 or run research or those kind of things for you,
24 personally?

25 A. No.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

13

1 **Q.** Then you mentioned that you had several
2 calls here that -- you mentioned notes.

3 **You prepared notes?**

4 **A.** Yeah. There would be quite a few e-mail
5 exchanges, regular -- usually, like, weekly calls to
6 go over the things that -- that I would send in.
7 And that pretty much is just a repetitive process
8 like that.

9 **Q.** All right. And through that repetitive
10 process, it's your belief that a legal assistant
11 here took those things, combined them and turned it
12 into a declaration that then you reviewed and
13 approved prior to signing it?

14 **A.** Yes.

15 **Q.** All right.

16 MR. SMITH: We'll start by Denning 1.

17 - - -

18 (Denning Deposition Exhibit
19 Number 1, Patent Owner's Notice of
20 Deposition of Scott A. Denning,
21 IPR2019-01103, marked for
22 identification, as of this date.)

23 - - -

24 BY MR. SMITH:

25 **Q.** I'm going to hand you what I've had

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

14

1 marked as Denning 1 and ask you if you've seen this
2 before.

3 A. Yes.

4 Q. And that's the notice by which you're
5 appearing here today to provide your testimony,
6 correct?

7 A. Yes.

8 Q. And then there will also be a second
9 notice that would be applicable to the other IPR
10 proceeding that you're here for as well, correct?

11 A. Yes.

12 Q. I'm going to hand you what I'll have
13 marked as Denning 2.

14 - - -

15 (Denning Deposition Exhibit
16 Number 2, United States Patent
17 7,979,023 B2, marked for
18 identification, as of this date.)

19 - - -

20 BY MR. SMITH:

21 Q. And can you identify Denning 2 for us?

22 A. This is a copy of U.S.
23 7,979,023 B2 patent.

24 Q. All right. And that is the '023 patent
25 for which you were asked to provide testimony in

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

15

1 **this matter, correct?**

2 A. Yes.

3 Q. I'm going to hand you what I'll have
4 **marked as Denning 3 --**

5 - - -

6 (Denning Deposition Exhibit
7 Number 3, Declaration of Scott A.
8 Denning, IPR2019-01103, marked for
9 identification, as of this date.)

10 - - -

11 BY MR. SMITH:

12 Q. -- and ask us -- if you can tell us what
13 **Denning 3 is.**

14 A. Declaration of Scott A. Denning.

15 Q. And that's the declaration that you
16 **prepared in IPR-1103 with respect to the '023**
17 **patent, correct?**

18 A. It appears to be.

19 Q. Then I'm going to hand you what I've had
20 **marked as Denning Exhibit 4 --**

21 - - -

22 (Denning Deposition Exhibit
23 Number 4, Scott Andrew Denning,
24 Curriculum Vitae, marked for

25

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

16

1 identification, as of this date.)

2 - - -

3 BY MR. SMITH:

4 Q. -- and ask you if you can identify
5 Deposition Exhibit 4.

6 A. This appears to be a version of my CV.

7 Q. All right. That you would have tendered
8 in association with your declaration for testimony
9 in this case, correct?

10 A. Yes.

11 Q. All right. Let's start by going through
12 your declaration. We'll refer to the other exhibits
13 from time to time, but we're going to start by
14 walking through your declaration.

15 In terms of the format that is laid out
16 in this, I think you've testified that the
17 references contained herein were all provided to you
18 by someone at Sterne Kessler, correct?

19 A. Yes.

20 Q. And with respect to the grounds, there
21 are five grounds listed for this petition.

22 Were those grounds that you came up
23 with, or were those grounds provided to you?

24 A. As I recall, the grounds kind of grew as
25 we worked through the material.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

17

1 Q. Okay. So you discussed the material
2 amongst the team and developed the grounds over a
3 course of time as part of a collaborative effort
4 with the team?

5 A. Yes.

6 Q. But it's your -- your opinion and
7 testimony that each of these grounds are sufficient
8 for having found the '023 obvious?

9 A. Yes.

10 Q. In Paragraph 4 of your declaration on
11 Page 1, you've mentioned that you've been asked to
12 provide your technical review, analysis and insights
13 with respect to the '023 patent, correct?

14 A. Yes.

15 Q. All right. And then you mentioned in
16 your qualifications 20 years of experience with
17 mobile communications, which is in Paragraph 6.

18 Have you had any experience with
19 designing mobile base stations?

20 A. I guess I would have to ask exactly what
21 you mean by "mobile base station." I certainly have
22 experience designing and building the wireless hub
23 for all kinds of different devices.

24 In the robotic inspection trucks, which
25 I -- pipeline inspection trucks that I mention,

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

18

1 those certainly had a wireless hub controller that
2 talked to other devices as well as connected back to
3 the cellular system.

4 **Q. Well, the '023 discusses mobile base**
5 **stations with respect to cellular networks, correct?**

6 A. Yes.

7 **Q. Have you participated in the design of**
8 **any base stations for use in a cellular network?**

9 A. No.

10 **Q. Have you designed any portable handsets**
11 **for use in a cellular network?**

12 A. Yes, I have.

13 **Q. All right. And tell me about that.**

14 A. One in particular design -- can I first
15 tell you about a related project which was actually
16 more of a modem, but it worked very similar?

17 **Q. Sure. Okay.**

18 A. So in 1994, I designed a design -- or
19 PacTel Cellular, which I believe was even starting
20 to be Verizon at that time -- that was a -- a modem
21 that would connect up to the AMPS and then D-AMPS
22 cellular system. It looked to the network as though
23 it was a base station, worked very much like a bag
24 phone at the time, difference being that instead of
25 a handset that you talk to, it had a lot of

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

19

1 interface electronics that you could connect up
2 computers to.

3 The original one was used in RS-232
4 connection. And then it would make connection with
5 the cellular network and just acted as a -- a modem,
6 much the same as a telephone line modem did at that
7 time.

8 **Q. What -- like, we hear today 4G, 5G.**
9 **What generation of technology would that**
10 **modem have utilized?**

11 A. That's before they actually even used
12 the term "G." This truly was analog cellular. I
13 would have to say that would have been 1G.

14 **Q. Anything -- any experience with handset**
15 **devices and the design of handset devices after this**
16 **reference that you had for Active Cellular?**

17 A. So there were several generations of
18 that project that I worked on. Certainly, there was
19 a GPS phone system that I worked on that was also
20 handheld cellular. In that case, though, it used an
21 off-the-shelf electronics package. It's a CDPD
22 modem that was provided by Novatel.

23 And I wrote the firmware for that and
24 all of the application, but we didn't actually make
25 the -- the RF model that was used in that device.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

20

1 Q. All right. What -- you said that --
2 that the continuation of the PacTel -- did that make
3 it into 2G or 3G, or was that all analog?

4 A. I don't know.

5 Q. In what you participated with?

6 A. What I participated was all analog, so
7 that would have been AMPS and D-AMPS; so the -- the
8 D-AMPS was not strictly just an analog signal, as it
9 used the control channel signaling for sending data.

10 Q. All right. Continuing on with your
11 declaration, we have the materials you considered.

12 And just for clarity's sake, you list 33
13 exhibits there, correct?

14 And I'm on Page 4, 5 and 6 of your
15 declaration.

16 A. Yes.

17 Q. And each of those 33 exhibits were
18 provided to you by Sterne Kessler, correct?

19 A. With the exception of my CV?

20 Q. With the exception of your CV; that's
21 correct. Right?

22 And the collaboration on your
23 declaration?

24 A. Yes.

25 Q. All right. And then with respect to

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

21

1 legal standards in your testimony that is at
2 Paragraph 15 through 28 -- those were all matters
3 that -- your understanding with respect to the legal
4 basis for that all came from your instructions and
5 conversations with counsel at Sterne Kessler,
6 correct?

7 A. As I mentioned, I've been doing this for
8 a while. I've had a few depositions. And so it's
9 accumulation of those cases as well.

10 Q. Did any of the -- I think you mentioned
11 you had been deposed seven or eight times?

12 A. I believe this is my eighth.

13 Q. All right. Of those other seven, did
14 any of those involve communications over a cellular
15 network?

16 A. Yes.

17 Q. Which one was that?

18 And just so we're clear on the record,
19 you're referring to Denning Exhibit 4, correct?

20 A. Yes.

21 (Whereupon, the witness reviews the
22 material provided.)

23 THE WITNESS: Core Wireless versus
24 LG; LBSI versus BP; and the ITC case, which
25 is at the bottom, Flashpoint versus HTC.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

22

1 BY MR. SMITH:

2 Q. Okay. Just briefly, so I understand the
3 background on this, the Core Wireless case -- what
4 was the technology at issue there?

5 A. Sorry. I'm having a hard time
6 recalling.

7 I'm -- I'm quite sure that it was
8 software on the -- on the handset -- or the mobile
9 device.

10 Q. Do you recall what that software did?

11 A. That's what I was trying to remember.
12 I do not. It's been long enough now
13 that I don't recall the exact technology.

14 Q. All right. With respect to the second
15 matter you mentioned, which was the LBSI versus
16 BP America, what technology was at issue there?

17 A. There were a couple of them: The
18 primary one was getting location-based services and
19 dealing with location technologies, such as cellular
20 triangulation, strength indicators to list cell site
21 as well as determining the location of other users
22 which could be nearby through other wireless
23 technologies.

24 Q. All right. Anything else?

25 A. That's all I recall.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

23

1 Q. And then on the ITC -- or, actually, you
2 referenced it as the Flashpoint versus HTC.

3 What was the technology at issue there?

4 A. So I was actually working for Pantech on
5 that one. It also had to do with software on the
6 handset. But I'm sorry. It's long enough ago I
7 just do not recall which part of the software.

8 Q. On the handset that you were talking
9 about in the Core Wireless versus LG, was that a
10 handset that directly communicated with a cellular
11 network, or did it have to go through a base
12 station?

13 A. This one communicated directly with the
14 cellular network.

15 Q. All right. What about the one in
16 Flashpoint versus HTC?

17 A. The same.

18 Q. So it directly communicated with a
19 cellular network as well?

20 A. Yes, it did.

21 Q. On the '023 -- and we'll get into
22 specifics as we go through it. I just want to
23 understand at a high level what your understanding
24 of the '023 is.

25 What was the main object of the

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

24

1 **invention of the '023?**

2 **(Whereupon, the witness reviews the**
3 **material provided.)**

4 THE WITNESS: As I state on the
5 bottom of Page 12 of my declaration, Like
6 the prior art techniques discussed above,
7 the '023 patent generally relates to a
8 mobile communication system that includes a
9 moving base station configured to
10 communicate with fixed radio ports. In
11 particular, the '023 patent describes the
12 moving base station being interposed
13 between a moving mobile telephone unit and
14 a fixed base station and facilitating
15 communication between the two systems.

16 BY MR. SMITH:

17 **Q. So you're basically reading from**
18 **Paragraph 31 of Page 12?**

19 A. Yes.

20 **Q. In layman's terms, what part of that**
21 **component is the thrust of the '023 patent? The**
22 **handset? The fixed cores? The moving base station?**
23 **What's the main object of the invention?**

24 MR. RICHARDSON: Objection: form.

25 THE WITNESS: So in order to

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

25

1 determine the main object of the invention,
2 I'd have to refer to the claim language.

3 So looking at the 7,979,023 patent,
4 Claim 1, which is An apparatus configured
5 to move relative to the Earth, the
6 apparatus comprising -- it has a plurality
7 of spatially separated antennas, a receiver
8 configured to receive mobile device signals
9 from a mobile device through a plurality of
10 spatially separated antennas, and a
11 transmitter configured to transmit radio
12 frequency signals corresponding to the
13 mobile device signals to a base station.

14 Based on my knowledge of the way
15 that patent claims are written and what is
16 required in order to infringe them or to be
17 obvious, I'm not sure that any one of these
18 would not be required. And, therefore, all
19 of them would be the main object of the
20 invention.

21 BY MR. SMITH:

22 **Q. Look at Paragraph 37 on Page 16.**

23 **And on the -- one, two -- third line**
24 **down, you have a sentence that reads, Instead, the**
25 **'023 patent merely purports to add a technique**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

26

1 whereby an intermediary (e.g. mobile base station)
2 moves relative to the base station and facilitates
3 the communication between the base station and the
4 mobile device to these known systems and methods for
5 facilitating communications between mobile
6 telephones and fixed base stations.

7 Do you see that?

8 A. Yes.

9 Q. Do you believe that the '023 patent does
10 more than that, or do you think that's what the '023
11 patent thrust is?

12 A. I don't think that there's more to it
13 than that.

14 Q. All right. What -- and what did you do
15 in preparation for your deposition today?

16 A. I reread and reread and reread my
17 declarations --

18 (Interruption by cellular telephone.)

19 THE WITNESS: Could we silence the
20 phone?

21 BY MR. SMITH:

22 Q. Yeah.

23 A. Thank you.

24 -- I looked at the prior art patents and
25 reread them as well. I went back over my notes that

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

27

1 we made and the e-mails that were between myself and
2 Sterne Kessler and really became familiar once again
3 with all of the materials.

4 **Q. All right.**

5 **With respect to the prior art reference**
6 **of Ito, we just mentioned that -- on the '023 that**
7 **it's really directed toward this mobile base station**
8 **concept of the cellular network.**

9 **What was the thrust of the Ito patent?**

10 A. Can I please see a copy of it?

11 **Q. Do you have a -- do you have a**
12 **recollection of it without -- I'm going to give you**
13 **a copy, but do you have a recollection without**
14 **referring to your declaration or to the Ito patent?**

15 A. I believe Ito could be summarized as we
16 just discussed in Paragraph 37, that it is an
17 intermediary mobile base station, was relative to
18 the base station, facilitates communication between
19 the base station and the mobile device.

20 **Q. Does the mobile device in Ito**
21 **communicate directly with a cellular network?**

22 A. I really would prefer to look at
23 the patent, if you don't mind.

24 MR. SMITH: Let's mark Denning

25 Exhibit 5.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

28

— — —

(Denning Deposition Exhibit
Number 5, United States Patent
5,276,686, marked for
identification, as of this date.)

— — —

THE WITNESS: Would you please repeat the question?

BY MR. SMITH:

Q. Yes.

In Ito, the portable handset -- can it communicate directly with the cellular network?

A. In Ito, the -- the mobile base is there to form a connection between a handset and a -- a fixed base station, but I don't see anything in the Summary here or through my recollection that prohibits the mobile device from being able to also establish a connection with -- with a fixed base station.

Q. All right. So if the MSS -- I'll refer you to Figure 1 of Ito.

Do you know -- if I turned off the MSS, do you know, one way or the other, whether the PSS there would be able to communicate with the cellular network?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

29

1 A. That's my point that I was just making.
2 I did not see anything that would prohibit that from
3 happening.

4 Q. All right.

5 In other words, you don't see anything
6 that prohibits in the patent, but you don't know one
7 way or the other, or you believe that it can?

8 MR. RICHARDSON: Objection: form.

9 THE WITNESS: All I know about Ito is
10 what the patent says.

11 BY MR. SMITH:

12 Q. Right.

13 Can the -- if we look at Column 2,
14 Line 10 on the Ito patent --

15 A. Okay.

16 Q. -- it says that the -- the -- in the
17 Summary of the Invention section, it says, Channel
18 in order to eliminate the necessity of wiring the
19 mobile base device and portable device and enhance
20 the maneuverability of an automobile telephone
21 handset.

22 Do you see that?

23 A. Yes.

24 Q. Would you agree that Ito is really just
25 designed to be a wireless connection to the mobile

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

30

1 **base station eliminating the cord of a fixed**
2 **connection?**

3 A. The first sentence of the paragraph
4 says, It is therefore an object of the present
5 invention to provide a mobile radio communication
6 system -- I would have to say that it's one object
7 to provide -- in order to eliminate the necessity of
8 wiring the mobile base device and portable device.

9 (Whereupon, the witness reviews the
10 material provided.)

11 THE WITNESS: It goes on and gives --
12 in the following paragraph, it says,
13 Another option.

14 So I think there are several objects
15 of the Ito patent.

16 BY MR. SMITH:

17 Q. **Does Ito ever specifically show where**
18 **the PSS communicates directly with a cellular**
19 **network?**

20 A. Are you asking me to look through the
21 whole patent and tell you --

22 Q. **I'm asking you if it's disclosed in Ito.**
23 **You would agree that the '023 is**
24 **referring to a handset that can communicate directly**
25 **with a cellular network, correct?**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

31

1 A. So you've asked me two questions.
2 Do you want me to answer the '023 patent
3 question or the other one?

4 **Q. Answer the '023 first, and then we'll go**
5 **back to the . . .**

6 A. Okay.

7 (Whereupon, the witness reviews the
8 material provided.)

9 THE WITNESS: Okay.

10 I find in the '023 patent in
11 Column 3, Line 27 -- it says, Due to the
12 characteristics of the Direct Sequence,
13 Spread Spectrum CDMA, the higher power
14 level signal will overpower the lower level
15 signal such that the mobile unit does not
16 receive communications from the fixed radio
17 port but only from the movable base
18 station.

19 I would have to say that the
20 radio -- the handset is capable of
21 communicating with the fixed station.

22 BY MR. SMITH:

23 **Q. All right.**

24 **And so with respect to Ito, does it show**
25 **where the PSS communicates directly with a cellular**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

32

1 **network, and if so, where?**

2 **(Whereupon, the witness reviews the**
3 **material provided.)**

4 THE WITNESS: So my declaration on
5 Page 43 -- it's actually Paragraph 92 --
6 states that As shown in Ito's Figure 3, the
7 mobile base device MSS includes a first
8 transmitter-receiver unit, a second
9 transceiver unit, whereas the first
10 transmitter-receiver unit facilitates
11 communication with the base station BSS,
12 second transmitter-receiver unit
13 facilitates communication with the portable
14 devices. Thus, in operation, the mobile
15 device -- mobile base device receives
16 signals from the base station via the first
17 transmitter-receiver unit, forwards those
18 signals to the portable device via the
19 second transmitter-receiver unit.
20 Similarly, the second transmitter-receiver
21 unit receives signals from a portable
22 device and forwards those to the base
23 station. In this manner, the mobile
24 device -- mobile base device provides a
25 moving source of communications

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

33

1 connectivity for portable devices located
2 within a moving vehicle.

3 That is the description given in Ito
4 of how it works. The MSS provides moving
5 source of communication. Once again,
6 though, I don't see anything in here that
7 would preclude a handset talking to a fixed
8 station; it's just not talked about.

9 BY MR. SMITH:

10 **Q. On Page 43 -- we're going to come back**
11 **to that in a second -- but your Figure 3 there, your**
12 **line -- your Paragraph 92, first sentence, reads,**
13 **As shown in Ito's Figure 3, the mobile base device**
14 **MSS includes a first transmitter-receiver unit 50**
15 **and a second transmitter-receiver unit 80.**

16 **Can you show me on Figure 3 where**
17 **Unit 80 is?**

18 **(Whereupon, the witness reviews the**
19 **material provided.)**

20 THE WITNESS: So in the Ito patent,
21 '686, in Column 8, Line 27, it says, Like
22 the first transmitter-receiver unit 50, the
23 second transmitter-receiver unit 80 also
24 comprises a transmission system, reception
25 system and a control system.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

34

1 Based on Column 8 that I just read
2 there, it is obviously referring to the
3 bottom block of Figure 3, but there is no
4 80 that is shown in Figure 3.

5 BY MR. SMITH:

6 **Q. All right.**

7 **And you didn't note in your report that**
8 **80 wasn't shown on Figure 3, did you?**

9 A. Are you representing that I didn't, or
10 do you want me to search?

11 **Q. I didn't see that you mentioned anywhere**
12 **in there that Unit 80 wasn't actually identified.**

13 **Do you recall -- strike that.**

14 **Do you recall having noticed that**
15 **Figure -- that Unit 80 was not identified in**
16 **Figure 3 prior to today?**

17 A. No.

18 **Q. Let's look at Figure 6 of Ito for a**
19 **second.**

20 **And at least as to what's illustrated in**
21 **Figure 6, it doesn't represent PSS1 or PSS2 directly**
22 **communicating to BSS, does it?**

23 **(Whereupon, the witness reviews the**
24 **material provided.)**

25 THE WITNESS: No, it doesn't

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

35

1 represent that.

2 BY MR. SMITH:

3 **Q. All right. Looking at Column 3, Line 50**
4 **through 56.**

5 A. Okay.

6 **Q. It mentions that core -- it actually**
7 **says "codeless."**

8 **Does Ito give any definition for what a**
9 **codeless telephone handset would be?**

10 A. I'm going to assume that that is a typo,
11 that it should be cordless, as in the sentence right
12 above it.

13 **Q. Right.**

14 A. And if I look at Column 3, Line 41, it
15 says, In a cordless telephone system, stationary
16 telephone units are connected to a telephone
17 exchange by way of subscribers' wire lines and each
18 of the stationary units is connected to a handset by
19 way of a radio channel. With a system according to
20 the invention, additional stationary telephone units
21 can be wirelessly connected to a telephone exchange
22 without incurring any additional cost of installing
23 new subscribers' lines and/or removing existing
24 subscribers' lines.

25 You know, I can look for additional

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

36

1 references to what they're referring to there as a
2 "cordless telephone." I think that makes it pretty
3 clear what they're talking about, though.

4 Q. All right. And it -- it shows what
5 they're talking about is not a unit that
6 communicates directly with a cellular network but
7 one that goes through the MSS, correct?

8 A. Well, I think what's actually described
9 here is that the cordless phone has a radio channel
10 that connects it to a device that then goes into the
11 phone system.

12 Q. Right. And if we turn that device that
13 it was connected to off, that portable device would
14 not connect to the cellular network, correct?

15 A. That's correct.

16 Q. And then if we look at Column 9,
17 Lines 64 through 68, I think this kind of furthers
18 the point.

19 It says that -- the portable device PSS
20 that belongs to the mobile station MS2.

21 Do you see that?

22 A. Yes.

23 Q. That would also correspond to what you
24 were just saying with respect to the portable device
25 has its functionality with respect to connecting a

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

37

1 cellular -- to a cellular network by virtue of the
2 MS2 connection, correct? It's not something --
3 strike that.

4 It furthers the fact that the portable
5 device needs the mobile station MS2 in order to
6 connect to the cellular network, true?

7 A. As I said before, Ito appears to be
8 describing -- or Ito is describing a mobile base
9 unit that is between a handset and a fixed -- fixed
10 base station. And certainly everything that is
11 described in Ito is describing that relationship.

12 But to my point earlier, I don't see
13 anything in Ito that says that that handset cannot
14 connect up to a fixed base station.

15 Q. But you would also agree that there's
16 nothing in Ito that discloses that it can or does,
17 right?

18 A. Ito is completely silent on that.

19 MR. SMITH: Let's take a short break.

20 - - -

21 (Whereupon, a recess was taken from
22 10:12 a.m. to 10:27 a.m.)

23 - - -

24 BY MR. SMITH:

25 Q. Continuing on in your declaration for a

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

38

1 minute on Page 21 -- actually, it's 20 and 21 on
2 Paragraph 46.

3 The last sentence there says, POSITAs
4 knew of this problem and had developed several
5 well-known solutions for more efficiently performing
6 handoffs prior to the '023 patent.

7 And your reference to that was to
8 Exhibit 1007 of your declaration, which was
9 Gilhousen '390. And then it was Column 7, Lines 49
10 to 62.

11 So let me get you Gilhousen '390.

12 MR. SMITH: This will be 6.

13 - - -

14 (Denning Deposition Exhibit
15 Number 6, United States Patent
16 5,109,390, marked for
17 identification, as of this date.)

18 - - -

19 BY MR. SMITH:

20 Q. All right. Column 7, Line 49 to 62.
21 What solution is proposed by Gilhousen
22 at Column 7, 49 to 62?

23 (Whereupon, the witness reviews the
24 material provided.)

25 THE WITNESS: In Line 60, it says, In

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

39

1 the cell-site diversity mode, the call is
2 allowed to linger in the in-between state
3 as described above, the -- what is being
4 described is known as cell-site diversity.

5 BY MR. SMITH:

6 **Q. All right. That's one solution.**

7 **Are there any other solutions proposed**
8 **in Gilhousen '390?**

9 A. Do you want me to read through it and
10 find them all?

11 **Q. This is -- this is your reference. So**
12 **in the reference in support of the statement, There**
13 **are several well-known solutions, I see a reference**
14 **to cell-site diversity.**

15 **What other solution -- what other**
16 **well-known solutions were there?**

17 **(Whereupon, the witness reviews the**
18 **material provided.)**

19 THE WITNESS: So in Column 3 of the
20 '390 patent, as well as 4, it describes a
21 conventional cellular telephone system and
22 describes the handoff problem.

23 In particular, Line 60, it says,
24 Handoff from one cell to another is
25 initiated when the cell-site receiver

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

40

1 handling the call notices that the received
2 signal strength from the mobile telephone
3 falls below a predetermined threshold.

4 Then in Column 4, Line 17, it says,
5 In the conventional system, a
6 break-before-make scheme is utilized such
7 that no diversity reception is possible in
8 overcoming fades.

9 So what it's describing there is that
10 the system is monitoring the signal
11 strength of the handset. And when it falls
12 below a particular level, an initiation to
13 an additional -- or to another cell site is
14 initiated or is handoff.

15 BY MR. SMITH:

16 **Q. Right.**

17 **My question is -- your statement is,**
18 **There's several well-known solutions for more**
19 **efficiently performing the handoffs prior to the**
20 **'023 patent, but all you've cited as an example for**
21 **that in Paragraph 56 [sic] of your declaration is**
22 **cell-site diversity, correct?**

23 MR. RICHARDSON: Objection: form.

24 BY MR. SMITH:

25 **Q. Since there's an objection, let me ask**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

41

1 it this way: You'll agree that the only citation
2 reference you provided for the statement that There
3 were several well-known solutions is a reference to
4 Exhibit 1007, which is Gilhousen '390, at Column 7,
5 Lines 49 to 62?

6 That's all that's cited in support of
7 that statement in Paragraph 46, correct?

8 (Whereupon, the witness reviews the
9 material provided.)

10 THE WITNESS: So the last sentence on
11 Page 20, Paragraph 46: This problem was
12 well known at least as early as 1991, as
13 disclosed by U.S. Patent Number 5,345,467
14 to Lomp.

15 I -- I don't have Lomp in front of
16 me, but, surely, something in Lomp
17 addressed the issue and was a solution.

18 It goes on, Similarly, issues with
19 maintaining a seamless call during a
20 handoff process were also well known as
21 early as 1993, as demonstrated by U.S.
22 6,393,281 to Capone.

23 I have to assume that Capone, though
24 I don't have that patent here, was
25 describing what this talked about,

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

42

1 maintaining a seamless call, and dealing
2 with that.

3 The last sentence where I give this
4 example here of Exhibit 1007 and then this
5 column, we are describing a -- still
6 another method for dealing with handoffs.

7 BY MR. SMITH:

8 **Q. All right.**

9 **But in support of this, the statement**
10 **you made in your declaration that says that A POSITA**
11 **knew of these problems and had developed several**
12 **well-known solutions for more efficiently performing**
13 **handoffs -- the only reference you provided for that**
14 **was Exhibit 7, Gilhousen '390, Column 7, Lines 49 to**
15 **62, correct?**

16 A. This is the reference that is provided
17 in Paragraph 46; however, I go on to describe the
18 problem further in Paragraphs 47, 48 and 49, even
19 50, 51 and 52, where I actually talk more about
20 those that I just mentioned previously in 46.

21 So if you want, we can talk about all of
22 those. I -- I definitely did not only give you an
23 example of dealing with the handoff problem in this
24 one exhibit. It is described in great detail in
25 these other sections as well.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

43

1 Q. But the only reference -- the only
2 solution proposed in Gilhousen was cell-site
3 diversity at this reference, correct?

4 (Whereupon, the witness reviews the
5 material provided.)

6 THE WITNESS: Gilhousen describes
7 cell -- cell-site diversity, yes.

8 BY MR. SMITH:

9 Q. Okay. Turning now to Paragraph 64,
10 which is on Page 28.

11 - - -

12 (Denning Deposition Exhibit
13 Number 7, United States Patent
14 5,481,533, marked for
15 identification, as of this date.)

