



Planet Depos®
We Make It *Happen™*

Transcript of Douglas A. Chrissan, Ph.D.

Date: July 26, 2024

Case: Cellco Partnership -v- General Access Solutions, Ltd. (PTAB)

Planet Depos

Phone: 888.433.3767

Email: transcripts@planetdepos.com

www.planetdepos.com

WORLDWIDE COURT REPORTING & LITIGATION TECHNOLOGY

Verizon Exhibit 1017
Verizon v. GAS IPR2023-01147

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4
5 CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,

6 Petitioner,

7 V.

8 GENERAL ACCESS SOLUTIONS, LTD.,

9 Patent Owner.

10
11 Case IPR2023-01147

12 U.S. Patent No. 9,426,794

13
14
15 Virtual Deposition of DOUGLAS A. CHRISSAN, PH.D.

16 Friday, July 26, 2024

17 8:02 A.M. (PST)

18
19 Job No.: 546765

20 Pages: 1 - 120

21 Reported By: Anita M. Trombetta, RMR, CRR,

22 California CSR No. 14647

1 A P P E A R A N C E S

2

3 ON BEHALF OF THE PETITIONER

4 CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS:

5 STEPHEN YAM, ESQ.

6 VENABLE LLP

7 600 Massachusetts Avenue, NW

8 Washington, D.C. 20001

9 202.721.5429

10

11 ON BEHALF OF THE PATENT OWNER

12 GENERAL ACCESS SOLUTIONS, LTD.:

13 SARAH E. SPIRES, ESQ.

14 SKIERMONT DERBY LLP

15 1601 Elm Street, Suite 4400

16 Dallas, Texas 75201

17 214.978.6600

18

19

20

21

22

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

-----I N D E X-----

WITNESS

DOUGLAS A. CHRISSAN, PH.D.

EXAMINATION BY

PAGE

ATTORNEY YAM

4

-----E X H I B I T S-----

(Previously Marked)

Exhibit	Description	Page
Exhibit 2007	Declaration of Douglas A. Chrissan, Ph.D.	13
Exhibit 1001	U.S. Patent Number 9,426,794	25
Exhibit 1004	U.S. Patent Number 6,556,553	66
Exhibit 1005	U.S. Patent Number 6,816,706	91
Exhibit 1006	U.S. Patent Number 5,790,536	103
Exhibit 1007	U.S. Patent Number 5,722,051	110

1 P R O C E E D I N G S

2 D O U G L A S A. C H R I S S A N, P h. D.,

3 called as a witness, having been duly

4 sworn by a Notary Public, was examined and

5 testified as follows:

6 EXAMINATION BY

7 ATTORNEY YAM:

8 Q Good morning, Dr. Chrissan.

9 A Good morning.

10 Q How are you today?

11 A I am doing well. How are you?

12 Q I am well also. Thank you for asking.

13 Have you been deposed before?

14 A I have.

15 Q About how many times?

16 A Approximately 20.

17 Q And you understand that you are testifying
18 under oath today?

19 A I do.

20 Q Great.

21 And do you understand what it means to
22 testify under oath?

1 A Yes, I do.

2 Q Is there any reason that you would be
3 unable to provide truthful and accurate answers
4 today?

5 A Not that I know of.

6 Q Are you taking any medications that may
7 influence your ability to truthfully and
8 accurately answer questions today?

9 A No, I am not.

10 Q Great.

11 So it sounds like you've been through this
12 many times before, but I'll still go through the
13 ground rules just so they're on the record.

14 So throughout the course of the day, I
15 will be asking you questions. In doing so, I will
16 try to be clear in my questioning. But if for
17 some reason there is some ambiguity or lack of
18 clarity in a question, please feel free to let me
19 know, and I will try to rephrase it to clear up
20 the -- any confusion.

21 Sound good?

22 A I understand.

1 Q Also, if you do not inform me that a
2 question is unclear or that you don't understand
3 it, I will assume that you understand the
4 question.

5 Sound good?

6 A Yes, I understand.

7 Q Great.

8 Also, because the reporter will need to
9 clearly hear us speak to make an accurate record,
10 and because we're conducting this virtually which
11 can lend to some lag time, please let me finish
12 asking a question before you begin to respond, and
13 I will do the same when you're providing your
14 answers.

15 Sound good?

16 A Yes.

17 Q Great.

18 During the course of this deposition, your
19 counsel may lodge certain objections. It will
20 typically be the word "objection," followed by the
21 basis of the objection.

22 Unless the objection is based on

1 privilege, you are still required to respond to
2 the question.

3 Do you understand this?

4 A I understand.

5 Q Great.

6 I will also try to take a break about
7 every hour or so. If you feel like you need a
8 break prior to that time, just let me know and I'm
9 happy to accommodate. All I ask is that if there
10 is a question already pending at that point, that
11 you provide your response to the question before
12 requesting a break.

13 Sound good?

14 A I understand.

15 Q Great.

16 And, again, just to note for the record,
17 we are conducting today's deposition by -- by
18 Zoom, remotely.

19 Is there anyone else in the room with you
20 today?

21 A No, there is not.

22 Q Where are you currently?

1 A I had -- okay. I am currently in
2 Los Gatos. A window popped up that said my
3 realtime closed.

4 I assume everyone else's realtime is still
5 working?

6 Q Yes, Dr. Chrissan. I thought we had
7 agreed prior to the start of the deposition that
8 you would not be --

9 A Right. I just wanted to make sure that
10 that was directed at me and not that everyone's
11 realtime had gone down.

12 I had a deposition recently where the
13 realtime was going down regularly.

14 Q Okay. So just for the record, do you have
15 a window on your computer with the realtime feed
16 open?

17 A No.

18 Q Okay. And you mentioned you were in
19 Los Gatos, California?

20 A That's correct.

21 Q Are you at home?

22 A I am.

1 Q Do you have any physical documents in
2 front of you currently?

3 A I do not.

4 Q Do you have any electronic documents open
5 in front of you?

6 A No, I don't.

7 Q And are you logged on to this Zoom
8 deposition via computer?

9 A Yes, I am.

10 Q And you would have access to any documents
11 that are provided on the Zoom session into the
12 chat?

13 A Yes. I will be able to download documents
14 from the chat.

15 Q Great.

16 Do you currently have your cell phone
17 accessible?

18 A It's about 3 feet away, face down and
19 silenced.

20 Q Great.

21 So today we'll be referring to various
22 exhibits in electronic form. I just ask that,

1 during today's deposition, you refrain from
2 accessing any other physical or electronic sources
3 of information other than those that are provided
4 during the deposition.

5 Sound good?

6 A Yes. I will download them as you request.

7 Q Great. Thank you.

8 And I know that you mentioned your phone
9 is face down, about 3 feet from you. If you --
10 during the breaks, if you want to check your
11 personal email or, you know, make a personal call,
12 that's fine. I would just ask that you refrain
13 from accessing anything else that relates to this
14 proceeding while the deposition is ongoing.

15 Sound good?

16 A Yes.

17 Q Great.

18 So our discussion today will involve U.S.
19 Patent Number 9,426,794, which is the subject
20 patent for this proceeding.

21 For shorthand today, I will refer to U.S.
22 Patent Number 94,426,794 as the '794 patent today.

1 Does that sound good?

2 A Yes, that's fine.

3 Q Great.

4 During the course of the day, I will be
5 generally asking you questions from the
6 perspective of a person of ordinary skill in the
7 art at the time of the alleged priority date for
8 the '794 patent.

9 I believe you have opined in your
10 declaration that such days were around the 2001
11 time frame; is that correct?

12 A Yes, that's correct.

13 Q Great.

14 Also, I may use the terms "POSA" or
15 "POSITA" today during my questions to refer to
16 such a person of ordinary skill in the art.

17 If I use the term "POSA" or "POSITA," will
18 you understand what I'm referring to?

19 A Yes, I will. I use that term in my
20 declaration.

21 Q Great.

22 And unless my question indicates

1 otherwise, will you understand that I am asking
2 questions based on the perspective of a person of
3 ordinary skill in the art at the time?

4 A Yes, I understand.

5 Q Great.

6 How did you prepare for today's
7 deposition?

8 A I read my declaration. I read many --
9 well, most, if not all, of the materials cited in
10 that declaration. And I met with Ms. Spires
11 briefly on Monday and for about -- for an hour or
12 two yesterday.

13 Q How long did you meet with Ms. Spires for
14 on Monday?

15 A I think it was 30 minutes exactly.

16 Q And that was the Monday of this week?

17 A Yes. July 22nd.

18 Q Thank you.

19 And you stated that you met with
20 Ms. Spires yesterday for about an hour or two?

21 A Yes. I think it was one and a half or two
22 hours.

1 Q Other than these two meetings this week,
2 did you meet with Ms. Spires in preparing for
3 today's deposition?

4 A No.

5 Q Were these two meetings with Ms. Spires
6 conducted remotely?

7 A Yes, they were.

8 Q Did you have any other discussions in
9 preparing for today's deposition other than these
10 two meetings with Ms. Spires?

11 A No.

12 Q About how many hours would you say you've
13 spent preparing for today's deposition?

14 A It would be the time to read all of the
15 documents that I mentioned that I read. Maybe 10
16 to 12 hours, for a guess.

17 Q That 10 to 12 hours includes the time that
18 you spent in your two meetings with Ms. Spires?

19 A Yes.

20 Q So I'm introducing into the chat, a
21 document that's been marked already in the IPR as
22 Exhibit 2007. It's entitled, Declaration of

1 Douglas A. Chrissan, Ph.D.

2 A I will download it.

3 Q Great.

4 A I have it up.

5 Q Excellent.

6 Dr. Chrissan, is Exhibit 2007 a
7 declaration that you submitted in this IPR
8 proceeding?

9 A I'm looking through it.

10 (Document review.)

11 Yes, it looks like my declaration.

12 Q Can you turn to the last page.

13 A Yes.

14 Q Is that your signature on the last page of
15 Exhibit 2007?

16 A It is.

17 Q And to shortcut things, for today's
18 deposition, I'll just refer to Exhibit 2007 as
19 your declaration.

20 Sound good?

21 A Yes.

22 Q Great.

1 Is there anything that you wish to change
2 in your declaration?

3 A As I read it, I think I found a couple of
4 typos. I think there was one instance where
5 Mahany should have been Palmer, or something like
6 that. But it was pretty clear that it was a typo.

7 If we get to one of those that matters,
8 I'll point it out.

9 Q Beyond any typos, is there anything else
10 that you wish to change in your declaration?

11 A No. My declaration stands as when I
12 signed it as my opinions.

13 Q Who prepared the first draft of your
14 declaration?

15 A Mostly me.

16 Q You said "mostly."

17 Was there anyone else who prepared the
18 first draft of your declaration?

19 A Counsel was the original typist on some of
20 the declaration. For example, the legal
21 principles section.

22 But the opinions section, I believe I was

1 the original -- even the original typist on almost
2 all of it.

3 There were portions of the overview
4 section where I explicitly state that I used
5 material from the -- from other documents in this
6 case because I believed those documents already
7 provided a -- a good overview.

8 But in all cases, over the entire report,
9 I read it multiple times and edited it until it
10 reflected my words.

11 Q When was the first draft of your
12 declaration prepared?

13 A To the best of my recollection, I started
14 on it about a month before it was due.

15 Q Who did you work with in preparing your
16 declaration?

17 A Ms. Spires.

18 Q Did you work with anyone else in preparing
19 your declaration?

20 A No.

21 Q Can you turn to Paragraph 21 of your
22 declaration.

1 A Yes.

2 Q Paragraphs 21 through 23 of your
3 declaration fall under a subsection entitled,
4 "Claim Construction"; is that right?

5 A Yes.

6 Q In your declaration, do you present any
7 proposed constructions of any claim terms in the
8 '794 patent?

9 ATTORNEY SPIRES: Object to form.

10 A Could you clarify what you mean by that
11 question?

12 Q In your declaration, do you present any
13 opinions as to what any particular claim term of
14 the '794 patent should be construed as?

15 A I -- I still can't answer your question
16 yes or no. Could you -- are you asking, did I put
17 forth a -- did I put forth a construction to the
18 PTAB or to the district court?

19 I did not put forth a construction to a
20 judicial body. I did not state a construction. I
21 used the constructions that were provided, where
22 available, by the PTAB and the district court, and

1 then I applied a POSITA's understanding of plain
2 and ordinary meaning.

3 Did that help to answer your question? I
4 was trying to get to where you wanted to go, even
5 though I didn't fully understand your question.

6 Q I think -- yeah, I think you did
7 understand my question. And just to confirm.

8 You did not put forth a construction of
9 any '794 patent claim terms to the PTAB or to the
10 district court; is that right?

11 A That's correct.

12 Q Thank you.

13 I'd like to turn to Paragraph 23 of your
14 declaration. It's still under the claim
15 construction subsection.

16 Let me know when you're there.

17 A Yes. I am reading Paragraph 23.

18 Q Great. Let me know when you're done.

19 A I will.

20 I'm also reading my Paragraph 59 before I
21 close out your previous question 100 percent.

22 Back to -- which paragraph did you say?

1 Q 23.

2 A Yeah. I am at Paragraph 23.

3 Q And I'd like to focus on the -- the first
4 half of Paragraph 23. And let me read it into the
5 record here.

6 "I understand that claim construction is a
7 matter of law. To the extent the Board has
8 already provided claim construction guidance for
9 claim terms in the '794 patent, including an
10 earlier IPRs, such as IPR 2017-01889 involving the
11 same '794 patent, I follow that guidance."

12 Did I read that correctly?

13 A Yes.

14 Q You refer to "that guidance" in -- in the
15 portion that I just read.

16 What do you mean when you refer to "that
17 guidance"?

18 A It refers to two lines up where it's --
19 where the phrase is "claim construction guidance."
20 That's what it's referring to, any claim
21 construction guidance from the board. I believe
22 that documents from IPR 2017-01889 were entered as

1 evidence and exhibits in this IPR. And as I
2 mentioned and noted, I have read those exhibits.

3 So when the board provided claim
4 construction guidance in those exhibits, I noted
5 that and used it.

6 Q Used it in formulating your opinions in
7 your declaration here?

8 A Could you repeat your question?

9 Q Sure.

10 At the end of your previous response, you
11 said you noted that guidance and used it.

12 I'd like to just explore what you mean
13 when you said you used it.

14 A If -- in the places that I have an opinion
15 that would depend on a claim construction from the
16 board, I -- I used that claim construction in
17 formulating my opinion.

18 That doesn't mean that every instance of
19 claim construction guidance -- any given instance
20 of claim construction guidance may not have been
21 relevant to my opinion, but where it was relevant,
22 I used -- I took that into consideration, and it

1 formed part of my opinion.

2 Q Okay. I'd like to move on to the second
3 paragraph of Paragraph 23 of your declaration.
4 I'll read it out loud.

5 "Furthermore, in a co-pending district
6 court case involving the same '794 patent, the
7 Court issued a claim construction order on
8 January 12th, 2024."

9 And there is a citation to Exhibit 2006.

10 Then it further reads, "I used the claim
11 constructions provided by the Court."

12 Do you see that?

13 Did I read that accurately, Dr. Chrissan?

14 A Yes, that is what my declaration says.

15 Q And what do you mean when you state, "I
16 used the claim constructions provided by the
17 Court" in Paragraph 23?

18 A I think that sentence stands on its own.
19 Is there anything that you consider ambiguous
20 about it? I think it's pretty clear what it means
21 to use a claim construction.

22 Q I think perhaps my confusion is that the

1 word "use," and I think we had the same confusion
2 earlier during my questioning.

3 What do you mean when you say you "use"
4 the claim constructions?

5 A I can't think of a better word than "use."
6 Any word -- any other word via synonym, I
7 accept -- I accept them as the claim construction
8 to use in forming my opinions.

9 Q Okay. I'd like to turn to Paragraph 33 of
10 your declaration.

11 A Okay.

12 Q And let me know when you've had a chance
13 to read it.

14 A (Document review.)

15 I have read it.

16 Q Great.

17 And just for the record, Paragraph 33 of
18 your declaration states, "Counsel has informed me,
19 and I understand, that a reference may be said to
20 teach away, when a person of ordinary skill [in
21 the art], upon reading the reference, would be
22 discouraged from following the path set out in the

1 reference or would be led in a direction divergent
2 from the path that was taken by the applicant for
3 the '794 patent."

4 Did I read Paragraph 33 correctly?

5 A Yes, you did. You added a couple words
6 after "person of ordinary skill," but I assume
7 that was for context.

8 Q My apologies. That was not intentional
9 but force of habit.

10 Is the statement in Paragraph 33 of your
11 declaration consistent with your understanding of
12 whether a reference teaches away?

13 A Yes, it is.

14 Q Do you have any other understanding of the
15 legal threshold on whether a reference teaches
16 away, other than what is stated in Paragraph 33 of
17 your declaration?

18 A Paragraph 33 is the guidance that I used.
19 If there is -- you know, Paragraph 33 is the
20 guidance that I used.

21 Q So then you don't rely on any other legal
22 understandings on whether a reference teaches away

1 other than what's stated in Paragraph 33 of your
2 declaration?

3 A Could you repeat your question?

4 Q Sure. I'll try to clarify it.

5 So Paragraph 33 sets forth your
6 understanding of what it means to -- for a
7 reference to teach away, correct?

8 ATTORNEY SPIRES: Object to form.

9 A Yes, it does. Yes, it informs my
10 understanding of teach away, at least as used in
11 this declaration.

12 Q And are there any other understandings
13 that you have on whether a reference teaches away
14 beyond what's stated in Paragraph 33 and on which
15 you relied upon in forming your opinions in this
16 declaration?

17 ATTORNEY SPIRES: Object to form.

18 A That was a compound question. Could you
19 ask it again?

20 Q Sure. And let me try to shorten it.

21 Do you rely on any other understandings on
22 whether a reference teaches away other than what's

1 stated in Paragraph 33?

2 ATTORNEY SPIRES: Object to form.

3 A It's possible, based on my experience up
4 to this point.

5 That said, if I have an opinion in this
6 declaration that a reference teaches away, I think
7 it's -- I think it's -- I think it's based on this
8 Paragraph 33.

9 Q I'm uploading to the Zoom chat a document
10 which has already been marked as Exhibit 1001 in
11 this IPR, which is U.S. Patent Number 9,426,794,
12 which we've been referring to as the '794 patent.

13 Dr. Chrissan, please let me know when
14 you've had an opportunity to download and open up.

15 A I have it up.

16 Q Great.

17 Is Exhibit 1001, the '794 patent, a
18 document you reviewed in preparing your
19 declaration?

20 A Yes, it is.

21 Q Approximately how much time would you say
22 you spent in reviewing the '794 patent in

1 preparing your declaration?

2 A I don't recall. Certainly, long enough to
3 read it in detail several times.

4 Q The '794 patent contains four figures,
5 correct?

6 A Yes, it does.

7 Q And it contains about nine and a half
8 columns of specification; is that about right?

9 A You are using the interpretation that the
10 claims are not part of the specification, I
11 assume?

12 Q That's right.

13 A Yes. Then it would be nine -- about nine
14 and a half columns.

15 Q And following that nine and a half columns
16 of specification, there are six claims in the '794
17 patent which total a little over one column.

18 Is that a fair assessment?

19 A Yes, I think that's a fairly accurate
20 assessment.

21 Q Could you turn to Figure 3 of the '794
22 patent.

1 A Yes, I'm there.

2 Q What does Figure 3 of the '794 patent
3 depict?

4 ATTORNEY SPIRES: Object to form.

5 A The '794 patent, at Column 7, Line 17,
6 presents an overview. It says, "Figure 3
7 illustrates another representation of the fixed
8 wireless access communication system shown in
9 Figures 1 and 2."

10 Any more detail than that and I would need
11 a more detailed question.

12 Q Okay. Let's focus on certain aspects of
13 Figure 3.

14 A Okay.

15 Q There are three rectangular boxes that are
16 labeled, "Access Processor" -- excuse me.

17 Two of them are labeled, "Access
18 Processor/Modem Array," and "(CO) backhaul."

19 Do you see that?

20 A I'm studying the figures a little bit.

21 Q I recognize the text is a bit grainy.

22 A Okay. What was your question again?

1 Q Do you see two rectangular boxes
2 containing the text, "Access Processor/Modem
3 Array" and "(CO)" and followed by the word
4 "backhaul"?

5 A Yes, I see those two boxes.

6 Q There is a third rectangular box in
7 Figure 3 which is labeled with the text, "Remote
8 Modem Array Backhaul."

9 Do you see that?

10 A Yes, I see that.

11 Q What does the word "backhaul" mean?

12 ATTORNEY SPIRES: Object to form.

13 A It can mean different things. In the
14 context of this patent, I would take some time to
15 read the written description.

16 Do you want me to do that?

17 Q Well, in my view, in reading the
18 description, there is no use of the word
19 "backhaul," which is somewhat the purpose of my
20 question in understanding what backhaul means in
21 the context of this figure.

22 ATTORNEY SPIRES: Object to form.

1 Q Do you have an understanding of what
2 "backhaul" means in the context of Figure 3?

3 A The two boxes that are described as access
4 processor, modem array, CO, backhaul. We'll take
5 those first.

6 Those are distinguished from the box
7 labeled, "Remote Modem Array Backhaul," as you
8 noted.

9 I think that the CO backhaul -- the CO,
10 probably -- let me see if I can find it to make
11 sure.

12 The CO probably refers to central office.

13 (Document review.)

14 I'm searching the patent.

15 Q Understood.

16 A Okay. I think a person of skill would
17 most likely interpret the CO as central office.
18 And the reason I say that is, Cloud 32
19 says, "PSTN/packet network." And PSTN is a term
20 of art, public switched telephone network."

21 So the CO backhaul is probably those
22 double-lined communication links connecting the

1 two boxes that we are talking about with Cloud 32.

2 And then the remote modem array backhaul,
3 the third box, the one on the right that we were
4 discussing, it has a thick, black, double arrow
5 line from it to the other box, the access
6 processor modem array CO backhaul. I think a
7 person of skill would interpret that thick, black
8 line, that line would represent the communication
9 link between the access processor modem array CO
10 backhaul box and the remote modem array backhaul,
11 and that would also be considered a backhaul
12 communication link.

13 So backhaul typically refers to a
14 communication link. Beyond that, it depends on
15 the context, because we've already seen two
16 different kinds, even in this Figure 3.

17 Q And by "two different kinds," you're
18 referring to the one being the double line, and
19 the other being the thick line with the double
20 arrows?

21 A Yes, that's what I was referring to.

22 Q And both of those communication links are

1 backhaul links?

2 A I think that a person of skill would
3 interpret it that way.

4 Q Would those be wide area communication
5 links?

6 ATTORNEY SPIRES: Object to form.

7 A (Document review.)

8 I'm reviewing the patent.

9 Q Understood.

10 A (Document review.)

11 I'm almost done.

12 Q Understood.

13 A What was your question again?

14 Q So the -- let's -- strike that.

15 Part of your review of the specification,
16 we were discussing the two backhaul communication
17 links depicted in Figure 3 of the '794 patent,
18 right?

19 A Yes.

20 Q One of those, the types of links, is the
21 double line, and the other is the -- the thicker
22 single line with the double arrows, right?

1 A Yes.

2 Q Let's just take those in turn.

3 The backhaul links that are depicted in
4 double lines in Figure 3, are those wide area
5 communication links?

6 A That would depend on the context. So I
7 don't have an opinion without understanding a
8 specific topology of a specific system.

9 Sometimes the term depends on context.

10 I could not see that the '794 explicitly
11 describes it as a wide area communication link.

12 Q So a person of ordinary skill in the art
13 looking at Figure 3 of the '794 patent could not
14 determine whether the double lines representing
15 the backhaul communication link is a wide area
16 network or not?

17 ATTORNEY SPIRES: Object to form.

18 A From Figure 3 in isolation, I think there
19 is still some uncertainty. A person of skill
20 knows, as I said, that the term can depend on
21 context, topology, geography. So a person would
22 want more details on a particular system before

1 answering yes or no.

2 Q And those details are not present in
3 Figure 3 of the '794 patent?

4 ATTORNEY SPIRES: Object to form.

5 A Again, I think the answer to your specific
6 question -- the answer to your specific question,
7 whether the double-line backhaul links would
8 qualify as wide area or not, that would depend on
9 the context of a particular system. A number of
10 systems are encompassed in Figure 3.

11 Q All right. Let's turn to the other
12 backhaul link, the thick, solid line with the
13 double arrows.

14 Is that communication link a wide area
15 network link?

16 A My answer is the same. Figure 3
17 encompasses a number of topologies, systems, and
18 contexts, and we would need to analyze a given --
19 a given system and topology in context to provide
20 a conclusive answer.

21 Q And the required detail as to that
22 topology is not depicted in Figure 3 of the '794

1 patent?

2 A My answer is the same. Figure 3
3 encompasses many possible contexts, topologies,
4 etc. We would need to analyze a particular one in
5 detail to answer your questions specifically.

6 Q I'd like to turn back to your
7 declaration --

8 A Yes.

9 Q -- Exhibit 2007.

10 Can you turn to Paragraph 45, which is on
11 Page 21 of the PDF.

12 A Yes.

13 Q Let me know if you need to read the
14 paragraph first before we dive in.

15 A What paragraph is that again?

16 Q Paragraph 45.

17 A Okay. I will read it.

18 ATTORNEY YAM: Actually, it looks like
19 we've been going about an hour. So maybe now is a
20 good time for a break before I launch into new
21 questions.

22 THE WITNESS: Okay. Do you want to go off

1 the record?

2 ATTORNEY YAM: Yes. Let's go ahead and
3 take a break.

4 (Recess.)

5 BY ATTORNEY YAM:

6 Q Welcome back, Dr. Chrissan.

7 A Thank you.

8 Q During the break, did you speak with
9 anybody?

10 A No, I did not.

11 Q I'd like to return back to your
12 declaration, Exhibit 2007.

13 A Yes.

14 Q And direct your attention to Paragraph 45
15 of your declaration.

16 A Yes.

17 Q Last sentence of Paragraph 45 reads, "A
18 protocol is a term of art in the network
19 architecture domain, generally meaning an
20 established set of rules for transmissions to and
21 from devices."

22 Did I read that correctly?

1 A Yes.

2 Q And you agree with this statement that's
3 set forth in Paragraph 45 of your declaration?

4 A The one you just read, the last sentence?

5 Q Correct.

6 A So am I agreeing that a protocol is a set
7 of rules that devices use for transmissions
8 between them? Yeah, that's -- that's what the
9 sentence says. That's my understanding of
10 protocol.

11 Q And what do you mean by "an established
12 set of rules"?

13 A When devices communicate with each other,
14 they need to have an established set of rules.
15 Otherwise, they won't understand each other.

16 In other words, let's assume that the --
17 let's assume that the devices are both
18 transceivers -- well, let's keep it simple.

19 Let's say that one device is a
20 transmitter, and one device is a receiver. Those
21 devices have to operate according to the same set
22 of rules or else the receiver will not be able to

1 understand what the transmitter is transmitting.

2 So those rules can be an extensive set of
3 constraints, requirements, timing, parameters, bit
4 fields, everything needed in terms of a rule that
5 those two devices will agree upon in order that
6 they can understand each other.

7 Q Can you provide one to two examples of
8 rules in the context of what you mention here in
9 Paragraph 45?

10 ATTORNEY SPIRES: Object to form.

11 A I think my previous answer covered your
12 current question. I think I provided examples of
13 rules when I said timings, bit fields,
14 synchronizations, frequency bands, everything that
15 two devices would need to communicate with each
16 other.

17 I think I said bit fields. Bit fields are
18 an important part of protocols in digital
19 communications, certainly. There may be thousands
20 of them.

21 Q And these rules are required so that the
22 receiver will understand what the transmitter is

1 transmitting?

2 ATTORNEY SPIRES: Object to form.

3 A That may be a paraphrase of one of my
4 previous answers but generally the same as one of
5 my previous answers.

6 Again, communication devices, for example,
7 a transmitter transmitting into a receiver do have
8 to operate by established set of rules, often
9 quite detailed rules, in order that the receiver
10 can receive a reasonably good, if not very good,
11 replicate or copy of what the transmitter intended
12 to send, whether that be digital, analogue, or
13 data of -- data and control fields of a -- of
14 various forms.

15 Q And we were just discussing this in the
16 context of a transmitter and a receiver.

17 Would your opinions on that setup also
18 apply to two transceivers?

19 A Yes.

20 Q I'd like to turn to Paragraph 36 of your
21 declaration.

22 A I'm at Paragraph 36.

1 Q Great.

2 I'll start with the first sentence --
3 well, the first two sentences, which read,
4 "Different types of wired and wireless networks
5 qualify as a WAN. Examples of wireless WANs
6 (WWANS) at the time of the patent, include RAM
7 Mobile Data (using a Mobitex network), CBPD,
8 (cellular digital packet data), ARDIS," which is
9 spelled A-R-D-I-S, and then "(advanced radio data
10 information services) and satellite
11 communication)."

12 Did I read that correctly?

13 A Yes, you did.

14 Q And so I'm understanding correctly, the
15 examples that you have listed here in the first
16 two sentences of Paragraph 36 of your declaration
17 are examples of wireless wide area networks?

18 A They are according to Mahany. I cite
19 Mahany for this, I think Exhibit 1006.

20 Mahany listed them as things that Mahany
21 considers types of wireless WANs. And for an
22 overview section in my declaration, I wasn't going

1 to say he's wrong.

2 If Mahany considers these types of
3 wireless WANs, then these are at least types of
4 wireless WANs as expressed in the prior art.

5 Q Do you agree that the examples listed in
6 Paragraph 36 of your declaration are wireless
7 WANs?

8 A I did not do enough analysis on that to
9 form a conclusive opinion.

10 As I said, Mahany lists them as wireless
11 WANs. So I list them as examples of what the
12 prior art considers wireless WANs.

13 Q Do you have any reason, sitting here
14 today, to dispute that the examples listed in
15 Paragraph 36 of your declaration are wireless
16 WANs?

17 A As I mentioned before, WAN or wireless WAN
18 can depend on the context and topology. I think,
19 in at least some contexts and topologies, these
20 systems could be considered WANs.

21 I worked in satellite communications. I
22 don't think that every satellite system would be

1 considered a WAN. Maybe some would. Like I said,
2 it depends on the context and topology.

3 Q Beyond satellite communication, are you
4 familiar with the remaining examples of wireless
5 WANs listed in Paragraph 36?

6 A Only at a very high level. I am not
7 familiar, as I sit here right now, with the
8 details of their inter-workings and possible
9 topologies and contexts.

10 Q Do each of these wireless WANs listed in
11 Paragraph 36 utilize a wide area wireless
12 communication protocol?

13 A I would have to analyze any one of them in
14 detail before I could answer that question.

15 Q Are you aware of any wireless WAN that
16 does not utilize a wide area wireless
17 communication protocol?

18 A I'm sorry. Could you repeat your
19 question?

20 Q Sure.

21 Are you aware of any wireless WAN that
22 does not utilize a wide area wireless

1 communication protocol?

2 A Okay. One more time?

3 Q Sure.

4 Are you aware of any wireless WAN that
5 does not utilize a wide area wireless
6 communication protocol?

7 A My answer is the same. I would need to do
8 a detailed analysis. So as I sit here right now,
9 I'm not -- I can't answer that I'm aware of one
10 that does or does not. It would require
11 additional work.

12 Q Well, my question was whether, sitting
13 here today, you're currently aware of any wireless
14 WAN that does not utilize a wide area wireless
15 communication protocol.

16 So, again, let me ask the question.

17 Sitting here today, is there any wireless
18 wide area network that you're aware of which is
19 not -- which does not utilize a wide area wireless
20 communication protocol?

21 ATTORNEY SPIRES: Object to form.

22 A My answer is the same. I think I answered

1 your question. I would need to do more analysis
2 before I could say yes or no to your question.

3 So as I sit here right now, I'm not aware
4 of one that does. I'm not aware of one that
5 doesn't. That would require more work and
6 analysis.

7 Q Turning back to Paragraph 36 of your
8 declaration and the first two sentences. Let's
9 take these in turn.

10 The first example that's -- of a wireless
11 WAN that's listed is RAM Mobile Data, correct?

12 A Yes.

13 Q Does the '794 patent disclose RAM Mobile
14 Data as a type of wireless WAN?

15 A I don't see that in the written
16 description.

17 Q I didn't see it, either.

18 So fair to say that the '794 patent does
19 not disclose RAM Mobile Data as a type of wireless
20 WAN?

21 A It does not disclose that in the written
22 description. I didn't read all of its references.

1 Q So turning to the next example listed in
2 Paragraph 36 of your declaration, CDPD, which
3 stands for cellular digital packet data.

4 Does the '794 patent refer to CDPD as one
5 type of wireless WAN?

6 A My answer is the same. Not in the written
7 description.

8 Q Turning to the next example in
9 Paragraph 36 of your declaration, ARDIS, which
10 stands for advanced radio data information
11 services.

12 Does the '794 patent refer to ARDIS as one
13 type of wireless WAN?

14 A Same answer. Not in its written
15 description.

16 Q And turning to the last example in
17 Paragraph 36 of your declaration, satellite
18 communication.

19 Does the '794 patent refer to satellite
20 communication as one type of wireless WAN?

21 A Not in its written description.

22 Q Can you turn to Paragraph 47 of your

1 declaration.

2 A Yes.

3 Q Let me know when you're there.

4 A I'm there.

5 Q So Paragraph 47 of your declaration
6 reads, "Thus, the '794 patent defines a specific
7 architecture that includes a WAN and LAN and the
8 accompanying protocols that govern those
9 networks."

10 Let's start -- let's stick to the first
11 half of that sentence.

12 Did I read that correctly?

13 A Yes.

14 Q What WAN protocols do the '794 patent
15 define?

16 ATTORNEY SPIRES: Object to form.

17 A I'm going to review the '794 patent.

18 (Document review.)

19 I'm also reviewing my declaration,
20 specifically the paragraphs prior to the one that
21 we are discussing.

22 (Document review.)

1 Are you okay if I jot down citations on a
2 post-it note, as long as I tell you what they are?

3 Q Sure.

4 A These will all be things straight from my
5 declaration.

6 I'm looking at Paragraph 43 of my
7 declaration where it says, "The '794 patent
8 discusses how this device can enable the creation
9 of a novel, broadband cellular system. When WWAN
10 service is provided to a plurality of fixed site
11 subscriber stations, cellular coverage areas are
12 formed."

13 That's the '794 patent at 349 to 51.

14 Let me look at the patent.

15 Column 7 of the '794 patent, at Line 12,
16 reads, "Figure 2 illustrates a representation of a
17 fixed wireless access communication system,
18 similar to that shown in Figure 1, here also
19 illustrating a plurality of cellular coverage
20 areas defined by about a plurality of subscriber
21 stations of the fixed wireless access
22 communication system."

1 There are a number of places where the
2 patent talks about base stations. And Figure 2
3 and Figure 3 clearly represent a cellular base
4 station-type topology.

5 So, given that, what was your question,
6 specifically?

7 Q My question was: What WAN protocols does
8 the '794 patent define?

9 A I think the '794 patent and a person of
10 skill, in light of the '794 patent's figures and
11 descriptions, would understand that the '794
12 patent encompasses at least cellular protocols for
13 communicating between a base station and access
14 points in a cellular configuration as known in the
15 art at that time.

16 Q But the '794 patent doesn't actually list
17 any specific cellular protocols, correct?

18 A As I mentioned in one of my previous --
19 sorry.

20 As I mentioned in one of my previous
21 answers, protocols are very detailed things that
22 can take extensive documentation to describe. I

1 don't see any detailed, explicit description of
2 the low-level rules and protocols that a base
3 station and an access point would use to
4 communicate, nor would I.

5 There may be some explanations in here.
6 Give me a chance. Maybe I'll find some details.

7 Q Sure. Take your time.

8 A (Document review.)

9 I read about half of the written
10 description, including the background section. I
11 would cite to anywhere that it's talking about a
12 base station, an IAD, or a fixed wireless access
13 communication system. It is referring to, in
14 part, at least, a selection of protocols that
15 could be used.

16 Q But there is no description of what that
17 actual protocol is, right?

18 A My answer is the same. There is some --
19 there is some description of what the protocol
20 would be. It mentions forward links, reverse
21 links, and certain features of a base station and
22 an IAD. But it certainly does not describe

1 everything in detail for a given protocol. That
2 would take many pages in addition to this patent.

3 Q Turn back to your declaration.

4 A Yes.

5 Q Paragraph 42.

6 Let me know when you're there.

7 A I am there.

8 Q Great.

9 So the first sentence of Paragraph 42 of
10 your declaration reads, "The wireless system and
11 device of the '794 patent contains two different
12 transceivers."

13 The next sentence is describing the first
14 transceiver, and then the sentence after that is
15 describing the second transceiver.

16 Is that generally accurate?

17 A Yes.

18 Q Okay. I'd like to focus on the -- the
19 latter, the second receiver.

20 And the sentence within your Paragraph 42
21 reads, "The second transceiver then routes the
22 information to other mobile stations using a LAN

1 communication protocol (e.g., Wi-Fi protocols.)"

2 Did I read that correctly?

3 A Yes.

4 Q Does the '794 patent refer to Wi-Fi
5 protocols?

6 A Let me review it.

7 (Document review.)

8 What was your question again?

9 Q Do you not remember my question? You've
10 been reviewing the patent for several minutes now.

11 ATTORNEY SPIRES: Object to form.

12 A I don't remember every word of your
13 question. So it would be helpful if you reread
14 it.

15 Q Sure.

16 Does the '794 patent refer to Wi-Fi
17 protocols?

18 A The '794 patent's written description does
19 not explicitly refer to the Wi-Fi protocols known
20 as 802.11. So capital WI-FI refers to the
21 IEEE 802.11, wireless LAN standards, and those
22 dictate a many -- a long set of rules that define

1 a protocol and how it would be used.

2 The '794 patent does not explicitly
3 mention 802.11 or WI-FI. I believe that its scope
4 of wireless LANs would include that protocol and
5 others. The '794 is not limited to 802.11 WI-FI.

6 Q Let's turn to Paragraph 37 of your
7 declaration.

8 A Okay.

9 Q And I'd like to focus on the second half
10 of Paragraph 37, which refers to examples of
11 wireless LANs at the time of the '794 patent.

12 Do you see that?

13 A Yes.

14 Q And in the second half of Paragraph 37,
15 you refer to the 802.11 IEEE standard and also two
16 other type of wireless LANs: HiperLAN 1 and
17 HiperLAN 2, correct?

18 A Yes.

19 Q Are HiperLAN 1 and HiperLAN 2 wireless
20 LANs in the context of the '794 patent?

21 A As I sit here right now, I have no opinion
22 that the '794 patent would exclude them.

1 Q And there is no citation that follows this
2 sentence listing the examples of wireless LANs; is
3 that right?

4 A That is correct.

5 Q What is the source of these examples of
6 wireless LANs that's listed in Paragraph 37?

7 A I would want to look at all of the cited
8 art, but I won't do that without your permission.

9 I believe that one of them cited at least
10 HiperLAN 1 or HiperLAN 2, if not both.

11 Beyond that, this is an overview section,
12 and I know that those examples are formed from my
13 own understanding as a person of skill. I also am
14 fairly confident that one of the prior art
15 references mentioned the 802.11 explicitly, but,
16 again, I would need to review all of the cited
17 prior art to confirm that.

18 Q Understood.

19 Do you agree with the statement in the
20 second half of Paragraph 37 that these three
21 examples listed are examples of wireless LANs?

22 A My answer is the same for your similar

1 questions about wireless WANs. It would depend on
2 the specific deployment. But I think, generally,
3 no one is going to dispute that 802.11 WI-FI is a
4 form of wireless WAN.

5 For the HiperLAN 1 and 2, those never got
6 very far in the market. And I'm not completely
7 sure of their deployment scenarios. But I think,
8 in at least -- in at least some contexts and uses
9 and scenarios, they were considered wireless LANs.

10 ATTORNEY YAM: I got a longer line of
11 questions, so maybe now is -- let's go ahead and
12 take a break.

13 (Recess.)

14 BY ATTORNEY YAM:

15 Q Welcome back, Dr. Chrissan.

16 During the breaks, did you speak with
17 anybody?

18 A Only my wife, for a minute or two.

19 Q Understood.

20 I'd like to turn your attention to
21 Paragraph 47 of your declaration.

22 A Yes, I'm there.

1 Q Paragraph 47 reads, "Thus, the '794 patent
2 defines a specific architecture that includes a
3 WAN and LAN and the accompanying protocols that
4 govern those networks, and it also includes
5 specific functions that the transceivers do in
6 relaying downlink signals to the mobile stations,
7 and then monitoring signal characteristic to route
8 information."

9 Did I read that correctly?

10 A Yes.

11 Q What specific architecture does the '794
12 patent define with respect to monitoring signal
13 characteristics to route information?

14 A Could you reread that question?

15 Q Sure.

16 What specific architecture does the '794
17 patent define with respect to monitoring signal
18 characteristics to route information? That's the
19 language at the end of the sentence that I read in
20 Paragraph 47.

21 A I'll need some time to review my
22 declaration and the patent.

1 Q Sure.

2 A (Document review.)

3 Okay. Could you ask your question one
4 more time?

5 Q Sure.

6 What specific architecture does the '794
7 patent define with respect to monitoring signal
8 characteristics to route information?

9 A Okay. I think I don't agree with your
10 interpretation of the grammar. I think that "it"
11 modifies the '794 patent, not specific
12 architecture.

13 I think if I -- if I had meant the second
14 clause to refer to specific architecture, I would
15 have wrote, "and that also includes." But since I
16 wrote, "and it also includes," I think that the
17 second part of that is referring to the '794
18 patent generally.

19 I think what I'm saying is, the '794
20 patent includes specific functions that the
21 transceivers do in relaying downlink signals to
22 the mobile stations and then monitoring signal

1 characteristics to route information. I think
2 that's described, and I just scanned the written
3 description, the detailed description, Column 7,
4 8. Described at various places in those columns,
5 and in the summary as well, I think. Columns 5
6 and 6.

7 But I can poke -- I can go through them
8 again and pick out lines if you wish.

9 Q Yeah, let's unpack this, starting with the
10 language in Paragraph 47, which I believe you
11 clarify.

12 So if I understand correctly, Paragraph 47
13 was not intended to state that the '794 patent
14 defines a specific architecture that monitors
15 signal characteristics to route information?

16 A Right. I think it just means that the
17 '794 patent includes specific functions that the
18 transceivers do in relaying downlink signals to
19 the mobile stations and then monitoring signal
20 characteristics to route information.

21 Q And you listed -- you refer to several
22 columns of the '794 patent in your earlier answer.

1 Was that in regards to the -- what's
2 described here in Paragraph 47 of the specific
3 functions of monitoring signal characteristics to
4 route information?

5 A That was the intent of my answer when I
6 mentioned those columns.

7 Q So you mentioned Columns 7 and 8.

8 Is there any particular portion of these
9 columns that you believe refers to the specific
10 functions of monitoring signal characteristics to
11 route information?

12 A Well, one example would be Column 8, at
13 Line 61. "Determination of when to initiation
14 hand-over of communications is made responsive to
15 measurements of signal characteristics of the
16 communication signals communicated between the
17 wireless LAN transceiver and the mobile station."