16 - - -

17 BY MR. SMITH:

18 Q. I'll hand you what we've had marked as
19 Denning 7.

20 And in your report at Page 64 -- excuse
21 me -- Paragraph 64 on Page 28, you reference the
22 well-known combination of -- well-known combined
23 TDMA and CDMA configuration.

24 Do you see that?

25 A. Yes.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

44

1 **Q. What cellular network standard uses this**
2 **configuration?**

3 **(Whereupon, the witness reviews the**
4 **material provided.)**

5 THE WITNESS: The '533 patent that
6 you just handed me, in Column 1, Line 25,
7 gives an example of PCS.

8 BY MR. SMITH:

9 **Q. So you're saying that PCS is TDMA/CDMA**
10 **configuration?**

11 A. I believe I just read you that the
12 '533 patent says that.

13 **Q. I'm not asking what the '533 patent**
14 **says; I'm asking you if you know if PCS is a**
15 **TDMA/CDMA configuration -- if you know that.**

16 A. So while I'm very familiar with both
17 techniques, TDMA and CDMA, the cellular technologies
18 that I actually built devices for was the analog
19 cellular TDMA. The more modern -- GSM, 2G, 3G,
20 LTE -- are CDMA systems. And I cannot say
21 firsthand, based on any equipment that I've
22 developed, they used both of those simultaneously.

23 **Q. I'm not asking for what you developed;**
24 **I'm asking if you, personally, know if the PCS**
25 **utilizes a TDMA/CDMA configuration.**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

45

1 MR. RICHARDSON: Objection: asked and
2 answered.

3 THE WITNESS: I know what I read here
4 in the '533 patent.

5 BY MR. SMITH:

6 Q. But you don't have any knowledge beyond
7 what you know from reading the aforementioned
8 reference in the patent, Column 1, approximately
9 Line 25?

10 A. As I said, I don't have any experience
11 designing systems that used both of those.

12 Q. All right.

13 Looking at Column 1, Line 55, it says, A
14 feature of the methodology, in contrast to the
15 standard TDMA/frequency-division multiple access
16 (FDMA) technique in which inter-cell interference is
17 suppressed by making sure that users in adjacent
18 cells are transmitting on the different frequency
19 bands is that the hybrid TD -- is that the hybrid
20 TDMA/CDMA scheme combines the high intra-cell
21 capacity of TDMA with the inter-cell and multiple
22 path interference rejection capabilities of CDMA.

23 Do you know what standard that might be
24 referring to -- what cellular standard that would be
25 referring to?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

46

1 **I'm specifically referring to Line 56,**
2 **where it has TDMA/FDMA.**

3 A. I believe that it's saying that that is
4 a standard technique. I'm not sure that it's saying
5 that that is a -- a phone standard.

6 **Q. If a phone standard applies to that,**
7 **you're not sure which one?**

8 A. Well, I -- from the time frame of
9 the patent, I'm quite sure that there were European
10 standards that did that.

11 I also believe that the standard AMPS
12 system also assigned channels in a TDMA manner such
13 that neighboring cell sites did not use the same
14 frequency band in close proximity, as what's being
15 described there.

16 AMPS, D-AMPS, PCS -- as far as what I
17 read here, I believe all of those use that.

18 **Q. On Paragraph 65 of your report, you say**
19 **that Mobile repeaters are substantially similar to**
20 **movable base stations.**

21 **In what way are mobile repeaters**
22 **different from movable base stations?**

23 A. Are you asking me how a mobile repeater
24 is different from a cellular base station?

25 **Q. Yes.**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

47

1 **Actually, a movable base station,**
2 **because I'm asking for you to explain what you meant**
3 **by that phrase.**

4 A. Okay.

5 (Whereupon, the witness reviews the
6 material provided.)

7 BY MR. SMITH:

8 **Q. So in Paragraph 65, you made the**
9 **statement that a mobile repeater is substantially**
10 **similar to a movable base station.**

11 **I'm asking you in which ways is a mobile**
12 **repeater different from a movable base station, as**
13 **you've utilized those terms in Paragraph 65.**

14 A. Okay.

15 Paragraph 68, I describe the function of
16 a repeater. It says, At least one repeater station
17 is used to receive radio signals transmitted by the
18 base station and to retransmit radio signals to the
19 mobile stations over the same frequency band.

20 Now, that same frequency band is -- is
21 kind of important in that what a repeater is doing
22 is actually just that: it's repeating what it
23 received from some other unit, some base and -- and
24 the mobile. And -- and it is just amplifying or
25 retransmitting exactly what it received.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

48

1 Base station in the cellular network
2 works somewhat differently in that it has to deal
3 with the control process by a host somewhere which
4 is assigning different channels on that base station
5 and housekeeping functions like that.

6 **Q. So a movable base station has additional**
7 **capabilities and responsibilities beyond what a**
8 **repeater would have?**

9 A. Yes.

10 **Q. In Paragraph 81 -- strike that.**

11 **When it says The fading of 40 decibels**
12 **means the signal strength becomes 10,000 times**
13 **smaller -- is that something you know or something**
14 **that you would have to rely on the literature cited**
15 **there for its knowledge?**

16 A. So it's been a while since I've done
17 decibel calculations. I would have to refer back to
18 the formula for looking up what the signal strength
19 is and then computing that.

20 It -- it's -- it's not something I do
21 all the time, so I'm not intimately familiar with
22 it --

23 **Q. All right.**

24 A. -- this seems reasonable.

25 **Q. All right. But your testimony is there**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

49

1 is a formula by which that can be done; that if you
2 referred to that formula, you could tell me what the
3 reduction was?

4 A. Yes.

5 Q. Okay. Let's go to your --

6 MR. SMITH: We are at 8.

7 - - -

8 (Denning Deposition Exhibit
9 Number 8, United States Patent
10 5,504,786, marked for
11 identification, as of this date.)

12 - - -

13 BY MR. SMITH:

14 Q. I'm handing you what I've had marked as
15 Denning 8 and ask if you can identify that for us,
16 please.

17 (Whereupon, the witness reviews the
18 material provided.)

19 THE WITNESS: This is United
20 States Patent Number 5,504,786, otherwise
21 known as the "Gardner '786."

22 BY MR. SMITH:

23 Q. And that's one of the references that
24 you've utilized in preparation of your declaration,
25 correct?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

50

1 A. Yes.

2 **Q. In layman's terms, what is it that**
3 **Gardner is disclosing to us?**

4 A. I believe the Abstract provides a very
5 good layman's term definition: Open loop phase
6 estimation methods and apparatus for coherent
7 combining of signals on mobile channels using
8 spatially diverse antennas.

9 The idea of spatially diverse antennas
10 is that there are more than one antennas, and they
11 are somewhat apart.

12 **Q. When it refers to "open loop phase**
13 **estimation," what does it mean by that?**

14 A. In signal processing and control
15 systems, a closed loop system would have some kind
16 of feedback. It's -- it's -- there's a process.
17 There's -- there's some kind of inputs, and then
18 there's outputs, and -- and some kind of feedback is
19 being provided from the output back into the system
20 that it's using to modify its calculations.

21 In an open loop, that feedback loop is
22 broken; it is not there. So it is purely an input
23 process/output kind of system.

24 **Q. Okay. And then when it refers to a**
25 **"coherent combining of signals," what does it mean**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

51

1 **by that?**

2 A. I'll give you an example.

3 How's that?

4 **Q. Okay.**

5 A. If I have a sine wave as one of the
6 signals and it's just at a standard frequency and I
7 have another sine wave that is at the same
8 frequency, but they're offset in phase so their
9 peaks and troughs do not line up, if I add those
10 together and the sine waves are offset by where
11 the -- the trough is exactly in line with the peak,
12 there is no signal coming out, they will exactly
13 cancel each other.

14 That's the extreme of what happens when
15 you combine two signals.

16 If you shift those phases back so that
17 the troughs align and the peaks align, you can add
18 those signals and -- and gain strength by doing so.

19 That's coherently combining or
20 coherently adding those signals.

21 **Q. Okay. And then continuing on, if I look**
22 **at the second sentence in the Abstract of Gardner,**
23 **it reads, In accordance with the method, the signals**
24 **from each of two antennas are demodulated using**
25 **inphase and quadrature components of a local carrier**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

52

1 **oscillator to provide RF demodulated inphase.**

2 **Do you see that?**

3 A. Yes.

4 **Q. So what does it mean when it says the**
5 **demodulated using inphase and quadrature --**
6 **quadrature components of a local carrier?**

7 A. If we look down at the diagram that's
8 shown on the front page of the patent and to the
9 left part of that diagram, you can see down below
10 there's a local carrier oscillator. It's Box 2.

11 Do you see that?

12 **Q. I do.**

13 A. Okay. So out of that local carrier
14 oscillator is a sine wave and a cosine wave. And
15 these are very much what I was describing with
16 the -- the sine wave coming out --

17 **Q. Right.**

18 A. -- they're just offset in phase.

19 So one of these would be called the
20 "inphase," and the other one would be "quadrature."
21 So, typically, it's sine would be your inphase;
22 cosine would be your quadrature.

23 And what it's doing is trying to
24 determine the direction of the signal as it's coming
25 in. So we're looking at where is it going up and

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

53

1 where is it looking down. And it's using both of
2 those components to describe exactly the phase of
3 the incoming signal.

4 The demodulation phase is because --
5 happens because the local carrier is coming in at a
6 very high frequency, so the signal could be in the
7 megahertz; but, actually, all that's being carried
8 across there would be audio, which that's in
9 kilohertz --

10 **Q. Right.**

11 A. -- typically, what would be happening
12 in, like, an FM system, or even AM, if you have a --
13 a high carrier that's in megahertz, there's
14 something that's happening to that signal that is a
15 modulated signal, such as voice, being on top of
16 that. So in amplitude modulation, it's the
17 amplitude of that wave coming in at a very high
18 megahertz rate.

19 The amplitude is changing in relation to
20 the voice signal. And so to demodulate it, you
21 subtract off the carrier frequency, and you're left
22 with the modulated signal which would then be the
23 output.

24 That's handled very much the same for
25 data. It just has different values as to what's a 1

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

54

1 and what's a 0.

2 Q. Okay. If we look back at the claims in
3 Gardner, we'll see -- it says in the preamble on
4 Claim 1, In a ground-based mobile radio channel.

5 And it has similar language in Claim 6
6 and in Claim 12 in the preamble.

7 Do see all three of those refer to in a
8 ground-based mobile communication?

9 A. Yes.

10 Q. Do you know why, in each of those three
11 claims, that they are specifying "ground based"?

12 (Whereupon, the witness reviews the
13 material provided.)

14 THE WITNESS: I can't say.

15 BY MR. SMITH:

16 Q. Do you believe that this invention would
17 also work in an air-based system where the base
18 station is moving in a commercial jet at, let's say,
19 500 miles an hour?

20 A. Yes, I do. And I outline that in
21 Paragraph 139.

22 Q. Let me turn to there.

23 Okay. So it's your opinion that the
24 Gardner description would work on a commercial jet
25 flying at 500 miles an hour?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

55

1 A. Yes.

2 Q. All right. Are you familiar with the
3 term "MIMO"?

4 A. Yes.

5 Q. What is MIMO?

6 A. MIMO is a different kind of diversity
7 scheme whereby multiple antennas and multiple
8 receivers are used for sending two channels worth of
9 data or multiple channels of data basically across
10 the same communication medium. So it would be
11 multiple data channels being broadcast
12 simultaneously into the same frequency band and the
13 system being able to use what's called "spatial
14 diversity," which is a different kind of spatial
15 diversity that we're talking about in Gardner, to
16 receive those two or multiple separate channels of
17 data.

18 Q. All right. What is transmit diversity?

19 A. Is there somewhere in my declaration
20 that you're referring to?

21 Q. I'm trying to understand what your
22 expertise is with respect to the antenna and the
23 utilization of multiple antennas and how that's
24 applicable to this technology.

25 So I'm asking you if you're familiar

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

56

1 **with what transmit diversity is.**

2 A. I just want to make sure that we're
3 talking the same thing.

4 Just as I mentioned here, spatial
5 diversity has a slightly different meaning in
6 Gardner than what MIMO spatial diversity would be.
7 I can go by the term "transmit" and "diversity" or
8 "transmitter," which, to me, says that there are
9 multiple transmitters.

10 **Q. Okay. What's the diversity reference in**
11 **that? What is diverse between the two?**

12 A. Diversity is multiple.

13 **Q. Just multiple?**

14 A. There's more than one to pick from.

15 **Q. Okay. Is it communicating the same**
16 **information or different information?**

17 A. You really would have to give me a
18 hypothetical situation or more information than just
19 that.

20 **Q. Okay. What is spatial multiplexing?**

21 A. Again, I have to ask you, Is there
22 somewhere in my declaration that you're referring
23 to? Because we seem to be getting kind of outside
24 of what I understand this deposition to be. And I'm
25 not really prepared to talk about all of these kinds

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

57

1 of things with you today.

2 Q. Right. But you're being presented as
3 someone who has expertise in this field, correct?

4 A. Yes.

5 Q. And you believe you have sufficient
6 expertise in this field to provide these opinions,
7 correct?

8 A. I do.

9 Q. And I'm just asking you what your
10 understanding of spatial multiplexing is.

11 A. So I understand that that is what you're
12 asking; however, I'm only prepared to talk about
13 things related to the patent at issue right here.

14 Can you explain where in any of the
15 material here we're talking about that kind of
16 diversity?

17 Q. I'm asking for your background,
18 expertise and what your understanding is with
19 respect to these concepts in providing the weight to
20 be given to your testimony.

21 And spatial multiplexing is a type of
22 diversity, correct?

23 A. It is.

24 Q. What is your understanding of what
25 spatial multiplexing is?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

58

1 A. Again, talking in very general terms
2 with nothing to do with any of the information we're
3 talking about here, spatial has to do with being
4 able to utilize space, and that would be part of the
5 MIMO technique or similar things, to switch the
6 various channels of data that you are sending across
7 the spatial domain.

8 Multiplexing has to do with switching,
9 so it would be switching from one channel to another
10 very quickly and doing it in such a manner that it
11 is in the spatial domain.

12 **Q. All right. You had mentioned -- I think**
13 **the term you used was "spatial diversity," correct?**

14 A. Yes.

15 **Q. And then you said that Gardner was in**
16 **some manner different than what was generally**
17 **considered to be spatial diversity.**

18 **Did I understand --**

19 A. So things have changed, right? I mean,
20 MIMO and spatial diversity, as it's used in Wi-Fi
21 and LTE and other modern wireless standards -- those
22 were being thought about at the time of the patent.

23 Gardner is -- date of patent, April 2nd,
24 1996.

25 So the technologies that we just talked

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

59

1 about of the Wi-Fi, MIMO -- or Wi-Fi, MIMO and LTE
2 didn't exist, and Gardner presents spatially diverse
3 antennas as really being antennas located somewhere
4 near each other but not directly together.

5 **Q. What's your understanding of how much**
6 **separation is necessary for there to be spatial**
7 **diversity?**

8 A. For Gardner?

9 **Q. I'm asking what your understanding at**
10 **this time.**

11 **At the time of the '023 patent, how much**
12 **separation was necessary for there to be spatial**
13 **diversity?**

14 A. I'm going to assume, then, that you're
15 talking about Gardner spatial diversity, and I
16 believe that he tells us . . .

17 (Whereupon, the witness reviews the
18 material provided.)

19 THE WITNESS: So I point that out in
20 my Paragraph 96, where I say, This involves
21 using two (or more) antennas spaced far
22 enough apart so that the characteristics of
23 the fading encountered by the desired
24 signal are independent for each of the two
25 receiver paths.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

60

1 BY MR. SMITH:

2 Q. I'm sorry. Which report were you --

3 A. This is Paragraph 96 towards the middle,
4 where I say, This involves using two (or more)
5 antennas spaced far enough part.

6 Q. Yep.

7 A. And that comes straight from the Gardner
8 '786 patent, Column 1, and it's Lines 15 to 24.

9 Q. Do you have any understanding with
10 respect to how much distance separation is required
11 other than by reference to Gardner?

12 A. So it is dependent on the wavelength of
13 the frequencies being received and transmitted, but
14 I do not have that table or equation in front of me
15 to tell you.

16 It is dependent on the wavelength as to
17 how many inches or millimeters or whatever that you
18 want to be apart with the antennas.

19 Q. Let's look at Paragraph 83. It's on
20 Page 38.

21 Thereafter -- are you there?

22 A. Yes.

23 Q. So on the -- one, two, three -- fourth
24 line down, there is a bracket around the 26th.

25 Do you see that? Just after the 800 to

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

61

1 **900 millihertz, there's a bracket 26?**

2 A. I do see that.

3 **Q. What is that referring to?**

4 **(Whereupon, the witness reviews the**
5 **material provided.)**

6 THE WITNESS: Do you have a copy of
7 my Exhibit 1010, George Calhoun?

8 BY MR. SMITH:

9 **Q. Exhibit 1010.**

10 Is there something -- is there a
11 **particular page number you're wanting to look at**
12 **or -- the reason I ask is I have only the copy that**
13 **I brought that I marked up. So if there's**
14 **something --**

15 A. Well, I believe that that's what this is
16 referring to.

17 **Q. Yeah. It's actually --**

18 A. Okay. I see where you're -- I see what
19 you're asking.

20 I think it's going to be a footnote in
21 the quote, so you don't have it.

22 **Q. It's an internal reference in the**
23 **article you're quoting, so I've --**

24 A. I believe that that is right.

25 **Q. No; it is in the book, and it does have**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

62

1 **the reference. So we're good.**

2 A. Okay.

3 MR. SMITH: Let's mark Exhibit 9.

4 - - -

5 (Denning Deposition Exhibit
6 Number 9, United States Patent
7 4,001,692, marked for
8 identification, as of this date.)

9 - - -

10 BY MR. SMITH:

11 **Q. I've handed you what I've had marked as**
12 **Exhibit 9.**

13 **Can you tell us what Exhibit 9 is?**

14 A. United States Patent 4,001,692,
15 otherwise known as "Fenwick."

16 **Q. And Fenwick is one of the references you**
17 **relied upon for your opinions expressed in your**
18 **declaration, correct?**

19 A. Yes.

20 **Q. Fenwick is -- was filed in 1975,**
21 **correct?**

22 A. Yes.

23 **Q. Can you tell me if any of the other**
24 **references that you've cited referred to or cited**
25 **Fenwick in their applications -- in their patents?**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

63

1 **Excuse me.**

2 **(Whereupon, the witness reviews the**
3 **material provided.)**

4 THE WITNESS: I don't see anything
5 listed on these others that we've talked
6 about as being or having Fenwick as a cited
7 reference.

8 BY MR. SMITH:

9 **Q. If we look at Column 1, Line 10, the**
10 **sentence beginning on Line 10 says, The present**
11 **invention is particularly useful in high frequency**
12 **and troposcatter radio circuits.**

13 **What is troposcatter?**

14 A. In layman's terms, that is the radio
15 waves that are bouncing off the troposphere of the
16 Earth.

17 **Q. Is that applicable to cellular**
18 **communication networks?**

19 A. I believe that it's applicable to any
20 radio circuits that would use -- or have enough
21 power to reach the troposphere.

22 **Q. Would those include cellular**
23 **communication networks?**

24 A. Certainly, if the transmission power was
25 great enough, yes.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

64

1 **Q. And what's typically utilized in our**
2 **communication systems -- AT&T, Verizon, whoever --**
3 **is there an issue with troposcatter with those**
4 **communications?**

5 MR. RICHARDSON: Objection: form.

6 THE WITNESS: I have never done that
7 analysis. I don't know.

8 BY MR. SMITH:

9 **Q. Fenwick is really directed towards the**
10 **use of microwaves, correct?**

11 A. I don't agree. I think that the
12 Abstract gives a very good idea of what Fenwick is
13 dealing with. And I don't see microwaves even
14 mentioned.

15 Fenwick is described as An asynchronous,
16 time diversity transmission apparatus including a
17 data encoder at a transmitting location and an
18 error-correcting data decoder at a receiving
19 location for overcoming the effects of signal
20 fading, impulsive noise and interference.

21 **Q. In microwave transmissions, how do those**
22 **typically occur?**

23 A. I'm sorry, but I don't understand your
24 question.

25 **Q. Are they -- how far apart are the**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

65

1 **transmission towers, generally, for microwave**
2 **communications?**

3 A. Is -- is there a particular frequency
4 band in microwave communication that you're talking
5 about?

6 Q. **What frequency bands are applicable to**
7 **microwave communications?**

8 A. Well, they extend up very high, and it's
9 certainly possible for devices in close range to use
10 microwaves. It's also possible for satellite
11 communication and even communication to the moon to
12 occur over microwaves.

13 Q. **Right. Are they typically used in small**
14 **ranges or in larger ranges?**

15 A. I really couldn't say. I know examples
16 in all of them.

17 Q. **You don't know which one is more**
18 **predominant versus the other?**

19 A. No. I've never done that analysis.

20 Q. **All right. The context in which I'm**
21 **familiar with them is more dish-to-dish direct**
22 **communication.**

23 **Is that a fair summary, or is it**
24 **different than that?**

25 MR. RICHARDSON: Objection: form.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

66

1 THE WITNESS: I'm familiar with that.

2 BY MR. SMITH:

3 **Q. Is that the predominant way that**
4 **communication occurs via microwave?**

5 A. As I said, I really couldn't say what is
6 predominant. I'm familiar with devices that do it
7 close as well as far.

8 **Q. All right. Cellular communication tends**
9 **to be more diverse to a multitude of receivers,**
10 **correct?**

11 A. Are you asking me if there is one base
12 station and many receivers that go with that?

13 **Q. Is that typically -- let me ask you**
14 **this: How would you differentiate microwave**
15 **communication from cellular communication? What**
16 **would you say the key differences are?**

17 A. Frequency band.

18 **Q. Any others?**

19 A. Microwave is going to be more line of
20 sight.

21 **Q. As opposed to cellular?**

22 A. Well, certainly, there are cellular
23 technologies that are also line of sight, but . . .

24 I really can't think of anything else
25 offhand.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

67

1 **Q. All right.**

2 MR. SMITH: I think -- let's -- I
3 think it's probably a good time to take a
4 lunch break. It's about 11:32.

5 We should talk about --

6 THE COURT REPORTER: Do you want to
7 go off the record?

8 MR. SMITH: That's fine.

9 - - -

10 (Whereupon, a recess was taken from
11 11:32 a.m. to 11:41 a.m.)

12 - - -

13 BY MR. SMITH:

14 **Q. Let's go to Paragraph 112 in your**
15 **declaration.**

16 And in -- I thought it was here.

17 Skip that a second.

18 Let's go to Exhibit 2 of the '023. It's
19 your Deposition Exhibit 2. You should have it in
20 front of you.

21 A. Oh.

22 Okay.

23 **Q. It's the -- it's the '023 patent.**

24 A. Oops. Sorry.

25 Too many exhibit numbers.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

68

1 Q. I understand.

2 A. Okay.

3 Q. In interpreting Claim 11 of the '023
4 patent, which kind of MIMO were you utilizing for
5 determining the plurality of spatially separated
6 antennas?

7 A. I'm confused by your question. I'm
8 sorry.

9 Q. Do you interpret Claim 11 as requiring
10 utilization of MIMO?

11 A. No.

12 Q. In -- you have referred to an exhibit
13 which was your Exhibit 1018, which is Acampora.

14 A. Yes.

15 Q. I'll get a copy for you real quick.

16 - - -

17 (Denning Deposition Exhibit
18 Number 10, Article, marked for
19 identification, as of this date.)

20 - - -

21 BY MR. SMITH:

22 Q. And Acampora deals with multipath fading
23 in buildings, correct?

24 A. Yes, as it says in the first paragraph,
25 Problems include multipath and shadow fading, which

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

69

1 reduce the coverage region.

2 **Q. Was the '023 invention designed to be**
3 **utilized in buildings?**

4 **(Whereupon, the witness reviews the**
5 **material provided.)**

6 THE WITNESS: It appears that it was
7 designed with moving base stations moving
8 in the direction of flow of traffic moving
9 along a roadway, as it says in the
10 Abstract.

11 BY MR. SMITH:

12 **Q. All right. So you would agree that it's**
13 **not really designed to be utilized inside of**
14 **buildings, correct?**

15 A. It appears that way.

16 **Q. You would agree that multipath fading**
17 **inside of buildings is very different than outside**
18 **of buildings where mobile base stations may be**
19 **traveling with the speed of traffic, correct?**

20 MR. RICHARDSON: Objection: form.

21 THE WITNESS: No, I don't agree with
22 that.

23 BY MR. SMITH:

24 **Q. So it's your opinion that the fading --**
25 **multipath fading issues associated with internal**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

70

1 **operations in buildings are substantially similar to**
2 **that encountered on the roadways?**

3 A. I've encountered many indoor systems
4 that experience fading, yeah, multipath.

5 Q. Right.

6 But my question is, Is the multipath
7 fading issues inside of buildings, which we were
8 just talking about -- is that substantially similar
9 to fading issues you see on the roadway moving at
10 the speed of traffic?

11 A. I would have to say that multipath is
12 multipath, and it doesn't discriminate whether it's
13 inside or outside. If there's things for the signal
14 to bounce off of, it does.

15 Fading definitely -- it creates more
16 challenges outside, but they certainly exist inside,
17 too.

18 Q. Well, multipath has to do with the
19 different -- I think you just mentioned the
20 different things it could bounce off of.

21 A. Yes.

22 Q. So there's substantially more things to
23 bounce off of inside of a building than on the
24 roadway, correct?

25 A. I guess you would have to constrain that

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

71

1 some. I mean, downtown situations, there's
2 incredible multipath; inside of highrises, there's
3 incredible multipath.

4 **Q. So you don't recognize there's a**
5 **difference -- a substantial difference between the**
6 **two?**

7 A. I believe that one skilled in the art
8 would recognize multipath as multipath, regardless
9 of where it showed up. And they would also
10 recognize fading as something causing the signal to
11 degrade as it moves around, wherever it was.

12 MR. SMITH: Let's go ahead and mark
13 what we -- what will be Deposition Exhibit
14 11.

- - -

(Denning Deposition Exhibit
Number 11, United States Patent
5,559,865, marked for
identification, as of this date.)

- - -

21 BY MR. SMITH:

22 **Q. Before we get -- can you identify what**
23 **Exhibit 11 is?**

24 A. United States Patent Number 5,559,865,
25 otherwise known as "Gilhousen."

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

72

1 Q. And we'll come back to that in just a
2 second.

3 Is it -- what is the subject matter of
4 Gilhousen '865?

5 A. I believe the Abstract says it really
6 nicely. First sentence: The airborne communication
7 system enables one or more radiotelephones to
8 communicate with a ground-based cellular
9 radiotelephone system.

10 Q. All right. And is there much of an
11 issue of multipath fading with respect to
12 communications with airplanes -- excuse me --
13 multipath?

14 A. Could you please restate your question?

15 Q. Yeah.

16 Is multipath a significant issue with
17 the communications with an airplane?

18 A. I've never done that analysis to say.

19 Q. Intuitively, do you have an opinion
20 about whether it would be an issue or not?

21 A. I can think of situations where it
22 certainly would be.

23 Q. All right. And what would those
24 situations be?

25 A. Anytime there's other devices,

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

73

1 obstacles, other aircraft, nearby buildings,
2 anything like that that the signal could bounce off
3 of.

4 **Q. Well, presumably, a nearby aircraft**
5 **would not be in close proximity for any substantial**
6 **period of time, correct?**

7 A. As I said, I haven't done an analysis to
8 tell you.

9 **Q. Would it be an issue -- and I probably**
10 **should have clarified this -- I think you were**
11 **answering -- just so we're on the same page .**

12 **Do you believe a multipath would be an**
13 **issue with planes when they're actually in the air**
14 **flying?**

15 A. I'm sorry. Once again, I haven't done
16 the analysis, but I can see where multipath would
17 truly be a problem while they are in flight.

18 I come from Colorado. There's mountains
19 all around. If a plane was flying up in front
20 range, I believe there would be multipath issues
21 there as well.

22 **Q. Would that be dependent upon the**
23 **elevation the plane was flying on?**

24 A. I can't answer that.

25 **Q. The portable device in Gilhousen '865 --**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

74

1 is it capable of communicating with the fixed base
2 if the repeater is turned off?

3 (Whereupon, the witness reviews the
4 material provided.)

5 THE WITNESS: Okay. So I want to
6 make sure that I understand your question.

7 If we turn to Figure 2 of the
8 '865 patent, it shows what appears to be
9 handsets there as -- labeled as 205.

10 Is this what you're referring to?

11 BY MR. SMITH:

12 Q. Yes.

13 Can 205 communicate if 210 is turned
14 off?

15 And just so I'm clear on my question,
16 I'll restate it just so the record's clear.

17 My question is, Can 205 directly
18 communicate with the base station if 210 is turned
19 off?

20 (Whereupon, the witness reviews the
21 material provided.)

22 THE WITNESS: I'm not seeing anything
23 in the '865 patent that says that these
24 units 205 are anything limited to and only
25 working with the aircraft system that's

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

75

1 described.

2 What it actually says is that these
3 are CDMA-type radiotelephones -- it says
4 that in Column 2, Line 45 -- which would
5 tell me that these are standard mobile
6 handsets that somebody would be able to use
7 wherever they had coverage.

8 So, therefore, if there is a base
9 station that is within range of the device
10 and the 210 system is turned off, 205s
11 would be able to establish communication
12 with a -- a base station outside of the
13 aircraft, which actually goes back to what
14 we were talking about in Ito.

15 There is nothing in Ito that would
16 say that these devices cannot communicate
17 with the base station. And, in fact, in
18 both cases, the type of communication from
19 the handset to the base station appears to
20 be the same; there's just a repeater in the
21 middle.

22 One skilled in the art would know, if
23 this is a standard CDMA handset, it would
24 be able to communicate with a base station
25 in Gilhousen '865 as well as Ito.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

76

1 BY MR. SMITH:

2 Q. There's nothing in Gilhousen '865 that
3 directly discusses communication between the handset
4 and the base station if the repeater is turned off,
5 correct?

6 A. Once again, it isn't discussed. But
7 with the information we're given, one skilled in the
8 art would definitely know that you can use the
9 mobile handset outside of the aircraft.

10 Q. If we turn back to Exhibit 6, which is
11 Gilhousen '390 --

12 A. Okay.

13 Q. -- and let's take a second to look at
14 Exhibit 2 as well, which is the '023 patent.

15 And you'll see that Claim 21 of the '023
16 provides that The movable base stations -- I'll wait
17 till you get there.

18 A. Claim 21?

19 Q. Yes.

20 A. Okay.

21 Q. -- that The movable base station's
22 receiver receives fixed port signals through the
23 plurality of spatially separated antennas.

24 Do you see that?

25 A. Yes.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

77

1 Q. And then if we turn to 140 of your
2 declaration -- not Page 140, Paragraph 140. It's on
3 Page 74 --

4 A. Okay.

5 Q. -- you say that However, unlike
6 Gardner's spatial diversity configuration, Gilhousen
7 '390 describes a cell-site diversity configuration
8 in which the receiving device simultaneously
9 receives signals from multiple base stations. For
10 example, as shown in Gilhousen '390's Figure 1
11 above, a receiver 16 may simultaneously receive
12 signal transmissions from both cell sites 12 and 14.

13 My question is, How many antennas does
14 Gilhousen '390 disclose are used by the mobile
15 phone's receiver 16?

16 (Whereupon, the witness reviews the
17 material provided.)

18 THE WITNESS: So in the '390 patent,
19 Column 7, Line 63 and following, which --
20 this is taken from my Paragraph 140 at 18
21 to 21 -- it says, In the exemplary
22 embodiment described herein with reference
23 to the mobile telephone of the present
24 invention, a total of three demodulator
25 processors or receivers are utilized. One

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

78

1 of the receivers is used for the scanning
2 function, while the two other receivers are
3 used for two-channel diversity receiver.

4 And it goes on to describe those
5 two -- further in Column 8, Line 11 and
6 following, In the cell-site diversity mode,
7 the strongest path from each cell site is
8 determined by the search receiver. The two
9 receivers are assigned to demodulate the
10 signals on the strongest two paths of the
11 paths available from the original cell site
12 and from the new cell site.

13 So what I see here is in the
14 exemplary embodiment, there are three
15 receivers, and one skilled in the art would
16 just assume that each receiver has its own
17 antenna.

18 BY MR. SMITH:

19 **Q. You're assuming that as opposed to**
20 **saying it's disclosed here, correct?**

21 A. I am saying that one skilled in the art
22 would know that.

23 **Q. Let's look at Column 11, Line 64 to**
24 **66 --**

25 A. Okay.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

79

1 Q. -- and I'm reading the first sentence of
2 the second -- I'll just read the first two
3 sentences: Figure 2 illustrates, in block diagram
4 form, the mobile unit. The mobile unit includes an
5 antenna 30 which is coupled through diplexer 32 to
6 analog receiver 34 and transmits power amplifier 36.

7 Do you see that?

8 A. I do.

9 Q. You would agree that "an antenna" is a
10 singular antenna, correct?

11 A. I would. However, I would have to say
12 that what's being described here is one of the
13 blocks of a receiver antenna combination. The
14 section that I just read said that in the exemplary
15 embodiment, there are three receivers.

16 Q. Where are those three receivers located?

17 (Whereupon, the witness reviews the
18 material provided.)

19 THE WITNESS: So in Column 7, the
20 bottom line, it says the other -- while the
21 other two -- the other -- I'm sorry --
22 while the two other receivers are used as a
23 two-channel diversity receiver.

24 So the '390 patent is disclosing the
25 cell-site diversity system, which means

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

80

1 that there are multiple cell sites in
2 communication with the receiver. What is
3 described there is the receivers being
4 connected up to each of the cell sites.

5 So what is described there is one of
6 these little mobile guys.

7 BY MR. SMITH:

8 **Q. Right.**

9 **If you look at Figure 2, right, which is**
10 **the one we were just talking about from Column 11,**
11 **64 through 66, you would agree that Figure 2 only**
12 **includes a single antenna, correct?**

13 **(Whereupon, the witness reviews the**
14 **material provided.)**

15 THE WITNESS: So I want to combine
16 Figure 2 with the description that's given
17 of Figure 2. And it says that The mobile
18 unit includes an antenna 30 which is
19 coupled through the diplexer.

20 And I realize that we talked about
21 this a few minutes ago; however, I would
22 have to say that "an" and "a," as I've been
23 informed by counsel, could be one or more.

24 I would have to say, then, that one
25 skilled in the art would realize that even

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

81

1 though there is a single box shown in
2 Figure 2 -- he would know that that could
3 be one or more.

4 BY MR. SMITH:

5 **Q. You're saying that counsel informed you**
6 **it could be that, so I'm taking it you know that**
7 **from counsel.**

8 **Is that what you're saying?**

9 A. I'm saying that I know that through
10 doing many such analysis and multiple counsels
11 telling me that "a" and "an" means one or more.

12 **Q. You can see that there's only one shown**
13 **in Figure 2, correct?**

14 A. I see a single box that's described
15 there -- or drawn there.

16 MR. SMITH: Do you know if lunch is
17 here?

18 MR. RICHARDSON: Lunch is here.

19 MR. SMITH: Let's go ahead and take a
20 break now.

21 - - -

22 (Whereupon, at 12:15 p.m., a
23 luncheon recess was taken.)

24 - - -

25

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

82

A F T E R N O O N

S E S S I O N

(1:06 p.m.)

- - -

SCOTT ANDREW DENNING,

called for continued examination and, having
been previously duly sworn, was examined
and testified further as follows:

- - -

- - -

EXAMINATION (CONTINUED) BY COUNSEL FOR PATENT OWNER

- - -

BY MR. SMITH:

**Q. All right. On your report, let's turn
to Page 84.**

A. Okay.

**Q. And for Ground 4 and 5, you're using
Gilhousen '865 as your primary reference, correct?
(Whereupon, the witness reviews the
material provided.)**

BY MR. SMITH:

**Q. If you're looking for Ground 5, it
starts at Page 104.**

A. Okay. Thanks.

(Whereupon, the witness continues to
review the material provided.)

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

83

1 THE WITNESS: Yes.

2 BY MR. SMITH:

3 Q. All right. And Gilhousen '865 we've
4 talked about previously having to deal with
5 communications from an airplane, correct?

6 A. Yes.

7 Q. All right. And -- and it's my
8 understanding that your declaration and testimony is
9 that it would have been obvious to combine Gilhousen
10 '390 with Gilhousen '865, correct?

11 A. Yes.

12 Q. Where in your declaration or in
13 those patents does it disclose how I should go about
14 constructing the spatially separated antennas on the
15 plane?

16 (Whereupon, the witness reviews the
17 material provided.)

18 THE WITNESS: Could you please repeat
19 the question?

20 BY MR. SMITH:

21 Q. Yes.

22 Your -- my understanding is that you're
23 saying that it would have been obvious to utilize
24 the spatially separated antennas of Gilhousen '390
25 on Gilhousen '865's plane.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

84

1 And I'm asking you where in the '865 or
2 '390 does it tell me how I would go about selecting
3 the antenna locations for the spatially separated
4 antennas.

5 A. So, in particular, in Paragraph 160 and
6 following, I describe --

7 Q. Which one -- in your paragraph -- in
8 your declaration?

9 A. Paragraph 160 in the declaration, yes.
10 -- I'm describing that Gilhousen '390
11 describes cell-site diversity, which mobile terminal
12 receives signals from multiple base stations
13 simultaneously.

14 And when we look in '390 patent,
15 Column 14, we see a description of Figure 3, which
16 is talking about cell site 2 receiver system
17 utilized having a separate antenna, an analog
18 receiver for space diversity reception.

19 And, certainly, there's more description
20 of that in Column 14, which is talking about what
21 we're really looking to have is spatial diversity,
22 which is the distance between the antennas --

23 Q. Right.

24 A. -- so one would have to assume -- one
25 skilled in the art would assume that the problem

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

85

1 that's described here -- the problem that I'm
2 describing there -- is it's the same. It's looking
3 for a cellular diversity or a cell-site diversity
4 system.

5 And then one skilled in the art knows
6 how to deal with that by looking at other
7 references, such as what I've already pointed to.

8 **Q. I'm wanting to now do what you've**
9 **testified would have been obvious to do.**

10 **What are the requirements for the**
11 **spatially separated antenna as located on an**
12 **aircraft?**

13 A. Well, as we go back to the things that
14 we've already covered where we're describing what it
15 is that is accomplished by multiple antennas, we're
16 looking to eliminate the effects of fading, which
17 that is a well-known term of art. One skilled in
18 the art knows how to deal with that. We're looking
19 to deal with multipath, and, here, we're providing
20 solutions to that.

21 So what Gilhousen assumes in '390 is
22 that none of this makes sense to somebody outside of
23 the art. A person skilled in the art knows what the
24 problem is and is going to know how to position the
25 antenna so the system actually works and is

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

86

1 successful.

2 **Q. All right. Are there any regulations or**
3 **requirements from FAA about where you can locate**
4 **antennas on aircraft?**

5 A. I don't know anything about what the FAA
6 requires for locations of antennas on aircraft.

7 **Q. Do -- are there safety concerns with**
8 **respect to the transmission power of the antenna on**
9 **the aircraft with respect to interference with the**
10 **control systems of the plane?**

11 A. Certainly, in my experience flying, it
12 used to be that they made you turn your cell phones
13 off. And sometimes the flight attendant would say,
14 As this can interfere with the controls. I've heard
15 that.

16 However, all that was rolled back --
17 what was it? -- five years ago, something like that.
18 And now you're allowed to have your cell phones on
19 in the aircraft up until the door is closed, I
20 believe.

21 So I'm not saying that from a knowledge
22 of one skilled in the art of RF engineering and all
23 of that; I'm saying that I've flown on a plane and
24 they said it and I heard it.

25 **Q. But they told you to turn it off before**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

87

1 **takeoff, correct?**

2 **You use it on the plane prior to**
3 **takeoff. That's what you testified to.**

4 A. Yes.

5 **Q. So are there FAA concerns that you're**
6 **aware of with respect to signal interference caused**
7 **by antennas used for communication on aircraft?**

8 A. I -- I cannot address what the concerns
9 would be.

10 **Q. So with respect to what you can or**
11 **cannot do with antennas on an aircraft, you would**
12 **agree you are not one of ordinary skill in the art**
13 **for that application, correct?**

14 MR. RICHARDSON: Objection: form.

15 THE WITNESS: I am not versed in FAA
16 guidelines as to where you can have an
17 antenna or what channels it can communicate
18 at what times.

19 From a person of skill in the art of
20 antennas and receivers and transmitters,
21 ignoring FAA requirements -- I can
22 certainly tell you what will and won't work
23 on an aircraft.

24 BY MR. SMITH:

25 **Q. All right. How far apart should I put**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

88

1 **these antennas, and where should I place them to**
2 **work for communication?**

3 **(Whereupon, the witness reviews the**
4 **material provided.)**

5 THE WITNESS: I pointed this out
6 earlier, so let me return to it in
7 Paragraph 112 of my declaration.

8 We're talking about Gardner. Gardner
9 further explains that spatial diversity is
10 achieved by using two (or more) antennas
11 spaced far enough apart so as to reduce the
12 effects of fading on a received signal.

13 Now, I realize that Gardner is
14 specifically talking about spatial
15 diversity. Gilhousen is talking about
16 cell-site diversity. One skilled in the
17 art, though, would be familiar with all of
18 these things and want to use as many of
19 them as possible to have the best possible
20 signal in dealing with fading and
21 multipath.

22 So Gardner provides a pretty good
23 standard that what we want is things to be
24 far enough apart so as to reduce the
25 effects of fading. So one skilled in the

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

89

1 art would know that it's going to require
2 testing, and they have to put them in
3 certain locations and then look and see
4 does it reduce fading or not.

5 BY MR. SMITH:

6 **Q. So without further testing, you can't**
7 **tell me where to locate the antennas?**

8 A. You know, I suppose it would be possible
9 if you gave me a particular aircraft and I knew all
10 of the construction of the aircraft and knew where
11 all the communication systems and the things that
12 might interfere. We could do an analysis and say it
13 looks like it would work if you put this in this
14 particular spot.

15 However, unless you give me all of that,
16 I don't know that anybody would be able to pick a
17 particular spot and say it's going to work there.

18 **Q. Let me ask you this question: What --**
19 **what is the top speed -- strike that.**

20 One of the other things you're doing
21 with Gilhousen '390 is providing for soft handoffs,
22 correct?

23 A. Yes.

24 **Q. All right. What is the top speed in**
25 **which you can do a soft handoff on a 2G system?**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

90

1 A. Is there a part in my declaration that
2 you're referring to?

3 Q. Well, not particularly. But you're
4 telling me that I should apply Gilhousen '390 to
5 Gilhousen '865 for purposes of providing
6 functionality of a soft handoff.

7 And so I'm wondering, with respect to a
8 2G system, what's the fastest speed I can be
9 traveling and still effectuate a soft handoff.

10 A. I don't believe I've ever done that
11 analysis.

12 Q. What's the maximum speed for a 3G?

13 A. I don't know that I've ever done an
14 analysis to see what the top speed is on any
15 system.

16 Q. All right. Well, the soft handoff
17 solution of '390 wouldn't help me in Gilhousen '865
18 if the top speed is less than 100 miles an hour,
19 would it?

20 A. So one of the things that I'm dealing
21 with when you just said that is when you're saying
22 "top speed," I'm thinking how many microseconds does
23 it take to turn -- to switch from one to the other.
24 To me, that use of speed is a measure of time.

25 What you just said is the plane is

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

91

1 flying at 600 miles an hour. Well, that is speed in
2 distance versus time; it isn't just a measure of
3 time.

4 There's a complete paradigm difference
5 here, and I don't know how to answer your question.

6 **Q. Well -- but those are related. I mean,**
7 **the time it takes is directly proportional to the**
8 **distance.**

9 A. So are you asking me how far will the
10 plane move while the switch takes place?

11 **Q. No. I'm asking you, Can you effectuate**
12 **a soft handoff in a plane going in excess of**
13 **100 miles an hour?**

14 **Just so we have all --**

15 A. First of all, I can't figure out why I
16 would even want to. So I'm having a hard time
17 understanding what -- what your hypothetical
18 situation is.

19 **Q. Well, you're telling me I can improve**
20 **'865 by incorporating Gilhousen '390's soft handoff**
21 **solution.**

22 **That's your opinion on Paragraph 163,**
23 **bottom of the page, correct? Gilhousen '390**
24 **provides a soft handoff solution.**

25 A. I think I'm understanding what -- what

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

92

1 you're looking for.

2 Hold on a minute.

3 (Whereupon, the witness reviews the
4 material provided.)

5 THE WITNESS: Okay. I think I have
6 my thoughts straight, but could you please
7 repeat your question?

8 MR. SMITH: Can you read back the
9 question, please?

10 - - -

11 (Whereupon, the court reporter read
12 back the pertinent part of the
13 record.)

14 - - -

15 BY MR. SMITH:

16 **Q. So my question is, Will soft handoffs be**
17 **functional and possible at speeds in excess of**
18 **100 miles an hour for a plane at 20,000 feet?**

19 A. Certainly, there would be an issue if
20 you were talking about the normal cell sites that we
21 deal with our hand phones and we drive around the
22 city with. That particular cell system would not be
23 functional from 20,000, 30,000 feet.

24 **Q. All right. One hundred miles an hour at**
25 **5,000 feet?**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

93

1 A. I haven't ever done an analysis to see
2 what the -- what the maximum altitude and speed of a
3 vehicle moving using the normal Verizon Wireless
4 cell system would be.

5 It seems possible. I've approached
6 speeds of 100 miles an hour in my car. Now, I
7 wasn't up 5,000 feet, but I certainly had cell
8 service.

9 **Q. One hundred miles per hour at 100 feet?**

10 A. I -- I -- I just have not done an
11 analysis to correctly answer your question.

12 **Q. All right. You said that driving your**
13 **car at 100 miles an hour -- that you had cell phone**
14 **service.**

15 **Do you know whether or not your**
16 **connection was handed off -- whether or not you had**
17 **a soft handoff?**

18 A. I would have to say that I -- I don't
19 have any way of verifying what was actually going on
20 in my phone at the time and how many cell sites were
21 around for it to be handing off from one to the
22 other in a soft handoff mode.

23 **Q. Do you know -- as you sit here today --**
24 **will a soft handoff work at 100 miles per hour in a**
25 **car? Do you know one way or the other as we sit**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

94

1 **here today?**

2 A. I cannot say. There's just too many
3 variables to the situation.

4 When we're looking at the range of a
5 particular base station in a cell site, some of them
6 have a great range; others have a small range.

7 And -- and, certainly, some cellular
8 topologies have greatly overlapping areas, too. And
9 these things would have to be taken into
10 consideration.

11 I think that one skilled in the art
12 would know to look at the distance between the cell
13 sites, the overlap that they have, look at the speed
14 that's there, look at the signal strength given
15 their altitude and be able to tell that. These are
16 all known things. There isn't anything new.

17 I have personally never been given the
18 opportunity to see it from an airplane, there's a
19 soft handoff taking place; however, the techniques
20 involved in determining that are the same whether
21 you're up in the air or whether you're on the
22 ground. There's -- there's no new magic technology
23 to doing that; it's the same old things.

24 **Q. Let's look at Paragraph 81 of your**
25 **report on Page 36.**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

95

1 A. Okay.

2 Q. And that reflects that When an
3 automobile antenna moves at 60 miles per hour, the
4 antenna passes through hundreds of, bracket, fading
5 holes of varying depths every second, causing the
6 signal strength to fluctuate very rapidly.

7 Do you see that?

8 A. I'm sorry. I'm in the wrong place. I
9 don't see it.

10 Which page?

11 Q. Page 36, Paragraph 81.

12 A. Oh, okay.

13 Yes, I see it.

14 Q. The last paragraph reads -- and I'll
15 just read the paragraph so we have it in the
16 record -- The fading effect is even more impactful
17 on moving devices, such as those within a moving
18 vehicle. When an automobile antenna moves at
19 60 miles per hour, the antenna passes through
20 hundreds of [fading] holes, varying depths --
21 every -- holes of varying depths every second,
22 causing the signal strength to fluctuate very
23 rapidly between normal levels and fades ranging up
24 to 40 decibels or more. The fading of 40 decibels
25 means the signal strength becomes 10,000 times

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

96

1 **smaller, which makes the signal very hard, if not**
2 **impossible, to decode.**

3 **Do you see that?**

4 A. Yes.

5 **Q. So would that create a soft handoff**
6 **problem at speeds in excess of 60 miles an hour?**

7 A. So the idea with soft handoff is that
8 you have more than one base station that is
9 available to talk to. The idea is that as an
10 antenna passes through the hundreds of fading holes,
11 if there is something where it cannot communicate
12 easily anymore, it's already been monitoring the
13 strength to the accompanying or the adjacent cell
14 sites, and it would just hand off at the appropriate
15 times.

16 I don't know that this describes your
17 scenario that you presented, that what is here
18 causes a problem for soft handoffs.

19 The problem would be if the hole was so
20 large the mobile station lost contact with all of
21 its surrounding base stations. And in that case,
22 sure, there is a problem.

23 **Q. On the plane, can you tell me whether**
24 **the repeater is high or low power -- the repeater**
25 **that's referenced in Gilhousen '865, is that high or**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

97

1 **low power?**

2 **Excuse me. The transmitter. Sorry. I**
3 **misspoke.**

4 **(Whereupon, the witness reviews the**
5 **material provided.)**

6 THE WITNESS: I think -- I think I
7 found an answer to your question.

8 If we look at Column 3 of the
9 '865 patent, Line 7.

10 So This base station has the same
11 functionality of its ground-based
12 counterpart but on a much smaller scale
13 since it does not have to handle the
14 thousands of radiotelephones on the
15 ground-based system.

16 There are a few other clues here that
17 tell us that this system also that's in the
18 plane doesn't have to be able to
19 communicate very far.

20 So we have two transceiver systems
21 that are connected to this repeater. One
22 of them is for the mobile devices that are
23 there on the phones. So there is a
24 receiver and a transmitter that is part of
25 this repeater that has a very limited

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

98

1 range; it's only trying to communicate
2 aboard the aircraft.

3 There isn't any need for that one to
4 be superpower, right?

5 The transceiver from that unit to the
6 ground, though, is going to have to be
7 significantly stronger. And -- and that
8 one, I would say, would have to be more of
9 a high-power system.

10 BY MR. SMITH:

11 **Q. And being a high-power system, that**
12 **would lead to additional interference with signals**
13 **within the plane, correct?**

14 A. If the same frequencies were used by
15 systems within the plane, it would interfere.

16 **Q. Exhibit 9, I think, is Gilhousen '865.**
17 **Do you see Exhibit 9 there?**

18 A. This is 11.

19 Did you say Gilhousen '865?

20 **Q. Gilhousen '865 is 11?**

21 A. Eleven.

22 **Q. Thank you.**

23 **So if we look at Gilhousen '865, which**
24 **is Exhibit 11, on the cover page of that, I see that**
25 **the inventor is Klein Gilhousen, correct?**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

99

1 A. Yes.

2 Q. And then on Exhibit 6, which is the
3 Gilhousen '390, the first named inventor there is
4 Klein Gilhousen, correct?

5 A. Yes.

6 Q. And I understand your testimony here,
7 it's that it would have been obvious to combine '390
8 with '865 to improve '865, correct?

9 A. Yes.

10 Q. Why didn't Klein Gilhousen do that?
11 (Whereupon, the witness reviews the
12 material provided.)

13 THE WITNESS: So I can't speak as to
14 the reasons why an inventor files a patent
15 in the way that he does; however, I do know
16 that each one of the inventions described
17 in the -- the invention described in the
18 '865 is specific, and he deals with a
19 particular -- a particular thing.

20 The same thing is true in the '390.
21 He describes his invention and how to make
22 it, but he doesn't go into all the details
23 of everything else that might be possible.

24 And one skilled in the art knows
25 that, looking at a patent, it is -- it has

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

100

1 a particular topic and a particular
2 invention, and that invention is described.
3 But, certainly, one skilled in the art has
4 to be aware of all the things that are
5 involved in that particular art.

6 In this case, here, one would look to
7 Gilhousen '865 to understand the -- the
8 things that are talked about here. And the
9 same thing with '390: we would look to this
10 one to learn the invention of the
11 '390 patent.

12 You say why didn't Gilhousen do that.
13 I -- I -- I would have to say he did. It's
14 in these two documents.

15 BY MR. SMITH:

16 **Q. Well, he didn't -- he didn't do a**
17 **continuation of the '865 to claim that -- you're not**
18 **aware of any patent where he has claimed that**
19 **subject matter, are you?**

20 MR. RICHARDSON: Objection: form.

21 THE WITNESS: I would have to say
22 that one skilled in the art would know to
23 combine those. Whether this was claimed
24 that way or not, it would be obvious -- it
25 is obvious to one skilled in the art that

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

101

1 you could combine these and -- and that it
2 would work.

3 There is nothing in either one of
4 these systems that precludes that. There's
5 nothing warning. They're just different
6 techniques and different systems that it
7 is -- it's very obvious to combine.

8 MR. SMITH: I think I'll pass the
9 witness.

10 Off the record.

11 - - -

12 (Whereupon, a discussion was held
13 off the record.)

14 - - -

15 - - -

16 (Denning Deposition Exhibit
17 Number 12, United States Patent
18 7,848,701 B2, marked for
19 identification, as of this date.)

20 - - -

21 - - -

22 (Denning Deposition Exhibit
23 Number 13, Declaration of Scott A.
24 Denning, IPR2019-01102, marked for
25

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

102

1 identification, as of this date.)

2 - - -

3 - - -

4 EXAMINATION (CONTINUED) BY COUNSEL FOR PATENT OWNER

5 - - -

6 BY MR. WARREN:

7 Q. So, Mr. Denning, I'm glad you're putting
8 up with us.

9 I'm Sanford Warren, and I'm going to be
10 doing this on the '701. And just to remind you that
11 you're still under oath, and I hope that you and I
12 can have the same agreement that you had with
13 Mr. Smith: If you don't know a question or I need
14 to repeat something, just let me know.

15 Is that fair?

16 A. That is fair.

17 Q. Cool.

18 So the way this deposition is going to
19 go this afternoon -- it can be really easy and
20 short, or it's going to be really long and
21 prolonged, depending on the answers to these few
22 questions here.

23 So let me hand you what's been marked --

24 A. I won't make it unnecessarily long.

25 Q. -- Deposition Exhibit 12.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

103

1 MR. WARREN: Here you go, sir.

2 MR. RICHARDSON: Thanks.

3 BY MR. WARREN:

4 **Q. And I'm going to go ahead and give you**
5 **Deposition Exhibit 13 while you're at it.**

6 MR. WARREN: Here you go, sir.

7 Sir, here you go.

8 MR. RICHARDSON: Thanks.

9 BY MR. WARREN:

10 **Q. And the first question is, Do you**
11 **recognize Exhibits 12 and 13, sir?**

12 A. Yes.

13 **Q. And Exhibit 12, I believe, is a copy of**
14 **the '701 patent?**

15 A. Yes.

16 **Q. And Exhibit 13 would be your declaration**
17 **for the '701?**

18 A. Yes.

19 **Q. So when you were doing your declaration**
20 **for the '701, I know you were doing them based on**
21 **claims.**

22 **Could you grab the '023, which I believe**
23 **is Exhibit 2, for me and turn to Claim 11?**

24 A. Okay.

25 **Q. And then if you would take Exhibit 12**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

104

1 and turn to Claim 10.

2 A. Okay.

3 Q. And could I get your agreement that the
4 only difference between Claim 10 of the '701 and
5 Claim 11 of the '023 is there's an extra element
6 called "a controller configured to align and combine
7 the receive fixed port signals and"?

8 (Whereupon, the witness reviews the
9 material provided.)

10 THE WITNESS: Yes.

11 BY MR. WARREN:

12 Q. Okay. So you testified earlier a lot
13 about the prior art that you cited in your
14 declaration against the '701?

15 A. Yes.

16 Q. Okay. And that was Ito, Gardner and the
17 two Gilhousens, '390 and '865?

18 A. And Fenwick.

19 Q. And Fenwick, yes.

20 Now, in this one, in the declaration,
21 Exhibit 13, in your grounds of obviousness that you
22 used against Claim 10, I believe, in Ground 1, you
23 used Ito and Gardner.