18 And it goes on to give one embodiment of
19 that. That's one example.

20 I think that Column 47 -- I'm sorry --
21 Paragraph 47 of my declaration discusses
22 monitoring signal characteristics and routing

1 information. And at minimum, where the written
2 description in the columns that I mentioned
3 describes measurements, signal characteristics, or
4 routing, that is likely to be the first place I
5 would go to cite additional specific lines to you.

6 Q And that's the paragraph in the '794
7 patent that starts at Column 8, Line 61?

8 A Yes. That's the one example that I gave
9 you.

10 Q Okay. The one example of monitoring
11 signal characteristics to route information?

12 A Yes.

13 Q So I'd like to turn back to a prior topic
14 that we had touched on, which was the IEEE 802.11
15 standard, which I believe you had mentioned in --
16 I think you at least mentioned it once in your
17 declaration.

18 Do you recall that?

19 A Yes. I think I had -- I recall mentioning
20 Wi-Fi. Let me see. But I think I mentioned
21 802.11 as well.

22 Yes. Oh, wait. That's my background.

1 Hold on.

2 (Document review.)

3 Yes. Paragraph 37 mentions 802.11, the
4 IEEE 802.11 Wi-Fi, as an example of a wireless
5 LAN.

6 Q Are you familiar with the IEEE 802.11
7 standard?

8 A I'm fairly familiar with some of it. The
9 whole thing is very large.

10 Q And I think you previously testified
11 earlier today that the term "Wi-Fi," capital W,
12 capital F, is synonymous with the 802.11 standard?

13 A Generally, yes.

14 Q Are you aware of whether the 802.11
15 standard defines the performance of routing
16 functions to wireless client devices?

17 A Could you ask that question again?

18 Q Sure.

19 Are you aware of whether the 802.11
20 standard defines performing routing functions to
21 wireless client devices?

22 A And I'm to answer that from the point of a

1 person of skill in 2001, correct? Per your
2 original instructions?

3 Q Thank you for bringing that up.

4 Let's -- I'm actually curious on both
5 perspectives, both your personal perspective and
6 that of a person of ordinary skill in the art in
7 2001.

8 A Well, I --

9 ATTORNEY SPIRES: Object to form.

10 Q Let me ask the question again so the
11 record is more clear.

12 In your personal perspective, are you
13 aware, personally, of whether the 802.11 standard
14 defines performing routing functions to wireless
15 client devices?

16 ATTORNEY SPIRES: Object to form.

17 A Even given my current knowledge of the
18 current 802.11 standard, I can't answer that "yes"
19 conclusively, but I can't answer it "no"
20 conclusively, either.

21 As I sit here right now, I -- there is
22 nothing I can particularly recall in the 802.11

1 standard itself about routing. And then the
2 answer from a person of ordinary skill in 2001
3 is -- I can't answer conclusively "yes" or "no,"
4 but I think it's much more likely to be a "no"
5 23 years ago because the 802.11 standards were
6 mainly, but I don't know if entirely, focused on
7 the radio links.

8 Q So you're not aware of whether the 802.11
9 standard bases any kind of routing operation on
10 downlink signal strength or other signal
11 characteristics?

12 ATTORNEY SPIRES: Object to form.

13 A That's a different question. 802.11 is a
14 standard. It could be -- we previously discussed
15 protocols as the details. The standard could
16 be -- could be implemented in different ways. I
17 think that would be implementation-dependent.

18 Q Implementation of the 802.11 standards,
19 you mean?

20 A And the whole system.

21 Q Would a person of ordinary skill in the
22 art back in 2001 have known whether the Wi-Fi

1 standard, at that time, included any routing based
2 on downlink signal strength or other signal
3 characteristics?

4 ATTORNEY SPIRES: Object to form.

5 A What was your question again?

6 Q Would a person of ordinary skill in the
7 art back in 2001 have known whether the Wi-Fi
8 standard, the 802.11 standard, at that time,
9 included any routing operation based on downlink
10 signal strength or other signal characteristics?

11 ATTORNEY SPIRES: Object to form.

12 A That person of skill, I don't think that
13 person of skill, as we've defined person of skill
14 in these proceedings, would know that off the top
15 of his or her head. That person of skill would
16 have to read all of the standard specifications at
17 that time.

18 And as I mentioned in my last answer, or
19 one of my previous answers, I think there is a
20 pretty good chance that it's not there at all.

21 Q And that's because the standard, at that
22 time, wasn't focused on routing, and, rather, was

1 focused on the radio link aspect?

2 A Well, even the standard today is mainly
3 focused on the radio link aspect. But I think,
4 back then, it would have been even less likely to
5 touch on topics outside of the radio link
6 specifically.

7 Q I'd like to switch back to your
8 declaration, Paragraph 42.

9 Let me know when you're there.

10 A I'm reading it.

11 I'm there.

12 Q Okay. And I think we had touched on this
13 paragraph earlier today, with respect to the
14 second transceiver.

15 But I'd like to focus on the second
16 sentence in Paragraph 42, which reads, "The first
17 transceiver receives communications using WAN
18 communication protocols from a base station (e.g.,
19 a 4G or 5G base station) and sends that
20 information to a second transceiver within the
21 device."

22 Do you see that?

1 A Yes.

2 Q And that follows from the first sentence,
3 which refers -- which reads, "The wireless system
4 and device of the '794 patent contains two
5 different transceivers."

6 Did I read that correctly?

7 A Yes.

8 Q So does the '794 patent describe a 4G or
9 5G base station?

10 A It does not, nor would it. Because the
11 '794 was pre 4G and 5G. This was simply an
12 example of what might be implemented today.

13 Q Do you recall when 4G emerged in the
14 market?

15 A 4G -- the first -- let me think about
16 this.

17 The first 3G PP release number that was
18 considered a complete implementation of LTE was
19 Release 8. And the first complete release of
20 Release 8 was December 2008.

21 So people were thinking about and
22 designing 4G within a few years prior to that.

1 And then the equipment started to hit the market
2 shortly after the start of 2009.

3 3G was established at the time of the
4 patent.

5 Q And let's turn to the 5G.

6 When was the implementation of 5G
7 completed?

8 A I believe the first version of 5G that
9 was -- the first release of 3G PP that was
10 complete enough for a equipment maker to produce
11 5G equipment was 2016 or 2017. I think it was
12 either Release 15 -- either Release 15 or
13 Release 16 in the 2015, '16, and '17 time frame.
14 That's why I think we -- the -- the world
15 generally agrees that 5G equipment started to
16 appear shortly thereafter.

17 Q So the specification, the standard for 5G
18 was around the 2015 to 2017 time frame, and the
19 actual 5G equipment appeared after the 2015 to
20 2017 time frame?

21 A Shortly thereafter. The companies
22 involved in the standards were working on these

1 standards several years in advance. So they had
2 the equipment essentially ready to deliver to
3 market.

4 And, again, 3G was fully known at -- in
5 the 2001 time frame.

6 Q I'm uploading a new exhibit into the chat,
7 which has already been marked Exhibit 1004.

8 And this is U.S. Patent Number 6,556,553.

9 And let me know when you have access,
10 Dr. Chrissan.

11 A I have it up.

12 Q Great.

13 And for shorthand purposes, I'm going to
14 refer to this exhibit as "the Palmer reference" or
15 simply "Palmer."

16 A Yes, I will understand.

17 Q Great.

18 Can you turn to Figure 2 of Palmer.

19 A Yes, give me a second.

20 Q Sure. Take your time.

21 A Does your copy -- so the copy that you
22 dropped, Palmer is ten pages. Page 1 is at scale,

1 but the remaining pages are massively blown up.

2 Is that what you see, and is that your
3 intent?

4 Q That's what I see. Unfortunately, this is
5 the copy that was downloaded from the Patent and
6 Trademark Offices site. And I think they are
7 aware of this page sizing issue but have not taken
8 steps to correct it. Unfortunately.

9 I think you can enlarge as needed to --

10 A Or shrink as needed.

11 Q Right.

12 A This one has been put through -- let me
13 see. Hold on.

14 This one looks like it's been put through
15 Adobe Acrobat. The telltale sign is that the Ds
16 are completely filled in as black, at least on
17 Page 1. Maybe that's why somebody did that.

18 Anyway, we can work from it. I'll just
19 scale it down as necessary.

20 Q Okay. So I'd like to turn to Figure 2.

21 And let me know when you're there.

22 A I'm looking at it.

1 Q Are you familiar with Figure 2 of Palmer?

2 A I've reviewed it. I think I mentioned it
3 in my declaration.

4 Q And do you have an understanding of the
5 operation based on this -- the configuration in
6 Figure 2 of Palmer?

7 ATTORNEY SPIRES: Object to form.

8 A I don't know that I can say I have an
9 understanding of the operation. I understand
10 Figure 2 to the extent Palmer describes it in
11 the -- and I opine on it in my declaration.

12 Q Okay. Let's walk through some top-level
13 interactions in Figure 2.

14 So Figure 2 depicts an Administration
15 Building 33, which is on the -- the top left if
16 you're looking at it from the rotated view; is
17 that right?

18 A Yes. Palmer describes 33 as an
19 administration building.

20 Q And Figure 2 depicts multiple remote
21 buildings, 36, one of which is exploded out into a
22 more detailed view.

1 Is that fair to say?

2 A Yes. 36 is described of one of various
3 buildings.

4 Q And Administration Building 33 includes
5 Antenna 32, correct?

6 A The central Antenna 32 may be attached to
7 the Administration Building 33. That's Line 60 of
8 Column 4.

9 Q Okay. And each of the -- strike that.

10 Each of the remote buildings, 36, includes
11 a Remote Antenna 34; is that fair to say?

12 A Yes.

13 Q And Palmer's Figure 2 depicts RF links,
14 labeled 26, between the Antenna 32 and the
15 Antenna 34; is that right?

16 A Yes.

17 Q And then turning to the remote Building 36
18 and the -- and the exploded-out detailed variant
19 of it in Figure 2 of Palmer, Figure 2 depicts
20 multiple access points, 40, within the remote
21 Building 36; is that right?

22 A Yes. In Figure 2, the expanded 36

1 includes two access points, 40.

2 Q And let's just focus on the left one as --
3 for discussion purposes.

4 So the left instance of Access Point 40
5 communicates with two portable terminal computers
6 that are labeled 20; is that right?

7 A Yes, that's what Figure 2 depicts.

8 Q And that that communication is provided
9 through the Wireless Link 26 between Access
10 Point 40 and each -- each instance of Portable
11 Terminal 20; is that right?

12 A I would say that's generally true.
13 Column 4, Line 40, says, "The radio frequency RF
14 wireless links are represented symbolically by RF
15 Links 26."

16 So the Links 26 symbolically represent
17 radio frequency links.

18 Q And those links provide data communication
19 between Access Point 40 and the Portable
20 Terminal 20, right?

21 A I think a person of skill would understand
22 that to be true.

1 Q So I'd like to walk through your
2 understanding of how data is communicated
3 throughout this system of Palmer's Figure 2.

4 I'd like to start first in the first
5 example of data transmission that originates in
6 the Administration Building 33 and destined for a
7 Portable Terminal 20 in one of the remote
8 buildings.

9 Does that make sense?

10 A So you're going to present a hypothetical
11 case of this, or we're just going to walk through
12 this or --

13 Q No.

14 Would you agree that there is data
15 communication between the Central Building 33 and
16 the Remote Building 36?

17 A We established that, yes.

18 Q Okay. And would you agree that there is
19 data communication between one of the portable
20 terminals 20 in the remote building and the
21 central building?

22 A Sorry. Can you ask that again?

1 Q Sure.

2 I'm simply asking whether we can agree
3 that there is data communication between one of
4 these portable terminals 20 in the remote building
5 and some computing platform in the administration
6 building?

7 A Yes. We can agree that that's possible,
8 and that Palmer's invention enables it.

9 Q And Palmer's invention enables it by the
10 data first being -- originating at the
11 Administration Building 33, and being transmitted
12 by the Antenna 32, to start?

13 A If, under the use case -- under the use
14 case scenario, the data is to be transmitted from
15 Administration Building 33 to one of the portable
16 terminal computer 20s, then, yes, at least as
17 depicted in Palmer, at a high level, the first
18 link is going to be 30 -- it's going to be between
19 33 -- the Administration Building 33 and the
20 Building 36, using the radio link shown.

21 Q The radio link between Antennas 32 and 34,
22 you mean?

1 A Yes.

2 Q So the data then is received by -- in that
3 use case that we're still referring to, the data
4 is then received by the Remote Antenna 34, right?

5 A Yes.

6 Q And then that data is provided to an
7 Access Point 40?

8 A As we can see in Figure 2, what happens is
9 that Antenna 34 is connected to an unmarked box in
10 the very upper left of the blown-up Building 36.

11 Palmer does not describe that box, but
12 that box does appear to be connected to a wireless
13 network -- I'm sorry. Scratch that.

14 That unmarked, undescribed box does appear
15 to be connected to a wireline network 38 to Access
16 Point 40 that is also on that wireline network.

17 And when I say "wireline," that means not
18 wireless, just cable.

19 Let's see what Palmer says about 38.

20 Wired, yeah. So not wirelines. It's a
21 wired network.

22 Building 36, may include a wired network

1 38, with a plurality of access points, and it
2 looks like multiple devices can all be connected
3 together. So it's not wireline. It's a cabled
4 network.

5 And then that would get to Access
6 Point 40, and then it would be transmitted over a
7 radio link to Portable Terminal Computer 20.

8 Q So to hopefully summarize what we've just
9 been discussing, under the use case where data is
10 to be transferred from the Administration
11 Building 33 to one of the Portable Terminals 20,
12 it takes the path of using Antenna 32 to Remote
13 Antenna 34, to Access Point 40, to Portable
14 Terminal 20; is that right?

15 ATTORNEY SPIRES: Object to form.

16 A Could you read your question again?

17 Q Sure.

18 To summarize our use case where data is
19 being transferred from the Administration
20 Building 30 to one of the portable terminals, 20,
21 it -- that data takes the path of being
22 transmitted by Antenna 32, received by Remote

1 Antenna 34, provided to Access Point 40, and then
2 provided to Portable Terminal 20?

3 ATTORNEY SPIRES: Object to form.

4 A You're leaving out a lot of details,
5 especially that middle step of how it gets from 34
6 to 40. That's -- but I think a person of skill
7 generally interpreting this would understand that
8 the data does get from Administration Building 33
9 to Portable Terminal Computer 20.

10 And it does at least -- at least part of
11 that connection is the Radio Link 26, some
12 undescribed network from Antenna 34 to Access
13 Point 40, and then a radio link from Access Point
14 40 to Portable Terminal Computer 20.

15 Q And in the opposite use case of the
16 Portable Terminal 20 sending data to the Central
17 Building 33, would it take the same path, but just
18 in the opposite direction?

19 A It probably wouldn't be the same path. It
20 would be the same general concept in reverse.

21 Q The concept being, data is transmitted
22 from Portable Terminal 20 to Access Point 40,

1 eventually makes its way to Remote Antenna 34,
2 gets transmitted by Antenna 34 to Antenna 32, and
3 then makes its way to the central Administration
4 Building 33?

5 A I think a person of skill would have that
6 general understanding.

7 Q Okay. So I'd like to focus on the data
8 link between Access Point 40 and one of the
9 portable terminals 20, and that's labeled with
10 Reference Numeral 26.

11 A Okay.

12 Q Is this wireless link between Portable
13 Terminal 20 and an Access Point 40 a wireless LAN
14 connection?

15 A (Document review.)

16 I'm reviewing Palmer. I'm almost done.

17 (Document review.)

18 Could you repeat your question?

19 Q Sure.

20 Is the wireless link between Portable
21 Terminal 20 and Access Point 40 a wireless LAN
22 connection?

1 A Within the context of Palmer and Palmer's
2 use of wireless LAN, I think -- I think that that
3 could be considered a wireless LAN connection.

4 Q And a person of ordinary skill in the art
5 would understand that connection between Portable
6 Terminal 20 and Access Point 40 in Palmer to be a
7 wireless LAN?

8 ATTORNEY SPIRES: Object to form.

9 A I'm also reviewing my declaration just
10 to...

11 (Document review.)

12 Yes, Palmer describes wireless LANs many
13 times, although, interestingly, mostly in the
14 background.

15 But -- yes. I think my answer is yes.

16 What was your question again?

17 Q Would a person of ordinary skill in the
18 art have understood that -- that the wireless
19 connection between Portable Terminal 20 and Access
20 Point 40 is a wireless LAN?

21 ATTORNEY SPIRES: Object to form.

22 A I think a person of skill would review

1 Palmer and Palmer's discussion of wireless LANs
2 and think that it applied to, for example, the
3 connection between Access Point 40 and Portable
4 Terminal Computer 20.

5 Q I'd like to turn your attention to one
6 paragraph, Paragraph 86 of your declaration.

7 A Okay. I'm there.

8 Q Do you need time to read it?

9 A I'll read it. It's not long.

10 Q This paragraph refers to Palmer's
11 discussion of performing measurements for making
12 rate or roam decisions; is that right?

13 A (Document review.)

14 Okay. What was your question?

15 Q Sure.

16 This Paragraph 86, just at a -- at least
17 at a top level, is referring to Palmer's
18 description of performing measurements for making
19 rate or roam decisions; is that fair?

20 And some of that language is taken from
21 the last few words of the paragraph.

22 A This paragraph relates to commenting on

1 something in Dr. Almeroth's report. So that's
2 what it relates to.

3 With that in mind, what was your question
4 again?

5 Q Perhaps focusing more on the second
6 sentence in Paragraph 86, as I read the paragraph,
7 this -- this -- excuse me.

8 As I read this second sentence in
9 Paragraph 86, you would agree that Palmer
10 describes the concept of performing measurements
11 for making rate or roam decisions, right?

12 A Yes. This sentence certainly has the
13 concept of performing measurements for making rate
14 or roam decisions. And then -- I think I said
15 this sentence.

16 Yeah, this sentence definitely relates to
17 the concept of performing measurements for making
18 rate or roam decisions and then discusses where
19 Palmer describes that happening.

20 Q And one option that's mentioned in the
21 second sentence of Paragraph 86 is a device in
22 Administration Building 33 performing these

1 measurements for making rate or roam decisions.

2 Is that a fair read of the second
3 sentence?

4 A Yes.

5 Q And the reference to these measurements,
6 at least based on the first sentence of
7 Paragraph 86, is the measurements of the wireless
8 network connection between Access Point 40 and
9 Portable Terminal 20; is that right?

10 A Could you restate your question?

11 Q Sure.

12 I'm just -- I'm looking at the term
13 "measurements" as used in the second sentence of
14 Paragraph 86.

15 Do you see that?

16 A Yes.

17 Q And those measurements that are referenced
18 in the second sentence of Paragraph 86 are
19 measurements of the wireless network connection
20 between Access Point 40 and Portable Terminal 20;
21 is that right?

22 ATTORNEY SPIRES: Object to form.

1 A I would want to review Palmer some, and
2 especially those statements from Dr. Almeroth,
3 before I answer. Especially because this
4 paragraph is primarily in response to something in
5 his declaration.

6 Q Well, this paragraph doesn't refer to any
7 other types of measurements, does it?

8 A Well, that's the same question, so I'll
9 give you the same answer.

10 I would at least want to review some
11 additional documentation before I answer that
12 conclusively. I believe that the measurements at
13 least had something to do with the wireless LAN.

14 Let me review Palmer.

15 (Document review.)

16 Q Perhaps I can help you out.

17 I think the relevant portion of Palmer is
18 Column 5, Lines 20 onward.

19 A Okay.

20 (Document review.)

21 I'm looking at other parts of Palmer as
22 well.

1 Q Okay.

2 A Okay. What was your question again?

3 Q So the measurements that are being --
4 well, let's turn back to Paragraph 86 of your
5 declaration, which is where we were before.

6 A Yes.

7 Q So the second sentence in Paragraph 86 of
8 your declaration refers to performing
9 measurements, right?

10 A Yes.

11 Q And those measurements are of the wireless
12 network connection between an Access Point 40 and
13 a Portable Terminal 20; is that right?

14 ATTORNEY SPIRES: Object to form.

15 A I think that many of those measurements
16 include aspects of that connection. Palmer
17 states, at Column 2, Line 7, a typical wireless
18 LAN determines whether to rate shift or roam. So,
19 clearly, Palmer has some notion of the
20 measurements being taken with respect to a
21 wireless LAN.

22 And then Column 6 talks about some of the

1 measurements. And, certainly, some of those
2 measurements would be influenced by the wireless
3 LAN link.

4 Q And that wireless LAN link is the link
5 between the Access Point 40 and the portable
6 terminal?

7 A Yes.

8 Q So returning back to Paragraph 86 of your
9 declaration again, the second sentence refers to,
10 as one option, a device in the Administration
11 Building 33 performing measurements -- performing
12 these measurements that we've been discussing; is
13 that right?

14 A Yes.

15 Q And Administration Building 33 is a
16 separate remote building from the remote
17 building 34 where the Terminal 20 is located; is
18 that right? As shown in Figure 2 of Palmer?

19 ATTORNEY SPIRES: Object to form.

20 A Did you say "Building 34"? Building 36,
21 right?

22 Q That's my fault.

1 A Could you restate --

2 Q Of course.

3 A Could you restate your question?

4 Q So -- maybe I'll simplify the question.

5 So Administration Building 33 and Remote
6 Building 36 are different buildings, right?

7 A In this Figure 2 depiction, yes.

8 Q So the Terminal 20 is located in the
9 Remote Building 36, which is remote from the
10 Administration Building 33, correct?