24 Does that sound, correct, sir?

25 Feel free to check.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

105

1 **(Whereupon, the witness reviews the**
2 **material provided.)**

3 THE WITNESS: Are we going to be
4 referring to my other declaration at all?

5 BY MR. WARREN:

6 **Q. I hope not.**

7 A. Okay.

8 Do you have a page number handy, by any
9 chance?

10 Actually, it's Page 70.

11 **Q. I think Ground 1 is on Page -- it starts**
12 **Paragraph 105, which is Page 51 of my copy.**

13 A. Yes. Ground 1, Obviousness based on Ito
14 in view of Gardner.

15 **Q. Okay.**

16 Did you use the references -- Ito and
17 Gardner -- any differently in your declaration for
18 the '701 for what they disclosed than you did for
19 the '023?

20 Let me ask you this, sir: Would it be
21 helpful to take a break and allow you to look at
22 your two declarations for a few minutes?

23 A. Unless you want to represent to me there
24 isn't a significant difference here.

25 **Q. You're the expert and they're your**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

106

1 **declarations, so that has to come from you.**

2 A. So I will take a break and let you all
3 take a break, and I'll go through this.

4 **Q. Okay. That's fine.**

5 MR. SMITH: I think it will speed it
6 up.

7 - - -

8 (Whereupon, a recess was taken from
9 1:59 p.m. to 2:21 p.m.)

10 - - -

11 BY MR. WARREN:

12 **Q. So, Mr. Denning, did you have a chance**
13 **to compare your declaration for the '023 to the one**
14 **for the '701?**

15 A. Yes, I did.

16 **Q. Okay. And my question was, Did you**
17 **apply the Ito and Gardner references any different**
18 **for Claim 10 of the '701 patent than you did for**
19 **Claim 11 of the '023 patent?**

20 A. With the exception of an addition of
21 Element 10C, which is Paragraph 121 describing the
22 difference.

23 **Q. And that was for the controller element?**

24 A. That is.

25 **Q. That's what I thought.**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

107

1 And I have the same question as to the
2 two Gilhousen references, '390 and '865: Did you
3 apply those any differently to Claim 10 of the '701
4 than you did for Claim 11 of the '023?

5 A. Not that I could find.

6 Q. Okay. So your testimony earlier today
7 as to the four prior art references -- Ito, Gardner
8 and the two Gilhousens -- would be the same in this
9 proceeding as it would have been in the '023
10 proceeding?

11 A. Yes, it would.

12 Q. And you mentioned -- well, just a couple
13 quick questions.

14 So when you looked at Exhibit 13, you
15 said that's your -- a true and correct copy of your
16 declaration, correct?

17 A. Yes.

18 Q. And just for the record, if you would
19 just turn to Paragraph 2 real quick. It's Page 1.

20 A. Okay.

21 Q. It says here, For purposes of this
22 declaration, I was not asked to provide any opinions
23 that are not expressed herein.

24 Is that a true and accurate statement as
25 we sit here today?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

108

1 A. Yes.

2 Q. So you have all of your -- let me
3 rephrase it.

4 All of the opinions you have toward the
5 '701 would be contained in your declaration,
6 Exhibit 13?

7 MR. RICHARDSON: Objection to form.

8 THE WITNESS: For all the materials
9 that I've seen so far, the analysis that
10 I've done so far, the answer to that is
11 yes.

12 BY MR. WARREN:

13 Q. Have you been asked to prepare any other
14 opinions for the proceeding related to the
15 '701 patent?

16 A. Not yet.

17 Q. And I think you testified as to the '023
18 that the legal standards were provided to you in
19 Section IV of Exhibit 13 -- let me rephrase that.

20 The legal standards for the '023
21 declaration have been provided to you by your
22 attorneys; is that correct?

23 A. Is this the section describing the legal
24 standard for obvious --

25 Q. It's on Page 7, yes.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

109

1 A. In '023?

2 Q. Let's look at the '701 for now. I'll
3 just ask it that way --

4 A. Okay.

5 Q. -- it's Page 7, IV.

6 A. Okay.

7 Q. So you see IV where it says, Legal
8 Standards?

9 A. Yes.

10 Q. Were the legal standards provided in IV
11 of Exhibit 13 provided to you by your attorneys?

12 A. Yes.

13 Q. And you relied upon that; is that
14 correct?

15 A. Yes, I did.

16 Q. Okay. You're not an attorney, are you?

17 A. No, I am not an attorney.

18 Q. And you've not had any legal training
19 that I know of?

20 A. No.

21 Q. So when you used the term "obviousness"
22 in your report, are you referring to that from a
23 legal standpoint?

24 A. I'm referring to it as what is presented
25 here in this section as my understanding of

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

110

1 obviousness.

2 Q. Okay. Would you turn to Page 13,
3 Paragraph 32, sir?

4 A. Okay.

5 Q. And that is related to the overview of
6 the '701 patent that's on the previous page.

7 Do you see that, sir?

8 A. Yes.

9 Q. And there's a cite at the top where it
10 says, According to the '701 patent, a problem with
11 existing mobile telephone systems is the
12 considerable time required at handoffs.

13 Do you see that?

14 A. Yes.

15 Q. And it quotes Column 1, Lines 58 and 59.
16 Could you look at Column 1, Lines 58 and
17 59 of the '701 patent, sir?

18 A. Okay.

19 Q. In my copy of the '701 patent, that is
20 not what is at Columns 58 and 59.

21 Would you like to perhaps find where
22 that was so I can correct it on the record as to
23 where you found that statement?

24 A. Sure.

25 MR. RICHARDSON: If it helps, for the

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

111

1 sake of time, I can direct the witness.

2 MR. WARREN: That's fine, if you know
3 where it is.

4 MR. RICHARDSON: Take a look at 54.
5 Line 54.

6 BY MR. WARREN:

7 Q. Okay. So it really should be Lines 54
8 and 55 in Column 1?

9 A. Yes.

10 Q. And if you look further down, you have
11 the same, I think, issue, where you said, It's
12 previously described the '701 patent alleges that
13 the amount of time required to perform a handoff is
14 lengthy and undesirable.

15 And you still -- you, again, quote
16 Column 1, 58 and 59.

17 Can you tell me where that quote
18 actually should be or where it comes from?

19 MR. WARREN: You don't happen to know
20 where that one is, too?

21 MR. RICHARDSON: You're on the last
22 sentence of 32?

23 MR. WARREN: Yes, sir.

24 MR. RICHARDSON: I think that's a
25 paraphrase of the first sentence. I don't

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

112

1 know if there was a quotation in there.

2 Is there?

3 MR. WARREN: Well, yeah, there is.
4 That's why I'm asking.

5 MR. RICHARDSON: In the last sentence
6 of 32?

7 MR. WARREN: Yes. It says, See
8 Column 1, 58 and 59.

9 MR. RICHARDSON: Sure; but I don't
10 see a quotation in the sentence, a direct
11 quote.

12 BY MR. WARREN:

13 **Q. So is that a paraphrasing of the first**
14 **sentence, Mr. Denning?**

15 A. It's -- I believe it's a paraphrase of
16 Column 1, 54 to Column 2, Line 2.

17 **Q. Okay. Thank you.**

18 **And then if you will look at the next**
19 **paragraph, Paragraph 33.**

20 **And this one is a quote where you say,**
21 **The moving base station performs the handoff**
22 **function and, advantageously, because movement of**
23 **the base station, brackets, is in the same direction**
24 **as the traveling mobile unit, the number of handoffs**
25 **is greatly reduced.**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

113

1 Do you see that? It says in Column 5,
2 16 to 18.

3 A. Yes, I see it.

4 Q. And when you look at Column 5, 16 to 18,
5 it talks about antenna.

6 Do you know where that quote actually
7 came from?

8 A. Is it all right if I ask for my counsel
9 to search for the word "reduced" in the patent?

10 MR. WARREN: Absolutely.

11 MR. RICHARDSON: You might want to
12 look up a couple of lines. Try at Line 13.

13 THE WITNESS: Yes. So that one
14 is . . .

15 BY MR. WARREN:

16 Q. Would that be Lines 13 through 16?

17 A. Yes.

18 Q. Okay. Thank you.

19 And as a general question, did you
20 prepare -- let me rephrase that.

21 Was the declaration, Exhibit 13 for the
22 '701 patent, prepared in the same manner as your
23 declaration was for the '023 patent?

24 A. Yes, it was.

25 Q. So it was a collaborative effort between

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

114

1 **yourself and your attorneys?**

2 A. That's correct.

3 **Q. Do you believe a paralegal typed this**
4 **one as well?**

5 A. Yes, I do believe that.

6 **Q. Okay. And would you please turn to**
7 **Paragraph 67 of Exhibit 13?**

8 A. Okay.

9 **Q. And in Paragraph 67, you're discussing**
10 **the ability by law enforcement to use a radio from**
11 **their cruiser, correct?**

12 A. Yes.

13 **Q. You're not contending that a radio is**
14 **the same as a cell phone, though, right?**

15 A. There are many characteristics that are
16 common to both.

17 **Q. But you don't -- that's not my question.**
18 **My question was, Do you contend that a**
19 **radio is the same as a cell phone?**

20 A. If you were to set a radio on the table
21 and a cell phone on the table and ask me are these
22 devices the same, I would say no; however, that many
23 of the principles that they work with are the same.

24 **Q. But they're not the same device?**

25 A. That's not the same device.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

115

1 Q. Okay. So I have another general
2 question for you, and that is -- when you look at
3 the '701 patent, it claims priority of the first
4 filing date of 1995 on the front page of Exhibit 12.

5 Do you see that, sir?

6 A. June 2nd, 1995?

7 Q. Yes, sir.

8 A. Yes.

9 Q. And were you asked when you prepared
10 your declaration to look at this from the standpoint
11 of a person of ordinary skill in the art at the time
12 of the invention?

13 A. Yes.

14 Q. That would have been around 1995,
15 correct, sir?

16 A. Yes.

17 Q. Okay. So I have a question for you.
18 If 1995 is the time of the invention and
19 you were told that's what someone of ordinary skill
20 in the art would use, how could you possibly think
21 to use a reference such as Gardner '786, which
22 didn't actually exist until 1996, and compare it
23 with Ito, which came out in 1994 --

24 MR. RICHARDSON: Objection: form.
25

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

116

1 BY MR. WARREN:

2 Q. -- did you look into the future, sir?

3 MR. RICHARDSON: Objection to form.

4 THE WITNESS: Would you please ask me
5 the question again?

6 MR. WARREN: Would you read it back,
7 please?

8 - - -

9 (Whereupon, the court reporter read
10 back the pertinent part of the
11 record.)

12 - - -

13 THE WITNESS: So the filing date of
14 Gardner is October 5th, 1993, which states
15 that that is the priority date of
16 this patent as I understand that sort of
17 thing.

18 The date of the patent up here is not
19 what I would use for deciding what is prior
20 art and what is not. The same thing is
21 true with Ito, which the filing date on
22 that one is obvious to me that it's
23 October 17th, 1991, which obviously is
24 significantly different from the date of
25 the patent up here.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

117

1 The prior date is what I used in my
2 analysis.

3 BY MR. WARREN:

4 **Q. Mr. Denning, are you aware that patents**
5 **are confidential at the Patent Office until they're**
6 **either published or issued?**

7 MR. RICHARDSON: Objection: form.

8 THE WITNESS: No, I don't think I
9 know that.

10 BY MR. WARREN:

11 **Q. Okay. Well, I will inform you that's**
12 **true.**

13 And so this hypothetical, the
14 Gardner patent, which issued in 1996, would not have
15 been publicly available until it issued, which was
16 April 2nd, 1996.

17 Would that change your answer?

18 A. Are you telling me that based on the
19 filing dates for Gardner and Ito that these are not
20 prior art?

21 **Q. No. I'm just telling you that the**
22 **Gardner reference, Exhibit 8, was not publicly**
23 **available until April 2nd, 1996, sir. So no one of**
24 **ordinary skill in the art would have had access to**
25 **it until April 2nd, 1996.**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

118

1 If you didn't have access to it until
2 April 2nd, 1996, sir, how could it possibly motivate
3 you to combine it with a reference which wasn't
4 publicly available until 1994?

5 MR. RICHARDSON: Objection: form.

6 THE WITNESS: I'm trying to
7 understand your line of reasoning and line
8 of questioning.

9 So using the same -- the same thing
10 that you just described to me, then, you
11 would say that the date of the '701 patent,
12 then, is December 7th, 2010; is that
13 correct?

14 BY MR. WARREN:

15 Q. I wasn't using that for -- for the date
16 for prior art. I was using the '701 filing date of
17 1995 as the date of the invention, sir.

18 A. It's just that it kind of breaks down
19 because if I was using December 7th, 2010, as the
20 date that we were referencing, well, certainly, all
21 that existed before. If I'm using the date that's
22 on Gavrilovich '701 as June 2nd, 1995, then I would
23 want to use the same kind of dates in the other work
24 as well.

25 Certainly, if what you say is true,

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

119

1 which I have no reason to doubt that patents are
2 published on the date that's up here (indicating),
3 then the whole situation breaks down because before
4 2010, nobody would have asked me to be a person of
5 ordinary skill looking at this particular subject
6 matter.

7 **Q. Okay. That's a lot of verbiage. That's**
8 **not actually what I asked.**

9 MR. WARREN: So move to strike it as
10 nonresponsive.

11 BY MR. WARREN:

12 **Q. I just asked a simple question, and that**
13 **was, If you did not have access to Gardner until**
14 **1996, how would it motivate you to be combined with**
15 **Ito?**

16 A. Well, if I didn't know that something
17 exists -- existed, I wouldn't be motivated to
18 combine it with anything --

19 **Q. Okay. Thank you.**

20 A. -- most likely, I would look for
21 alternate references.

22 **Q. Could you please turn to Paragraph 111**
23 **on Page 55 of your report?**

24 A. Okay.

25 **Q. And it is my understanding from reading**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

120

1 this that from Paragraph 111 to Paragraph 125 is
2 where you outline where you believed the prior art
3 shows some of the elements of Claim 10.

4 Is that accurate, sir?

5 A. Yes.

6 Q. And I believe -- if you'll look at
7 Paragraph 124 for me, sir.

8 A. Okay.

9 Q. I think I'm off a paragraph. Just a
10 second.

11 (Pause.)

12 BY MR. WARREN:

13 Q. Yeah. I'm sorry.
14 Paragraph 121.

15 A. Okay.

16 Q. Do you see Paragraph 21 [sic]?
17 And you map that to Element 10C.
18 Do you see, sir?

19 A. Yes.

20 Q. So this is the language in the '701 that
21 you were referring to that would be different
22 because that's the controller element, C? This is
23 what would be different than the '023?

24 A. Yes.

25 Q. Okay. And could you now turn to

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

121

1 Paragraph 181 for me, sir?

2 That deals with Claim 18 of the
3 '701 patent.

4 Do you see that, sir?

5 A. Yes.

6 Q. I think it's actually Paragraph 182 I'd
7 like to direct your attention to.

8 A. Okay.

9 Q. So I want to make sure I understand
10 this.

11 It is your opinion that an airplane is
12 now a car?

13 A. No. It is my opinion that an airplane
14 is an automotive vehicle, as I say there in
15 parentheses.

16 Q. So, basically, a car?

17 MR. RICHARDSON: Objection: form.

18 THE WITNESS: As -- as I describe
19 there further in that same paragraph, the
20 idea of a vehicle being any device or
21 contrivance for carrying or conveying
22 persons or an object, especially over land
23 or in space, and "automotive" as defined as
24 self-moving or moving by means of its own
25 power.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

122

1 An airplane, like a car, is
2 self-moving since it is pushed and moved by
3 its own engine. Thus, "automotive vehicle"
4 was clearly understood at the time of the
5 '701 patent to include airplanes.

6 BY MR. WARREN:

7 **Q. All right. So your opinion is that the**
8 **word "automotive vehicle" can include also an**
9 **airplane?**

10 A. Yes.

11 **Q. Okay. And could you turn to**
12 **Paragraph 201, Page 110 of Exhibit 13?**

13 A. Okay.

14 **Q. Is that your signature, sir?**

15 A. Yes.

16 **Q. Okay. Turning back to Exhibit 12, which**
17 **is the '701 patent, and looking specifically at**
18 **Claim 10 for me, sir.**

19 A. Okay.

20 **Q. Does Claim 10 of the '701 patent require**
21 **the use of MIMO?**

22 A. The word "MIMO" does not appear in
23 Claim 10. It -- the only thing that is specifically
24 referenced which is even similar is the idea of
25 spatially separated antennas.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

123

1 **Q. Okay.**

2 MR. WARREN: Let's take a break.

3 - - -

4 (Whereupon, a recess was taken from
5 2:47 p.m. to 2:55 p.m.)

6 - - -

7 MR. WARREN: Okay. Mr. Denning, I
8 have no further questions. Thank you for
9 your time. I appreciate it.

10 MR. RICHARDSON: I think we will take
11 a quick break before we go on record, if we
12 go on record.

13 MR. WARREN: Okay.

14 - - -

15 (Whereupon, a recess was taken from
16 2:55 p.m. to 3:04 p.m.)

17 - - -

18 - - -

19 EXAMINATION BY COUNSEL FOR PETITIONER

20 - - -

21 BY MR. RICHARDSON:

22 **Q. Mr. Denning, welcome back.**

23 A. Thank you.

24 **Q. I have a couple of questions for you on**
25 **redirect about some of your earlier testimony today.**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

124

1 I don't anticipate it taking too long but just a
2 couple of points of clarification, if that's all
3 right with you.

4 A. Yes.

5 Q. Okay. So, Mr. Denning, do you recall
6 earlier in your testimony today where you were asked
7 a series of questions relating to whether a mobile
8 device could communicate directly with a cellular
9 network or whether it had to go through a movable
10 base station?

11 A. Yes, I recall that.

12 Q. And you were asked those questions in
13 relation to some of the prior art that we -- that
14 you pointed to in your declarations as well as the
15 patent at issue, correct?

16 A. Yes.

17 Q. So I want to direct your attention to
18 the '023 patent first and, particularly, Independent
19 Claim 11.

20 A. Okay.

21 Q. And Independent Claim 11 was the
22 independent claim from the '023 patent that you
23 opined on in your declaration, correct?

24 A. Yes.

25 Q. Is there anything in

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

125

1 Independent Claim 11 that relates to a mobile device
2 having the capability to communicate directly with a
3 fixed port?

4 A. No.

5 Q. And the absence of such a requirement
6 from the claim -- what does that inform you about
7 whether such a capability is required to show that
8 that claim is obvious?

9 A. It has no bearing at all as to whether
10 it's obvious or not since it doesn't exist in the
11 claim.

12 Q. Okay. I have the same question for you
13 with regards to Independent Claim 10 of the
14 '701 patent.

15 A. Okay.

16 Q. So, again, is there anything in
17 Independent Claim 10 of the '701 patent that relates
18 to a mobile device having the capability to
19 communicate directly with a fixed port?

20 A. No.

21 Q. And then -- so the same follow-up
22 question would be, In your opinion, is that
23 capability a requirement to show that
24 Independent Claim 10 is obvious?

25 A. No, it is not. There's nothing in

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

126

1 Claim 10 about it, so I wouldn't try to show whether
2 that was obvious or not.

3 **Q. Okay. Shifting gears slightly, during**
4 **your questioning earlier today, you were also asked**
5 **a series of questions relating to a preferred or**
6 **required separation distance between spatially**
7 **separated antennas.**

8 Do you recall that?

9 A. Yes.

10 **Q. And I believe you were asked questions**
11 **as to whether certain of the references that you**
12 **relied on disclosed a preferred or a mandatory**
13 **separation distance of its antennas; is that**
14 **correct?**

15 (Interruption in the proceedings.)

16 BY MR. RICHARDSON:

17 **Q. I can reask the question again if you**
18 **need.**

19 A. Please.

20 **Q. So I believe you were asked a series of**
21 **questions as to whether certain of the prior art**
22 **references that you relied on -- whether those**
23 **references disclose preferred or required separation**
24 **distances for its antennas.**

25 A. Yes.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

127

1 Q. And I want to ask you --

2 (Interruption in the proceedings.)

3 BY MR. RICHARDSON:

4 Q. So I'll start that question again.

5 So I want to ask you the same question
6 with regard to the '023 patent.

7 At any point in the '023 patent is it
8 explained -- does it explain a preferred or
9 mandatory separation distance between its spatially
10 separated antennas?

11 (Whereupon, the witness reviews the
12 material provided.)

13 THE WITNESS: Would you please ask
14 the question again?

15 BY MR. RICHARDSON:

16 Q. Sure.

17 I'll just reread it.

18 So with regard to the '023 patent that
19 you just took a look at, does it explain anywhere in
20 there a preferred or mandatory separation distance
21 between its spatially separated antennas?

22 A. So in Column 6, starting with Line 24,
23 it describes antenna diversity. It says, Antenna
24 diversity can be provided with two separately
25 separated -- spatially separated radio beams

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

128

1 separated in time with a predefined time-delay
2 offset for easier separation that is at reception.
3 Various techniques for obtaining high antenna
4 diversity are well known in the art, and antennas
5 employing such techniques are commercially
6 available.

7 The answer to your question is that it's
8 specifying that they need to be separated in time
9 with a predefined time-delay offset.

10 So that the offset, whatever it is
11 determined -- that time-delay offset is -- is the
12 spacing that it's looking for.

13 And that's addressed in Claim 15, where
14 it says, The spatially separated radio frequency
15 beam is separated in time with a predefined time
16 delay.

17 So, once again, well known in the art
18 and obvious.

19 **Q. Sure.**

20 **So maybe my question was slightly**
21 **different, so maybe we can take it in two parts.**

22 **You pointed to two places where it**
23 **mentioned a predefined time delay, correct?**

24 **A. Yes.**

25 **Q. But it doesn't mention anywhere in**

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

129

1 the patent precisely what that predefined time delay
2 should be, correct?

3 A. That is correct.

4 Q. And it doesn't give any specific
5 parameters on a measurable separation distance,
6 correct?

7 A. That is correct.

8 One skilled in the art would know how to
9 determine those.

10 Q. So that -- that would be my follow-up
11 question.

12 The fact that the '023 patent does not
13 precisely explain what those separation distances
14 need to be, is it safe to assume that the inventor
15 of the '023 patent would have thought that a POSA
16 would have understood how to come up with the
17 appropriate separation distance?

18 A. Yes.

19 That goes along with what it says in
20 Lines -- in Column 6, Line 27, where it says,
21 Various techniques for obtaining high antenna
22 diversity are well known in the art.

23 Q. Because if a POSA wouldn't have had that
24 understanding at the time of the invention, then
25 they wouldn't have been able to implement the '023

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

130

1 **system, correct?**

2 A. Yes, that is correct.

3 Q. So you were also asked -- shifting gears
4 slightly, you were also asked a series of questions
5 about the Gilhousen '865 reference.

6 Do you recall that?

7 A. I believe so.

8 Q. And you were asked a series of questions
9 relating to the speed at which that aircraft in that
10 particular patent could travel and whether that
11 speed -- at that speed, whether soft handoffs could
12 be performed.

13 Do you recall that?

14 A. Yes, I do.

15 Q. Okay. So I want to direct you to your
16 first declaration, the one relating to the '023
17 patent. And it's Exhibit 3.

18 A. Okay.

19 Q. So in Paragraph 62 of that
20 declaration --

21 MR. RICHARDSON: Did I say "62" or
22 "162"?

23 MR. SCHLEH: You said 62.

24 BY MR. RICHARDSON:

25 Q. I meant 162. Sorry.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

131

1 A. Okay.

2 Q. So I want to read the first sentence of
3 that particular paragraph. It says, Based on the
4 teachings of Gilhousen '390, a POSITA would have
5 been motivated to modify Gilhousen '865's system
6 with any one or more of the signal diversity
7 configurations of Gilhousen '390, at least for the
8 purpose of reducing the errors caused by well-known
9 deleterious effects -- effects on wirelessly
10 transmitted signals.

11 Do you see that?

12 A. Yes.

13 Q. And so is it your understanding -- well,
14 I guess, let me rephrase the question.

15 In the opinions that you provide in this
16 portion of your declaration, is it your opinion that
17 any one or more of these signal diversity
18 configurations of Gilhousen '390 could be
19 incorporated into the Gilhousen '865 patent?

20 A. Yes. And I believe that I stated in my
21 testimony earlier that these can be combined.

22 Q. So, in other words, you weren't just
23 advocating for incorporating soft handoff from
24 Gilhousen '390; it could be any one or more of the
25 signal diversity configurations disclosed in

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

132

1 that patent, correct?

2 A. Yes.

3 Q. And we -- in your earlier testimony, I
4 believe when you were talking about the Gilhousen
5 '865 reference, you were asked to consider that --
6 that particular disclosure in the context of when
7 the plane was flying in the air; is that correct?

8 A. Yes.

9 Q. Do you have an understanding of that --
10 of whether planes only exist in the air?

11 A. Yes, I do.

12 Q. And what is that opinion?

13 A. That they exist on the ground -- rolling
14 along the ground as well as flying in the air.

15 Q. So if the exemplary airplane
16 configuration from Gilhousen '865 was considered
17 when it was on the ground, would there be any issues
18 with incorporating the one or more signal diversity
19 configurations from Gilhousen '390 into the
20 Gilhousen '865 system?

21 A. No.

22 Q. And then there was a -- this is more of
23 a clarification than anything.

24 When you were initially directed to your
25 declaration relating to the '701 patent, you were

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

133

1 asked to compare Independent Claim 10 of the
2 '701 patent to Independent Claim 11 of the '023
3 patent.

4 Do you recall that?

5 A. Yes.

6 Q. And you were asked something along the
7 lines of whether the only difference in those claims
8 was, I believe, Claim Element 10C from the '701
9 patent; is that correct?

10 A. Yes.

11 Q. So I'm going to direct your attention to
12 the preambles for those two particular independent
13 claims.

14 And the Preamble of Claim 10 of the '023
15 patent reads, A mobile base station in -- excuse
16 me -- a mobile base station configured to move
17 relative --

18 MR. WARREN: Objection as to form.

19 It says "movable" base station, not a
20 mobile.

21 MR. RICHARDSON: Okay.

22 BY MR. RICHARDSON:

23 Q. -- a movable base station configured to
24 move relative to the Earth.

25 Do you see that?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

134

1 A. I see it.

2 Q. And if I direct your attention to the
3 Preamble of Claim 11 of the '023 patent. That one
4 reads, An apparatus configured to move relative to
5 the Earth.

6 Do you see that?

7 A. Yes, I do.

8 Q. So slightly different languages in those
9 preambles, correct?

10 A. Yes, there is -- slightly different.

11 Q. Does that difference in those preambles
12 that we just read into the record impact your
13 opinions in any way?

14 A. No.

15 Q. Finally, you were asked a series of
16 questions regarding your combination of the Ito
17 reference and the Gardner reference.

18 Do you recall that?

19 A. Yes.

20 Q. And you were particularly asked some
21 questions about some of the relevant dates for the
22 Gardner reference.

23 Do you recall that?

24 A. Yes.

25 Q. And counsel for Patent Owner represented

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

135

1 to you during the questioning that
2 particular patents are held in confidence by the
3 Patent Office for a period of time after they're
4 filed.

5 Do you recall that?

6 A. Yes.

7 Q. And I believe there was a follow-up
8 question along the lines of how would a person of
9 ordinary skill in the art be aware of Gardner at the
10 time that it was filed if it was held in confidence,
11 correct?

12 A. Yes.

13 Q. Paraphrasing, but something along those
14 lines?

15 A. Yeah, that's right.

16 Q. So the inventor of the Gardner patent --
17 his name is Steven H. Gardner, correct?

18 A. Yes.

19 Q. He's the lone listed inventor on
20 that patent, correct?

21 A. Yes.

22 Q. Okay. And so the inventor of the
23 systems and methods and other disclosure in
24 this patent, in theory, we can assume, is
25 attributable to the knowledge of Mr. Gardner,

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

136

1 correct?

2 A. Yes.

3 Q. So by the -- the disclosure that he put
4 into this document, it's safe to assume that he is a
5 skilled artisan in the area of wireless
6 communications, correct?

7 A. Yes.

8 Q. Okay. So it would be safe to assume
9 that he had an understanding of this disclosure when
10 he filed it not on October 5th, 1993, correct?

11 A. Yes.

12 Q. And you were also asked some questions
13 about the Ito reference, if you want to take a look
14 at that.

15 The Ito reference has a date of patent
16 of January 4th, 1994, correct?

17 A. Yes.

18 Q. And that's after the filing date of the
19 Gardner reference, correct?

20 A. Yes, it is.

21 Q. So at least when we consider
22 Mr. Steven H. Gardner, he would have been aware of
23 Ito and the disclosure in his application at least
24 by the January 4th, 1994, date of patent of the Ito
25 reference, correct?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

137

1 A. Yes.

2 Q. Now I want to turn your attention to
3 Paragraph 16 of your declaration relating to the
4 '701 patent.

5 A. Okay.

6 Q. So in Paragraph 16, you set forth your
7 understanding of a person of ordinary skill in the
8 art, correct?

9 A. Yes.

10 Q. And the lone sentence in that paragraph
11 reads, I understand that a person of ordinary skill
12 in the relevant art (herein a POSITA) is presumed to
13 be aware of all pertinent art, things along
14 conventional wisdom in the art and is a person of
15 ordinary creativity – not an automation.

16 Correct?

17 A. Yes.

18 Q. And so that particular sentence uses the
19 term "presumed to be aware," correct?

20 A. Yes.

21 Q. Not "is in fact aware," correct?

22 A. That is correct.

23 Q. So your understanding, is it accurate to
24 say that a person of ordinary skill in the art isn't
25 required to go and search and read every document

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

138

1 that could potentially be relevant that existed at
2 the time of the invention?

3 A. That is correct.

4 Q. It's a presumption, correct?

5 A. It is presumed.

6 Q. So speaking in hypothetical terms, if
7 you were to write a paper or write a technical
8 document, not show it to anybody and you stuck it in
9 a drawer, does that mean that that technical
10 document that you drafted doesn't set forth your
11 understanding at the time that you wrote it?

12 A. No, it doesn't mean that.

13 MR. RICHARDSON: No further
14 questions.

15 MR. WARREN: I'm sure you'll
16 understand I have a couple --

17 MR. RICHARDSON: Yes.

18 MR. WARREN: -- because I just want
19 to clarify something I found confusing.

20 - - -

21 FURTHER EXAMINATION BY COUNSEL FOR PATENT OWNER

22 - - -

23 BY MR. WARREN:

24 Q. I believe you said that Gardner -- you
25 just testified that Gardner would have been aware of

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

139

1 **Ito; is that correct?**

2 A. Gardner would have been aware of Ito
3 before the '786 patent was published, or could have
4 been aware.

5 Q. Okay. I'm a little confused about that,
6 because -- let's look at that.

7 If you look at your Exhibit 5, which is
8 Ito, it issued January 4th, 1994.

9 Do you see that, sir?

10 A. I do.

11 Q. Yeah. And if you look at your
12 Exhibit 8, which is Gardner, he filed it
13 October 5th, 1993.

14 Do you see that?

15 A. I do.

16 Q. And that would have been before Ito
17 issued, correct?

18 A. Sure.

19 Q. And so, therefore, he would not have had
20 access to Ito to know what it disclosed.

21 A. So I believe that you're
22 mischaracterizing my testimony. What I said was
23 that he would be aware of Ito before his patent, the
24 '786, was published.

25 Q. You mean before it was issued?

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

140

1 A. Before the date of patent, April 2nd,
2 1996.

3 **Q. But he would not have been aware of Ito**
4 **before he actually filed his patent application?**

5 A. I guess I don't know.

6 **Q. Well, how would he have known on**
7 **October 15th, 1993, about something that wasn't**
8 **publicly available until January 4th, 1994?**

9 MR. RICHARDSON: Objection: form;
10 hypothetical.

11 THE WITNESS: I don't know.

12 BY MR. WARREN:

13 **Q. Did you ever personally talk to**
14 **Mr. Steven H. Gardner?**

15 A. No.

16 **Q. Have you ever talked to Mr. Ito?**

17 A. No.

18 MR. WARREN: A quick break.

19 MR. SMITH: Yeah.

20 - - -

21 (Whereupon, a recess was taken from
22 3:34 p.m. to 3:38 p.m.)

23 - - -

24 MR. WARREN: I have no further
25 questions.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

141

1 MR. RICHARDSON: Nothing further.

2
3
4 (Whereupon, at 3:38 p.m., the
5 deposition of SCOTT ANDREW DENNING was
6 concluded.)

7
8
9 (Read and Signing Requested.)

10
11 (Witness excused.)
12
13
14
15
16
17
18
19
20
21
22
23
24
25

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

142

CERTIFICATE OF NOTARY PUBLIC

I, Cindy L. Sebo, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness was taken by me in shorthand and thereafter reduced to computerized transcription under my direction; that said deposition is a true record of the testimony given by said witness; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken; and further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of the action.

Cindy L. Sebo

Notary Public in and for
the District of Columbia

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

143

INSTRUCTIONS TO WITNESS

Please read your deposition over carefully and make any necessary corrections. You should state the reason in the appropriate space on the errata sheet for any corrections that are made.

After doing so, please sign the errata sheet and date it.

You are signing same subject to the changes you have noted on the errata sheet, which will be attached to your deposition.

It is imperative that you return the original errata sheet to the deposing attorney within thirty (30) days of receipt of the deposition transcript by you. If you fail to do so, the deposition transcript may be deemed to be accurate and may be used in court.

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

144

1 E R R A T A
2 WITNESS: SCOTT ANDREW DENNING
3 DATE: January 16, 2020
4 CAPTION: Volkswagen v. Carucel
5

PAGE LINE REASON FOR CHANGE:

6 _____

7 PAGE LINE REASON FOR CHANGE:

8 _____

9 PAGE LINE REASON FOR CHANGE:

10 _____

11 PAGE LINE REASON FOR CHANGE:

12 _____

13 PAGE LINE REASON FOR CHANGE:

14 _____

15 PAGE LINE REASON FOR CHANGE:

16 _____

17 PAGE LINE REASON FOR CHANGE:

18 _____

19 PAGE LINE REASON FOR CHANGE:

20 _____

21 PAGE LINE REASON FOR CHANGE:

22 _____

23 PAGE LINE REASON FOR CHANGE:

24 _____

25 _____

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

145

ACKNOWLEDGMENT OF DEPONENT

I, _____, do
hereby certify that I have read the foregoing
pages, 1 to 141, and that the same is a correct
transcription of the answers given by me to the
questions therein propounded, except for the
corrections or changes in form or substance,
if any, noted in the attached errata sheet.

DATE

SIGNATURE

Subscribed and sworn to before me
this _____ day of _____, 20____.

My Commission expires:

Notary Public

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

146

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| A | 106:20 | 89:9,10 98:2 | 2:18 3:6 5:2 | anymore 96:12 |
| a.m 3:2 7:6 | additional | 130:9 | 5:18 7:9 | Anytime 72:25 |
| 37:22,22 | 35:20,22,25 | airplane 72:17 | 15:23 82:4 | apart 50:11 |
| 67:11,11 | 40:13 48:6 | 83:5 94:18 | 141:5 144:2 | 59:22 60:18 |
| ability 114:10 | 98:12 | 121:11,13 | answer 9:19 | 64:25 87:25 |
| able 28:17,24 | address 87:8 | 122:1,9 | 31:2,4 73:24 | 88:11,24 |
| 55:13 58:4 | addressed | 132:15 | 91:5 93:11 | apparatus 25:4 |
| 75:6,11,24 | 41:17 128:13 | airplanes | 97:7 108:10 | 25:6 50:6 |
| 89:16 94:15 | adjacent 45:17 | 72:12 122:5 | 117:17 128:7 | 64:16 134:4 |
| 97:18 129:25 | 96:13 | align 51:17,17 | answered 10:1 | APPEAL 1:3 2:3 |
| aboard 98:2 | Administrator | 104:6 | 45:2 | appear 11:10 |
| absence 125:5 | 3:23 | alleges 111:12 | answering | 122:22 |
| Absolutely | advantageo... | allow 105:21 | 73:11 | appearances |
| 8:16 113:10 | 112:22 | allowed 39:2 | answers 102:21 | 8:15 |
| Abstract 50:4 | advocating | 86:18 | 145:6 | appearing 14:5 |
| 51:22 64:12 | 131:23 | alternate | antenna 55:22 | appears 15:18 |
| 69:10 72:5 | aforementi... | 119:21 | 78:17 79:5,9 | 16:6 37:7 |
| Acampora 68:13 | 45:7 | altitude 93:2 | 79:10,13 | 69:6,15 74:8 |
| 68:22 | afternoon | 94:15 | 80:12,18 | 75:19 142:4 |
| access 45:15 | 102:19 | America 1:5 | 84:3,17 | applicable |
| 117:24 118:1 | ago 23:6 80:21 | 2:5 8:18 | 85:11,25 | 14:9 55:24 |
| 119:13 | 86:17 | 22:16 | 86:8 87:17 | 63:17,19 |
| 139:20 | agree 8:11 | amount 111:13 | 95:3,4,18,19 | 65:6 |
| accompanying | 29:24 30:23 | amplifier 79:6 | 96:10 113:5 | application |
| 96:13 | 37:15 41:1 | amplifying | 127:23,23 | 19:24 87:13 |
| accomplished | 64:11 69:12 | 47:24 | 128:3 129:21 | 136:23 140:4 |
| 85:15 | 69:16,21 | amplitude | antennas 25:7 | applications |
| accumulation | 79:9 80:11 | 53:16,17,19 | 25:10 50:8,9 | 62:25 |
| 21:9 | 87:12 | AMPS 18:21 | 50:10 51:24 | applies 46:6 |
| accurate | agreed 7:20 | 20:7 46:11 | 55:7,23 59:3 | apply 90:4 |
| 107:24 120:4 | agreement | 46:16 | 59:3,21 60:5 | 106:17 107:3 |
| 137:23 | 102:12 104:3 | analog 19:12 | 60:18 68:6 | appreciate |
| 143:16 | ahead 71:12 | 20:3,6,8 | 76:23 77:13 | 123:9 |
| achieved 88:10 | 81:19 103:4 | 44:18 79:6 | 83:14,24 | approached |
| ACKNOWLEDG... | air 73:13 | 84:17 | 84:4,22 | 93:5 |
| 145:1 | 94:21 132:7 | analysis 17:12 | 85:15 86:4,6 | appropriate |
| acted 19:5 | 132:10,14 | 64:7 65:19 | 87:7,11,20 | 96:14 129:17 |
| action 142:12 | air-based | 72:18 73:7 | 88:1,10 89:7 | 143:4 |
| 142:16 | 54:17 | 73:16 81:10 | 122:25 126:7 | approved 13:13 |
| Active 19:16 | airborne 72:6 | 89:12 90:11 | 126:13,24 | approximately |
| actual 12:10 | aircraft 73:1 | 90:14 93:1 | 127:10,21 | 45:8 |
| add 25:25 51:9 | 73:4 74:25 | 93:11 108:9 | 128:4 | April 10:7 |
| 51:17 | 75:13 76:9 | 117:2 | anticipate | 58:23 117:16 |
| adding 51:20 | 85:12 86:4,6 | and- 4:18 | 124:1 | 117:23,25 |
| addition | 86:9,19 87:7 | and/or 35:23 | anybody 89:16 | 118:2 140:1 |
| | 87:11,23 | Andrew 1:20 | 138:8 | area 136:5 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

147

| | | | | |
|-----------------------|-----------------------|---------------------|----------------------|-----------------------|
| areas 94:8 | 30:20,22 | 108:22 | 123:22 | 117:18 131:3 |
| art 11:15,16 | 44:13,14,23 | 109:11 114:1 | background | basically 12:1 |
| 12:7 24:6 | 44:24 46:23 | attributable | 22:3 57:17 | 24:17 55:9 |
| 26:24 27:5 | 47:2,11 | 135:25 | bag 18:23 | 121:16 |
| 71:7 75:22 | 55:25 57:9 | audio 53:8 | Ballpark 9:10 | basis 21:4 |
| 76:8 78:15 | 57:12,17 | Authorized | band 46:14 | beam 128:15 |
| 78:21 80:25 | 59:9 61:19 | 3:23 | 47:19,20 | beams 127:25 |
| 84:25 85:5 | 66:11 84:1 | automation | 55:12 65:4 | bearing 125:9 |
| 85:17,18,23 | 91:9,11 | 137:15 | 66:17 | beginning |
| 85:23 86:22 | 112:4 | automobile | bands 45:19 | 63:10 |
| 87:12,19 | assigned 46:12 | 29:20 95:3 | 65:6 | behalf 4:2,11 |
| 88:17 89:1 | 78:9 | 95:18 | base 17:19,21 | belief 13:10 |
| 94:11 99:24 | assigning 48:4 | automotive | 18:4,8,23 | believe 12:10 |
| 100:3,5,22 | assistant | 121:14,23 | 23:11 24:9 | 18:19 21:12 |
| 100:25 | 12:21 13:10 | 122:3,8 | 24:12,14,22 | 26:9 27:15 |
| 104:13 107:7 | associated | available | 25:13 26:1,2 | 29:7 44:11 |
| 115:11,20 | 11:22,23 | 78:11 96:9 | 26:3,6 27:7 | 46:3,11,17 |
| 116:20 | 69:25 | 117:15,23 | 27:17,18,19 | 50:4 54:16 |
| 117:20,24 | association | 118:4 128:6 | 28:13,15,18 | 57:5 59:16 |
| 118:16 120:2 | 16:8 | 140:8 | 29:19 30:1,8 | 61:15,24 |
| 124:13 | assume 35:10 | Avenue 3:11 | 31:17 32:7 | 63:19 71:7 |
| 126:21 128:4 | 41:23 59:14 | 4:6 | 32:11,15,16 | 72:5 73:12 |
| 128:17 129:8 | 78:16 84:24 | aware 87:6 | 32:22,24 | 73:20 86:20 |
| 129:22 135:9 | 84:25 129:14 | 100:4,18 | 33:13 37:8 | 90:10 103:13 |
| 137:8,12,13 | 135:24 136:4 | 117:4 135:9 | 37:10,14 | 103:22 |
| 137:14,24 | 136:8 | 136:22 | 46:20,22,24 | 104:22 |
| article 6:11 | assumes 85:21 | 137:13,19,21 | 47:1,10,12 | 112:15 114:3 |
| 61:23 68:18 | assuming 78:19 | 138:25 139:2 | 47:18,23 | 114:5 120:6 |
| artisan 136:5 | asynchronous | 139:4,23 | 48:1,4,6 | 126:10,20 |
| asked 10:12,18 | 64:15 | 140:3 | 54:17 66:11 | 130:7 131:20 |
| 11:3,13 | AT&T 64:2 | | 69:7,18 74:1 | 132:4 133:8 |
| 14:25 17:11 | attached 6:21 | B | 74:18 75:8 | 135:7 138:24 |
| 31:1 45:1 | 143:11 145:9 | B 5:7 6:1 | 75:12,17,19 | 139:21 |
| 107:22 | attendant | B2 5:14 6:16 | 75:24 76:4 | believed 10:21 |
| 108:13 115:9 | 86:13 | 14:17,23 | 76:16,21 | 120:2 |
| 119:4,8,12 | attention | 101:18 | 77:9 84:12 | belongs 36:20 |
| 124:6,12 | 121:7 124:17 | back 18:2 | 94:5 96:8,21 | best 8:4 88:19 |
| 126:4,10,20 | 133:11 134:2 | 26:25 31:5 | 97:10 112:21 | beyond 45:6 |
| 130:3,4,8 | 137:2 | 33:10 48:17 | 112:23 | 48:7 |
| 132:5 133:1 | attorney | 50:19 51:16 | 124:10 | block 34:3 |
| 133:6 134:15 | 109:16,17 | 54:2 72:1 | 133:15,16,19 | 79:3 |
| 134:20 | 142:14 | 75:13 76:10 | 133:23 | blocks 79:13 |
| 136:12 | 143:13 | 85:13 86:16 | based 25:14 | BOARD 1:3 2:3 |
| asking 7:25 | attorney-c... | 92:8,12 | 34:1 44:21 | book 61:25 |
| 8:6 10:2 | 11:5 | 116:6,10 | 54:11 103:20 | bottom 21:25 |
| 11:8,11 | attorneys | 122:16 | 105:13 | 24:5 34:3 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

148

| | | | | |
|--|--|--|--|---|
| 79:20 91:23 bounce 70:14 70:20, 23 73:2 bouncing 63:15 box 52:10 81:1 81:14 BP 21:24 22:16 bracket 60:24 61:1 95:4 brackets 112:23 break 37:19 67:4 81:20 105:21 106:2 106:3 123:2 123:11 140:18 break-befo... 40:6 breaks 118:18 119:3 briefly 22:2 broadcast 55:11 broken 50:22 brought 12:5 61:13 BSS 32:11 34:22 building 17:22 70:23 buildings 68:23 69:3 69:14, 17, 18 70:1, 7 73:1 built 44:18 | 39:1 40:1 41:19 42:1 called 52:19 55:13 82:5 104:6 calls 12:6 13:2, 5 cancel 51:13 capabilities 45:22 48:7 capability 125:2, 7, 18 125:23 capable 31:20 74:1 capacity 45:21 Capone 41:22 41:23 CAPTION 144:4 car 93:6, 13, 25 121:12, 16 122:1 carefully 143:3 carried 53:7 carrier 51:25 52:6, 10, 13 53:5, 13, 21 carrying 121:21 Carucel 1:8 2:8 8:24 9:1 144:4 case 1:11, 14 2:11, 14 12:3 16:9 19:20 21:24 22:3 96:21 100:6 cases 21:9 75:18 caused 87:6 131:8 causes 96:18 causing 71:10 95:5, 22 caution 11:4 | CDMA 31:13 43:23 44:17 44:20 45:22 75:23 CDMA-type 75:3 CDPD 19:21 cell 22:20 39:24 40:13 43:7 46:13 77:12 78:7 78:11, 12 80:1, 4 84:16 86:12, 18 92:20, 22 93:4, 7, 13, 20 94:5, 12 96:13 114:14 114:19, 21 cell-site 39:1 39:4, 14, 25 40:22 43:2, 7 77:7 78:6 79:25 84:11 85:3 88:16 cells 45:18 cellular 18:3 18:5, 8, 11, 19 18:22 19:5 19:12, 16, 20 21:14 22:19 23:10, 14, 19 26:18 27:8 27:21 28:12 28:24 30:18 30:25 31:25 36:6, 14 37:1 37:1, 6 39:21 44:1, 17, 19 45:24 46:24 48:1 63:17 63:22 66:8 66:15, 21, 22 72:8 85:3 94:7 124:8 certain 89:3 126:11, 21 | certainly 17:21 18:1 19:18 37:10 63:24 65:9 66:22 70:16 72:22 84:19 86:11 87:22 92:19 93:7 94:7 100:3 118:20, 25 CERTIFICATE 142:1 Certified 3:19 3:20, 21, 22 certify 142:4 145:4 challenges 70:16 chance 105:9 106:12 change 117:17 144:5, 7, 9, 11 144:13, 15, 17 144:19, 21, 23 changed 58:19 changes 143:10 145:8 changing 53:19 channel 20:9 29:17 35:19 36:9 54:4 58:9 channels 46:12 48:4 50:7 55:8, 9, 11, 16 58:6 87:17 characteri... 31:12 59:22 114:15 check 104:25 Cindy 2:25 3:18 142:2 circuits 63:12 63:20 citation 41:1 cite 110:9 | cited 40:20 41:6 48:14 62:24, 24 63:6 104:13 city 92:22 claim 25:2, 4 54:4, 5, 6 68:3, 9 76:15 76:18 100:17 103:23 104:1 104:4, 5, 22 106:18, 19 107:3, 4 120:3 121:2 122:18, 20, 23 124:19, 21, 22 125:1, 6, 8, 11 125:13, 17, 24 126:1 128:13 133:1, 2, 8, 14 134:3 claimed 100:18 100:23 claims 8:7 25:15 54:2 54:11 103:21 115:3 133:7 133:13 clarification 124:2 132:23 clarified 73:10 clarify 138:19 clarity's 20:12 clear 8:10 21:18 36:3 74:15, 16 clearly 122:4 close 46:14 65:9 66:7 73:5 closed 50:15 86:19 clues 97:16 codeless 35:7 |
| C | | | | |
| C 4:1, 3, 4 5:1 7:2 120:22 calculations 48:17 50:20 Calhoun 61:7 call 10:25 11:10 12:17 | | | | |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

149

| | | | | |
|--|--|--|--|--|
| 35:9 coherent 50:6 50:25 coherently 51:19,20 collaboration 20:22 collaborative 17:3 113:25 Colorado 73:18 Columbia 3:25 142:21 column 29:13 31:11 33:21 34:1 35:3,14 36:16 38:9 38:20,22 39:19 40:4 41:4 42:5,14 44:6 45:8,13 60:8 63:9 75:4 77:19 78:5,23 79:19 80:10 84:15,20 97:8 110:15 110:16 111:8 111:16 112:8 112:16,16 113:1,4 127:22 129:20 Columns 110:20 combination 43:22 79:13 134:16 combine 51:15 80:15 83:9 99:7 100:23 101:1,7 104:6 118:3 119:18 combined 13:11 43:22 119:14 131:21 combines 45:20 | combining 50:7 50:25 51:19 come 33:10 72:1 73:18 106:1 129:16 comes 60:7 111:18 coming 51:12 52:16,24 53:5,17 commercial 54:18,24 commercially 128:5 Commission 145:21 common 114:16 communicate 24:10 27:21 28:12,24 30:24 72:8 74:13,18 75:16,24 87:17 96:11 97:19 98:1 124:8 125:2 125:19 communicated 23:10,13,18 communicates 30:18 31:25 36:6 communicating 31:21 34:22 56:15 74:1 communication 24:8,15 26:3 27:18 30:5 32:11,13 33:5 54:8 55:10 63:18 63:23 64:2 65:4,11,11 65:22 66:4,8 66:15,15 72:6 75:11 | 75:18 76:3 80:2 87:7 88:2 89:11 communicat... 17:17 21:14 26:5 31:16 32:25 64:4 65:2,7 72:12 72:17 83:5 136:6 compare 106:13 115:22 133:1 complete 91:4 completely 37:18 component 24:21 components 51:25 52:6 53:2 comprises 33:24 comprising 25:6 computerized 142:8 computers 19:2 computing 48:19 concept 27:8 concepts 57:19 concerns 86:7 87:5,8 concluded 141:6 confidence 135:2,10 confidential 117:5 configuration 43:23 44:2 44:10,15,25 77:6,7 132:16 configurat... 131:7,18,25 | 132:19 configured 24:9 25:4,8 25:11 104:6 133:16,23 134:4 confused 68:7 139:5 confusing 138:19 connect 18:21 19:1 36:14 37:6,14 connected 18:2 35:16,18,21 36:13 80:4 97:21 connecting 36:25 connection 19:4,4 28:14 28:18 29:25 30:2 37:2 93:16 connectivity 33:1 connects 36:10 consider 132:5 136:21 considerable 110:12 consideration 94:10 considered 20:11 58:17 132:16 constrain 70:25 constructing 83:14 construction 89:10 contact 96:20 contacted 10:4 10:9,14 contained | 16:17 108:5 contend 114:18 contending 114:13 context 65:20 132:6 continuation 20:2 100:17 continued 6:1 82:5,10 102:4 continues 82:24 continuing 20:10 37:25 51:21 contrast 45:14 contrivance 121:21 control 20:9 33:25 48:3 50:14 86:10 controller 18:1 104:6 106:23 120:22 controls 86:14 conventional 39:21 40:5 137:14 conversations 21:5 conveying 121:21 Cool 102:17 copies 12:12 copy 14:22 27:10,13 61:6,12 68:15 103:13 105:12 107:15 110:19 cord 30:1 cordless 35:11 35:15 36:2,9 |
|--|--|--|--|--|

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

150

| | | | | |
|--|--|--|---|---|
| core 21:23 22:3 23:9 35:6 | 136:1, 6, 10 136:16, 19, 25 137:8, 16, 19 137:21, 22 138:3, 4 139:1, 17 145:5 | create 96:5 creates 70:15 creativity 137:15 CRR 2:25 cruiser 114:11 CSR 2:25 Curriculum 5:19 15:24 CV 16:6 20:19 20:20 | deal 48:2 83:4 85:6, 18, 19 92:21 dealing 22:19 42:1, 6, 23 64:13 88:20 90:20 deals 68:22 99:18 121:2 December 118:12, 19 decibel 48:17 decibels 48:11 95:24, 24 deciding 116:19 declaration 5:15 6:17 8:6 11:17 12:11 13:12 15:7, 14, 15 16:8, 12, 14 17:10 20:11 20:15, 23 24:5 27:14 32:4 37:25 38:8 40:21 42:10 49:24 55:19 56:22 62:18 67:15 77:2 83:8, 12 84:8, 9 88:7 90:1 101:23 103:16, 19 104:14, 20 105:4, 17 106:13 107:16, 22 108:5, 21 113:21, 23 115:10 124:23 130:16, 20 131:16 132:25 137:3 declarations | 11:24 12:2 26:17 105:22 106:1 124:14 decode 96:2 decoder 64:18 deemed 143:16 defined 121:23 definitely 42:22 70:15 76:8 definition 35:8 50:5 degrade 71:11 delay 128:16 128:23 129:1 deleterious 131:9 demodulate 53:20 78:9 demodulated 51:24 52:1, 5 demodulation 53:4 demodulator 77:24 demonstrated 41:21 Denning 1:20 2:18 3:6 5:2 5:10, 15, 18 6:17 7:9, 15 9:7 13:16, 18 13:20 14:1 14:13, 15, 21 15:4, 6, 8, 13 15:14, 20, 22 15:23 21:19 27:24 28:2 38:14 43:12 43:19 49:8 49:15 62:5 68:17 71:16 82:4 101:16 101:22, 24 102:7 106:12 112:14 117:4 |
| cores 24:22 Corporate 4:21 correct 9:8 14:6, 10 15:1 15:17 16:9 16:18 17:13 18:5 20:13 20:18, 21 21:6, 19 30:25 36:7 36:14, 15 37:2 40:22 41:7 42:15 43:3 49:25 57:3, 7, 22 58:13 62:18 62:21 64:10 66:10 68:23 69:14, 19 70:24 73:6 76:5 78:20 79:10 80:12 81:13 82:17 83:5, 10 87:1 87:13 89:22 91:23 98:13 98:25 99:4, 8 104:24 107:15, 16 108:22 109:14 110:22 114:2 114:11 115:15 118:13 124:15, 23 126:14 128:23 129:2 129:3, 6, 7 130:1, 2 132:1, 7 133:9 134:9 135:11, 17, 20 | corrections 143:3, 5 145:8 correctly 93:11 correspond 36:23 corresponding 25:12 cosine 52:14 52:22 cost 35:22 counsel 9:4 21:5 80:23 81:5, 7 82:10 102:4 113:8 123:19 134:25 138:21 142:11, 14 counsels 81:10 counterpart 97:12 couple 22:17 107:12 113:12 123:24 124:2 138:16 coupled 79:5 80:19 course 17:3 court 3:19, 21 9:16 67:6 92:11 116:9 143:17 cover 98:24 coverage 69:1 75:7 covered 85:14 | D D 7:2 D-AMPS 18:21 20:7, 8 46:16 D.C 2:19 3:13 4:7 7:5 Dartbrook 4:14 data 20:9 53:25 55:9, 9 55:11, 17 58:6 64:17 64:18 date 10:6 13:22 14:18 15:9 16:1 28:5 38:17 43:15 49:11 58:23 62:8 68:19 71:19 101:19 102:1 115:4 116:13 116:15, 18, 21 116:24 117:1 118:11, 15, 16 118:17, 20, 21 119:2 136:15 136:18, 24 140:1 143:8 144:3 145:13 dates 117:19 118:23 134:21 day 145:19 days 143:14 | deal 48:2 83:4 85:6, 18, 19 92:21 dealing 22:19 42:1, 6, 23 64:13 88:20 90:20 deals 68:22 99:18 121:2 December 118:12, 19 decibel 48:17 decibels 48:11 95:24, 24 deciding 116:19 declaration 5:15 6:17 8:6 11:17 12:11 13:12 15:7, 14, 15 16:8, 12, 14 17:10 20:11 20:15, 23 24:5 27:14 32:4 37:25 38:8 40:21 42:10 49:24 55:19 56:22 62:18 67:15 77:2 83:8, 12 84:8, 9 88:7 90:1 101:23 103:16, 19 104:14, 20 105:4, 17 106:13 107:16, 22 108:5, 21 113:21, 23 115:10 124:23 130:16, 20 131:16 132:25 137:3 declarations | 11:24 12:2 26:17 105:22 106:1 124:14 decode 96:2 decoder 64:18 deemed 143:16 defined 121:23 definitely 42:22 70:15 76:8 definition 35:8 50:5 degrade 71:11 delay 128:16 128:23 129:1 deleterious 131:9 demodulate 53:20 78:9 demodulated 51:24 52:1, 5 demodulation 53:4 demodulator 77:24 demonstrated 41:21 Denning 1:20 2:18 3:6 5:2 5:10, 15, 18 6:17 7:9, 15 9:7 13:16, 18 13:20 14:1 14:13, 15, 21 15:4, 6, 8, 13 15:14, 20, 22 15:23 21:19 27:24 28:2 38:14 43:12 43:19 49:8 49:15 62:5 68:17 71:16 82:4 101:16 101:22, 24 102:7 106:12 112:14 117:4 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