11 A Yes. Same answer. According to Figure 2
12 topology, they could appear to be in different
13 buildings.

14 How is your line of questioning looking?

15 Q I'm happy to take a break now if it
16 would --

17 A It's your --

18 ATTORNEY YAM: Let's go ahead and do that.

19 THE WITNESS: Okay. Off the record?

20 (Recess.)

21 BY ATTORNEY YAM:

22 Q Welcome back, Dr. Chrissan.

1 A Thank you. Welcome back.

2 Q Did you speak with anyone during the
3 break?

4 A No, I did not.

5 Q Before we left on our break, we were
6 discussing Paragraph 86 of your declaration.

7 A Yes.

8 Q And I believe we had -- both on the same
9 page that -- the second paragraph of Paragraph 86
10 of your declaration refers to Palmer describing a
11 device in Administration Building 33 performing
12 measurements for making rate or roam decisions; is
13 that right?

14 A Could you restate that question?

15 Q Sure. Let's just turn to Paragraph 86.

16 Paragraph 86 refers to performing
17 measurements for making rate or roam decisions, in
18 the second sentence, right?

19 A I'm reading Paragraph 86.

20 (Document review.)

21 Okay. Sorry I have to make you restate
22 your question again. Go ahead.

1 Q No problem.

2 So based on the second sentence of
3 Paragraph 86 of your declaration, Palmer describes
4 performing measurements for making rate or roam
5 decisions, right?

6 A Palmer does describe that.

7 Q And as we were discussing prior to the
8 break, those measurements at least encompass the
9 wireless link between Portable Terminal 20 and the
10 Access Point 40; is that right?

11 A I think the wording I used is that they
12 could be related to the wireless LAN link.

13 Q Okay. And Paragraph 86 of your
14 declaration, second sentence, refers to, "A device
15 in Administration Building 33 (in Figure 2)
16 performing these measurements."

17 Do you see that?

18 A Yes, I see that. That's what I wrote.

19 Q How would a device in the Administration
20 Building 33 perform measurements of the wireless
21 link between Portable Terminal 20 and Access
22 Point 40, which is located in a different

1 building?

2 A Well, let's start what Palmer says, which
3 goes further back in the context here of what
4 Dr. -- what petitioner's expert, Dr. Almeroth,
5 said. But we won't go back to his report. We
6 will simply work from Palmer. I'm going to search
7 through Palmer right now.

8 (Document review.)

9 Okay. I think we're focused on Column 5
10 at Line 30. "This determination could be made by
11 the wireless communication device 20 having a
12 processor and a memory, with a processor executing
13 a stored program for carrying out the
14 methods/steps discussed below. Alternatively, the
15 method steps may be performed centrally, for
16 example, by the network or a central host
17 processor."

18 Let me make sure I'm in the right place.

19 Yeah, this is where -- Column 5, starting
20 at Line 10, or even Line 20, is where it starts to
21 talk about transmitting data. Connection should
22 be transparent as the Wireless Communication

1 Device 20 roams from cell to cell or rate shifts.

2 So it's Palmer that says the determination
3 is made either in Wireless Communication Device 20
4 or performed centrally, for example, by the
5 network or a central host processor.

6 So then if we look at where Palmer depicts
7 a network and a central host processor, that would
8 be back in Figure 1, where there is a network 14
9 and a central host processor 12. I think that's
10 what Palmer called 12. Yeah, Palmer calls 12, in
11 Figure 1, the central host processor.

12 And then relating Figure 1 to Figure 2,
13 the central host processor in Figure 1 would be in
14 the administration building in Figure 2. If
15 anything, it would be above one of the access
16 points 16 or 40.

17 So based on that, you could ask the
18 same -- you could ask the same question about
19 Administration Building 33 or Central Processing
20 Unit 12 in Figure 1 that Palmer explicitly
21 describes.

22 But I think the answer to that is, those

1 units, any unit qualifying as network or central
2 host processor in Palmer's sentence here, it's
3 understood that those would not be directly
4 measuring the Radio Signal 26, but they could
5 collect measurements from Portable Terminal
6 Computer 20 and potentially take other
7 measurements related to the connection quality and
8 then use those measurements and possibly generate
9 other measurements in some algorithm that was
10 making a choice of rate versus roam.

11 So the answer to my question mostly flips
12 it back at Palmer. Palmer is the one that
13 describes where the measurements and processing of
14 the measurements can occur. And I'm simply
15 restating that in light of a statement that
16 petitioner's expert made.

17 Q And your previous answer applies both to
18 the Figure 1 and Figure 2 embodiments of Palmer?

19 A I think so. Let me clarify.

20 Palmer explicitly mentions portable
21 terminal computers, network, and central host
22 processor. Those would be 20 -- those would be

1 indexed as 2014 and 12 in Figure 1 respectively.

2 I think, if you were to apply Figure 1 to
3 Figure 2, certainly, portable terminal computer is
4 still 20. The network and central host processor
5 would likely be 33. Possibly, it could be that
6 unmarked box in Palmer, but Palmer doesn't
7 describe that at all, so I assume it's not there
8 and that's irrelevant.

9 So, yeah, I would say that my analysis
10 applies similarly for Figure 1 and Figure 2,
11 whereby the measuring and processing in Figure 2
12 is either done in portable terminal computer 20 or
13 Administration Building 33.

14 Q And it's done in Administration
15 Building 33 by that building receiving the
16 measurement information from Portable Terminal 20?

17 A That is one way -- that is one aspect that
18 it could use, yes.

19 Q I'd like to turn back to your declaration
20 and turn to Paragraph 88.

21 A Yes, I am there.

22 Q Great.

1 And Paragraph 88 of your declaration
2 references the parallel District Court litigation
3 involving the '794 patent, correct?

4 A Yes, it does.

5 Q And starting at Line 4 of Paragraph 88,
6 there is references to petitioner's expert in that
7 related litigation making certain assertions. And
8 the following sentence also refers to petitioner's
9 expert.

10 Do you see that?

11 A Yes, I see that.

12 Q Do you know who that expert is?

13 A I read those exhibits. I believe it was
14 Dr. Andrews.

15 Q So it was not Dr. Almeroth, who is the --
16 Verizon's expert in the IPR, right?

17 A I believe that's correct.

18 Q I'd like to switch gears to a new exhibit,
19 which I will upload in the chat.

20 A I have it. I will download it.

21 Q For the record, this exhibit has already
22 been marked as Exhibit 1005, and is U.S. Patent

1 Number 6,816,706.

2 A I have it up.

3 Q Great.

4 And I'll be referring to Exhibit 1005 as
5 "the Hohnstein reference" or simply "Hohnstein."

6 Sound good?

7 A Yes.

8 Q Great.

9 Dr. Chrissan, are you familiar with
10 Hohnstein?

11 A Yes, I am. I discuss it in my
12 declaration.

13 Q Can you turn to Figure 1 of Hohnstein.

14 A Yes.

15 Q Figure 1 of Hohnstein depicts various
16 distribution points that are labeled with
17 Reference Numeral 40; is that correct?

18 A Yes, Hohnstein describes distribution
19 points indexed as 40.

20 Q And taking the one instance of
21 distribution point 40 that's on the lower left
22 corner of Figure 1, that particular instance of

1 distribution point 40 communicates wirelessly with
2 multiple access points that are labeled as
3 Reference Numeral 22; is that correct?

4 A Yes, that's correct.

5 Q And that wireless link between
6 distribution point 40 and each access point 22 is
7 indicated by a zigzag indexed as Reference Numeral
8 42, correct?

9 A You're still talking about that one access
10 point on the lower left?

11 Q Yes. We can focus on that one.

12 A Right.

13 I'm seeing -- from the access point on the
14 lower left, there is a lightning bolt 42 at about
15 4:30, if you look at it as a clock; another
16 lightning bolt at about 7:30; and another
17 lightning bolt at about 9:00 P.M., all going to
18 access points 22.

19 Q I think we were -- had some slight
20 confusion.

21 I was referring to distribution point 40,
22 and not access point 22.

1 A So let's go back. What was your original
2 question?

3 Q Sure.

4 So let's focus on the instance of
5 distribution point 40 on the lower left portion.

6 A Right.

7 Q So that is -- that distribution point 40
8 communicates wirelessly with multiple access
9 points 22, right?

10 A I'm seeing three of them.

11 Q Correct.

12 And there are lightning bolt, as you
13 termed it, symbols between those three instances
14 of access point 22 and distribution point 40,
15 correct?

16 A Correct.

17 Q And those lightning bolts are labeled --
18 at least two out of the three are labeled using
19 Reference Numeral 42, correct?

20 A Yes.

21 Q So is it accurate to say that that
22 distribution point 40 communicates wirelessly with

1 multiple access points 22?

2 A Yes, it does. That is what's depicted
3 here.

4 Q Can you turn to Figure 2 of Hohnstein.

5 A Okay.

6 Q So in Figure 2 of Hohnstein, the big block
7 of components in the middle, is one instance of
8 distribution point 40; is that correct?

9 A That's my understanding of what that 40
10 means on the left side of the diagram, a little
11 bit lower than the middle, with the arrow.

12 Q Right.

13 A I think Hohnstein describes Figure 2 as a
14 blowup of a distribution point 40, but let's see.

15 Yeah, Hohnstein, at Column 3, Line 36,
16 says, "Figure 2 is a block diagram of a
17 distribution point."

18 Q Okay. So we can agree that Figure 2 is
19 distribution point 40 or one example of a
20 distribution point 40?

21 A Yes.

22 Q Okay. And following up on our discussion

1 on -- with respect to Figure 1, there are multiple
2 instances in Figure 2 here of access point 22; is
3 that right?

4 A Yes. I see four blocks labeled 22.

5 Q So there is one of them that's -- we'll
6 call it like 9:00, of the contribution point 40.
7 And there is another one that's, say, 11:00, with
8 respect to the distribution point 40.

9 A Yes. I know which ones you're talking
10 about.

11 Q Great.

12 And there's lightning bolts that are
13 labeled 42 connecting each of those two instances
14 of Access Point 40 -- excuse me -- each instance
15 of access point 22 to the distribution point 40;
16 is that correct?

17 A Yes.

18 Q And those lightning bolts 42 represent a
19 wireless network connection, correct?

20 A Yes, that's correct. That's what's
21 described in Column 8 at Line 39 through 41.

22 It says, "In another configuration, front

1 and interface 100 connects to antenna 102 for
2 establishing radio link 42 with access point 22."

3 Q And as shown in Figure 2, there's two
4 examples of that configuration, right, the line
5 9:00 and the one at 11:00?

6 A Yes.

7 Q So that means that the distribution point
8 40 shown in Figure 2 can communicate with --
9 communicate wirelessly with both of those access
10 points 22 located at 9:00 and 11:00, right?

11 A The answer is a qualified, yes, it can,
12 but it uses separate antennas and different front
13 ends. The separate antennas being two instances
14 of the 102.

15 Q But it does?

16 A I didn't understand that.

17 Q Let me rephrase again.

18 Putting aside the separate antennas, from
19 a top level, distribution point 40 communicates
20 wirelessly with the instance of access point 22 at
21 9:00 and the instance of 22 at 11:00, right?

22 A Same answer. My answer was a qualified,

1 yes, with the qualifications I stated before.

2 Q Okay. I'd like to turn to Paragraph 107
3 of your declaration. And that is a longer
4 paragraph, so if you'd like the opportunity to
5 read it first, just let me know.

6 A (Document review.)

7 I have read my Paragraph 107.

8 Q Great.

9 I'd like to turn to the second half of
10 that paragraph, which is on Page Number 16.

11 A Okay.

12 Q And after that block quote and the
13 citation, there is a reference to -- the first
14 passage emphasizes that the links are
15 point-to-point microwave lengths at 5.8, 6, 11,
16 18, and 23 and 24 GHZ, gigahertz.

17 Do you see that?

18 A Yes.

19 Q And those frequencies that are listed
20 there and I just mentioned, they are taken from
21 Hohnstein at Column 16, Lines 15 through 21, which
22 you quoted further up in the paragraph, correct?

1 A Yes.

2 Q Now, you refer to these links as
3 point-to-point microwave links.

4 Hohnstein doesn't describe these links as
5 microwave links, does it?

6 A I would need to read all of Hohnstein, but
7 to make it a shorter answer, 5.8 -- I'm pretty
8 sure 5.8 gigahertz is considered microwave. I'm
9 pretty sure 6, 11, 18, 23, and 24 are considered
10 microwave, especially in light of licensed bands
11 for DS3/OCS transmission, and ATM25 transmission.

12 Q So you're familiar with these -- these
13 license bands?

14 A Yes, I am somewhat familiar with those
15 license bands, and with DS3 OCS transmission, and
16 ATM25 transmission. That's -- that's a particular
17 standard for a -- the standard -- asynchronous
18 transfer mode, the standard ATM that's used.
19 Sorry.

20 Yes, I'm somewhat familiar with those.

21 Plus, as I mentioned throughout my
22 declaration, Hohnstein describes his -- Hohnstein

1 describes those links and depicts those links as
2 point to point.

3 Q But it doesn't specifically refer to those
4 as microwave links, right?

5 ATTORNEY SPIRES: Object to form.

6 A Searching Hohnstein, I'm not seeing the
7 word "microwave." That would be, from my
8 understanding, that those are microwave
9 frequencies and that Hohnstein teaches
10 point-to-point links and knowledge of those
11 transmission modes, DS3, OCS and ATM25.

12 Q So what is the wireless transmission
13 distance for a DS3 OCS microwave link?

14 A I don't know the range, but it can be -- I
15 think it can be on the order of a mile.

16 Q Do you know the wireless transmission
17 range for the ATM25 microwave link?

18 A I don't know the range as I sit here, but,
19 again, I think that it could go a mile.

20 Q I'd like to turn to Paragraph 96 of your
21 declaration.

22 A I'm there.

1 Q And at a top level, Paragraph 96
2 references a concept known as a mesh network,
3 correct?

4 A Yes, that's correct.

5 Q And you provide a definition from the IBM
6 dictionary for mesh network.

7 Do you see that?

8 A Yes, I did.

9 Q So according to that definition, a mesh
10 network has at least two nodes with two or more
11 paths between them.

12 Is that a fair characterization, based on
13 the definition?

14 A Yes.

15 Q Are those paths between the nodes
16 considered local area network paths or wide area
17 network paths?

18 ATTORNEY SPIRES: Object to form.

19 A I believe a mesh network is agnostic in
20 that regard.

21 Q And what do you mean by a mesh network is
22 "agnostic"?

1 A A mesh network is a topology. You could
2 have -- independent of whether a network is a LAN
3 or a WAN or something else, you could configure it
4 in a mesh network, or you could configure it using
5 some other topology like hub and spoke.

6 Q But an individual path between two nodes
7 is a -- a network path, correct?

8 A Yes. If network path is interpreted as a
9 path within the network, then, yes.

10 Q Okay. Would that network path be a wide
11 area path or a local area path?

12 A My answer is the same as before. It would
13 depend on the actual network.

14 My declaration describes wide area
15 networks and local area networks, and part of that
16 description is geometry and topology. So I think
17 that would play into whether a mesh network was a
18 LAN or a WAN or something else.

19 Again, a mesh -- a mesh network is simply
20 a topology to be distinguished from, for example,
21 hub and spoke. That's independent of WAN or LAN.
22 Even it -- it can be even independent of wireless

1 or not. It's a general topology term.

2 Q I'd like to switch gears to another
3 exhibit, which I am uploading in the chat and
4 which has already been marked as Exhibit 1006, and
5 is U.S. Patent Number 5,790,536.

6 A I have it up.

7 Q And for discussion today, I'll simply
8 refer to this as "the Mahany reference" or
9 "Mahany."

10 Does that work for you?

11 A Yes, I will understand.

12 Q Great.

13 Are you familiar with Mahany?

14 A Yes, I am.

15 Q Can you turn to Figure 48 of Mahany.

16 And let me know when you're there.

17 A Okay. I'm there.

18 Q And are you familiar with Figure 48 of
19 Mahany?

20 A I am. I believe I reference it in my
21 declaration.

22 Q I believe you do as well.

1 So Figure 48 of Mahany depicts multiple
2 components, and I'd like to focus on several of
3 them.

4 There is one box on the -- left half of
5 the figure which is labeled, "LAN Transceiver
6 Circuit," and the reference here is 4803.

7 Do you see that?

8 A Yes.

9 Q And then there is an antenna that
10 protrudes from that LAN transceiver circuit and is
11 labeled 4805.

12 Do you see that?

13 A Yes.

14 Q Would it be fair to say that the 4803 and
15 4805 are a wireless LAN transceiver?

16 A Yes, including its antenna. The antenna
17 is typically configured part of -- the antenna is
18 typically considered part of the -- well, the
19 antenna is sometimes considered part of the
20 transceiver.

21 But in any case, yeah, 4803 and 4805 is
22 transceiver circuitry and associated antenna.

1 That's in Mahany at Column 75, Line 12.

2 I apologize I couldn't find that faster,
3 but for some reason, my search -- my search didn't
4 jump me to 4805 in the written description.

5 Q I see it in Column 75, though. I see what
6 you're referring to. Okay.

7 And then on the right side of Figure 48,
8 there is a box labeled, "WAN Transceiver Circuit"
9 and Reference Numeral 4807. And that's connected
10 to an antenna that's labeled 4809.

11 Do you see that?

12 A Right. That's also in that same
13 paragraph. Another transceiver, a transceiver
14 circuit 4807, and associated antenna 4809 might be
15 added, for example, to support WAN or cellular
16 communications.

17 Q Is it fair to say that 4807 and 4809
18 together make up a WAN transceiver?

19 A That is what Mahany depicts.

20 Q Does the wireless WAN transceiver shown in
21 Mahany's Figure 48 communicate using a wide area
22 wireless communication protocol?

1 A I would need to assess that in context. I
2 think this is along the lines of what we discussed
3 quite a ways back in this deposition.

4 Do you have a particular scenario or
5 description or context that you'd like to analyze?

6 Q Do you need more context beyond Mahany's
7 Figure 48 and the accompanying description and
8 specification to determine whether or not that WAN
9 transceiver communicates using a wide area
10 wireless communication protocol?

11 A Well, yes. Mahany has a particular
12 description of WANs. I discussed Mahany's
13 description of WAN. Let me go back in my
14 declaration. Let's see.

15 (Document review.)

16 Yeah, my -- my reproduction of Mahany's
17 understanding of WAN is in my declaration at
18 Paragraph 122, Page 68 and 69. I won't read the
19 whole thing.

20 I'll say, "Moreover, WANs require
21 relatively higher transmission power, a negative
22 factor in the ever-increasing need for power

1 savings associated with portable transceiving
2 devices. As a result, WANs are generally so slow
3 and expensive, and simply do not provide an
4 effective overall solution."

5 So then I go on and say, "Mahany
6 disparages wireless WANs -- wireless WANs, and
7 describes them as point-to-point communication
8 links," and then I list a couple of other things.

9 So could a person of skill interpret that,
10 Mahany's WAN uses some set of rules specialized to
11 Mahany's WAN? I can't answer that "yes" or "no."
12 I'd have to look at a specific design and system.
13 I suppose it's possible.

14 But as I state in my declaration, for at
15 least these reasons, Mahany does not disclose a
16 WAN or a WWAN protocol as recited in the
17 challenged claims.

18 Q So turning to Paragraph 1 -- strike that.

19 Turning to Paragraph 124 of your
20 declaration.

21 A Okay.

22 Q In the second sentence, you note that --

1 you state that you note, "The WAN transceiver is
2 optional, given the dotted box in Figure 48."

3 Do you see that language?

4 A Yes.

5 Q Is the only reason you believe the WAN
6 transceiver in Mahany's Figure 48 is optional is
7 because of the dotted box?

8 A That's not the only reason. We were
9 looking at Column 75, and it says, at Line 14, "In
10 addition, another transceiver, a transceiver
11 circuit 4807 and associated antenna 4809 might be
12 added."

13 So that's certainly not required. And in
14 light of Mahany's other discussions about WANs,
15 that's why I say that.

16 And I discussed WAN with respect to some
17 of this prior art, and they -- Mahany especially
18 says you only use a WAN if you absolutely have to.
19 Because you can't -- because you're out of the
20 range of the LAN. Palmer has something about that
21 too. I describe that somewhere in this
22 declaration.

1 Q So Column 75 of Mahany refers to having
2 this WAN transceiver to support WAN or cellular
3 communications.

4 Do you see that?

5 A Yes.

6 Q So by including the WAN transceiver, this
7 additional functionality of supporting WAN or
8 cellular communications is provided for the
9 device; is that right?

10 A I think that's literally what Mahany is
11 saying here.

12 Q And even if it is optional, there is a
13 stated benefit of providing the WAN transceiver
14 component, right?

15 ATTORNEY SPIRES: Object to form.

16 A In the topology, we must consider that in
17 the context of Mahany. Now, Mahany is saying
18 there is a benefit to adding it. It gives you
19 long-distance connectivity when you're out of
20 range of short-distance connectivity. According
21 to Mahany, there is no other use.

22 Q I'd like to switch to another exhibit,

1 which I will upload to the chat.

2 THE WITNESS: We are going on an hour, I
3 think. How do you want to time it out? I will
4 want to take a longer break.

5 ATTORNEY YAM: Yeah, let's maybe take a
6 five-minute break just to -- I'm -- I think I'm
7 mostly done, but, you know, maybe it's easier to
8 just take five minutes and then regroup.

9 THE WITNESS: Okay. Let's go off the
10 record.

11 (Recess.)

12 BY ATTORNEY YAM:

13 Q Welcome back, Dr. Chrissan.

14 A Thank you. Welcome back.

15 Q Did you speak with anyone during the
16 break?

17 A I did not.

18 Q All right. I'm uploading another exhibit
19 into the chat. This exhibit is already marked
20 Exhibit 1007 and is U.S. Patent Number 5,722,051.