151

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 123:7,22 | 99:17 100:2 | 29:19 30:8,8 | differently | discusses 18:4 |
| 124:5 141:5 | 111:12 | 32:7,15,15 | 48:2 105:17 | 76:3 |
| 144:2 | 118:10 | 32:18,22,24 | 107:3 | discussing |
| dependent | describes | 32:24 33:13 | diplexer 79:5 | 114:9 |
| 60:12,16 | 24:11 39:20 | 36:10,12,13 | 80:19 | discussion |
| 73:22 | 39:22 43:6 | 36:19,24 | direct 31:12 | 101:12 |
| depending | 77:7 84:11 | 37:5 73:25 | 65:21 111:1 | dish-to-dish |
| 102:21 | 96:16 99:21 | 75:9 77:8 | 112:10 121:7 | 65:21 |
| DEPONENT 145:1 | 127:23 | 114:24,25 | 124:17 | distance 60:10 |
| deposed 21:11 | describing | 121:20 124:8 | 130:15 | 84:22 91:2,8 |
| deposing | 37:8,8,11 | 125:1,18 | 133:11 134:2 | 94:12 126:6 |
| 143:13 | 40:9 41:25 | devices 17:23 | directed 27:7 | 126:13 127:9 |
| deposition | 42:5 52:15 | 18:2 19:15 | 64:9 132:24 | 127:20 129:5 |
| 1:20 2:18 | 84:10 85:2 | 19:15 32:14 | direction | 129:17 |
| 3:6 5:10 | 85:14 106:21 | 33:1 44:18 | 52:24 69:8 | distances |
| 7:14 9:7 | 108:23 | 65:9 66:6 | 112:23 142:8 | 126:24 |
| 13:18,20 | description | 72:25 75:16 | directly 23:10 | 129:13 |
| 14:15 15:6 | 5:8 6:2 33:3 | 95:17 97:22 | 23:13,18 | District 3:24 |
| 15:22 16:5 | 54:24 80:16 | 114:22 | 27:21 28:12 | 142:21 |
| 26:15 28:2 | 84:15,19 | diagram 52:7,9 | 30:18,24 | diverse 50:8,9 |
| 38:14 43:12 | design 18:7,14 | 79:3 | 31:25 34:21 | 56:11 59:2 |
| 49:8 56:24 | 18:18 19:15 | difference | 36:6 59:4 | 66:9 |
| 62:5 67:19 | designed 18:10 | 18:24 71:5,5 | 74:17 76:3 | diversity 39:1 |
| 68:17 71:13 | 18:18 29:25 | 91:4 104:4 | 91:7 124:8 | 39:4,14 40:7 |
| 71:16 101:16 | 69:2,7,13 | 105:24 | 125:2,19 | 40:22 43:3,7 |
| 101:22 | designing | 106:22 133:7 | disclose 77:14 | 55:6,14,15 |
| 102:18,25 | 17:19,22 | 134:11 | 83:13 126:23 | 55:18 56:1,5 |
| 103:5 141:5 | 45:11 | differences | disclosed | 56:6,7,10,12 |
| 142:3,5,9,12 | desired 59:23 | 66:16 | 30:22 41:13 | 57:16,22 |
| 143:2,11,14 | detail 42:24 | different 12:4 | 78:20 105:18 | 58:13,17,20 |
| 143:16 | details 99:22 | 17:23 45:18 | 126:12 | 59:7,13,15 |
| depositions | determine 25:1 | 46:22,24 | 131:25 | 64:16 77:6,7 |
| 21:8 | 52:24 129:9 | 47:12 48:4 | 139:20 | 78:3,6 79:23 |
| depths 95:5,20 | determined | 53:25 55:6 | discloses | 79:25 84:11 |
| 95:21 | 78:8 128:11 | 55:14 56:5 | 37:16 | 84:18,21 |
| describe 42:17 | determining | 56:16 58:16 | disclosing | 85:3,3 88:9 |
| 47:15 53:2 | 22:21 68:5 | 65:24 69:17 | 50:3 79:24 | 88:15,16 |
| 78:4 84:6 | 94:20 | 70:19,20 | disclosure | 127:23,24 |
| 121:18 | developed 17:2 | 101:5,6 | 132:6 135:23 | 128:4 129:22 |
| described 36:8 | 38:4 42:11 | 106:17 | 136:3,9,23 | 131:6,17,25 |
| 37:11 39:3,4 | 44:22,23 | 116:24 | discriminate | 132:18 |
| 42:24 46:15 | device 19:25 | 120:21,23 | 70:12 | document 136:4 |
| 64:15 75:1 | 22:9 25:8,9 | 128:21 134:8 | discuss 12:6 | 137:25 138:8 |
| 77:22 79:12 | 25:13 26:4 | 134:10 | discussed 17:1 | 138:10 |
| 80:3,5 81:14 | 27:19,20 | differentiate | 24:6 27:16 | documents |
| 85:1 99:16 | 28:17 29:19 | 66:14 | 76:6 | 100:14 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

152

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

153

| | | | | |
|---|---|--|--|--|
| fact 37:4 75:17 129:12 137:21 fades 40:8 95:23 fading 48:11 59:23 64:20 68:22,25 69:16,24,25 70:4,7,9,15 71:10 72:11 85:16 88:12 88:20,25 89:4 95:4,16 95:20,24 96:10 fail 143:15 fair 9:21,22 65:23 102:15 102:16 falls 40:3,11 familiar 27:2 44:16 48:21 55:2,25 65:21 66:1,6 88:17 far 46:16 59:21 60:5 64:25 66:7 87:25 88:11 88:24 91:9 97:19 108:9 108:10 fastest 90:8 FDMA 45:16 feature 45:14 feedback 50:16 50:18,21 Feel 104:25 feet 92:18,23 92:25 93:7,9 Fenwick 62:15 62:16,20,25 63:6 64:9,12 64:15 104:18 104:19 | field 57:3,6 figure 28:21 32:6 33:11 33:13,16 34:3,4,8,15 34:16,18,21 74:7 77:10 79:3 80:9,11 80:16,17 81:2,13 84:15 91:15 filed 62:20 135:4,10 136:10 139:12 140:4 files 99:14 filing 115:4 116:13,21 117:19 118:16 136:18 Finally 134:15 financially 142:15 find 11:17 31:10 39:10 107:5 110:21 fine 67:8 106:4 111:2 finish 9:18,19 firm 8:19 firmware 19:23 first 7:10 10:4 11:2 18:14 30:3 31:4 32:7,9 32:16 33:12 33:14,22 68:24 72:6 79:1,2 91:15 99:3 103:10 111:25 112:13 115:3 124:18 130:16 131:2 firsthand | 44:21 five 16:21 86:17 fixed 24:10,14 24:22 26:6 28:15,18 30:1 31:16 31:21 33:7 37:9,9,14 74:1 76:22 104:7 125:3 125:19 Flashpoint 21:25 23:2 23:16 flight 73:17 86:13 flow 69:8 flown 86:23 fluctuate 95:6 95:22 flying 54:25 73:14,19,23 86:11 91:1 132:7,14 FM 53:12 follow 8:2 follow-up 125:21 129:10 135:7 following 30:12 77:19 78:6 84:6 follows 7:11 82:7 footnote 61:20 foregoing 142:3,5 145:4 form 24:24 28:14 29:8 40:23 64:5 65:25 69:20 79:4 87:14 100:20 108:7 115:24 116:3 | 117:7 118:5 121:17 133:18 140:9 145:8 format 16:15 formula 48:18 49:1,2 forth 137:6 138:10 forwards 32:17 32:22 found 17:8 97:7 110:23 138:19 four 107:7 fourth 60:23 Fox 3:10 4:5 8:20,22 frame 10:8 46:8 free 104:25 frequencies 60:13 98:14 frequency 25:12 45:18 46:14 47:19 47:20 51:6,8 53:6,21 55:12 63:11 65:3,6 66:17 128:14 front 41:15 52:8 60:14 67:20 73:19 115:4 full 12:15 function 47:15 78:2 112:22 functional 92:17,23 functionality 36:25 90:6 97:11 functions 48:5 further 42:18 78:5 82:7 | 88:9 89:6 111:10 121:19 123:8 138:13,21 140:24 141:1 142:13 further 36:17 37:4 future 116:2 <hr/> G <hr/> G 7:2 19:12 gain 51:18 Gardner 49:21 50:3 51:22 54:3,24 55:15 56:6 58:15,23 59:2,8,15 60:7,11 88:8 88:8,13,22 104:16,23 105:14,17 106:17 107:7 115:21 116:14 117:14,19,22 119:13 134:17,22 135:9,16,17 135:25 136:19,22 138:24,25 139:2,12 140:14 Gardner's 77:6 Gavrilovich 118:22 gears 126:3 130:3 general 58:1 113:19 115:1 generally 24:7 58:16 65:1 generation 19:9 |
|---|---|--|--|--|

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

154

| | | | | |
|---|--|--|---|--|
| generations 19:17 George 61:7 getting 22:18 56:23 Gilhousen 38:9 38:11,21 39:8 41:4 42:14 43:2,6 71:25 72:4 73:25 75:25 76:2,11 77:6 77:10,14 82:17 83:3,9 83:10,24,25 84:10 85:21 88:15 89:21 90:4,5,17 91:20,23 96:25 98:16 98:19,20,23 98:25 99:3,4 99:10 100:7 100:12 107:2 130:5 131:4 131:5,7,18 131:19,24 132:4,16,19 132:20 Gilhousens 104:17 107:8 give 11:11 27:12 35:8 42:3,22 51:2 56:17 89:15 103:4 129:4 given 11:13,19 11:20 33:3 57:20 76:7 80:16 94:14 94:17 142:10 145:6 gives 30:11 44:7 64:12 giving 9:13 glad 102:7 | go 8:14 13:6 23:11,22 31:4 42:17 49:5 56:7 66:12 67:7 67:14,18 71:12 81:19 83:13 84:2 85:13 99:22 102:19 103:1 103:4,6,7 106:3 123:11 123:12 124:9 137:25 goes 30:11 36:7,10 41:18 75:13 78:4 129:19 going 12:4 13:25 14:12 15:3,19 16:11,13 27:12 33:10 35:10 52:25 59:14 61:20 66:19 85:24 89:1,17 91:12 93:19 98:6 102:9 102:18,20 103:4 105:3 133:11 Goldstein 3:10 4:5 8:20,22 good 9:15 50:5 62:1 64:12 67:3 88:22 GPS 19:19 grab 103:22 great 42:24 63:25 94:6 greatly 94:8 112:25 grew 16:24 ground 54:11 82:16,21 | 94:22 98:6 104:22 105:11,13 132:13,14,17 ground-based 54:4,8 72:8 97:11,15 grounds 16:20 16:21,22,23 16:24 17:2,7 104:21 Group 1:5 2:5 8:18 GSM 44:19 guess 10:25 17:20 70:25 131:14 140:5 guidelines 87:16 guys 80:6 <hr/> H <hr/> H 5:7 6:1 135:17 136:22 140:14 hand 13:25 14:12 15:3 15:19 43:18 92:21 96:14 102:23 handed 44:6 62:11 93:16 handheld 19:20 hanging 49:14 93:21 handle 97:13 handled 53:24 handling 40:1 handoff 39:22 39:24 40:14 41:20 42:23 89:25 90:6,9 90:16 91:12 91:20,24 93:17,22,24 | 94:19 96:5,7 111:13 112:21 131:23 handoffs 38:6 40:19 42:6 42:13 89:21 92:16 96:18 110:12 112:24 130:11 handset 18:25 19:14,15 22:8 23:6,8 23:10 24:22 28:11,14 29:21 30:24 31:20 33:7 35:9,18 37:9 37:13 40:11 75:19,23 76:3,9 handsets 18:10 74:9 75:6 handy 105:8 happen 111:19 happened 10:24 happening 29:3 53:11,14 happens 12:11 51:14 53:5 hard 22:5 91:16 96:1 hear 19:8 heard 86:14,24 held 3:6 101:12 135:2 135:10 help 12:1 90:17 helpful 105:21 helps 12:22 110:25 hereto 142:15 high 23:23 45:20 53:6 | 53:13,17 63:11 65:8 96:24,25 128:3 129:21 high-power 98:9,11 higher 31:13 highrises 71:2 Hold 92:2 hole 96:19 holes 95:5,20 95:21 96:10 hope 102:11 105:6 host 48:3 hour 54:19,25 90:18 91:1 91:13 92:18 92:24 93:6,9 93:13,24 95:3,19 96:6 housekeeping 48:5 How's 51:3 HTC 21:25 23:2 23:16 hub 17:22 18:1 hundred 92:24 93:9 hundreds 95:4 95:20 96:10 hybrid 45:19 45:19 hypothetical 56:18 91:17 117:13 138:6 140:10 <hr/> I <hr/> idea 50:9 64:12 96:7,9 121:20 122:24 identifica... 13:22 14:18 15:9 16:1 |
|---|--|--|---|--|

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

155

| | | | | |
|---|---|---|--|---|
| 28:5 38:17 43:15 49:11 62:8 68:19 71:19 101:19 102:1 identified 34:12,15 identify 8:8 14:21 16:4 49:15 71:22 ignoring 87:21 illustrated 34:20 illustrates 79:3 impact 134:12 impactful 95:16 imperative 143:12 implement 129:25 important 47:21 impossible 96:2 improve 91:19 99:8 impulsive 64:20 in-between 39:2 inches 60:17 include 63:22 68:25 122:5 122:8 includes 24:8 32:7 33:14 79:4 80:12 80:18 including 64:16 incoming 53:3 incorporated 131:19 incorporating | 91:20 131:23 132:18 incredible 71:2,3 incurring 35:22 independent 59:24 124:18 124:21,22 125:1,13,17 125:24 133:1 133:2,12 indicating 119:2 indicators 22:20 indoor 70:3 inform 117:11 125:6 information 11:6 56:16 56:16,18 58:2 76:7 informed 80:23 81:5 infringe 25:16 initially 132:24 initiated 39:25 40:14 initiation 40:12 inphase 51:25 52:1,5,20,21 input 50:22 inputs 50:17 inside 69:13 69:17 70:7 70:13,16,23 71:2 insights 17:12 inspection 17:24,25 installing 35:22 instructions | 21:4 143:1 intent 11:9 inter-cell 45:16,21 interested 142:16 interface 19:1 interfere 86:14 89:12 98:15 interference 45:16,22 64:20 86:9 87:6 98:12 intermediary 26:1 27:17 internal 61:22 69:25 interposed 24:12 interpret 68:9 interpreting 68:3 Interruption 26:18 126:15 127:2 intimately 48:21 intra-cell 45:20 Intuitively 72:19 invention 24:1 24:23 25:1 25:20 29:17 30:5 35:20 54:16 63:11 69:2 77:24 99:17,21 100:2,2,10 115:12,18 118:17 129:24 138:2 inventions 99:16 inventor 98:25 | 99:3,14 129:14 135:16,19,22 INVESTMENTS 1:8 2:8 involve 21:14 involved 94:20 100:5 involves 59:20 60:4 IPR 7:15,17,21 14:9 IPR-1103 10:5 10:13 15:16 IPR2019-01102 1:11 2:11 6:18 7:16 101:24 IPR2019-01103 1:14 2:14 5:11,16 7:18 13:21 15:8 Irving 4:22 issue 22:4,16 23:3 41:17 57:13 64:3 72:11,16,20 73:9,13 92:19 111:11 124:15 issued 117:6 117:14,15 139:8,17,25 issues 11:15 41:18 69:25 70:7,9 73:20 132:17 ITC 21:24 23:1 Ito 27:6,9,14 27:15,20 28:11,13,21 29:9,14,24 30:15,17,22 31:24 33:3 33:20 34:18 35:8 37:7,8 | 37:11,13,16 37:18 75:14 75:15,25 104:16,23 105:13,16 106:17 107:7 115:23 116:21 117:19 119:15 134:16 136:13,15,23 136:24 139:1 139:2,8,16 139:20,23 140:3,16 Ito's 32:6 33:13 IV 108:19 109:5,7,10 |
| J | | | | |
| January 1:21 2:20 3:1 7:6 136:16,24 139:8 140:8 144:3 jet 54:18,24 job 2:23 9:15 JR 4:19 June 115:6 118:22 | | | | |
| K | | | | |
| Kessler 3:10 4:5 8:20,22 12:18 16:18 20:18 21:5 27:2 key 66:16 kilohertz 53:9 kind 12:23 16:24 36:17 47:21 50:15 50:17,18,23 55:6,14 | | | | |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

156

| | | | | |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 56:23 57:15 | knows 85:5,18 | 81:19 82:13 | literature | 111:10 |
| 68:4 118:18 | 85:23 99:24 | 94:24 109:2 | 48:14 | 112:18 113:4 |
| 118:23 | | 123:2 139:6 | little 80:6 | 113:12 115:2 |
| kinds 17:23 | <hr/> L <hr/> | level 23:23 | 139:5 | 115:10 116:2 |
| 56:25 | L 2:25 3:18 | 31:14,14 | LiveDeposi... | 119:20 120:6 |
| Klein 98:25 | 142:2 | 40:12 | 3:23 | 127:19 |
| 99:4,10 | L-A-N-N-I-N-G | levels 95:23 | LiveNote 3:22 | 136:13 139:6 |
| knew 38:4 | 9:2 | LG 21:24 23:9 | LLP 4:20 | 139:7,11 |
| 42:11 89:9 | L.P 1:8 2:8 | limited 74:24 | local 51:25 | looked 18:22 |
| 89:10 | labeled 74:9 | 97:25 | 52:6,10,13 | 26:24 107:14 |
| know 11:14 | laid 16:15 | line 19:6 | 53:5 | looking 25:3 |
| 12:8 20:4 | land 121:22 | 25:23 29:14 | locate 86:3 | 35:3 45:13 |
| 28:22,23 | language 25:2 | 31:11 33:12 | 89:7 | 48:18 52:25 |
| 29:6,9 35:25 | 54:5 120:20 | 33:21 35:3 | located 33:1 | 53:1 82:21 |
| 44:14,15,24 | languages | 35:14 38:20 | 59:3 79:16 | 84:21 85:2,6 |
| 45:3,7,23 | 134:8 | 38:25 39:23 | 85:11 | 85:16,18 |
| 48:13 54:10 | Lanning 4:25 | 40:4 44:6 | location 22:19 | 92:1 94:4 |
| 64:7 65:15 | 9:2 | 45:9,13 46:1 | 22:21 64:17 | 99:25 119:5 |
| 65:17 75:22 | large 96:20 | 51:9,11 | 64:19 | 122:17 |
| 76:8 78:22 | larger 65:14 | 60:24 63:9 | location-b... | 128:12 |
| 81:2,6,9,16 | Lauren 4:4 | 63:10 66:19 | 22:18 | looks 89:13 |
| 85:24 86:5 | 8:21 11:1,2 | 66:23 75:4 | locations 84:3 | loop 50:5,12 |
| 89:1,8,16 | 11:21,22 | 77:19 78:5 | 86:6 89:3 | 50:15,21,21 |
| 90:13 91:5 | law 4:13 8:19 | 78:23 79:20 | Lomp 41:14,15 | lost 96:20 |
| 93:15,23,25 | 114:10 | 97:9 111:5 | 41:16 | lot 12:3,4 |
| 94:12 96:16 | layman's 24:20 | 112:16 | lone 135:19 | 18:25 104:12 |
| 99:15 100:22 | 50:2,5 63:14 | 113:12 118:7 | 137:10 | 119:7 |
| 102:13,14 | LBSI 21:24 | 118:7 127:22 | long 22:12 | low 96:24 97:1 |
| 103:20 | 22:15 | 129:20 144:5 | 23:6 102:20 | lower 31:14 |
| 109:19 111:2 | lead 98:12 | 144:7,9,11 | 102:24 124:1 | lschleh@st... |
| 111:19 112:1 | learn 100:10 | 144:13,15,17 | look 10:18 | 4:10 |
| 113:6 117:9 | left 52:9 | 144:19,21,23 | 25:22 27:22 | LTE 44:20 |
| 119:16 129:8 | 53:21 | lines 35:17,23 | 29:13 30:20 | 58:21 59:1 |
| 139:20 140:5 | legal 13:10 | 35:24 36:17 | 34:18 35:14 | lunch 67:4 |
| 140:11 | 21:1,3 | 38:9 41:5 | 35:25 36:16 | 81:16,18 |
| knowledge | 108:18,20,23 | 42:14 60:8 | 51:21 52:7 | luncheon 81:23 |
| 25:14 45:6 | 109:7,10,18 | 110:15,16 | 54:2 60:19 | |
| 48:15 86:21 | 109:23 | 111:7 113:12 | 61:11 63:9 | <hr/> M <hr/> |
| 135:25 | lengthy 111:14 | 113:16 | 76:13 78:23 | magic 94:22 |
| known 26:4 | let's 16:11 | 129:20 133:7 | 80:9 84:14 | main 23:25 |
| 39:4 41:12 | 27:24 34:18 | 135:8,14 | 89:3 94:12 | 24:23 25:1 |
| 41:20 49:21 | 37:19 49:5 | linger 39:2 | 94:13,14,24 | 25:19 |
| 62:15 71:25 | 54:18 60:19 | list 20:12 | 97:8 98:23 | maintaining |
| 94:16 128:4 | 62:3 67:2,14 | 22:20 | 100:6,9 | 41:19 42:1 |
| 128:17 | 67:18 71:12 | listed 16:21 | 105:21 109:2 | making 29:1 |
| 129:22 140:6 | 76:13 78:23 | 63:5 135:19 | 110:16 111:4 | 45:17 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

157

| | | | | |
|--|---|--|---|--|
| mandatory 126:12 127:9 127:20 | matter 15:1 22:15 72:3 100:19 119:6 | microseconds 90:22 | 33:13 36:20 37:5,8 40:2 | 133:16,24 134:4 |
| maneuverab... 29:20 | matters 21:2 | microwave 64:21 65:1,4 65:7 66:4,14 66:19 | 46:19,21,23 47:9,11,19 47:24 50:7 54:4,8 69:18 75:5 76:9 77:14,23 79:4,4 80:6 80:17 84:11 96:20 97:22 110:11 112:24 124:7 125:1,18 133:15,16,20 | moved 122:2 movement 112:22 moves 26:2 71:11 95:3 95:18 |
| manner 32:23 46:12 58:10 58:16 113:22 | maximum 90:12 93:2 | microwaves 64:10,13 65:10,12 | mode 39:1 78:6 93:22 | moving 24:9,12 24:13,22 32:25 33:2,4 54:18 69:7,7 69:8 70:9 93:3 95:17 95:17 112:21 121:24 |
| map 120:17 | mean 10:14 17:21 50:13 50:25 52:4 58:19 71:1 91:6 138:9 138:12 139:25 | middle 60:3 75:21 | model 19:25 | MS2 36:20 37:2 37:5 |
| March 10:7 | meaning 56:5 | miles 54:19,25 90:18 91:1 91:13 92:18 92:24 93:6,9 93:13,24 95:3,19 96:6 | modem 18:16,20 19:5,6,10,22 | MSS 28:20,22 32:7 33:4,14 36:7 |
| mark 4:25 9:2 27:24 62:3 71:12 | means 48:12 79:25 81:11 95:25 121:24 | millihertz 61:1 | modern 44:19 58:21 | multipath 68:22,25 69:16,25 70:4,6,11,12 70:18 71:2,3 71:8,8 72:11 72:13,16 73:12,16,20 85:19 88:21 |
| marked 13:21 14:1,13,17 15:4,8,20,24 28:4 38:16 43:14,18 49:10,14 61:13 62:7 62:11 68:18 71:18 101:18 101:24 102:23 | meant 47:2 130:25 | millimeters 60:17 | modify 50:20 131:5 | multiple 45:15 45:21 55:7,7 55:9,11,16 55:23 56:9 56:12,13 77:9 80:1 81:10 84:12 85:15 |
| material 16:25 17:1 21:22 24:3 30:10 31:8 32:3 33:19 34:24 38:24 39:18 41:9 43:5 44:4 47:6 49:18 54:13 57:15 59:18 61:5 63:3 69:5 74:4,21 77:17 79:18 80:14 82:19 82:25 83:17 88:4 92:4 97:5 99:12 104:9 105:2 127:12 | measure 90:24 91:2 | MIMO 55:3,5,6 56:6 58:5,20 59:1,1 68:4 68:10 122:21 122:22 | modulated 53:15,22 | multiplexing 56:20 57:10 57:21,25 58:8 |
| materials 12:4 20:11 27:3 108:8 | medium 55:10 | mind 27:23 | modulation 53:16 | multitude 66:9 |
| | megahertz 53:7 53:13,18 | minute 38:1 92:2 | monitoring 40:10 96:12 | <hr/> N <hr/> |
| | mention 17:25 128:25 | minutes 80:21 105:22 | moon 65:11 | N 4:1 5:1,1 |
| | mentioned 13:1 13:2 17:11 17:15 21:7 21:10 22:15 27:6 34:11 42:20 56:4 58:12 64:14 70:19 107:12 128:23 | mischaract... 139:22 | morning 7:14 | |
| | mentions 35:6 | misspoke 97:3 | motivate 118:2 119:14 | |
| | merely 25:25 | mobile 17:17 17:19,21 18:4 22:8 24:8,13 25:8 25:9,13 26:1 26:4,5 27:7 27:17,19,20 28:13,17 29:19,25 30:5,8 31:15 32:7,14,15 32:23,24 | motivated 119:17 131:5 | |
| | Merit 3:19 | | mountains 73:18 | |
| | method 42:6 51:23 | | movable 31:17 46:20,22 47:1,10,12 48:6 76:16 76:21 124:9 133:19,23 | |
| | methodology 45:14 | | move 25:5 91:10 119:9 | |
| | methods 26:4 50:6 135:23 | | | |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