21 A I have it up.

22 Q Great.

1 And I'll refer to this exhibit as the
2 Agrawal reference or just Agrawal.

3 Sound good?

4 A Yes.

5 Q Are you familiar with Agrawal?

6 A Yes. I discuss it starting on -- at least
7 starting on Page 73 of my declaration.

8 Q I'd like to turn to Column 5 of Agrawal.

9 A Yes, I'm there.

10 Q Great.

11 In Column 5, Line 24 onwards, there is --
12 Agrawal refers to receiver that monitors received
13 signal strength and the average WER.

14 Do you see that?

15 A Yes.

16 Q Are you familiar with this portion of
17 Agrawal?

18 A I have read all of Agrawal, so I've at
19 least read through this once.

20 Q So Column 5, Lines 25, again, refer to,
21 "Monitoring received signal strength."

22 And then later, right after that, it

1 refers to a connection between a transmitter and a
2 receiver; is that right?

3 A Yes.

4 Q And then following on with that same
5 sentence, Agrawal refers to, "The transmitter
6 using the monitored signal strength for setting
7 the power and encoding levels."

8 Is that right?

9 A Let me read a little bigger chunk of
10 Agrawal in context.

11 Q Sure.

12 A (Document review.)

13 I'm done reviewing Agrawal.

14 Let me skim through my declaration, if I
15 may, about what I say --

16 Q Sure.

17 A -- about Agrawal.

18 Q I believe that's in Paragraph 131 onward.

19 A Yes. Yeah, I'm simply reading my
20 Paragraph 131.

21 (Document review.)

22 Okay. Let's come back to the specific

1 point of Agrawal, and please restate your
2 question.

3 Q Sure.

4 And I believe we were on Column 5,
5 Lines 26 onward of Agrawal.

6 And let me re-ask my question.

7 A All right. Let me read 26 to 35.

8 I have to start at Line 17 of Column 5 for
9 context. I'm reading starting there.

10 (Document review.)

11 Okay. I'm not 100 percent locked in to
12 what Agrawal is describing here, but let's give it
13 a shot.

14 Q Okay. So Agrawal refers to the receiver
15 monitoring received signal strength; is that
16 right? I believe that's at Column 5, Lines 24
17 through 25.

18 A Right.

19 "A receiver periodically monitors the
20 received signal strength and the average WER,
21 error rate."

22 Yes.

1 Q And the following sentence, starting at
2 Line 26, "The transmitter uses that monitored
3 signal strength to set power and encoding levels";
4 is that right?

5 A (Document review.)

6 Yes.

7 Q Was that your full answer, or are you
8 still reading?

9 A Both. Please ask -- I mean, the statement
10 literally says what it says. I think that that
11 answers your question, but give me your question
12 again.

13 Q I think you answered it. I wasn't sure
14 you -- whether you had something more to say.

15 A Yeah. There was -- the reason I'm
16 pausing, it just -- I understand that this -- I
17 understand these complicated communication theory
18 discussions, but sometimes I have to read multiple
19 times to understand which transceiver and which
20 receiver they're talking about, and exactly what's
21 going on.

22 And I had to read even further down beyond

1 Line 35 to try to understand what Mahany was
2 talking about here.

3 But, anyway, I think your question was
4 simply -- I think your question simply reiterated
5 what Mahany states pointblank at Line 24 of
6 Column 5, where Mahany says, "During a connection,
7 the receiver periodically monitors the received
8 signal strength and the average WER. When a
9 connection between a transmitter and a receiver is
10 established, the transmitter uses the monitored
11 signal strength and the WER error rate on the
12 channel between the two for setting the power and
13 the encoding levels."

14 There is still some ambiguity here, that
15 somehow the information monitored at the receiver
16 has to get back to the transmitter, if that's what
17 they're talking about. It's a little ambiguous,
18 but there is a limited use case in the following
19 paragraph that kind of describes that as well.

20 Q Yeah, let's move to that next paragraph
21 because I think that may shed some light.

22 And I think -- correct me if I'm wrong --

1 that you may be referring to Lines 42 of Column 5,
2 which reads that, "The mobile unit advantageously
3 informs the base station of the drop in the
4 channel quality, and the base station changes the
5 power level and/or the encoding level based on
6 this feedback."

7 A Yeah, Mahany describes that it's -- it's
8 possible, as described by Mahany.

9 Q Did you mean Agrawal?

10 A Sorry, Agrawal. You're right.

11 Q Okay. So Agrawal discloses that a
12 receiver monitors received signal strengths,
13 informs the transmitter of this monitor level, and
14 the transmitter changes the encoding level based
15 on that monitoring information; is that right?

16 A Within the scope of Agrawal, Agrawal does
17 discuss that. That's what this paragraph is
18 talking about.

19 ATTORNEY YAM: I think I'm done with my
20 questions. So I pass the witness. Thank you for
21 your time, Dr. Chrissan.

22 ATTORNEY SPIRES: I don't have any

1 questions, so everyone can enjoy your Friday.

2 (Time noted: 1:00 P.M. PST)

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

ACKNOWLEDGMENT OF DEPONENT

I, DOUGLAS A. CHRISSAN, PH.D., do hereby
acknowledge that I have read and examined the
foregoing testimony and the same is a true,
correct, and complete transcription of the
testimony given by me and any corrections appear
on the attached errata sheet signed by me.

(SIGNATURE)

(DATE)

1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

2 I, Anita M. Trombetta, Certified Reporter
3 and Notary Public within and for the State of New
4 York do hereby certify: That DOUGLAS A. CHRISSAN,
5 PH.D., the witness whose deposition is
6 hereinbefore set forth, was duly sworn by me
7 before the commencement of such deposition and
8 that such deposition was taken before me and is a
9 true record of the testimony given by such
10 Witness.

11 I further certify that the adverse party,
12 GENERAL ACCESS SOLUTIONS, LTD., was represented by
13 counsel at the
14 Deposition.

15 I further certify that the deposition of
16 DOUGLAS A. CHRISSAN, PH.D., occurred virtually via
17 Zoom on Friday, July 26, 2024, commencing at
18 8:02 A.M. to 1:00 P.M.

19
20
21
22

1 I further certify that I am not related to
2 Any of the parties to this action by blood or
3 marriage, I am not employed by or an attorney to
4 any of the parties to this action, and that I am
5 in no way interested, financially or otherwise, in
6 the outcome of this matter.

7
8 IN WITNESS WHEREOF, I have hereunto set my
9 Hand this 31st day of July, 2024.

10
11 
12 _____

13 NOTARY PUBLIC IN AND FOR THE STATE OF NEW YORK
14
15
16
17
18
19
20
21
22

A			
a-r-d-i-s	74:5, 74:13,	actually	60:10, 62:5,
39:9	75:1, 75:12,	34:18, 47:16,	66:4, 71:22,
ability	75:13, 75:22,	60:4	74:16, 77:16,
5:7	76:8, 76:13,	added	79:4, 82:2,
able	76:21, 77:6,	23:5, 105:15,	83:9, 85:22,
9:13, 36:22	77:19, 78:3,	108:12	97:17, 100:19,
about	80:8, 80:20,	adding	102:19, 111:20,
4:15, 7:6,	82:12, 83:5,	109:18	114:12
9:18, 10:9,	86:10, 86:21,	addition	agnostic
12:11, 12:20,	88:15, 93:2,	49:2, 108:10	101:19, 101:22
13:12, 16:14,	93:6, 93:9,	additional	ago
21:20, 26:7,	93:13, 93:18,	42:11, 58:5,	61:5
26:8, 26:13,	93:22, 94:8,	81:11, 109:7	agrawal
30:1, 34:19,	94:14, 95:1,	administration	111:2, 111:5,
46:20, 47:2,	96:2, 96:14,	68:14, 68:19,	111:8, 111:12,
48:9, 48:11,	96:15, 97:2,	69:4, 69:7,	111:17, 111:18,
53:1, 61:1,	97:9, 97:20,	71:6, 72:5,	112:5, 112:10,
64:15, 64:21,	119:12	72:11, 72:15,	112:13, 112:17,
73:19, 82:22,	accessible	72:19, 74:10,	113:1, 113:5,
87:21, 88:18,	9:17	74:19, 75:8,	113:12, 113:14,
93:9, 93:14,	accessing	76:3, 79:22,	116:9, 116:10,
93:16, 93:17,	10:2, 10:13	83:10, 83:15,	116:11, 116:16
96:10, 108:14,	accommodate	84:5, 84:10,	agree
108:20, 112:15,	7:9	85:11, 86:15,	36:2, 37:5,
112:17, 114:20,	accompanying	86:19, 88:14,	40:5, 52:19,
115:2, 115:17,	45:8, 54:3,	88:19, 90:13,	55:9, 71:14,
116:18	106:7	90:14	71:18, 72:2,
above	according	adobe	72:7, 79:9,
88:15	36:21, 39:18,	67:15	95:18
absolutely	84:11, 101:9,	advance	agreed
108:18	109:20	66:1	8:7
accept	accurate	advanced	agreeing
22:7	5:3, 6:9,	39:9, 44:10	36:6
access	26:19, 49:16,	advantageously	agrees
1:8, 2:12,	94:21	116:2	65:15
9:10, 27:8,	accurately	adverse	ahead
27:16, 27:17,	5:8, 21:13	119:11	35:2, 53:11,
28:2, 29:3,	acknowledge	after	84:18, 85:22
30:5, 30:9,	118:3	23:6, 49:14,	algorithm
46:17, 46:21,	acknowledgment	65:2, 65:19,	89:9
47:13, 48:3,	118:1	98:12, 111:22	all
48:12, 66:9,	acrobat	again	7:9, 12:9,
69:20, 70:1,	67:15	7:16, 24:19,	13:14, 16:2,
70:4, 70:9,	action	27:22, 31:13,	16:8, 33:11,
70:19, 73:7,	120:2, 120:4	33:5, 34:15,	43:22, 46:4,
73:15, 74:1,	actual	38:6, 42:16,	52:7, 52:16,
	48:17, 65:19,	50:8, 52:16,	62:16, 62:20,
	102:13	56:8, 59:17,	74:2, 90:7,

93:17, 99:6, 110:18, 111:18, 113:7 alleged 11:7 almeroth 81:2, 87:4, 91:15 almeroth's 79:1 almost 16:1, 31:11, 76:16 along 106:2 already 7:10, 13:21, 16:6, 19:8, 25:10, 30:15, 66:7, 91:21, 103:4, 110:19 also 4:12, 6:1, 6:8, 7:6, 11:14, 18:20, 30:11, 38:17, 45:19, 46:18, 51:15, 52:13, 54:4, 55:15, 55:16, 73:16, 77:9, 91:8, 105:12 alternatively 87:14 although 77:13 ambiguity 5:17, 115:14 ambiguous 21:19, 115:17 analogue 38:12 analysis 40:8, 42:8, 43:1, 43:6, 90:9 analyze 33:18, 34:4, 41:13, 106:5 andrews 91:14	anita 1:21, 119:2 another 27:7, 93:15, 93:16, 96:7, 96:22, 103:2, 105:13, 108:10, 109:22, 110:18 answer 5:8, 17:15, 18:3, 33:5, 33:6, 33:16, 33:20, 34:2, 34:5, 37:11, 41:14, 42:7, 42:9, 42:22, 44:6, 44:14, 48:18, 52:22, 56:22, 57:5, 59:22, 60:18, 60:19, 61:2, 61:3, 62:18, 77:15, 81:3, 81:9, 81:11, 84:11, 88:22, 89:11, 89:17, 97:11, 97:22, 99:7, 102:12, 107:11, 114:7 answered 42:22, 114:13 answering 33:1 answers 5:3, 6:14, 38:4, 38:5, 47:21, 62:19, 114:11 antenna 69:5, 69:6, 69:11, 69:14, 69:15, 72:12, 73:4, 73:9, 74:12, 74:13, 74:22, 75:1, 75:12, 76:1, 76:2, 97:1, 104:9, 104:16,	104:17, 104:19, 104:22, 105:10, 105:14, 108:11 antennas 72:21, 97:12, 97:13, 97:18 any 5:2, 5:6, 5:20, 9:1, 9:4, 9:10, 10:2, 13:8, 15:9, 17:6, 17:7, 17:12, 17:13, 18:9, 19:20, 20:19, 22:6, 23:14, 23:21, 24:12, 24:21, 27:10, 40:13, 41:13, 41:15, 41:21, 42:4, 42:13, 42:17, 47:17, 48:1, 57:8, 61:9, 62:1, 62:9, 81:6, 89:1, 104:21, 116:22, 118:6, 120:2, 120:4 anybody 35:9, 53:17 anyone 7:19, 15:17, 16:18, 85:2, 110:15 anything 10:13, 15:1, 15:9, 21:19, 88:15 anyway 67:18, 115:3 anywhere 48:11 apologies 23:8 apologize 105:2 appeal 1:3 appear 65:16, 73:12,	73:14, 84:12, 118:6 appeared 65:19 applicant 23:2 applied 18:1, 78:2 applies 89:17, 90:10 apply 38:18, 90:2 approximately 4:16, 25:21 architecture 35:19, 45:7, 54:2, 54:11, 54:16, 55:6, 55:12, 55:14, 56:14 ardis 39:8, 44:9, 44:12 area 31:4, 32:4, 32:11, 32:15, 33:8, 33:14, 39:17, 41:11, 41:16, 41:22, 42:5, 42:14, 42:18, 42:19, 101:16, 102:11, 102:14, 102:15, 105:21, 106:9 areas 46:11, 46:20 around 11:10, 65:18 array 27:18, 28:3, 28:8, 29:4, 29:7, 30:2, 30:6, 30:9, 30:10 arrow 30:4, 95:11 arrows 30:20, 31:22,
--	---	--	--

33:13 art 11:7, 11:16, 12:3, 22:21, 29:20, 32:12, 35:18, 40:4, 40:12, 47:15, 52:8, 52:14, 52:17, 60:6, 61:22, 62:7, 77:4, 77:18, 108:17 aside 97:18 asking 4:12, 5:15, 6:12, 11:5, 12:1, 17:16, 72:2 aspect 63:1, 63:3, 90:17 aspects 27:12, 82:16 assertions 91:7 assess 106:1 assessment 26:18, 26:20 associated 104:22, 105:14, 107:1, 108:11 assume 6:3, 8:4, 23:6, 26:11, 36:16, 36:17, 90:7 asynchronous 99:17 atm 99:11, 99:16, 99:18, 100:11, 100:17 attached 69:6, 118:7 attention 35:14, 53:20, 78:5	attorney 3:6, 4:7, 17:9, 24:8, 24:17, 25:2, 27:4, 28:12, 28:22, 31:6, 32:17, 33:4, 34:18, 35:2, 35:5, 37:10, 38:2, 42:21, 45:16, 50:11, 53:10, 53:14, 60:9, 60:16, 61:12, 62:4, 62:11, 68:7, 74:15, 75:3, 77:8, 77:21, 80:22, 82:14, 83:19, 84:18, 84:21, 100:5, 101:18, 109:15, 110:5, 110:12, 116:19, 116:22, 120:3 available 17:22 avenue 2:7 average 111:13, 113:20, 115:8 aware 41:15, 41:21, 42:4, 42:9, 42:13, 42:18, 43:3, 43:4, 59:14, 59:19, 60:13, 61:8, 67:7 away 9:18, 22:20, 23:12, 23:16, 23:22, 24:7, 24:10, 24:13, 24:22, 25:6 B back 18:22, 34:6,	35:6, 35:11, 43:7, 49:3, 53:15, 58:13, 61:22, 62:7, 63:4, 63:7, 82:4, 83:8, 84:22, 85:1, 87:3, 87:5, 88:8, 89:12, 90:19, 94:1, 106:3, 106:13, 110:13, 110:14, 112:22, 115:16 background 48:10, 58:22, 77:14 backhaul 27:18, 28:4, 28:8, 28:11, 28:19, 28:20, 29:2, 29:4, 29:7, 29:9, 29:21, 30:2, 30:6, 30:10, 30:11, 30:13, 31:1, 31:16, 32:3, 32:15, 33:7, 33:12 bands 37:14, 99:10, 99:13, 99:15 base 47:2, 47:3, 47:13, 48:2, 48:12, 48:21, 63:18, 63:19, 64:9, 116:3, 116:4 based 6:22, 12:2, 25:3, 25:7, 62:1, 62:9, 68:5, 80:6, 86:2, 88:17, 101:12, 116:5, 116:14 bases 61:9	basis 6:21 because 6:8, 6:10, 16:6, 30:15, 61:5, 62:21, 64:10, 81:3, 108:7, 108:19, 115:21 been 4:3, 4:13, 5:11, 13:21, 15:5, 20:20, 25:10, 25:12, 34:19, 50:10, 63:4, 66:7, 67:12, 67:14, 74:9, 83:12, 91:22, 103:4 before 1:3, 4:13, 5:12, 6:12, 7:11, 16:14, 18:20, 32:22, 34:14, 34:20, 40:17, 41:14, 43:2, 81:3, 81:11, 82:5, 85:5, 98:1, 102:12, 119:7, 119:8 begin 6:12 behalf 2:3, 2:11 being 30:18, 30:19, 72:10, 72:11, 74:19, 74:21, 75:21, 82:3, 82:20, 97:13 believe 11:9, 15:22, 19:21, 51:3, 52:9, 56:10, 57:9, 58:15, 65:8, 81:12, 85:8, 91:13,
---	--	---	--

91:17, 101:19, 103:20, 103:22, 108:5, 112:18, 113:4, 113:16 believed 16:6 below 87:14 benefit 109:13, 109:18 best 16:13 better 22:5 between 30:9, 36:8, 47:13, 57:16, 69:14, 70:9, 70:19, 71:15, 71:19, 72:3, 72:18, 72:21, 76:8, 76:12, 76:20, 77:5, 77:19, 78:3, 80:8, 80:20, 82:12, 83:5, 86:9, 86:21, 93:5, 94:13, 101:11, 101:15, 102:6, 112:1, 115:9, 115:12 beyond 15:9, 24:14, 30:14, 41:3, 52:11, 106:6, 114:22 big 95:6 bigger 112:9 bit 27:20, 27:21, 37:3, 37:13, 37:17, 95:11 black 30:4, 30:7, 67:16 block 95:6, 95:16,	98:12 blocks 96:4 blood 120:2 blown 67:1 blown-up 73:10 blowup 95:14 board 1:3, 19:7, 19:21, 20:3, 20:16 body 17:20 bolt 93:14, 93:16, 93:17, 94:12 bolts 94:17, 96:12, 96:18 both 30:22, 36:17, 52:10, 60:4, 60:5, 85:8, 89:17, 97:9, 114:9 box 28:6, 29:6, 30:3, 30:5, 30:10, 73:9, 73:11, 73:12, 73:14, 90:6, 104:4, 105:8, 108:2, 108:7 boxes 27:15, 28:1, 28:5, 29:3, 30:1 break 7:6, 7:8, 7:12, 34:20, 35:3, 35:8, 53:12, 84:15, 85:3, 85:5, 86:8, 110:4, 110:6, 110:16	breaks 10:10, 53:16 briefly 12:11 bringing 60:3 broadband 46:9 building 68:15, 68:19, 69:4, 69:7, 69:17, 69:21, 71:6, 71:15, 71:16, 71:20, 71:21, 72:4, 72:6, 72:11, 72:15, 72:19, 72:20, 73:10, 73:22, 74:11, 74:20, 75:8, 75:17, 76:4, 79:22, 83:11, 83:15, 83:16, 83:17, 83:20, 84:5, 84:6, 84:9, 84:10, 85:11, 86:15, 86:20, 87:1, 88:14, 88:19, 90:13, 90:15 buildings 68:21, 69:3, 69:10, 71:8, 84:6, 84:13 C cable 73:18 cabled 74:3 california 1:22, 8:19 call 10:11, 96:6 called 4:3, 88:10 calls 88:10	can't 17:15, 22:5, 42:9, 60:18, 60:19, 61:3, 107:11, 108:19 capital 50:20, 59:11, 59:12 carrying 87:13 case 1:11, 16:6, 21:6, 71:11, 72:13, 72:14, 73:3, 74:9, 74:18, 75:15, 104:21, 115:18 cases 16:8 cbpd 39:7 cdpd 44:2, 44:4 cell 9:16, 88:1 cellco 1:5, 2:4 cellular 39:8, 44:3, 46:9, 46:11, 46:19, 47:3, 47:12, 47:14, 47:17, 105:15, 109:2, 109:8 central 29:12, 29:17, 69:6, 71:15, 71:21, 75:16, 76:3, 87:16, 88:5, 88:7, 88:9, 88:11, 88:13, 88:19, 89:1, 89:21, 90:4 centrally 87:15, 88:4 certain 6:19, 27:12,
---	---	---	---

48:21, 91:7 certainly 26:2, 37:19, 48:22, 79:12, 83:1, 90:3, 108:13 certificate 119:1 certified 119:2 certify 119:4, 119:11, 119:15, 120:1 challenged 107:17 chance 22:12, 48:6, 62:20 change 15:1, 15:10 changes 116:4, 116:14 channel 115:12, 116:4 characteristic 54:7 characteristics 54:13, 54:18, 55:8, 56:1, 56:15, 56:20, 57:3, 57:10, 57:15, 57:22, 58:3, 58:11, 61:11, 62:3, 62:10 characterization 101:12 chat 9:12, 9:14, 13:20, 25:9, 66:6, 91:19, 103:3, 110:1, 110:19 check 10:10 choice 89:10 chrissan 1:15, 3:3,	3:13, 4:8, 8:6, 14:1, 14:6, 21:13, 25:13, 35:6, 53:15, 66:10, 84:22, 92:9, 110:13, 116:21, 118:2, 119:4, 119:16 chunk 112:9 circuit 104:6, 104:10, 105:8, 105:14, 108:11 circuitry 104:22 citation 21:9, 52:1, 98:13 citations 46:1 cite 39:18, 48:11, 58:5 cited 12:9, 52:7, 52:9, 52:16 claim 17:4, 17:7, 17:13, 18:9, 18:14, 19:6, 19:8, 19:9, 19:19, 19:20, 20:3, 20:15, 20:16, 20:19, 20:20, 21:7, 21:10, 21:16, 21:21, 22:4, 22:7 claims 26:10, 26:16, 107:17 clarify 17:10, 24:4, 56:11, 89:19 clarity 5:18 clause 55:14	clear 5:16, 5:19, 15:6, 21:20, 60:11 clearly 6:9, 47:3, 82:19 client 59:16, 59:21, 60:15 clock 93:15 close 18:21 closed 8:3 cloud 29:18, 30:1 co-pending 21:5 collect 89:5 column 26:17, 27:5, 46:15, 56:3, 57:12, 57:20, 58:7, 69:8, 70:13, 81:18, 82:17, 82:22, 87:9, 87:19, 95:15, 96:21, 98:21, 105:1, 105:5, 108:9, 109:1, 111:8, 111:11, 111:20, 113:4, 113:8, 113:16, 115:6, 116:1 columns 26:8, 26:14, 26:15, 56:4, 56:5, 56:22, 57:6, 57:7, 57:9, 58:2 come 112:22 commencement 119:7	commencing 119:17 commenting 78:22 communicate 36:13, 37:15, 48:4, 97:8, 97:9, 105:21 communicated 57:16, 71:2 communicates 70:5, 93:1, 94:8, 94:22, 97:19, 106:9 communicating 47:13 communication 27:8, 29:22, 30:8, 30:12, 30:14, 30:22, 31:4, 31:16, 32:5, 32:11, 32:15, 33:14, 38:6, 39:11, 41:3, 41:12, 41:17, 42:1, 42:6, 42:15, 42:20, 44:18, 44:20, 46:17, 46:22, 48:13, 50:1, 57:16, 63:18, 70:8, 70:18, 71:15, 71:19, 72:3, 87:11, 87:22, 88:3, 105:22, 106:10, 107:7, 114:17 communications 37:19, 40:21, 57:14, 63:17, 105:16, 109:3, 109:8 companies 65:21 complete 64:18, 64:19, 65:10, 118:5
---	---	--	---

completed 65:7 completely 53:6, 67:16 complicated 114:17 component 109:14 components 95:7, 104:2 compound 24:18 computer 8:15, 9:8, 72:16, 74:7, 75:9, 75:14, 78:4, 89:6, 90:3, 90:12 computers 70:5, 89:21 computing 72:5 concept 75:20, 75:21, 79:10, 79:13, 79:17, 101:2 conclusive 33:20, 40:9 conclusively 60:19, 60:20, 61:3, 81:12 conducted 13:6 conducting 6:10, 7:17 confident 52:14 configuration 47:14, 68:5, 96:22, 97:4 configure 102:3, 102:4 configured 104:17 confirm 18:7, 52:17 confusion 5:20, 21:22,	22:1, 93:20 connected 73:9, 73:12, 73:15, 74:2, 105:9 connecting 29:22, 96:13 connection 75:11, 76:14, 76:22, 77:3, 77:5, 77:19, 78:3, 80:8, 80:19, 82:12, 82:16, 87:21, 89:7, 96:19, 112:1, 115:6, 115:9 connectivity 109:19, 109:20 connects 97:1 consider 21:19, 109:16 consideration 20:22 considered 30:11, 40:20, 41:1, 53:9, 64:18, 77:3, 99:8, 99:9, 101:16, 104:18, 104:19 considers 39:21, 40:2, 40:12 consistent 23:11 constraints 37:3 construction 17:17, 17:19, 17:20, 18:8, 18:15, 19:6, 19:8, 19:19, 19:21, 20:4, 20:15, 20:16, 20:19, 20:20, 21:7, 21:21,	22:7 construction" 17:4 constructions 17:7, 17:21, 21:11, 21:16, 22:4 construed 17:14 containing 28:2 contains 26:4, 26:7, 49:11, 64:4 context 23:7, 28:14, 28:21, 29:2, 30:15, 32:6, 32:9, 32:21, 33:9, 33:19, 37:8, 38:16, 40:18, 41:2, 51:20, 77:1, 87:3, 106:1, 106:5, 106:6, 109:17, 112:10, 113:9 contexts 33:18, 34:3, 40:19, 41:9, 53:8 contribution 96:6 control 38:13 copy 38:11, 66:21, 67:5 corner 92:22 correct 8:20, 11:11, 11:12, 18:11, 24:7, 26:5, 36:5, 43:11, 47:17, 51:17, 52:4, 60:1, 67:8, 69:5,	84:10, 91:3, 91:17, 92:17, 93:3, 93:4, 93:8, 94:11, 94:15, 94:16, 94:19, 95:8, 96:16, 96:19, 96:20, 98:22, 101:3, 101:4, 102:7, 115:22, 118:5 corrections 118:6 correctly 19:12, 23:4, 35:22, 39:12, 39:14, 45:12, 50:2, 54:9, 56:12, 64:6 could 17:10, 17:16, 20:8, 24:3, 24:18, 26:21, 32:10, 32:13, 40:20, 41:14, 41:18, 43:2, 48:15, 54:14, 55:3, 59:17, 61:14, 61:15, 61:16, 74:16, 76:18, 77:3, 80:10, 84:1, 84:3, 84:12, 85:14, 86:12, 87:10, 88:17, 88:18, 89:4, 90:5, 90:18, 100:19, 102:1, 102:3, 102:4, 107:9 couldn't 105:2 counsel 6:19, 15:19, 22:18, 119:13 couple 15:3, 23:5, 107:8
--	---	---	--

course 5:14, 6:18, 11:4, 84:2 court 17:18, 17:22, 18:10, 21:6, 21:7, 21:11, 21:17, 91:2 coverage 46:11, 46:19 covered 37:11 creation 46:8 crr 1:21 csr 1:22 curious 60:4 current 37:12, 60:17, 60:18 currently 7:22, 8:1, 9:2, 9:16, 42:13 D dallas 2:16 data 38:13, 39:7, 39:8, 39:9, 43:11, 43:14, 43:19, 44:3, 44:10, 70:18, 71:2, 71:5, 71:14, 71:19, 72:3, 72:10, 72:14, 73:2, 73:3, 73:6, 74:9, 74:18, 74:21, 75:8, 75:16, 75:21, 76:7, 87:21 date 11:7, 118:10 day 5:14, 11:4,	120:9 days 11:10 december 64:20 decisions 78:12, 78:19, 79:11, 79:14, 79:18, 80:1, 85:12, 85:17, 86:5 declaration 3:11, 11:10, 11:20, 12:8, 12:10, 13:22, 14:7, 14:11, 14:19, 15:2, 15:10, 15:11, 15:14, 15:18, 15:20, 16:12, 16:16, 16:19, 16:22, 17:3, 17:6, 17:12, 18:14, 20:7, 21:3, 21:14, 22:10, 22:18, 23:11, 23:17, 24:2, 24:11, 24:16, 25:6, 25:19, 26:1, 34:7, 35:12, 35:15, 36:3, 38:21, 39:16, 39:22, 40:6, 40:15, 43:8, 44:2, 44:9, 44:17, 45:1, 45:5, 45:19, 46:5, 46:7, 49:3, 49:10, 51:7, 53:21, 54:22, 57:21, 58:17, 63:8, 68:3, 68:11, 77:9, 78:6, 81:5, 82:5, 82:8, 83:9, 85:6, 85:10,	86:3, 86:14, 90:19, 91:1, 92:12, 98:3, 99:22, 100:21, 102:14, 103:21, 106:14, 106:17, 107:14, 107:20, 108:22, 111:7, 112:14 define 45:15, 47:8, 50:22, 54:12, 54:17, 55:7 defined 46:20, 62:13 defines 45:6, 54:2, 56:14, 59:15, 59:20, 60:14 definitely 79:16 definition 101:5, 101:9, 101:13 deliver 66:2 depend 20:15, 32:6, 32:20, 33:8, 40:18, 53:1, 102:13 depends 30:14, 32:9, 41:2 depict 27:3 depicted 31:17, 32:3, 33:22, 72:17, 95:2 depiction 84:7 depicts 68:14, 68:20, 69:13, 69:19, 70:7, 88:6, 92:15, 100:1, 104:1, 105:19	deployment 53:2, 53:7 deponent 118:1 deposed 4:13 deposition 1:15, 6:18, 7:17, 8:7, 8:12, 9:8, 10:1, 10:4, 10:14, 12:7, 13:3, 13:9, 13:13, 14:18, 106:3, 119:5, 119:7, 119:8, 119:14, 119:15 derby 2:14 describe 47:22, 48:22, 64:8, 73:11, 86:6, 90:7, 99:4, 108:21 described 29:3, 56:2, 56:4, 57:2, 69:2, 96:21, 116:8 describes 32:11, 58:3, 68:10, 68:18, 77:12, 79:10, 79:19, 86:3, 88:21, 89:13, 92:18, 95:13, 99:22, 100:1, 102:14, 107:7, 115:19, 116:7 describing 49:13, 49:15, 85:10, 113:12 description 3:10, 28:15, 28:18, 43:16, 43:22, 44:7, 44:15, 44:21, 48:1, 48:10, 48:16, 48:19,
---	--	---	---

50:18, 56:3, 58:2, 78:18, 102:16, 105:4, 106:5, 106:7, 106:12, 106:13 descriptions 47:11 design 107:12 designing 64:22 destined 71:6 detail 26:3, 27:10, 33:21, 34:5, 41:14, 49:1 detailed 27:11, 38:9, 42:8, 47:21, 48:1, 56:3, 68:22, 69:18 details 32:22, 33:2, 41:8, 48:6, 61:15, 75:4 determination 57:13, 87:10, 88:2 determine 32:14, 106:8 determines 82:18 device 36:19, 36:20, 46:8, 49:11, 63:21, 64:4, 79:21, 83:10, 85:11, 86:14, 86:19, 87:11, 88:1, 88:3, 109:9 devices 35:21, 36:7, 36:13, 36:17, 36:21, 37:5, 37:15, 38:6, 59:16, 59:21,	60:15, 74:2, 107:2 diagram 95:10, 95:16 dictate 50:22 dictionary 101:6 different 28:13, 30:16, 30:17, 39:4, 49:11, 61:13, 61:16, 64:5, 84:6, 84:12, 86:22, 97:12 digital 37:18, 38:12, 39:8, 44:3 direct 35:14 directed 8:10 direction 23:1, 75:18 directly 89:3 disclose 43:13, 43:19, 43:21, 107:15 discloses 116:11 discouraged 22:22 discuss 92:11, 111:6, 116:17 discussed 61:14, 87:14, 106:2, 106:12, 108:16 discusses 46:8, 57:21, 79:18 discussing 30:4, 31:16, 38:15, 45:21, 74:9, 83:12, 85:6, 86:7	discussion 10:18, 70:3, 78:1, 78:11, 95:22, 103:7 discussions 13:8, 108:14, 114:18 disparages 107:6 dispute 40:14, 53:3 distance 100:13 distinguished 29:6, 102:20 distribution 92:16, 92:18, 92:21, 93:1, 93:6, 93:21, 94:5, 94:7, 94:14, 94:22, 95:8, 95:14, 95:17, 95:19, 95:20, 96:8, 96:15, 97:7, 97:19 district 17:18, 17:22, 18:10, 21:5, 91:2 dive 34:14 divergent 23:1 document 13:21, 14:10, 22:14, 25:9, 25:18, 29:13, 31:7, 31:10, 45:18, 45:22, 48:8, 50:7, 55:2, 59:2, 76:15, 76:17, 77:11, 78:13, 81:15, 81:20, 85:20, 87:8, 98:6, 106:15, 112:12, 112:21,	113:10, 114:5 documentation 47:22, 81:11 documents 9:1, 9:4, 9:10, 9:13, 13:15, 16:5, 16:6, 19:22 doing 4:11, 5:15 domain 35:19 done 18:18, 31:11, 76:16, 90:12, 90:14, 110:7, 112:13, 116:19 dotted 108:2, 108:7 double 30:4, 30:18, 30:19, 31:21, 31:22, 32:4, 32:14, 33:13 double-line 33:7 double-lined 29:22 douglas 1:15, 3:3, 3:12, 14:1, 118:2, 119:4, 119:16 down 8:11, 8:13, 9:18, 10:9, 46:1, 67:19, 114:22 downlink 54:6, 55:21, 56:18, 61:10, 62:2, 62:9 download 9:13, 10:6, 14:2, 25:14, 91:20 downloaded 67:5
--	---	---	--

dr 4:8, 8:6, 14:6, 21:13, 25:13, 35:6, 53:15, 66:10, 79:1, 81:2, 84:22, 87:4, 91:14, 91:15, 92:9, 110:13, 116:21 draft 15:13, 15:18, 16:11 drop 116:3 dropped 66:22 ds 67:15 ds3 99:11, 99:15, 100:11, 100:13 due 16:14 duly 4:3, 119:6 during 6:18, 10:1, 10:4, 10:10, 11:4, 11:15, 22:2, 35:8, 53:16, 85:2, 110:15, 115:6 E e 50:1, 63:18 each 36:13, 36:15, 37:6, 37:15, 41:10, 69:9, 69:10, 70:10, 93:6, 96:13, 96:14 earlier 19:10, 22:2, 56:22, 59:11, 63:13 easier 110:7	edited 16:9 effective 107:4 either 43:17, 60:20, 65:12, 88:3, 90:12 electronic 9:4, 9:22, 10:2 elm 2:15 else 7:19, 10:13, 15:9, 15:17, 16:18, 36:22, 102:3, 102:18 else's 8:4 email 10:11 embodiment 57:18 embodiments 89:18 emerged 64:13 emphasizes 98:14 employed 120:3 enable 46:8 enables 72:8, 72:9 encoding 112:7, 114:3, 115:13, 116:5, 116:14 encompass 86:8 encompassed 33:10 encompasses 33:17, 34:3, 47:12 end 20:10, 54:19	ends 97:13 enjoy 117:1 enlarge 67:9 enough 26:2, 40:8, 65:10 entered 19:22 entire 16:8 entirely 61:6 entitled 13:22, 17:3 equipment 65:1, 65:10, 65:11, 65:15, 65:19, 66:2 errata 118:7 error 113:21, 115:11 especially 75:5, 81:2, 81:3, 99:10, 108:17 esq 2:5, 2:13 essentially 66:2 established 35:20, 36:11, 36:14, 38:8, 65:3, 71:17, 115:10 establishing 97:2 etc 34:4 even 16:1, 18:4, 30:16, 60:17, 63:2, 63:4, 87:20, 102:22, 109:12, 114:22	eventually 76:1 ever-increasing 106:22 every 7:7, 20:18, 40:22, 50:12 everyone 8:4, 117:1 everyone's 8:10 everything 37:4, 37:14, 49:1 evidence 20:1 exactly 12:15, 114:20 examination 3:4, 4:6 examined 4:4, 118:3 example 15:20, 38:6, 43:10, 44:1, 44:8, 44:16, 57:12, 57:19, 58:8, 58:10, 59:4, 64:12, 71:5, 78:2, 87:16, 88:4, 95:19, 102:20, 105:15 examples 37:7, 37:12, 39:5, 39:15, 39:17, 40:5, 40:11, 40:14, 41:4, 51:10, 52:2, 52:5, 52:12, 52:21, 97:4 excellent 14:5 exclude 51:22 excuse 27:16, 79:7,
--	--	--	--

96:14 executing 87:12 exhibit 3:10, 3:11, 3:14, 3:16, 3:18, 3:20, 3:22, 13:22, 14:6, 14:15, 14:18, 21:9, 25:10, 25:17, 34:9, 35:12, 39:19, 66:6, 66:7, 66:14, 91:18, 91:21, 91:22, 92:4, 103:3, 103:4, 109:22, 110:18, 110:19, 110:20, 111:1 exhibits 9:22, 20:1, 20:2, 20:4, 91:13 expanded 69:22 expensive 107:3 experience 25:3 expert 87:4, 89:16, 91:6, 91:9, 91:12, 91:16 explanations 48:5 explicit 48:1 explicitly 16:4, 32:10, 50:19, 51:2, 52:15, 88:20, 89:20 exploded 68:21 exploded-out 69:18 explore 20:12	expressed 40:4 extensive 37:2, 47:22 extent 19:7, 68:10 F face 9:18, 10:9 factor 106:22 fair 26:18, 43:18, 69:1, 69:11, 78:19, 80:2, 101:12, 104:14, 105:17 fairly 26:19, 52:14, 59:8 fall 17:3 familiar 41:4, 41:7, 59:6, 59:8, 68:1, 92:9, 99:12, 99:14, 99:20, 103:13, 103:18, 111:5, 111:16 far 53:6 faster 105:2 fault 83:22 features 48:21 feed 8:15 feedback 116:6 feel 5:18, 7:7 feet 9:18, 10:9 few 64:22, 78:21	fields 37:4, 37:13, 37:17, 38:13 figure 26:21, 27:2, 27:6, 27:13, 28:7, 28:21, 29:2, 30:16, 31:17, 32:4, 32:13, 32:18, 33:3, 33:10, 33:16, 33:22, 34:2, 46:16, 46:18, 47:2, 47:3, 66:18, 67:20, 68:1, 68:6, 68:10, 68:13, 68:14, 68:20, 69:13, 69:19, 69:22, 70:7, 71:3, 73:8, 83:18, 84:7, 84:11, 86:15, 88:8, 88:11, 88:12, 88:13, 88:14, 88:20, 89:18, 90:1, 90:2, 90:3, 90:10, 90:11, 92:13, 92:15, 92:22, 95:4, 95:6, 95:13, 95:16, 95:18, 96:1, 96:2, 97:3, 97:8, 103:15, 103:18, 104:1, 104:5, 105:7, 105:21, 106:7, 108:2, 108:6 figures 26:4, 27:9, 27:20, 47:10 filled 67:16 financially 120:5 find 29:10, 48:6,	105:2 fine 10:12, 11:2 finish 6:11 first 15:13, 15:18, 16:11, 19:3, 29:5, 34:14, 39:2, 39:3, 39:15, 43:8, 43:10, 45:10, 49:9, 49:13, 58:4, 63:16, 64:2, 64:15, 64:17, 64:19, 65:8, 65:9, 71:4, 72:10, 72:17, 80:6, 98:5, 98:13 five 110:8 five-minute 110:6 fixed 27:7, 46:10, 46:17, 46:21, 48:12 flips 89:11 focus 19:3, 27:12, 49:18, 51:9, 63:15, 70:2, 76:7, 93:11, 94:4, 104:2 focused 61:6, 62:22, 63:1, 63:3, 87:9 focusing 79:5 follow 19:11 followed 6:20, 28:3 following 22:22, 26:15, 91:8, 95:22,
---	--	--	--

112:4, 114:1, 115:18 follows 4:5, 52:1, 64:2 force 23:9 foregoing 118:4 form 9:22, 17:9, 24:8, 24:17, 25:2, 27:4, 28:12, 28:22, 31:6, 32:17, 33:4, 37:10, 38:2, 40:9, 42:21, 45:16, 50:11, 53:4, 60:9, 60:16, 61:12, 62:4, 62:11, 68:7, 74:15, 75:3, 77:8, 77:21, 80:22, 82:14, 83:19, 100:5, 101:18, 109:15 formed 21:1, 46:12, 52:12 forming 22:8, 24:15 forms 38:14 formulating 20:6, 20:17 forth 17:17, 17:19, 18:8, 24:5, 36:3, 119:6 forward 48:20 found 15:3 four 26:4, 96:4 frame 11:11, 65:13, 65:18, 65:20,	66:5 free 5:18 frequencies 98:19, 100:9 frequency 37:14, 70:13, 70:17 friday 1:16, 117:1, 119:17 front 9:2, 9:5, 96:22, 97:12 full 114:7 fully 18:5, 66:4 functionality 109:7 functions 54:5, 55:20, 56:17, 57:3, 57:10, 59:16, 59:20, 60:14 further 21:10, 87:3, 98:22, 114:22, 119:11, 119:15, 120:1 furthermore 21:5	59:13, 65:15, 70:12, 75:7, 107:2 generate 89:8 geography 32:21 geometry 102:16 ghz 98:16 gigahertz 98:16, 99:8 give 48:6, 57:18, 66:19, 81:9, 113:12, 114:11 given 20:19, 33:18, 33:19, 47:5, 49:1, 60:17, 108:2, 118:6, 119:9 gives 109:18 go 5:12, 18:4, 34:22, 35:2, 53:11, 56:7, 58:5, 84:18, 85:22, 87:5, 94:1, 100:19, 106:13, 107:5, 110:9 goes 57:18, 87:3 going 8:13, 34:19, 39:22, 45:17, 53:3, 66:13, 71:10, 71:11, 72:18, 87:6, 93:17, 110:2, 114:21 gone 8:11 good 4:8, 4:9, 5:21,	6:5, 6:15, 7:13, 10:5, 10:15, 11:1, 14:20, 16:7, 34:20, 38:10, 62:20, 92:6, 111:3 govern 45:8, 54:4 grainy 27:21 grammar 55:10 great 4:20, 5:10, 6:7, 6:17, 7:5, 7:15, 9:15, 9:20, 10:7, 10:17, 11:3, 11:13, 11:21, 12:5, 14:3, 14:22, 18:18, 22:16, 25:16, 39:1, 49:8, 66:12, 66:17, 90:22, 92:3, 92:8, 96:11, 98:8, 103:12, 110:22, 111:10 ground 5:13 guess 13:16 guidance 19:8, 19:11, 19:14, 19:17, 19:19, 19:21, 20:4, 20:11, 20:19, 20:20, 23:18, 23:20
			H
			habit 23:9 half 12:21, 19:4, 26:7, 26:14, 26:15, 45:11, 48:9, 51:9,