158

| | | | | |
|---|--|--|---|--|
| 7:2 82:1,1,1 name 8:18 135:17 named 99:3 near 59:4 nearby 22:22 73:1,4 necessary 59:6 59:12 143:3 necessity 29:18 30:7 need 98:3 102:13 126:18 128:8 129:14 needs 37:5 neighboring 46:13 neither 142:10 network 18:8 18:11,22 19:5 21:15 23:11,14,19 27:8,21 28:12,25 30:19,25 32:1 36:6,14 37:1,6 44:1 48:1 124:9 networks 18:5 63:18,23 never 64:6 65:19 72:18 94:17 new 3:11 4:6 35:23 78:12 94:16,22 nicely 72:6 noise 64:20 nonresponsive 119:10 normal 92:20 93:3 95:23 Northwest 3:11 4:6 Notary 3:24 | 142:1,20 145:25 note 34:7 noted 143:10 145:9 notes 12:12 13:2,3 26:25 notice 3:17 5:9 13:19 14:4,9 noticed 34:14 notices 40:1 Novatel 19:22 nuances 12:7 number 13:19 14:16 15:7 15:23 28:3 38:15 41:13 43:13 49:9 49:20 61:11 62:6 68:18 71:17,24 101:17,23 105:8 112:24 numbers 67:25 O O 5:1 7:2 82:1 82:1,1 oath 9:13 102:11 object 23:25 24:23 25:1 25:19 30:4,6 121:22 objection 24:24 29:8 40:23,25 45:1 64:5 65:25 69:20 87:14 100:20 108:7 115:24 116:3 117:7 118:5 121:17 133:18 140:9 objects 30:14 | obstacles 73:1 obtaining 128:3 129:21 obvious 17:8 25:17 83:9 83:23 85:9 99:7 100:24 100:25 101:7 108:24 116:22 125:8 125:10,24 126:2 128:18 obviously 34:2 116:23 obviousness 104:21 105:13 109:21 110:1 occur 64:22 65:12 occurs 66:4 October 116:14 116:23 136:10 139:13 140:7 off-the-shelf 19:21 offhand 66:25 Office 1:1 2:1 117:5 135:3 officer 142:2 OFFICES 4:13 offset 51:8,10 52:18 128:2 128:9,10,11 Oh 67:21 95:12 okay 9:12 10:12 11:2 12:21 17:1 18:17 22:2 29:15 31:6,9 35:5 43:9 47:4,14 49:5 50:24 51:4 51:21 52:13 54:2,23 | 56:10,15,20 61:18 62:2 67:22 68:2 74:5 76:12 76:20 77:4 78:25 82:15 82:23 92:5 95:1,12 103:24 104:2 104:12,16 105:7,15 106:4,16 107:6,20 109:4,6,16 110:2,4,18 111:7 112:17 113:18 114:6 114:8 115:1 115:17 117:11 119:7 119:19,24 120:8,15,25 121:8 122:11 122:13,16,19 123:1,7,13 124:5,20 125:12,15 126:3 130:15 130:18 131:1 133:21 135:22 136:8 137:5 139:5 old 94:23 once 27:2 33:5 73:15 76:6 128:17 Oops 67:24 open 50:5,12 50:21 operation 32:14 operations 70:1 opined 124:23 opinion 17:6 54:23 69:24 | 72:19 91:22 121:11,13 122:7 125:22 131:16 132:12 opinions 57:6 62:17 107:22 108:4,14 131:15 134:13 opportunity 94:18 opposed 66:21 78:19 option 30:13 order 24:25 25:16 29:18 30:7 37:5 ordinary 87:12 115:11,19 117:24 119:5 135:9 137:7 137:11,15,24 original 6:21 19:3 78:11 143:13 oscillator 52:1,10,14 outcome 142:16 outline 54:20 120:2 output 50:19 53:23 outputs 50:18 outside 12:19 12:20 56:23 69:17 70:13 70:16 75:12 76:9 85:22 overcoming 40:8 64:19 overlap 94:13 overlapping 94:8 overpower 31:14 |
|---|--|--|---|--|

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING

January 16, 2020

159

| | | | | |
|------------------------|----------------------|-------------------------|----------------|------------------------|
| overview 110:5 | Pantech 23:4 | 135:13 | 24:7, 11, 21 | 134:3, 25 |
| Owner 1:9 2:9 | paper 138:7 | parentheses | 25:3, 15, 25 | 135:3, 16, 20 |
| 4:11 9:4 | papers 10:25 | 121:15 | 26:9, 11 27:9 | 135:24 |
| 82:10 102:4 | paradigm 91:4 | part 12:18 | 27:14, 23 | 136:15, 24 |
| 134:25 | paragraph | 17:3 23:7 | 28:3 29:6, 10 | 137:4 138:21 |
| 138:21 | 17:10, 17 | 24:20 52:9 | 29:14 30:15 | 139:3, 23 |
| Owner's 5:9 | 21:2 24:18 | 58:4 60:5 | 30:21 31:2 | 140:1, 4 |
| 13:19 | 25:22 27:16 | 90:1 92:12 | 31:10 33:20 | patents 8:8 |
| | 30:3, 12 32:5 | 97:24 116:10 | 38:6, 15 | 10:18 11:12 |
| P | 33:12 38:2 | participated | 39:20 40:20 | 26:24 62:25 |
| P 4:1, 1 7:2 | 40:21 41:7 | 18:7 20:5, 6 | 41:13, 24 | 83:13 117:4 |
| P.L.L.C 3:10 | 41:11 42:17 | particular | 43:13 44:5 | 119:1 135:2 |
| 4:5 | 43:9, 21 | 18:14 24:11 | 44:12, 13 | path 45:22 |
| p.m 81:22 82:2 | 46:18 47:8 | 39:23 40:12 | 45:4, 8 46:9 | 78:7 |
| 106:9, 9 | 47:13, 15 | 61:11 65:3 | 49:9, 20 52:8 | paths 59:25 |
| 123:5, 5, 16 | 48:10 54:21 | 84:5 89:9, 14 | 57:13 58:22 | 78:10, 11 |
| 123:16 | 59:20 60:3 | 89:17 92:22 | 58:23 59:11 | Pause 120:11 |
| 140:22, 22 | 60:19 67:14 | 94:5 99:19 | 60:8 62:6, 14 | PCS 44:7, 9, 14 |
| 141:4 | 68:24 77:2 | 99:19 100:1 | 67:23 68:4 | 44:24 46:16 |
| package 19:21 | 77:20 84:5, 7 | 100:1, 5 | 71:17, 24 | peak 51:11 |
| PacTel 18:19 | 84:9 88:7 | 119:5 130:10 | 74:8, 23 | peaks 51:9, 17 |
| 20:2 | 91:22 94:24 | 131:3 132:6 | 76:14 77:18 | people 11:22 |
| page 5:2, 8 6:2 | 95:11, 14, 15 | 133:12 135:2 | 79:24 82:10 | 11:23 12:1 |
| 12:9 17:11 | 105:12 | 137:18 | 84:14 97:9 | perform 111:13 |
| 20:14 24:5 | 106:21 | particularly | 99:14, 25 | performed |
| 24:18 25:22 | 107:19 110:3 | 63:11 90:3 | 100:11, 18 | 130:12 |
| 32:5 33:10 | 112:19, 19 | 124:18 | 101:17 102:4 | performing |
| 38:1 41:11 | 114:7, 9 | 134:20 | 103:14 | 38:5 40:19 |
| 43:10, 20, 21 | 119:22 120:1 | parties 142:12 | 106:18, 19 | 42:12 |
| 52:8 60:20 | 120:1, 7, 9, 14 | 142:15 | 108:15 110:6 | performs |
| 61:11 73:11 | 120:16 121:1 | parts 128:21 | 110:10, 17, 19 | 112:21 |
| 77:2, 3 82:14 | 121:6, 19 | pass 101:8 | 111:12 113:9 | period 73:6 |
| 82:22 91:23 | 122:12 | passes 95:4, 19 | 113:22, 23 | 135:3 |
| 94:25 95:10 | 130:19 131:3 | 96:10 | 115:3 116:16 | person 10:14 |
| 95:11 98:24 | 137:3, 6, 10 | pastes 12:12 | 116:18, 25 | 85:23 87:19 |
| 105:8, 10, 11 | Paragraphs | patent 1:1, 3, 9 | 117:5, 14 | 115:11 119:4 |
| 105:12 | 42:18 | 1:12, 15 2:1 | 118:11 121:3 | 135:8 137:7 |
| 107:19 | paralegal | 2:3, 9, 12, 15 | 122:5, 17, 20 | 137:11, 14, 24 |
| 108:25 109:5 | 12:11 114:3 | 4:11 5:9, 13 | 124:15, 18, 22 | personally |
| 110:2, 6 | parameters | 5:20, 23 6:3 | 125:14, 17 | 12:24 44:24 |
| 115:4 119:23 | 129:5 | 6:6, 8, 12, 15 | 127:6, 7, 18 | 94:17 140:13 |
| 122:12 144:5 | paraphrase | 7:17, 19 8:1 | 129:1, 12, 15 | persons 121:22 |
| 144:7, 9, 11 | 111:25 | 8:2 9:4 10:5 | 130:10, 17 | pertinent |
| 144:13, 15, 17 | 112:15 | 13:19 14:16 | 131:19 132:1 | 92:12 116:10 |
| 144:19, 21, 23 | paraphrasing | 14:23, 24 | 132:25 133:2 | 137:13 |
| pages 145:5 | 112:13 | 15:17 17:13 | 133:3, 9, 15 | petition 16:21 |

CSI GLOBAL DEPOSITION SERVICES

972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

160

| | | | | |
|--|--|--|---|--|
| Petitioner 1:6 2:6 4:2 123:19 | 127:13 143:2 143:7 PLLC 4:13 | preamble 54:3 54:6 133:14 134:3 | pretty 10:10 10:17 13:7 36:2 88:22 | 13:10 41:20 48:3 50:16 |
| Petitioner's 8:17 | plurality 25:6 25:9 68:5 | preambles 133:12 134:9 134:11 | previous 110:6 previously 42:20 82:6 83:4 111:12 | process/ou... 50:23 |
| Pgs 2:24 | 76:23 | precisely 129:1,13 | primary 22:18 82:17 | processing 50:14 |
| phase 50:5,12 51:8 52:18 53:2,4 | point 9:23 29:1 36:18 37:12 59:19 127:7 | preclude 33:7 precludes 101:4 | principles 114:23 | processors 77:25 |
| phases 51:16 | pointed 85:7 88:5 124:14 128:22 | predefined 128:1,9,15 128:23 129:1 | prior 11:15,16 13:13 24:6 26:24 27:5 34:16 38:6 40:19 87:2 104:13 107:7 116:19 117:1 117:20 118:16 120:2 124:13 126:21 | product 11:6 11:25 |
| phone 18:24 19:19 26:20 36:9,11 46:5 46:6 93:13 93:20 114:14 114:19,21 | points 124:2 poor 9:24 port 31:17 76:22 104:7 125:3,19 | predetermined 40:3 | prohibit 29:2 prohibits 28:17 29:6 | Professional 3:20 |
| phone's 77:15 | portable 18:10 28:11 29:19 | predominant 65:18 66:3,6 | project 18:15 19:18 | prolonged 102:21 |
| phones 86:12 86:18 92:21 97:23 | POS 129:15,23 POSITA 42:10 131:4 137:12 | prefer 27:22 preferred 126:5,12,23 127:8,20 | priority 115:3 116:15 | proportional 91:7 |
| phrase 47:3 | portion 131:16 | preparation 12:10 26:15 49:24 | privileged 11:6 | proposed 38:21 39:7 43:2 |
| pick 56:14 89:16 | ports 24:10 | prepare 108:13 113:20 | probably 67:3 73:9 | propounded 145:7 |
| pipeline 17:25 | POSAs 38:3 | prepared 13:3 15:16 56:25 57:12 113:22 115:9 | problem 38:4 39:22 41:11 42:18,23 73:17 84:25 85:1,24 96:6 96:18,19,22 110:10 | provide 14:5 14:25 17:12 30:5,7 52:1 57:6 107:22 131:15 |
| place 88:1 91:10 94:19 95:8 | position 85:24 possible 40:7 65:9,10 88:19,19 89:8 92:17 93:5 99:23 | present 4:25 30:4 63:10 77:23 | problems 42:11 68:25 | provided 16:17 16:23 19:22 20:18 21:22 24:3 30:10 31:8 32:3 33:19 34:24 38:24 39:18 41:2,9 42:13 42:16 43:5 44:4 47:6 49:18 50:19 54:13 59:18 61:5 63:3 69:5 74:4,21 77:17 79:18 80:14 82:19 |
| places 128:22 | possibly 115:20 118:2 | presented 57:2 96:17 109:24 | proceeding 7:18 14:10 107:9,10 108:14 | |
| plane 73:19,23 83:15,25 86:10,23 87:2 90:25 91:10,12 92:18 96:23 97:18 98:13 98:15 132:7 | potentially 138:1 | presents 59:2 presumably 73:4 | proceedings 7:16,21,23 126:15 127:2 | |
| planes 73:13 132:10 | power 31:13 63:21,24 79:6 86:8 96:24 97:1 121:25 | presume 10:1 10:20 | process 11:19 12:18 13:7 | |
| play 11:19 | | presumed 137:12,19 138:5 | | |
| please 27:10 28:7 49:16 72:14 83:18 92:6,9 114:6 116:4,7 119:22 126:19 | | presumption 138:4 | | |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

161

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 82:25 83:17 | qualificat... | quite 12:6 | 79:14 92:8 | 133:4 134:18 |
| 88:4 92:4 | 17:16 | 13:4 22:7 | 92:11 95:15 | 134:23 135:5 |
| 97:5 99:12 | question 9:18 | 46:9 | 116:6,9 | recalling 22:6 |
| 104:9 105:2 | 9:24,25 10:1 | quotation | 131:2 134:12 | receipt 143:14 |
| 108:18,21 | 28:8 31:3 | 112:1,10 | 137:25 141:9 | receive 25:8 |
| 109:10,11 | 40:17 64:24 | quote 61:21 | 143:2 145:4 | 31:16 47:17 |
| 127:12,24 | 68:7 70:6 | 111:15,17 | reading 24:17 | 55:16 77:11 |
| provides 32:24 | 72:14 74:6 | 112:11,20 | 45:7 79:1 | 104:7 |
| 33:4 50:4 | 74:15,17 | 113:6 | 119:25 | received 40:1 |
| 76:16 88:22 | 77:13 83:19 | quotes 110:15 | reads 25:24 | 47:23,25 |
| 91:24 | 89:18 91:5 | quoting 61:23 | 33:12 51:23 | 60:13 88:12 |
| providing | 92:7,9,16 | | 95:14 133:15 | receiver 25:7 |
| 57:19 85:19 | 93:11 97:7 | R | 134:4 137:11 | 39:25 59:25 |
| 89:21 90:5 | 102:13 | R 4:1 7:2 82:1 | real 68:15 | 76:22 77:11 |
| proximity | 103:10 | 144:1,1 | 107:19 | 77:15 78:3,8 |
| 46:14 73:5 | 106:16 107:1 | radio 24:10 | Real-Time 3:19 | 78:16 79:6 |
| PSS 28:23 | 113:19 | 25:11 30:5 | 3:22 | 79:13,23 |
| 30:18 31:25 | 114:17,18 | 31:16,20 | realize 80:20 | 80:2 84:16 |
| 36:19 | 115:2,17 | 35:19 36:9 | 80:25 88:13 | 84:18 97:24 |
| PSS1 34:21 | 116:5 119:12 | 47:17,18 | really 12:8 | receivers 55:8 |
| PSS2 34:21 | 125:12,22 | 54:4 63:12 | 27:2,7,22 | 66:9,12 |
| Public 3:24 | 126:17 127:4 | 63:14,20 | 29:24 56:17 | 77:25 78:1,2 |
| 142:1,20 | 127:5,14 | 114:10,13,19 | 56:25 59:3 | 78:9,15 |
| 145:25 | 128:7,20 | 114:20 | 64:9 65:15 | 79:15,16,22 |
| publicly | 129:11 | 127:25 | 66:5,24 | 80:3 87:20 |
| 117:15,22 | 131:14 135:8 | 128:14 | 69:13 72:5 | receives 32:15 |
| 118:4 140:8 | questioning | radiotelep... | 84:21 102:19 | 32:21 76:22 |
| published | 118:8 126:4 | 72:9 | 102:20 111:7 | 77:9 84:12 |
| 117:6 119:2 | 135:1 | radiotelep... | reask 126:17 | receiving |
| 139:3,24 | questions 7:25 | 72:7 75:3 | reason 61:12 | 64:18 77:8 |
| purely 50:22 | 8:5 11:9 | 97:14 | 119:1 143:4 | reception |
| purports 25:25 | 31:1 102:22 | range 65:9 | 144:5,7,9,11 | 33:24 40:7 |
| purpose 131:8 | 107:13 123:8 | 73:20 75:9 | 144:13,15,17 | 84:18 128:2 |
| purposes 90:5 | 123:24 124:7 | 94:4,6,6 | 144:19,21,23 | recess 37:21 |
| 107:21 | 124:12 126:5 | 98:1 | reasonable | 67:10 81:23 |
| Pursuant 3:17 | 126:10,21 | ranges 65:14 | 48:24 | 106:8 123:4 |
| pushed 122:2 | 130:4,8 | 65:14 | reasoning | 123:15 |
| put 8:15 87:25 | 134:16,21 | ranging 95:23 | 118:7 | 140:21 |
| 89:2,13 | 136:12 | rapidly 95:6 | reasons 99:14 | recognize 71:4 |
| 136:3 | 138:14 | 95:23 | recall 10:6 | 71:8,10 |
| putting 102:7 | 140:25 145:7 | rate 53:18 | 11:12 16:24 | 103:11 |
| | quick 68:15 | reach 63:21 | 22:10,13,25 | recollection |
| Q | 107:13,19 | read 11:13 | 23:7 34:13 | 27:12,13 |
| quadrature | 123:11 | 34:1 39:9 | 34:14 124:5 | 28:16 |
| 51:25 52:5,6 | 140:18 | 44:11 45:3 | 124:11 126:8 | record 8:10,15 |
| 52:20,22 | quickly 58:10 | 46:17 79:2 | 130:6,13 | 21:18 67:7 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

162

| | | | | |
|---|---|---|---|---|
| 92:13 95:16 101:10,13 107:18 110:22 116:11 123:11,12 134:12 142:9 record's 74:16 redirect 123:25 reduce 69:1 88:11,24 89:4 reduced 112:25 113:9 142:7 reducing 131:8 reduction 49:3 refer 16:12 25:2 28:20 48:17 54:7 reference 19:16 27:5 38:7 39:11 39:12,13 41:2,3 42:13 42:16 43:1,3 43:21 45:8 56:10 60:11 61:22 62:1 63:7 77:22 82:17 115:21 117:22 118:3 130:5 132:5 134:17,17,22 136:13,15,19 136:25 referenced 11:17 23:2 96:25 122:24 references 11:18,18,20 16:17 36:1 49:23 62:16 62:24 85:7 105:16 106:17 107:2 | 107:7 119:21 126:11,22,23 referencing 118:20 referred 49:2 62:24 68:12 referring 8:9 21:19 27:14 30:24 34:2 36:1 45:24 45:25 46:1 55:20 56:22 61:3,16 74:10 90:2 105:4 109:22 109:24 120:21 refers 50:12 50:24 reflects 95:2 regard 127:6 127:18 regarding 134:16 regardless 71:8 regards 125:13 region 69:1 Registered 3:18,20 regular 13:5 regulations 86:2 rejection 45:22 related 7:17 7:18 8:7 18:15 57:13 91:6 108:14 110:5 142:11 relates 24:7 125:1,17 relating 124:7 126:5 130:9 130:16 132:25 137:3 | relation 53:19 124:13 relationship 37:11 relative 25:5 26:2 27:17 133:17,24 134:4 142:13 relevant 134:21 137:12 138:1 relied 62:17 109:13 126:12,22 rely 48:14 remember 10:9 22:11 remind 102:10 removing 35:23 repeat 28:7 83:18 92:7 102:14 repeater 46:23 47:9,12,16 47:16,21 48:8 74:2 75:20 76:4 96:24,24 97:21,25 repeaters 46:19,21 repeating 47:22 repetitive 13:7,9 rephrase 9:25 108:3,19 113:20 131:14 report 34:7 43:20 46:18 60:2 82:13 94:25 109:22 119:23 reported 2:25 3:17 | reporter 3:19 3:19,20,21 3:21,22,23 9:17 67:6 92:11 116:9 reports 12:2 represent 34:21 35:1 105:23 represented 134:25 representing 9:1 34:9 Requested 141:9 require 89:1 122:20 required 25:16 25:18 60:10 110:12 111:13 125:7 126:6,23 137:25 requirement 125:5,23 requirements 85:10 86:3 87:21 requires 86:6 requiring 68:9 reread 26:16 26:16,16,25 127:17 research 12:23 respect 7:25 10:5,13 11:16 15:16 16:20 17:13 18:5 20:25 21:3 22:14 27:5 31:24 36:24,25 55:22 57:19 60:10 72:11 86:8,9 87:6 87:10 90:7 | responsibi... 48:7 restate 72:14 74:16 retransmit 47:18 retransmit... 47:25 return 88:6 143:12 Reuters 10:11 reveal 11:5 review 17:12 82:25 reviewed 13:12 reviews 21:21 24:2 30:9 31:7 32:2 33:18 34:23 38:23 39:17 41:8 43:4 44:3 47:5 49:17 54:12 59:17 61:4 63:2 69:4 74:3,20 77:16 79:17 80:13 82:18 83:16 88:3 92:3 97:4 99:11 104:8 105:1 127:11 RF 19:25 52:1 86:22 RHOADES 4:20 Richardson 4:3 5:5 8:12,14 8:17,19 11:4 24:24 29:8 40:23 45:1 64:5 65:25 69:20 81:18 87:14 100:20 103:2,8 108:7 110:25 111:4,21,24 |
|---|---|---|---|---|

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

163

| | | | | |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 112:5,9 | 114:14 122:7 | 40:4 42:10 | 120:10 | sentence 25:24 |
| 113:11 | 124:3 135:15 | 44:12,14 | section 29:17 | 30:3 33:12 |
| 115:24 116:3 | RMR 2:25 | 45:13 47:16 | 79:14 108:19 | 35:11 38:3 |
| 117:7 118:5 | roadway 69:9 | 48:11 52:4 | 108:23 | 41:10 42:3 |
| 121:17 | 70:9,24 | 54:3 56:8 | 109:25 | 51:22 63:10 |
| 123:10,21 | roadways 70:2 | 63:10 68:24 | sections 42:25 | 72:6 79:1 |
| 126:16 127:3 | robotic 17:24 | 69:9 72:5 | see 10:19 | 111:22,25 |
| 127:15 | Rockwall 4:15 | 74:23 75:2,3 | 12:13 26:7 | 112:5,10,14 |
| 130:21,24 | rolled 86:16 | 77:21 79:20 | 27:10 28:15 | 131:2 137:10 |
| 133:21,22 | rolling 132:13 | 80:17 107:21 | 29:2,5,22 | 137:18 |
| 138:13,17 | RPR 2:25 | 109:7 110:10 | 33:6 34:11 | sentences 79:3 |
| 140:9 141:1 | rrichardso... | 112:7 113:1 | 36:21 37:12 | separate 7:15 |
| right 8:13,23 | 4:9 | 127:23 | 39:13 43:24 | 55:16 84:17 |
| 9:23 10:20 | RS-232 19:3 | 128:14 | 52:2,9,11 | separated 25:7 |
| 10:23 11:21 | run 12:23 | 129:19,20 | 54:3,7 60:25 | 25:10 68:5 |
| 12:14 13:9 | Ryan 4:3 8:19 | 131:3 133:19 | 61:2,18,18 | 76:23 83:14 |
| 13:15 14:24 | | scale 97:12 | 63:4 64:13 | 83:24 84:3 |
| 16:7,11 | S | scanning 78:1 | 70:9 73:16 | 85:11 122:25 |
| 17:15 18:13 | S 4:1 5:1,7 | scenario 96:17 | 76:15,24 | 126:7 127:10 |
| 20:1,10,21 | 6:1 7:2 82:1 | scheme 40:6 | 78:13 79:7 | 127:21,25,25 |
| 20:25 21:13 | 82:1,1 | 45:20 55:7 | 81:12,14 | 128:1,8,14 |
| 22:14,24 | safe 129:14 | Schleh 4:4 | 84:15 89:3 | 128:15 |
| 23:15 26:14 | 136:4,8 | 8:21 130:23 | 90:14 93:1 | separately |
| 27:4 28:20 | safety 86:7 | Scott 1:20 | 94:18 95:7,9 | 127:24 |
| 29:4,12 | sake 20:12 | 2:18 3:6 5:2 | 95:13 96:3 | separation |
| 31:23 34:6 | 111:1 | 5:10,15,18 | 98:17,24 | 59:6,12 |
| 35:3,11,13 | salesperson | 6:17 7:9 | 109:7 110:7 | 60:10 126:6 |
| 36:4,12 | 10:11 | 13:20 15:7 | 110:13 112:7 | 126:13,23 |
| 37:17 38:20 | Sanford 4:19 | 15:14,23 | 112:10 113:1 | 127:9,20 |
| 39:6 40:16 | 8:25 102:9 | 82:4 101:23 | 113:3 115:5 | 128:2 129:5 |
| 42:8 45:12 | satellite | 141:5 144:2 | 120:16,18 | 129:13,17 |
| 48:23,25 | 65:10 | seamless 41:19 | 121:4 131:11 | Sequence 31:12 |
| 52:17 53:10 | saying 9:18 | 42:1 | 133:25 134:1 | series 124:7 |
| 55:2,18 57:2 | 36:24 44:9 | search 34:10 | 134:6 139:9 | 126:5,20 |
| 57:13 58:12 | 46:3,4 78:20 | 78:8 113:9 | 139:14 | 130:4,8 |
| 58:19 61:24 | 78:21 81:5,8 | 137:25 | seeing 74:22 | 134:15 |
| 65:13,20 | 81:9 83:23 | Sebo 2:25 3:18 | seen 14:1 | service 93:8 |
| 66:8 67:1 | 86:21,23 | 142:2 | 108:9 | 93:14 |
| 69:12 70:5 | 90:21 | second 14:8 | selecting 84:2 | services 22:18 |
| 72:10,23 | says 29:10,16 | 22:14 32:8 | self-moving | set 11:1 |
| 80:8,9 82:13 | 29:17 30:4 | 32:12,19,20 | 121:24 122:2 | 114:20 137:6 |
| 83:3,7 84:23 | 30:12 31:11 | 33:11,15,23 | send 13:6 | 138:10 |
| 86:2 87:25 | 33:21 35:7 | 34:19 51:22 | sending 20:9 | seven 21:11,13 |
| 89:24 90:16 | 35:15 36:19 | 67:17 72:2 | 55:8 58:6 | shadow 68:25 |
| 92:24 93:12 | 37:13 38:3 | 76:13 79:2 | sense 85:22 | sheet 143:5,8 |
| 98:4 113:8 | 38:25 39:23 | 95:5,21 | sent 10:17 | 143:10,13 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