51:14, 52:20, 98:9, 104:4 hand 120:9 hand-over 57:14 happening 79:19 happens 73:8 happy 7:9, 84:15 head 62:15 hear 6:9 help 18:3, 81:16 helpful 50:13 here 19:5, 20:7, 37:8, 39:15, 40:13, 41:7, 42:8, 42:13, 42:17, 43:3, 46:18, 48:5, 51:21, 57:2, 60:21, 87:3, 89:2, 95:3, 96:2, 100:18, 104:6, 109:11, 113:12, 115:2, 115:14 hereby 118:2, 119:4 hereinbefore 119:6 hereunto 120:8 high 41:6, 72:17 higher 106:21 hiperlan 51:16, 51:17, 51:19, 52:10, 53:5	hit 65:1 hohnstein 92:5, 92:10, 92:13, 92:15, 92:18, 95:4, 95:6, 95:13, 95:15, 98:21, 99:4, 99:6, 99:22, 100:6, 100:9 hold 59:1, 67:13 home 8:21 hopefully 74:8 host 87:16, 88:5, 88:7, 88:9, 88:11, 88:13, 89:2, 89:21, 90:4 hour 7:7, 12:11, 12:20, 34:19, 110:2 hours 12:22, 13:12, 13:16, 13:17 hub 102:5, 102:21 hypothetical 71:10 I iad 48:12, 48:22 ibm 101:5 ieee 50:21, 51:15, 58:14, 59:4, 59:6 illustrates 27:7, 46:16 illustrating 46:19	implementation 61:18, 64:18, 65:6 implementation-d- ependent 61:17 implemented 61:16, 64:12 important 37:18 include 39:6, 51:4, 73:22, 82:16 included 62:1, 62:9 includes 13:17, 45:7, 54:2, 54:4, 55:15, 55:16, 55:20, 56:17, 69:4, 69:10, 70:1 including 19:9, 48:10, 104:16, 109:6 independent 102:2, 102:21, 102:22 indexed 90:1, 92:19, 93:7 indicated 93:7 indicates 11:22 individual 102:6 influence 5:7 influenced 83:2 inform 6:1 information 10:3, 39:10, 44:10, 49:22, 54:8, 54:13, 54:18, 55:8,	56:1, 56:15, 56:20, 57:4, 57:11, 58:1, 58:11, 63:20, 90:16, 115:15, 116:15 informed 22:18 informs 24:9, 116:3, 116:13 initiation 57:13 instance 15:4, 20:18, 20:19, 70:4, 70:10, 92:20, 92:22, 94:4, 95:7, 96:14, 97:20, 97:21 instances 94:13, 96:2, 96:13, 97:13 instructions 60:2 intended 38:11, 56:13 intent 57:5, 67:3 intentional 23:8 inter-workings 41:8 interactions 68:13 interested 120:5 interestingly 77:13 interface 97:1 interpret 29:17, 30:7, 31:3, 107:9 interpretation 26:9, 55:10 interpreted 102:8
--	--	--	--

interpreting 75:7	kind 61:9, 115:19	77:2, 77:3, 77:7, 77:20, 81:13, 82:18, 82:21, 83:3, 83:4, 86:12, 102:2, 102:18, 102:21, 104:5, 104:10, 104:15, 108:20	left 68:15, 70:2, 70:4, 73:10, 85:5, 92:21, 93:10, 93:14, 94:5, 95:10, 104:4
introducing 13:20	kinds 30:16, 30:17	language 54:19, 56:10, 78:20, 108:3	legal 15:20, 23:15, 23:21
invention 72:8, 72:9	know 5:5, 5:19, 7:8, 10:8, 10:11, 18:16, 18:18, 22:12, 23:19, 25:13, 34:13, 45:3, 49:6, 52:12, 61:6, 62:14, 63:9, 66:9, 67:21, 68:8, 91:12, 96:9, 98:5, 100:14, 100:16, 100:18, 103:16, 110:7	lans 51:4, 51:11, 51:16, 51:20, 52:2, 52:6, 52:21, 53:9, 77:12, 78:1	lend 6:11
involve 10:18		large 59:9	lengths 98:15
involved 65:22	knowledge 60:17, 100:10	last 14:12, 14:14, 35:17, 36:4, 44:16, 62:18, 78:21	less 63:4
involving 19:10, 21:6, 91:3	known 47:14, 50:19, 61:22, 62:7, 66:4, 101:2	later 111:22	let's 27:12, 31:14, 32:2, 33:11, 35:2, 36:16, 36:17, 36:18, 36:19, 43:8, 45:10, 51:6, 53:11, 56:9, 60:4, 65:5, 68:12, 70:2, 73:19, 82:4, 84:18, 85:15, 87:2, 94:1, 94:4, 95:14, 106:14, 110:5, 110:9, 112:22, 113:12, 115:20
ipr 1:11, 13:21, 14:7, 19:10, 19:22, 20:1, 25:11, 91:16	knows 32:20	latter 49:19	level 41:6, 72:17, 78:17, 97:19, 101:1, 116:5, 116:13, 116:14
iprs 19:10	L	launch 34:20	levels 112:7, 115:13
irrelevant 90:8	labeled 27:16, 27:17, 28:7, 29:7, 69:14, 70:6, 76:9, 92:16, 93:2, 94:17, 94:18, 96:4, 96:13, 104:5, 104:11, 105:8, 105:10	law 19:7	levels" 114:3
isolation 32:18	lack 5:17	least 24:10, 40:3, 40:19, 47:12, 48:14, 52:9, 53:8, 58:16, 67:16, 72:16, 75:10, 78:16, 80:6, 81:10, 81:13, 86:8, 94:18, 101:10, 107:15, 111:6, 111:19	license 99:13, 99:15
issue 67:7	lag 6:11	leaving 75:4	licensed 99:10
issued 21:7	lan 45:7, 49:22, 50:21, 54:3, 57:17, 59:5, 76:13, 76:21,	led 23:1	light 47:10, 89:15,
itself 61:1			
J			
january 21:8			
job 1:19			
jot 46:1			
judicial 17:20			
july 1:16, 12:17, 119:17, 120:9			
jump 105:4			
K			
keep 36:18			

99:10, 108:14, 115:21 lightning 93:14, 93:16, 93:17, 94:12, 94:17, 96:12, 96:18 likely 29:17, 58:4, 61:4, 63:4, 90:5 limited 51:5, 115:18 line 27:5, 30:5, 30:8, 30:18, 30:19, 31:21, 31:22, 33:12, 46:15, 53:10, 57:13, 58:7, 69:7, 70:13, 82:17, 84:14, 87:10, 87:20, 91:5, 95:15, 96:21, 97:4, 105:1, 108:9, 111:11, 113:8, 114:2, 115:1, 115:5 lines 19:18, 32:4, 32:14, 56:8, 58:5, 81:18, 98:21, 106:2, 111:20, 113:5, 113:16, 116:1 link 30:9, 30:12, 30:14, 32:11, 32:15, 33:12, 33:14, 33:15, 63:1, 63:3, 63:5, 70:9, 72:18, 72:20, 72:21, 74:7, 75:11, 75:13, 76:8, 76:12, 76:20, 83:3, 83:4, 86:9,	86:12, 86:21, 93:5, 97:2, 100:13, 100:17 links 29:22, 30:22, 31:1, 31:5, 31:17, 31:20, 32:3, 32:5, 33:7, 48:20, 48:21, 61:7, 69:13, 70:14, 70:15, 70:16, 70:17, 70:18, 98:14, 99:2, 99:3, 99:4, 99:5, 100:1, 100:4, 100:10, 107:8 list 40:11, 47:16, 107:8 listed 39:15, 39:20, 40:5, 40:14, 41:5, 41:10, 43:11, 44:1, 52:6, 52:21, 56:21, 98:19 listing 52:2 lists 40:10 literally 109:10, 114:10 litigation 91:2, 91:7 little 26:17, 27:20, 95:10, 112:9, 115:17 llp 2:6, 2:14 local 101:16, 102:11, 102:15 located 83:17, 84:8, 86:22, 97:10	locked 113:11 lodge 6:19 logged 9:7 long 12:13, 26:2, 46:2, 50:22, 78:9 long-distance 109:19 longer 53:10, 98:3, 110:4 look 46:14, 52:7, 88:6, 93:15, 107:12 looking 14:9, 32:13, 46:6, 67:22, 68:16, 80:12, 81:21, 84:14, 108:9 looks 14:11, 34:18, 67:14, 74:2 los 8:2, 8:19 lot 75:4 loud 21:4 low-level 48:2 lower 92:21, 93:10, 93:14, 94:5, 95:11 lte 64:18 M made 57:14, 87:10, 88:3, 89:16 mahany 15:5, 39:18,	39:19, 39:20, 40:2, 40:10, 103:8, 103:9, 103:13, 103:15, 103:19, 104:1, 105:1, 105:19, 106:11, 107:5, 107:15, 108:17, 109:1, 109:10, 109:17, 109:21, 115:1, 115:5, 115:6, 116:7, 116:8 mahany's 105:21, 106:6, 106:12, 106:16, 107:10, 107:11, 108:6, 108:14 mainly 61:6, 63:2 make 6:9, 8:9, 10:11, 29:10, 71:9, 85:21, 87:18, 99:7, 105:18 maker 65:10 makes 76:1, 76:3 making 78:11, 78:18, 79:11, 79:13, 79:17, 80:1, 85:12, 85:17, 86:4, 89:10, 91:7 many 4:15, 5:12, 12:8, 13:12, 34:3, 49:2, 50:22, 77:12, 82:15 marked 3:9, 13:21, 25:10, 66:7, 91:22, 103:4, 110:19
--	---	---	---

market 53:6, 64:14, 65:1, 66:3 marriage 120:3 massachusetts 2:7 massively 67:1 material 16:5 materials 12:9 matter 19:7, 120:6 matters 15:7 maybe 13:15, 34:19, 41:1, 48:6, 53:11, 67:17, 84:4, 110:5, 110:7 mean 17:10, 19:16, 20:12, 20:18, 21:15, 22:3, 28:11, 28:13, 36:11, 61:19, 72:22, 101:21, 114:9, 116:9 meaning 18:2, 35:19 means 4:21, 21:20, 24:6, 28:20, 29:2, 56:16, 73:17, 95:10, 97:7 meant 55:13 measurement 90:16 measurements 57:15, 58:3, 78:11, 78:18, 79:10, 79:13, 79:17, 80:1,	80:5, 80:7, 80:13, 80:17, 80:19, 81:7, 81:12, 82:3, 82:9, 82:11, 82:15, 82:20, 83:1, 83:2, 83:11, 83:12, 85:12, 85:17, 86:4, 86:8, 86:16, 86:20, 89:5, 89:7, 89:8, 89:9, 89:13, 89:14 measuring 89:4, 90:11 medications 5:6 meet 12:13, 13:2 meetings 13:1, 13:5, 13:10, 13:18 memory 87:12 mention 37:8, 51:3 mentioned 8:18, 10:8, 13:15, 20:2, 40:17, 47:18, 47:20, 52:15, 57:6, 57:7, 58:2, 58:15, 58:16, 58:20, 62:18, 68:2, 79:20, 98:20, 99:21 mentioning 58:19 mentions 48:20, 59:3, 89:20 mesh 101:2, 101:6, 101:9, 101:19, 101:21, 102:1, 102:4, 102:17,	102:19 met 12:10, 12:19 method 87:15 methods 87:14 microwave 98:15, 99:3, 99:5, 99:8, 99:10, 100:4, 100:7, 100:8, 100:13, 100:17 middle 75:5, 95:7, 95:11 might 64:12, 105:14, 108:11 mile 100:15, 100:19 mind 79:3 minimum 58:1 minute 53:18 minutes 12:15, 50:10, 110:8 mobile 39:7, 43:11, 43:13, 43:19, 49:22, 54:6, 55:22, 56:19, 57:17, 116:2 mobitex 39:7 mode 99:18 modem 27:18, 28:2, 28:8, 29:4, 29:7, 30:2, 30:6, 30:9, 30:10 modes 100:11	modifies 55:11 monday 12:11, 12:14, 12:16 monitor 116:13 monitored 112:6, 114:2, 115:10, 115:15 monitoring 54:7, 54:12, 54:17, 55:7, 55:22, 56:19, 57:3, 57:10, 57:22, 58:10, 111:21, 113:15, 116:15 monitors 56:14, 111:12, 113:19, 115:7, 116:12 month 16:14 more 27:10, 27:11, 32:22, 42:2, 43:1, 43:5, 55:4, 60:11, 61:4, 68:22, 79:5, 101:10, 106:6, 114:14 moreover 106:20 morning 4:8, 4:9 most 12:9, 29:17 mostly 15:15, 15:16, 77:13, 89:11, 110:7 move 21:2, 115:20 much 25:21, 61:4 multiple 16:9, 68:20,
---	---	--	--

69:20, 74:2, 93:2, 94:8, 95:1, 96:1, 104:1, 114:18 must 109:16	102:17, 102:19 networks 39:4, 39:17, 45:9, 54:4, 102:15 never 53:5 new 34:20, 66:6, 91:18, 119:3, 120:13 next 44:1, 44:8, 49:13, 115:20 nine 26:7, 26:13, 26:15 nodes 101:10, 101:15, 102:6 notary 4:4, 119:1, 119:3, 120:13 note 7:16, 46:2, 107:22, 108:1 noted 20:2, 20:4, 20:11, 29:8, 117:2 nothing 60:22 notion 82:19 novel 46:9 number 3:14, 3:16, 3:18, 3:20, 3:22, 10:19, 10:22, 25:11, 33:9, 33:17, 47:1, 64:17, 66:8, 92:1, 98:10, 103:5, 110:20 numeral 76:10, 92:17,	93:3, 93:7, 94:19, 105:9 nw 2:7 O oath 4:18, 4:22 object 17:9, 24:8, 24:17, 25:2, 27:4, 28:12, 28:22, 31:6, 32:17, 33:4, 37:10, 38:2, 42:21, 45:16, 50:11, 60:9, 60:16, 61:12, 62:4, 62:11, 68:7, 74:15, 75:3, 77:8, 77:21, 80:22, 82:14, 83:19, 100:5, 101:18, 109:15 objection 6:20, 6:21, 6:22 objections 6:19 occur 89:14 occurred 119:16 ocs 99:11, 99:15, 100:11, 100:13 office 1:1, 29:12, 29:17 offices 67:6 often 38:8 oh 58:22 okay 8:1, 8:14,	8:18, 21:2, 22:9, 22:11, 27:12, 27:14, 27:22, 29:16, 34:17, 34:22, 42:2, 46:1, 49:18, 51:8, 55:3, 55:9, 58:10, 63:12, 67:20, 68:12, 69:9, 71:18, 76:7, 76:11, 78:7, 78:14, 81:19, 82:1, 82:2, 84:19, 85:21, 86:13, 87:9, 95:5, 95:18, 95:22, 98:2, 98:11, 102:10, 103:17, 105:6, 107:21, 110:9, 112:22, 113:11, 113:14, 116:11 once 58:16, 111:19 one 12:21, 15:4, 15:7, 26:17, 30:3, 30:18, 31:20, 34:4, 36:4, 36:19, 36:20, 37:7, 38:3, 38:4, 41:13, 42:2, 42:9, 43:4, 44:4, 44:12, 44:20, 45:20, 47:18, 47:20, 52:9, 52:14, 53:3, 55:3, 57:12, 57:18, 57:19, 58:8, 58:10, 62:19, 67:12, 67:14, 68:21, 69:2, 70:2, 71:7, 71:19, 72:3,
--	--	---	--

72:15, 74:11, 74:20, 76:8, 78:5, 79:20, 83:10, 88:15, 89:12, 90:17, 92:20, 93:9, 93:11, 95:7, 95:19, 96:5, 96:7, 97:5, 104:4 ones 96:9 ongoing 10:14 only 41:6, 53:18, 108:5, 108:8, 108:18 onward 81:18, 112:18, 113:5 onwards 111:11 open 8:16, 9:4, 25:14 operate 36:21, 38:8 operation 61:9, 62:9, 68:5, 68:9 opine 68:11 opined 11:9 opinion 20:14, 20:17, 20:21, 21:1, 25:5, 32:7, 40:9, 51:21 opinions 15:12, 15:22, 17:13, 20:6, 22:8, 24:15, 38:17 opportunity 25:14, 98:4 opposite 75:15, 75:18	option 79:20, 83:10 optional 108:2, 108:6, 109:12 order 21:7, 37:5, 38:9, 100:15 ordinary 11:6, 11:16, 12:3, 18:2, 22:20, 23:6, 32:12, 60:6, 61:2, 61:21, 62:6, 77:4, 77:17 original 15:19, 16:1, 60:2, 94:1 originates 71:5 originating 72:10 other 10:2, 10:3, 13:1, 13:8, 13:9, 16:5, 22:6, 23:14, 23:16, 23:21, 24:1, 24:12, 24:21, 24:22, 30:5, 30:19, 31:21, 33:11, 36:13, 36:15, 36:16, 37:6, 37:16, 49:22, 51:16, 61:10, 62:2, 62:10, 81:7, 81:21, 89:6, 89:9, 102:5, 107:8, 108:14, 109:21 others 51:5 otherwise 12:1, 36:15, 120:5 out 15:8, 18:21,	21:4, 22:22, 56:8, 68:21, 75:4, 81:16, 87:13, 94:18, 108:19, 109:19, 110:3 outcome 120:6 outside 63:5 over 16:8, 26:17, 74:6 overall 107:4 overview 16:3, 16:7, 27:6, 39:22, 52:11 own 21:18, 52:13 owner 1:9, 2:11 P packet 29:19, 39:8, 44:3 page 3:4, 3:10, 14:12, 14:14, 34:11, 66:22, 67:7, 67:17, 85:9, 98:10, 106:18, 111:7 pages 1:20, 49:2, 66:22, 67:1 palmer 15:5, 66:14, 66:15, 66:18, 66:22, 68:1, 68:6, 68:10, 68:18, 69:19, 72:17, 73:11, 73:19, 76:16, 77:1, 77:6, 77:12, 78:1,	79:9, 79:19, 81:1, 81:14, 81:17, 81:21, 82:16, 82:19, 83:18, 85:10, 86:3, 86:6, 87:2, 87:6, 87:7, 88:2, 88:6, 88:10, 88:20, 89:12, 89:18, 89:20, 90:6, 108:20 palmer's 69:13, 71:3, 72:8, 72:9, 77:1, 78:1, 78:10, 78:17, 89:2 paragraphs 17:2, 45:20 parallel 91:2 parameters 37:3 paraphrase 38:3 part 21:1, 26:10, 31:15, 37:18, 48:14, 55:17, 75:10, 102:15, 104:17, 104:18, 104:19 particular 17:13, 32:22, 33:9, 34:4, 57:8, 92:22, 99:16, 106:4, 106:11 particularly 60:22 parties 120:2, 120:4 partnership 1:5, 2:4 parts 81:21 party 119:11
---	--	--	--

pass 116:20 passage 98:14 patent 1:1, 1:3, 1:9, 1:12, 2:11, 3:14, 3:16, 3:18, 3:20, 3:22, 10:19, 10:20, 10:22, 11:8, 17:8, 17:14, 18:9, 19:9, 19:11, 21:6, 23:3, 25:11, 25:12, 25:17, 25:22, 26:4, 26:17, 26:22, 27:2, 27:5, 28:14, 29:14, 31:8, 31:17, 32:13, 33:3, 34:1, 39:6, 43:13, 43:18, 44:4, 44:12, 44:19, 45:6, 45:14, 45:17, 46:7, 46:13, 46:14, 46:15, 47:2, 47:8, 47:9, 47:12, 47:16, 49:2, 49:11, 50:4, 50:10, 50:16, 51:2, 51:11, 51:20, 51:22, 54:1, 54:12, 54:17, 54:22, 55:7, 55:11, 55:18, 55:20, 56:13, 56:17, 56:22, 58:7, 64:4, 64:8, 65:4, 66:8, 67:5, 91:3, 91:22, 103:5, 110:20 patent's 47:10, 50:18	path 22:22, 23:2, 74:12, 74:21, 75:17, 75:19, 102:6, 102:7, 102:8, 102:9, 102:10, 102:11 paths 101:11, 101:15, 101:16, 101:17 pausing 114:16 pdf 34:11 pending 7:10 people 64:21 percent 18:21, 113:11 perform 86:20 performance 59:15 performed 87:15, 88:4 performing 59:20, 60:14, 78:11, 78:18, 79:10, 79:13, 79:17, 79:22, 82:8, 83:11, 85:11, 85:16, 86:4, 86:16 perhaps 21:22, 79:5, 81:16 periodically 113:19, 115:7 permission 52:8 person 11:6, 11:16, 12:2, 22:20, 23:6, 29:16, 30:7, 31:2, 32:12, 32:19, 32:21, 47:9, 52:13, 60:1, 60:6, 61:2, 61:21, 62:6, 62:12, 62:13, 62:15, 70:21, 75:6, 76:5, 77:4, 77:17, 77:22, 107:9 personal 10:11, 60:5, 60:12 personally 60:13 perspective 11:6, 12:2, 60:5, 60:12 perspectives 60:5 petitioner 1:6, 2:3 petitioner's 87:4, 89:16, 91:6, 91:8 ph 1:15, 3:3, 3:13, 14:1, 118:2, 119:5, 119:16 phone 9:16, 10:8 phrase 19:19 physical 9:1, 10:2 pick 56:8 place 58:4, 87:18 places 20:14, 47:1, 56:4 plain 18:1 platform 72:5 play 102:17 please 5:18, 6:11, 25:13, 113:1, 114:9 plurality 46:10, 46:19, 46:20, 74:1 plus 99:21 point 7:10, 15:8, 25:4, 48:3, 59:22, 70:4, 70:10, 70:19, 73:7, 73:16, 74:6, 74:13, 75:1, 75:13, 75:22, 76:8, 76:13, 76:21, 77:6, 77:20, 78:3, 80:8, 80:20, 82:12, 83:5, 86:10, 86:22, 92:21, 93:1, 93:6, 93:10, 93:13, 93:21, 93:22, 94:5, 94:7, 94:14, 94:22, 95:8, 95:14, 95:17, 95:19, 95:20, 96:2, 96:6, 96:8, 96:14, 96:15, 97:2, 97:7, 97:19, 97:20, 100:2, 113:1 point-to-point 98:15, 99:3, 100:10, 107:7 pointblank 115:5 points 47:14, 69:20, 70:1, 74:1, 88:16, 92:16, 92:19, 93:2, 93:18, 94:9, 95:1, 97:10 poke 56:7
---	---