164

| | | | | |
|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|
| 145:9 | 47:17,18 | 120:4,7,18 | 8:13,16,23 | solution 38:21 |
| shift 51:16 | 50:7,25 51:6 | 121:1,4 | 8:24 9:6 | 39:6,15 |
| shifting 126:3 | 51:15,18,20 | 122:14,18 | 11:7 13:16 | 41:17 43:2 |
| 130:3 | 51:23 76:22 | 139:9 | 13:24 14:20 | 90:17 91:21 |
| shop 12:1 | 77:9 78:10 | sit 93:23,25 | 15:11 16:3 | 91:24 |
| short 37:19 | 84:12 98:12 | 107:25 | 22:1 24:16 | solutions 38:5 |
| 102:20 | 104:7 131:10 | site 22:20 | 25:21 26:21 | 39:7,13,16 |
| shorthand 3:21 | signature | 40:13 78:7 | 27:24 28:9 | 40:18 41:3 |
| 142:7 | 122:14 | 78:11,12 | 29:11 30:16 | 42:12 85:20 |
| show 30:17 | 145:13 | 84:16 94:5 | 31:22 33:9 | somebody 12:22 |
| 31:24 33:16 | signed 10:25 | sites 46:13 | 34:5 35:2 | 75:6 85:22 |
| 125:7,23 | significant | 77:12 80:1,4 | 37:19,24 | somewhat 10:8 |
| 126:1 138:8 | 72:16 105:24 | 92:20 93:20 | 38:12,19 | 48:2 50:11 |
| showed 71:9 | significantly | 94:13 96:14 | 39:5 40:15 | sorry 22:5 |
| shown 32:6 | 98:7 116:24 | situation | 40:24 42:7 | 23:6 60:2 |
| 33:13 34:4,8 | signing 13:13 | 56:18 91:18 | 43:8,17 44:8 | 64:23 67:24 |
| 52:8 77:10 | 141:9 143:9 | 94:3 119:3 | 45:5 47:7 | 68:8 73:15 |
| 81:1,12 | silence 26:19 | situations | 49:6,13,22 | 79:21 95:8 |
| shows 36:4 | silent 37:18 | 71:1 72:21 | 54:15 60:1 | 97:2 120:13 |
| 74:8 120:3 | similar 18:16 | 72:24 | 61:8 62:3,10 | 130:25 |
| sic 40:21 | 46:19 47:10 | skill 87:12,19 | 63:8 64:8 | sort 116:16 |
| 120:16 | 54:5 58:5 | 115:11,19 | 66:2 67:2,8 | sound 104:24 |
| side 8:18 | 70:1,8 | 117:24 119:5 | 67:13 68:21 | source 32:25 |
| sight 66:20,23 | 122:24 | 135:9 137:7 | 69:11,23 | 33:5 |
| sign 143:7 | Similarly | 137:11,24 | 71:12,21 | space 58:4 |
| signal 20:8 | 32:20 41:18 | skilled 71:7 | 74:11 76:1 | 84:18 121:23 |
| 31:14,15 | simple 119:12 | 75:22 76:7 | 78:18 80:7 | 143:4 |
| 40:2,10 | simultaneo... | 78:15,21 | 81:4,16,19 | spaced 59:21 |
| 48:12,18 | 44:22 55:12 | 80:25 84:25 | 82:12,20 | 60:5 88:11 |
| 50:14 51:12 | 77:8,11 | 85:5,17,23 | 83:2,20 | spacing 128:12 |
| 52:24 53:3,6 | 84:13 | 86:22 88:16 | 87:24 89:5 | spatial 55:13 |
| 53:14,15,20 | sine 51:5,7,10 | 88:25 94:11 | 92:8,15 | 55:14 56:4,6 |
| 53:22 59:24 | 52:14,16,21 | 99:24 100:3 | 98:10 100:15 | 56:20 57:10 |
| 64:19 70:13 | single 7:20 | 100:22,25 | 101:8 102:13 | 57:21,25 |
| 71:10 73:2 | 80:12 81:1 | 129:8 136:5 | 106:5 140:19 | 58:3,7,11,13 |
| 77:12 87:6 | 81:14 | Skip 67:17 | soft 89:21,25 | 58:17,20 |
| 88:12,20 | singular 79:10 | slightly 56:5 | 90:6,9,16 | 59:6,12,15 |
| 94:14 95:6 | sir 103:1,6,7 | 126:3 128:20 | 91:12,20,24 | 77:6 84:21 |
| 95:22,25 | 103:11 | 130:4 134:8 | 92:16 93:17 | 88:9,14 |
| 96:1 131:6 | 104:24 | 134:10 | 93:22,24 | spatially 25:7 |
| 131:17,25 | 105:20 110:3 | small 65:13 | 94:19 96:5,7 | 25:10 50:8,9 |
| 132:18 | 110:7,17 | 94:6 | 96:18 130:11 | 59:2 68:5 |
| signaling 20:9 | 111:23 115:5 | smaller 48:13 | 131:23 | 76:23 83:14 |
| signals 25:8 | 115:7,15 | 96:1 97:12 | software 22:8 | 83:24 84:3 |
| 25:12,13 | 116:2 117:23 | Smith 4:12,13 | 22:10 23:5,7 | 85:11 122:25 |
| 32:16,18,21 | 118:2,17 | 5:3 7:13 | solely 11:25 | 126:6 127:9 |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

165

| | | | | |
|--|---|---|---|--|
| 127:21,25 128:14 speak 99:13 speaking 138:6 specific 8:6,8 8:9 99:18 129:4 specifically 30:17 46:1 88:14 122:17 122:23 specifics 23:22 specifying 54:11 128:8 Spectrum 31:13 speed 69:19 70:10 89:19 89:24 90:8 90:12,14,18 90:22,24 91:1 93:2 94:13 106:5 130:9,11,11 speeds 92:17 93:6 96:6 spot 89:14,17 Spread 31:13 standard 44:1 45:15,23,24 46:4,5,6,11 51:6 75:5,23 88:23 108:24 standards 21:1 46:10 58:21 108:18,20 109:8,10 standpoint 109:23 115:10 start 13:16 16:11,13 127:4 started 7:13 starting 7:24 18:19 127:22 | starts 82:22 105:11 state 24:4 39:2 143:4 stated 131:20 statement 39:12 40:17 41:2,7 42:9 47:9 107:24 110:23 states 1:1 2:1 5:13,20,23 6:3,6,8,12 6:15 14:16 28:3 32:6 38:15 43:13 49:9,20 62:6 62:14 71:17 71:24 101:17 116:14 station 17:21 18:23 23:12 24:9,12,14 24:22 25:13 26:1,2,3 27:7,17,18 27:19 28:15 28:19 30:1 31:18,21 32:11,16,23 33:8 36:20 37:5,10,14 46:24 47:1 47:10,12,16 47:18 48:1,4 48:6 54:18 66:12 74:18 75:9,12,17 75:19,24 76:4 94:5 96:8,20 97:10 112:21 112:23 124:10 133:15,16,19 133:23 | station's 76:21 stationary 35:15,18,20 stations 17:19 18:5,8 26:6 46:20,22 47:19 69:7 69:18 76:16 77:9 84:12 96:21 stenograph... 3:18 Sterne 3:10 4:5 8:20,22 12:18 16:18 20:18 21:5 27:2 Steven 135:17 136:22 140:14 straight 60:7 92:6 strength 22:20 40:2,11 48:12,18 51:18 94:14 95:6,22,25 96:13 strictly 20:8 strike 34:13 37:3 48:10 89:19 119:9 stronger 98:7 strongest 78:7 78:10 stuck 138:8 subject 72:3 100:19 119:5 143:9 Subscribed 145:18 subscribers' 35:17,23,24 substance 145:8 | substantial 71:5 73:5 substantially 46:19 47:9 70:1,8,22 subtract 53:21 successful 86:1 sufficient 17:7 57:5 Suite 3:12 4:21 summarized 27:15 summary 28:16 29:17 65:23 superpower 98:4 support 39:12 41:6 42:9 suppose 89:8 suppressed 45:17 sure 10:3,10 10:17 12:8 12:14 18:17 22:7 25:17 45:17 46:4,7 46:9 56:2 74:6 96:22 110:24 112:9 121:9 127:16 128:19 138:15 139:18 surely 41:16 surrounding 96:21 swarren@wr... 4:24 switch 58:5 90:23 91:10 switching 58:8 58:9 sworn 7:10 82:6 142:5 | 145:18 system 18:3,22 19:19 24:8 30:6 33:24 33:25,25 35:15,19 36:11 39:21 40:5,10 46:12 50:15 50:19,23 53:12 54:17 55:13 72:7,9 74:25 75:10 79:25 84:16 85:4,25 89:25 90:8 90:15 92:22 93:4 97:15 97:17 98:9 98:11 130:1 131:5 132:20 systems 3:22 24:15 26:4 44:20 45:11 50:15 64:2 70:3 86:10 89:11 97:20 98:15 101:4 101:6 110:11 135:23 |
| T | | | | |
| T 5:1,1,7 6:1 82:1 144:1 table 60:14 114:20,21 take 9:17 10:18 37:19 67:3 76:13 81:19 90:23 103:25 105:21 106:2 106:3 111:4 123:2,10 128:21 136:13 | | | | |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

166

| | | | | |
|---|--|---|--|---|
| taken 9:8 37:21 67:10 77:20 81:23 94:9 106:8 123:4,15 140:21 142:3 142:6,13 takeoff 87:1,3 takes 12:11 91:7,10 talk 18:25 42:19,21 56:25 57:12 67:5 96:9 140:13 talked 18:2 33:8 41:25 58:25 63:5 80:20 83:4 100:8 140:16 talking 9:20 12:15,16 23:8 33:7 36:3,5 55:15 56:3 57:15 58:1,3 59:15 65:4 70:8 75:14 80:10 84:16,20 88:8,14,15 92:20 132:4 talks 113:5 TD 45:19 TDMA 43:23 44:17,19 45:21 46:12 TDMA/CDMA 44:9 44:15,25 45:20 TDMA/FDMA 46:2 TDMA/frequ... 45:15 teachings 131:4 team 12:5,16 17:2,4 | technical 10:19 17:12 138:7,9 technique 25:25 45:16 46:4 58:5 techniques 24:6 44:17 94:19 101:6 128:3,5 129:21 technologies 22:19,23 44:17 58:25 66:23 technology 12:7 19:9 22:4,13,16 23:3 55:24 94:22 telephone 19:6 24:13 26:18 29:20 35:9 35:15,16,16 35:20,21 36:2 39:21 40:2 77:23 110:11 telephones 26:6 tell 15:12 18:13,15 30:21 49:2 60:15 62:13 62:23 73:8 75:5 84:2 87:22 89:7 94:15 96:23 97:17 111:17 telling 81:11 90:4 91:19 117:18,21 tells 59:16 tendered 16:7 tends 66:8 term 19:12 | 50:5 55:3 56:7 58:13 85:17 109:21 137:19 terminal 84:11 terms 16:15 24:20 47:13 50:2 58:1 63:14 138:6 testified 7:11 16:16 82:7 85:9 87:3 104:12 108:17 138:25 testimony 9:12 14:5,25 16:8 17:7 21:1 48:25 57:20 83:8 99:6 107:6 123:25 124:6 131:21 132:3 139:22 142:4,6,10 testing 89:2,6 Texas 4:15,22 Thank 26:23 98:22 112:17 113:18 119:19 123:8 123:23 Thanks 82:23 103:2,8 theory 135:24 thing 11:2 56:3 99:19 99:20 100:9 116:17,20 118:9 122:23 things 12:23 13:6,11 57:1 57:13 58:5 58:19 70:13 70:20,22 85:13 88:18 88:23 89:11 | 89:20 90:20 94:9,16,23 100:4,8 137:13 think 9:11 16:16 21:10 26:10,12 30:14 36:2,8 36:17 58:12 61:20 64:11 66:24 67:2,3 70:19 72:21 73:10 91:25 92:5 94:11 97:6,6 98:16 101:8 105:11 106:5 108:17 111:11,24 115:20 117:8 120:9 121:6 123:10 thinking 90:22 third 25:23 thirty 143:14 Thomson 10:11 thought 11:14 58:22 67:16 106:25 129:15 thoughts 92:6 thousands 97:14 three 54:7,10 60:23 77:24 78:14 79:15 79:16 threshold 40:3 thrust 24:21 26:11 27:9 Thursday 1:21 2:20 till 76:17 time 9:23 10:7 16:13,13 17:3 18:20 18:24 19:7 | 22:5 46:8 48:21 58:22 59:10,11 64:16 67:3 73:6 90:24 91:2,3,7,16 93:20 110:12 111:1,13 115:11,18 122:4 123:9 128:1,8,15 128:15,23 129:1,24 135:3,10 138:2,11 time-delay 128:1,9,11 times 9:10 21:11 48:12 87:18 95:25 96:15 today 9:13 10:21 14:5 19:8 26:15 34:16 57:1 93:23 94:1 107:6,25 123:25 124:6 126:4 told 10:21 86:25 115:19 top 53:15 89:19,24 90:14,18,22 110:9 topic 100:1 topologies 94:8 total 77:24 towers 65:1 TRADEMARK 1:1 2:1 traffic 69:8 69:19 70:10 training 109:18 |
|---|--|---|--|---|

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

167

| | | | | |
|---|--|--|---|---|
| transceiver 32:9 97:20 98:5 | 51:17 trucks 17:24 17:25 | 107:8 127:24 128:21,22 133:12 | undesirable 111:14 | 55:23 68:10 |
| transcript 6:21 7:21 143:15,16 | true 37:6 99:20 107:15 107:24 | two-channel 78:3 79:23 | unit 24:13 31:15 32:8,9 32:10,12,17 32:19,21 33:14,15,17 33:22,23 34:12,15 36:5 37:9 47:23 79:4,4 80:18 98:5 112:24 | utilize 58:4 83:23 utilized 19:10 40:6 47:13 49:24 64:1 69:3,13 77:25 84:17 utilizes 44:25 utilizing 68:4 |
| transcription 142:8 145:6 | 116:21 117:12 118:25 142:9 | type 57:21 75:18 typed 114:3 typically 12:5 52:21 53:11 64:1,22 65:13 66:13 | United 1:1 2:1 5:13,20,23 6:3,6,8,12 6:15 14:16 28:3 38:15 43:13 49:9 49:19 62:6 62:14 71:17 71:24 101:17 | <hr/> V <hr/> v 1:7 2:7 144:4 |
| transmission 33:24 63:24 64:16 65:1 86:8 | truly 19:12 73:17 try 8:8 9:17 9:19 113:12 126:1 | typo 35:10 | units 35:16,18 35:20 74:24 | values 53:25 variables 94:3 various 58:6 128:3 129:21 varying 95:5 95:20,21 |
| transmissions 64:21 77:12 | trying 22:11 52:23 55:21 98:1 118:6 | <hr/> U <hr/> U.S 1:12,15 2:12,15 14:22 41:13 41:21 | unnecessarily 102:24 | vehicle 33:2 93:3 95:18 121:14,20 122:3,8 |
| transmit 25:11 55:18 56:1,7 | turn 36:12 54:22 74:7 76:10 77:1 | understand 9:12,24 12:8 12:15 22:2 23:23 55:21 56:24 57:11 58:18 64:23 68:1 74:6 99:6 100:7 116:16 118:7 121:9 137:11 138:16 | usable 7:22 use 18:8,11 46:13,17 55:13 63:20 64:10 65:9 75:6 76:8 87:2 88:18 90:24 105:16 114:10 115:20,21 116:19 118:23 122:21 | verbiage 119:7 verifying 93:19 Verizon 18:20 64:2 93:3 |
| transmits 79:6 | turned 13:11 28:22 74:2 74:13,18 75:10 76:4 | understanding 21:3 23:23 57:10,18,24 59:5,9 60:9 83:8,22 91:17,25 109:25 119:25 129:24 131:13 132:9 136:9 137:7 137:23 138:11 | users 22:21 45:17 uses 44:1 137:18 | versed 87:15 version 16:6 versus 21:23 21:24,25 22:15 23:2,9 23:16 65:18 91:2 |
| transmitted 47:17 60:13 131:10 | Turning 43:9 122:16 | understood 10:2 122:4 129:16 | utilization | view 105:14 virtue 37:1 Vitae 5:19 15:24 |
| transmitter 25:11 56:8 97:2,24 | two 7:15,22 24:15 25:23 31:1 51:15 51:24 55:8 55:16 56:11 59:21,24 60:4,23 71:6 78:2,5,8,10 79:2,21,22 88:10 97:20 100:14 104:17 105:22 107:2 | | | voice 53:15,20 Volkswagen 1:5 2:5 8:18 144:4 |
| transmitte... 32:8,10,12 32:17,19,20 33:14,15,22 33:23 | | | | <hr/> W <hr/> |
| transmitters 56:9 87:20 | | | | |
| transmitting 45:18 64:17 | | | | |
| travel 130:10 | | | | |
| traveling 69:19 90:9 112:24 | | | | |
| TRIAL 1:3 2:3 | | | | |
| triangulation 22:20 | | | | |
| troposcatter 63:12,13 64:3 | | | | |
| troposphere 63:15,21 | | | | |
| trough 51:11 | | | | |
| troughs 51:9 | | | | |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

168

| | | | | |
|------------------------|-----------------------|-----------------------|-----------------------|----------------------|
| wait 76:16 | 53:17 | 59:1 | 105:3 108:8 | 11:23 13:4 |
| walking 16:14 | wavelength | Wi-Fi 59:1 | 111:1 113:13 | 26:22 61:17 |
| want 12:14 | 60:12, 16 | wire 35:17 | 116:4, 13 | 70:4 72:15 |
| 23:22 31:2 | waves 51:10 | wireless 17:22 | 117:8 118:6 | 112:3 120:13 |
| 34:10 39:9 | 63:15 | 18:1 21:23 | 121:18 | 135:15 |
| 42:21 56:2 | way 25:14 | 22:3, 22 23:9 | 127:11, 13 | 139:11 |
| 60:18 67:6 | 28:23 29:7 | 29:25 58:21 | 140:11 | 140:19 |
| 74:5 80:15 | 35:17, 19 | 93:3 136:5 | 141:11 142:4 | years 17:16 |
| 88:18, 23 | 41:1 46:21 | wirelessly | 142:6, 10 | 86:17 |
| 91:16 105:23 | 66:3 69:15 | 35:21 131:9 | 143:1 144:2 | Yep 60:6 |
| 113:11 | 93:19, 25 | wiring 29:18 | wondering 90:7 | York 3:11 4:6 |
| 118:23 121:9 | 99:15 100:24 | 30:8 | word 113:9 | |
| 124:17 127:1 | 102:18 109:3 | wisdom 137:14 | 122:8, 22 | Z |
| 127:5 130:15 | 134:13 | witness 4:25 | words 29:5 | 0 |
| 131:2 136:13 | ways 47:11 | 11:5 21:21 | 131:22 | 0 54:1 |
| 137:2 138:18 | we'll 7:20 8:4 | 21:23 24:2, 4 | work 10:11 | 01103 8:1 |
| wanting 61:11 | 8:8, 15 13:16 | 24:25 26:19 | 11:25 12:4, 5 | 023 7:25 10:5 |
| 85:8 | 16:12 23:21 | 28:7 29:9 | 54:17, 24 | 14:24 15:16 |
| warning 101:5 | 31:4 54:3 | 30:9, 11 31:7 | 87:22 88:2 | 17:8, 13 18:4 |
| Warren 4:19, 20 | 72:1 | 31:9 32:2, 4 | 89:13, 17 | 23:21, 24 |
| 5:4 8:1, 25 | we're 7:14 8:5 | 33:18, 20 | 93:24 101:2 | 24:1, 7, 11, 21 |
| 102:6, 9 | 8:9 9:19 | 34:23, 25 | 114:23 | 25:25 26:9 |
| 103:1, 3, 6, 9 | 16:13 21:18 | 38:23, 25 | 118:23 | 26:10 27:6 |
| 104:11 105:5 | 33:10 52:25 | 39:17, 19 | worked 16:25 | 30:23 31:2, 4 |
| 106:11 | 55:15 56:2 | 41:8, 10 43:4 | 18:16, 23 | 31:10 38:6 |
| 108:12 111:2 | 57:15 58:2 | 43:6 44:3, 5 | 19:18, 19 | 40:20 59:11 |
| 111:6, 19, 23 | 62:1 73:11 | 45:3 47:5 | working 12:17 | 67:18, 23 |
| 112:3, 7, 12 | 76:7 84:21 | 49:17, 19 | 23:4 74:25 | 68:3 69:2 |
| 113:10, 15 | 85:14, 15, 18 | 54:12, 14 | works 8:12 | 76:14, 15 |
| 116:1, 6 | 85:19 88:8 | 59:17, 19 | 33:4 48:2 | 103:22 104:5 |
| 117:3, 10 | 94:4 | 61:4, 6 63:2 | 85:25 | 105:19 |
| 118:14 119:9 | we've 7:20 | 63:4 64:6 | worth 55:8 | 106:13, 19 |
| 119:11 | 43:18 63:5 | 66:1 69:4, 6 | wouldn't 90:17 | 107:4, 9 |
| 120:12 122:6 | 83:3 85:14 | 69:21 74:3, 5 | 119:17 126:1 | 108:17, 20 |
| 123:2, 7, 13 | weekly 13:5 | 74:20, 22 | 129:23, 25 | 109:1 113:23 |
| 133:18 | weight 57:19 | 77:16, 18 | write 138:7, 7 | 120:23 |
| 138:15, 18, 23 | welcome 123:22 | 79:17, 19 | written 25:15 | 124:18, 22 |
| 140:12, 18, 24 | well-known | 80:13, 15 | wrong 95:8 | 127:6, 7, 18 |
| Washington | 38:5 39:13 | 82:18, 24 | wrote 19:23 | 129:12, 15, 25 |
| 2:19 3:13 | 39:16 40:18 | 83:1, 16, 18 | 138:11 | 130:16 133:2 |
| 4:7 7:5 | 41:3 42:12 | 87:15 88:3, 5 | | 133:14 134:3 |
| wasn't 34:8, 12 | 43:22, 22 | 92:3, 5 97:4 | X | |
| 93:7 118:3 | 85:17 131:8 | 97:6 99:11 | X 5:7 6:1 | 1 |
| 118:15 140:7 | went 26:25 | 99:13 100:21 | | 1 2:24 5:9 |
| wave 51:5, 7 | weren't 131:22 | 101:9 104:8 | Y | 13:16, 19 |
| 52:14, 14, 16 | Wi-Fi 58:20 | 104:10 105:1 | yeah 9:22 | |

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

169

| | | | | |
|--|--|--|---|--|
| 14:1 17:11 25:4 28:21 44:6 45:8,13 53:25 54:4 60:8 63:9 77:10 104:22 105:11,13 107:19 110:15,16 111:8,16 112:8,16 145:5 1:06 82:2 1:59 106:9 10 6:11 29:14 63:9,10 68:18 104:1 104:4,22 106:18 107:3 120:3 122:18 122:20,23 125:13,17,24 126:1 133:1 133:14 10,000 48:12 95:25 10:12 37:22 10:27 37:22 100 90:18 91:13 92:18 93:6,9,13,24 1007 38:8 41:4 42:4 101 6:16,18 1010 61:7,9 1018 68:13 102 5:4 104 82:22 105 105:12 10C 106:21 120:17 133:8 11 6:12 68:3,9 71:14,17,23 78:5,23 80:10 98:18 98:20,24 | 103:23 104:5 106:19 107:4 124:19,21 125:1 133:2 134:3 11:32 67:4,11 11:41 67:11 110 122:12 1100 3:11 4:6 111 119:22 120:1 112 67:14 88:7 12 6:15 24:5 24:18 54:6 77:12 101:17 102:25 103:11,13,25 115:4 122:16 12:15 81:22 121 106:21 120:14 1212 4:21 123 5:5 124 120:7 125 120:1 13 5:11 6:17 101:23 103:5 103:11,16 104:21 107:14 108:6 108:19 109:11 110:2 113:12,16,21 114:7 122:12 134483 2:23 138 5:4 139 54:21 14 5:14 77:12 84:15,20 140 77:1,2,2 77:20 141 145:5 145 2:24 15 5:16,19 21:2 60:8 128:13 | 15th 140:7 16 1:21 2:20 3:1 7:6 25:22 77:11 77:15 113:2 113:4,16 137:3,6 144:3 160 84:5,9 162 130:22,25 163 91:22 17 40:4 17th 116:23 18 77:20 113:2 113:4 121:2 181 121:1 182 121:6 1975 62:20 1991 41:12 116:23 1993 41:21 116:14 136:10 139:13 140:7 1994 18:18 115:23 118:4 136:16,24 139:8 140:8 1995 115:4,6 115:14,18 118:17,22 1996 58:24 115:22 117:14,16,23 117:25 118:2 119:14 140:2 1G 19:13 <hr/> 2 <hr/> 2 5:13 14:13 14:16,21 29:13 52:10 67:18,19 74:7 75:4 76:14 79:3 80:9,11,16 | 80:17 81:2 81:13 84:16 103:23 107:19 112:16,16 2:21 106:9 2:47 123:5 2:55 123:5,16 20 17:16 38:1 41:11 145:19 20,000 92:18 92:23 20005 3:13 4:7 201 122:12 2010 118:12,19 119:4 202 4:8 2020 1:21 2:20 3:1 7:6 144:3 205 74:9,13,17 74:24 205s 75:10 21 38:1,1 76:15,18 77:21 120:16 210 74:13,18 75:10 24 60:8 127:22 25 44:6 45:9 250 4:21 26 61:1 26th 60:24 27 31:11 33:21 129:20 28 5:21 21:2 43:10,21 2G 20:3 44:19 89:25 90:8 2nd 58:23 115:6 117:16 117:23,25 118:2,22 140:1 <hr/> 3 <hr/> | 3 5:15 15:4,7 15:13 31:11 32:6 33:11 33:13,16 34:3,4,8,16 35:3,14 39:19 84:15 97:8 130:17 3:04 123:16 3:34 140:22 3:38 140:22 141:4 30 79:5 80:18 143:14 30,000 92:23 307 4:14 31 24:18 32 79:5 110:3 111:22 112:6 33 20:12,17 112:19 34 79:6 36 79:6 94:25 95:11 37 25:22 27:16 38 5:24 60:20 390 38:9,11 39:8,20 41:4 42:14 76:11 77:7,14,18 79:24 83:10 83:24 84:2 84:10,14 85:21 89:21 90:4,17 91:23 99:3,7 99:20 100:9 100:11 104:17 107:2 131:4,7,18 131:24 132:19 390's 77:10 91:20 3G 20:3 44:19 90:12 |
|--|--|--|---|--|

CSI GLOBAL DEPOSITION SERVICES
972-719-5000

DEPOSITION OF SCOTT ANDREW DENNING
January 16, 2020

170

| | | | | |
|---|---|---|--|---|
| <p style="text-align: center;">4</p> <p>4 5:18 15:20 15:23 16:5 17:10 20:14 21:19 39:20 40:4 82:16 4,001,692 6:9 62:7,14 40 48:11 95:24 95:24 41 35:14 43 6:4 32:5 33:10 45 75:4 46 38:2 41:7 41:11 42:17 42:20 47 42:18 48 42:18 49 6:7 38:9,20 38:22 41:5 42:14,18 4G 19:8 4th 136:16,24 139:8 140:8</p> <p style="text-align: center;">5</p> <p>5 5:20 20:14 27:25 28:3 82:16,21 113:1,4 139:7 5,000 92:25 93:7 5,109,390 5:24 38:16 5,276,686 5:21 28:4 5,345,467 41:13 5,481,533 6:4 43:14 5,504,786 6:7 49:10,20 5,559,865 6:13</p> | <p>71:18,24 50 33:14,22 35:3 42:19 500 54:19,25 51 42:19 105:12 52 42:19 533 44:5,12,13 45:4 54 111:4,5,7 112:16 55 45:13 111:8 119:23 550-2955 4:23 56 35:4 40:21 46:1 58 110:15,16 110:20 111:16 112:8 59 110:15,17 110:20 111:16 112:8 5G 19:8 5th 116:14 136:10 139:13</p> <p style="text-align: center;">6</p> <p>6 5:23 17:17 20:14 34:18 34:21 38:12 38:15 54:5 76:10 99:2 127:22 129:20 6,393,281 41:22 60 38:25 39:23 95:3,19 96:6 600 3:12 91:1 62 6:9 38:10 38:20,22 41:5 42:15 130:19,21,23 63 77:19 64 36:17 43:9</p> | <p>43:20,21 78:23 80:11 65 46:18 47:8 47:13 66 78:24 80:11 67 114:7,9 68 6:11 36:17 47:15 686 33:21</p> <p style="text-align: center;">7</p> <p>7 6:3 38:9,20 38:22 41:4 42:14,14 43:13,19 77:19 79:19 97:9 108:25 109:5 7,848,701 1:12 2:12 6:16 7:17 101:18 7,979,023 1:15 2:15 5:14 7:19 14:17 14:23 25:3 70 105:10 701 8:2 102:10 103:14,17,20 104:4,14 105:18 106:14,18 107:3 108:5 108:15 109:2 110:6,10,17 110:19 111:12 113:22 115:3 118:11,16,22 120:20 121:3 122:5,17,20 125:14,17 132:25 133:2 133:8 137:4 71 6:13 722-2475 4:16 74 77:3</p> | <p>75038 4:22 75087 4:15 772-8729 4:8 786 49:21 60:8 115:21 139:3 139:24 7th 118:12,19</p> <p style="text-align: center;">8</p> <p>8 6:6 33:21 34:1 49:6,9 49:15 78:5 117:22 139:12 80 33:15,17,23 34:4,8,12,15 800 60:25 81 48:10 94:24 95:11 82 5:3 83 60:19 84 82:14 865 72:4 73:25 74:8,23 75:25 76:2 82:17 83:3 83:10 84:1 90:5,17 91:20 96:25 97:9 98:16 98:19,20,23 99:8,8,18 100:7,17 104:17 107:2 130:5 131:19 132:5,16,20 865's 83:25 131:5</p> <p style="text-align: center;">9</p> <p>9 5:3 6:8 36:16 62:3,6 62:12,13 98:16,17 9:16 3:2 7:6 900 61:1</p> | <p>92 32:5 33:12 96 59:20 60:3 972 4:16,23</p> |
|---|---|---|--|---|

CSI GLOBAL DEPOSITION SERVICES
972-719-5000