popped 8:2 portable 70:5, 70:10, 70:19, 71:7, 71:19, 72:4, 72:15, 74:7, 74:11, 74:13, 74:20, 75:2, 75:9, 75:14, 75:16, 75:22, 76:9, 76:12, 76:20, 77:5, 77:19, 78:3, 80:9, 80:20, 82:13, 83:5, 86:9, 86:21, 89:5, 89:20, 90:3, 90:12, 90:16, 107:1 portion 19:15, 57:8, 81:17, 94:5, 111:16 portions 16:3 posa 11:14, 11:17 posita 11:15, 11:17 posita's 18:1 possible 25:3, 34:3, 41:8, 72:7, 107:13, 116:8 possibly 89:8, 90:5 post-it 46:2 potentially 89:6 power 106:21, 106:22, 112:7, 114:3, 115:12, 116:5 pp 64:17, 65:9	pre 64:11 prepare 12:6 prepared 15:13, 15:17, 16:12 preparing 13:2, 13:9, 13:13, 16:15, 16:18, 25:18, 26:1 present 17:6, 17:12, 33:2, 71:10 presents 27:6 pretty 15:6, 21:20, 62:20, 99:7, 99:9 previous 18:21, 20:10, 37:11, 38:4, 38:5, 47:18, 47:20, 62:19, 89:17 previously 3:9, 59:10, 61:14 primarily 81:4 principles 15:21 prior 7:8, 8:7, 40:4, 40:12, 45:20, 52:14, 52:17, 58:13, 64:22, 86:7, 108:17 priority 11:7 privilege 7:1 probably 29:10, 29:12, 29:21, 75:19 problem 86:1	proceeding 10:14, 10:20, 14:8 proceedings 62:14 processer 27:18 processing 88:19, 89:13, 90:11 processor 27:16, 28:2, 29:4, 30:6, 30:9, 87:12, 87:17, 88:5, 88:7, 88:9, 88:11, 88:13, 89:2, 89:22, 90:4 produce 65:10 program 87:13 proposed 17:7 protocol 35:18, 36:6, 36:10, 41:12, 41:17, 42:1, 42:6, 42:15, 42:20, 48:17, 48:19, 49:1, 50:1, 51:1, 51:4, 105:22, 106:10, 107:16 protocols 37:18, 45:8, 45:14, 47:7, 47:12, 47:17, 47:21, 48:2, 48:14, 50:1, 50:5, 50:17, 50:19, 54:3, 61:15, 63:18 protrudes 104:10 provide 5:3, 7:11,	33:19, 37:7, 70:18, 101:5, 107:3 provided 9:11, 10:3, 16:7, 17:21, 19:8, 20:3, 21:11, 21:16, 37:12, 46:10, 70:8, 73:6, 75:1, 75:2, 109:8 providing 6:13, 109:13 pst 1:17, 117:2 pstn 29:19 ptab 17:18, 17:22, 18:9 public 4:4, 29:20, 119:1, 119:3, 120:13 purpose 28:19 purposes 66:13, 70:3 put 17:16, 17:17, 17:19, 18:8, 67:12, 67:14 putting 97:18 Q qualifications 98:1 qualified 97:11, 97:22 qualify 33:8, 39:5 qualifying 89:1 quality 89:7, 116:4 question 5:18, 6:2, 6:4,
---	---	--	---

6:12, 7:2, 7:10, 7:11, 11:22, 17:11, 17:15, 18:3, 18:5, 18:7, 18:21, 20:8, 24:3, 24:18, 27:11, 27:22, 28:20, 31:13, 33:6, 37:12, 41:14, 41:19, 42:12, 42:16, 43:1, 43:2, 47:5, 47:7, 50:8, 50:9, 50:13, 54:14, 55:3, 59:17, 60:10, 61:13, 62:5, 74:16, 76:18, 77:16, 78:14, 79:3, 80:10, 81:8, 82:2, 84:3, 84:4, 85:14, 85:22, 88:18, 89:11, 94:2, 113:2, 113:6, 114:11, 115:3, 115:4 questioning 5:16, 22:2, 84:14 questions 5:8, 5:15, 11:5, 11:15, 12:2, 34:5, 34:21, 53:1, 53:11, 116:20, 117:1 quite 38:9, 106:3 quote 98:12 quoted 98:22 R radio 39:9, 44:10,	61:7, 63:1, 63:3, 63:5, 70:13, 70:17, 72:20, 72:21, 74:7, 75:11, 75:13, 89:4, 97:2 ram 39:6, 43:11, 43:13, 43:19 range 100:14, 100:17, 100:18, 108:20, 109:20 rate 78:12, 78:19, 79:11, 79:13, 79:18, 80:1, 82:18, 85:12, 85:17, 86:4, 88:1, 89:10, 113:21, 115:11 rather 62:22 re-ask 113:6 read 12:8, 13:14, 13:15, 15:3, 16:9, 19:4, 19:12, 19:15, 20:2, 21:4, 21:13, 22:13, 22:15, 23:4, 26:3, 28:15, 34:13, 34:17, 35:22, 36:4, 39:3, 39:12, 43:22, 45:12, 48:9, 50:2, 54:9, 54:19, 62:16, 64:6, 74:16, 78:8, 78:9, 79:6, 79:8, 80:2, 91:13, 98:5, 98:7, 99:6, 106:18, 111:18,	111:19, 112:9, 113:7, 114:18, 114:22, 118:3 reading 18:17, 18:20, 22:21, 28:17, 63:10, 85:19, 112:19, 113:9, 114:8 reads 21:10, 35:17, 45:6, 46:16, 49:10, 49:21, 54:1, 63:16, 64:3, 116:2 ready 66:2 realtime 8:3, 8:4, 8:11, 8:13, 8:15 reason 5:2, 5:17, 29:18, 40:13, 105:3, 108:5, 108:8, 114:15 reasonably 38:10 reasons 107:15 recall 26:2, 58:18, 58:19, 60:22, 64:13 receive 38:10 received 73:2, 73:4, 74:22, 111:12, 111:21, 113:15, 113:20, 115:7, 116:12 receiver 36:20, 36:22, 37:22, 38:7, 38:9, 38:16, 49:19, 111:12, 112:2, 113:14, 113:19, 114:20,	115:7, 115:9, 115:15, 116:12 receives 63:17 receiving 90:15 recently 8:12 recess 35:4, 53:13, 84:20, 110:11 recited 107:16 recognize 27:21 recollection 16:13 record 5:13, 6:9, 7:16, 8:14, 19:5, 22:17, 35:1, 60:11, 84:19, 91:21, 110:10, 119:9 rectangular 27:15, 28:1, 28:6 refer 10:21, 11:15, 14:18, 19:14, 19:16, 44:4, 44:12, 44:19, 50:4, 50:16, 50:19, 51:15, 55:14, 56:21, 66:14, 81:6, 99:2, 100:3, 103:8, 111:1, 111:20 reference 22:19, 22:21, 23:1, 23:12, 23:15, 23:22, 24:7, 24:13, 24:22, 25:6, 66:14, 76:10, 80:5, 92:5, 92:17, 93:3,
---	--	--	--

93:7, 94:19, 98:13, 103:8, 103:20, 104:6, 105:9, 111:2 referenced 80:17 references 43:22, 52:15, 91:2, 91:6, 101:2 referring 9:21, 11:18, 19:20, 25:12, 30:18, 30:21, 48:13, 55:17, 73:3, 78:17, 92:4, 93:21, 105:6, 116:1 refers 19:18, 29:12, 30:13, 50:20, 51:10, 57:9, 64:3, 78:10, 82:8, 83:9, 85:10, 85:16, 86:14, 91:8, 109:1, 111:12, 112:1, 112:5, 113:14 reflected 16:10 refrain 10:1, 10:12 regard 101:20 regards 57:1 regroup 110:8 regularly 8:13 reiterated 115:4 related 86:12, 89:7, 91:7, 120:1 relates 10:13, 78:22,	79:2, 79:16 relating 88:12 relatively 106:21 relaying 54:6, 55:21, 56:18 release 64:17, 64:19, 64:20, 65:9, 65:12, 65:13 relevant 20:21, 81:17 relied 24:15 rely 23:21, 24:21 remaining 41:4, 67:1 remember 50:9, 50:12 remote 28:7, 29:7, 30:2, 30:10, 68:20, 69:10, 69:11, 69:17, 69:20, 71:7, 71:16, 71:20, 72:4, 73:4, 74:12, 74:22, 76:1, 83:16, 84:5, 84:9 remotely 7:18, 13:6 repeat 20:8, 24:3, 41:18, 76:18 rephrase 5:19, 97:17 replicate 38:11 report 16:8, 79:1, 87:5 reported 1:21 reporter 6:8, 119:1,	119:2 represent 30:8, 47:3, 70:16, 96:18 representation 27:7, 46:16 represented 70:14, 119:12 representing 32:14 reproduction 106:16 request 10:6 requesting 7:12 require 42:10, 43:5, 106:20 required 7:1, 33:21, 37:21, 108:13 requirements 37:3 reread 50:13, 54:14 respect 54:12, 54:17, 55:7, 63:13, 82:20, 96:1, 96:8, 108:16 respectively 90:1 respond 6:12, 7:1 response 7:11, 20:10, 81:4 responsive 57:14 restate 80:10, 84:1, 84:3, 85:14, 85:21, 113:1 restating 89:15 result 107:2	return 35:11 returning 83:8 reverse 48:20, 75:20 review 14:10, 22:14, 29:13, 31:7, 31:10, 31:15, 45:17, 45:18, 45:22, 48:8, 50:6, 50:7, 52:16, 54:21, 55:2, 59:2, 76:15, 76:17, 77:11, 77:22, 78:13, 81:1, 81:10, 81:14, 81:15, 81:20, 85:20, 87:8, 98:6, 106:15, 112:12, 112:21, 113:10, 114:5 reviewed 25:18, 68:2 reviewing 25:22, 31:8, 45:19, 50:10, 76:16, 77:9, 112:13 rf 69:13, 70:13, 70:14 right 8:9, 17:4, 18:10, 26:8, 26:12, 30:3, 31:18, 31:22, 33:11, 41:7, 42:8, 43:3, 48:17, 51:21, 52:3, 56:16, 60:21, 67:11, 68:17, 69:15, 69:21, 70:6, 70:11, 70:20, 73:4, 74:14,
--	---	---	--

78:12, 79:11, 80:9, 80:21, 82:9, 82:13, 83:13, 83:18, 83:21, 84:6, 85:13, 85:18, 86:5, 86:10, 87:7, 87:18, 91:16, 93:12, 94:6, 94:9, 95:12, 96:3, 97:4, 97:10, 97:21, 100:4, 105:7, 105:12, 109:9, 109:14, 110:18, 111:22, 112:2, 112:8, 113:7, 113:16, 113:18, 114:4, 116:10, 116:15 rmr 1:21 roam 78:12, 78:19, 79:11, 79:14, 79:18, 80:1, 82:18, 85:12, 85:17, 86:4, 89:10 rooms 88:1 room 7:19 rotated 68:16 route 54:7, 54:13, 54:18, 55:8, 56:1, 56:15, 56:20, 57:4, 57:11, 58:11 routes 49:21 routing 57:22, 58:4, 59:15, 59:20, 60:14, 61:1, 61:9, 62:1,	62:9, 62:22 rule 37:4 rules 5:13, 35:20, 36:7, 36:12, 36:14, 36:22, 37:2, 37:8, 37:13, 37:21, 38:8, 38:9, 48:2, 50:22, 107:10 s s ----- 3:8 said 8:2, 15:16, 20:11, 20:13, 22:19, 25:5, 32:20, 37:13, 37:17, 40:10, 41:1, 79:14, 87:5 same 6:13, 19:11, 21:6, 22:1, 33:16, 34:2, 36:21, 38:4, 42:7, 42:22, 44:6, 44:14, 48:18, 52:22, 75:17, 75:19, 75:20, 81:8, 81:9, 84:11, 85:8, 88:18, 97:22, 102:12, 105:12, 112:4, 118:4 sarah 2:13 satellite 39:10, 40:21, 40:22, 41:3, 44:17, 44:19 savings 107:1 say 13:12, 18:22,	22:3, 25:21, 29:18, 36:19, 40:1, 43:2, 43:18, 68:8, 69:1, 69:11, 70:12, 73:17, 83:20, 90:9, 94:21, 96:7, 104:14, 105:17, 106:20, 107:5, 108:15, 112:15, 114:14 saying 55:19, 109:11, 109:17 says 21:14, 27:6, 29:19, 36:9, 46:7, 70:13, 73:19, 87:2, 88:2, 95:16, 96:22, 108:9, 108:18, 114:10, 115:6 scale 66:22, 67:19 scanned 56:2 scenario 72:14, 106:4 scenarios 53:7, 53:9 scope 51:3, 116:16 scratch 73:13 search 87:6, 105:3 searching 29:14, 100:6 second 21:2, 49:15, 49:19, 49:21, 51:9, 51:14, 52:20, 55:13, 55:17, 63:14, 63:15, 63:20, 66:19, 79:5,	79:8, 79:21, 80:2, 80:13, 80:18, 82:7, 83:9, 85:9, 85:18, 86:2, 86:14, 98:9, 107:22 section 15:21, 15:22, 16:4, 39:22, 48:10, 52:11 see 21:12, 27:19, 28:1, 28:5, 28:9, 28:10, 29:10, 32:10, 43:15, 43:17, 48:1, 51:12, 58:20, 63:22, 67:2, 67:4, 67:13, 73:8, 73:19, 80:15, 86:17, 86:18, 91:10, 91:11, 95:14, 96:4, 98:17, 101:7, 104:7, 104:12, 105:5, 105:11, 106:14, 108:3, 109:4, 111:14 seeing 93:13, 94:10, 100:6 seen 30:15 selection 48:14 send 38:12 sending 75:16 sends 63:19 sense 71:9 sentence 21:18, 35:17, 36:4, 36:9,
---	---	---	--

39:2, 45:11, 49:9, 49:13, 49:14, 49:20, 52:2, 54:19, 63:16, 64:2, 79:6, 79:8, 79:12, 79:15, 79:16, 79:21, 80:3, 80:6, 80:13, 80:18, 82:7, 83:9, 85:18, 86:2, 86:14, 89:2, 91:8, 107:22, 112:5, 114:1 sentences 39:3, 39:16, 43:8 separate 83:16, 97:12, 97:13, 97:18 service 46:10 services 39:10, 44:11 session 9:11 set 22:22, 35:20, 36:3, 36:6, 36:12, 36:14, 36:21, 37:2, 38:8, 50:22, 107:10, 114:3, 119:6, 120:8 sets 24:5 setting 112:6, 115:12 setup 38:17 several 26:3, 50:10, 56:21, 66:1, 104:2 shed 115:21 sheet 118:7	shift 82:18 shifts 88:1 short-distance 109:20 shortcut 14:17 shorten 24:20 shorter 99:7 shorthand 10:21, 66:13, 119:1 shortly 65:2, 65:16, 65:21 shot 113:13 should 15:5, 17:14, 87:21 shown 27:8, 46:18, 72:20, 83:18, 97:3, 97:8, 105:20 shrink 67:10 side 95:10, 105:7 sign 67:15 signal 54:7, 54:12, 54:17, 55:7, 55:22, 56:15, 56:19, 57:3, 57:10, 57:15, 57:22, 58:3, 58:11, 61:10, 62:2, 62:10, 89:4, 111:13, 111:21, 112:6, 113:15, 113:20, 114:3, 115:8, 115:11, 116:12	signals 54:6, 55:21, 56:18, 57:16 signature 14:14, 118:10 signature-bi6ds 120:11 signed 15:12, 118:7 silenced 9:19 similar 46:18, 52:22 similarly 90:10 simple 36:18 simplify 84:4 simply 64:11, 66:15, 72:2, 87:6, 89:14, 92:5, 102:19, 103:7, 107:3, 112:19, 115:4 since 55:15 single 31:22 sit 41:7, 42:8, 43:3, 51:21, 60:21, 100:18 site 46:10, 67:6 sitting 40:13, 42:12, 42:17 six 26:16 sizing 67:7 skiermont 2:14 skill 11:6, 11:16, 12:3, 22:20, 23:6, 29:16, 30:7, 31:2, 32:12, 32:19, 47:10, 52:13, 60:1, 60:6, 61:2, 61:21, 62:6, 62:12, 62:13, 62:15, 70:21, 75:6, 76:5, 77:4, 77:17, 77:22, 107:9 skim 112:14 slight 93:19 slow 107:2 solid 33:12 solution 107:4 solutions 1:8, 2:12, 119:12 some 5:17, 6:11, 15:19, 28:14, 32:19, 40:19, 41:1, 48:5, 48:6, 48:18, 48:19, 53:8, 54:21, 59:8, 68:12, 72:5, 75:11, 78:20, 81:1, 81:10, 82:19, 82:22, 83:1, 89:9, 93:19, 102:5, 105:3, 107:10, 108:16, 115:14, 115:21 somebody 67:17 somehow 115:15 something 15:5, 79:1,
---	--	---

81:4, 81:13, 102:3, 102:18, 108:20, 114:14 sometimes 32:9, 104:19, 114:18 somewhat 28:19, 99:14, 99:20 somewhere 108:21 sorry 41:18, 47:19, 57:20, 71:22, 73:13, 85:21, 99:19, 116:10 sound 5:21, 6:5, 6:15, 7:13, 10:5, 10:15, 11:1, 14:20, 92:6, 111:3 sounds 5:11 source 52:5 sources 10:2 speak 6:9, 35:8, 53:16, 85:2, 110:15 specialized 107:10 specific 32:8, 33:5, 33:6, 45:6, 47:17, 53:2, 54:2, 54:5, 54:11, 54:16, 55:6, 55:11, 55:14, 55:20, 56:14, 56:17, 57:2, 57:9, 58:5, 107:12, 112:22 specifically 34:5, 45:20,	47:6, 63:6, 100:3 specification 26:8, 26:10, 26:16, 31:15, 65:17, 106:8 specifications 62:16 spelled 39:9 spent 13:13, 13:18, 25:22 spires 2:13, 12:10, 12:13, 12:20, 13:2, 13:5, 13:10, 13:18, 16:17, 17:9, 24:8, 24:17, 25:2, 27:4, 28:12, 28:22, 31:6, 32:17, 33:4, 37:10, 38:2, 42:21, 45:16, 50:11, 60:9, 60:16, 61:12, 62:4, 62:11, 68:7, 74:15, 75:3, 77:8, 77:21, 80:22, 82:14, 83:19, 100:5, 101:18, 109:15, 116:22 spoke 102:5, 102:21 st 120:9 standard 51:15, 58:15, 59:7, 59:12, 59:15, 59:20, 60:13, 60:18, 61:1, 61:9, 61:14, 61:15, 62:1, 62:8, 62:16, 62:21,	63:2, 65:17, 99:17, 99:18 standards 50:21, 61:5, 61:18, 65:22, 66:1 stands 15:11, 21:18, 44:3, 44:10 start 8:7, 39:2, 45:10, 65:2, 71:4, 72:12, 87:2, 113:8 started 16:13, 65:1, 65:15 starting 56:9, 87:19, 91:5, 111:6, 111:7, 113:9, 114:1 starts 58:7, 87:20 state 16:4, 17:20, 21:15, 56:13, 107:14, 108:1, 119:3, 120:13 stated 12:19, 23:16, 24:1, 24:14, 25:1, 98:1, 109:13 statement 23:10, 36:2, 52:19, 89:15, 114:9 statements 81:2 states 1:1, 22:18, 82:17, 115:5 station 47:13, 48:3, 48:12, 48:21, 57:17, 63:18, 63:19, 64:9,	116:3, 116:4 station-type 47:4 stations 46:11, 46:21, 47:2, 49:22, 54:6, 55:22, 56:19 step 75:5 stephen 2:5 steps 67:8, 87:14, 87:15 stick 45:10 still 5:12, 7:1, 8:4, 17:15, 18:14, 32:19, 73:3, 90:4, 93:9, 114:8, 115:14 stored 87:13 straight 46:4 street 2:15 strength 61:10, 62:2, 62:10, 111:13, 111:21, 112:6, 113:15, 113:20, 114:3, 115:8, 115:11 strengths 116:12 strike 31:14, 69:9, 107:18 studying 27:20 subject 10:19 submitted 14:7 subscriber 46:11, 46:20
--	--	---	--

subsection 17:3, 18:15 suite 2:15 summarize 74:8, 74:18 summary 56:5 support 105:15, 109:2 supporting 109:7 suppose 107:13 sure 8:9, 20:9, 24:4, 24:20, 29:11, 41:20, 42:3, 46:3, 48:7, 50:15, 53:7, 54:15, 55:1, 55:5, 59:18, 66:20, 72:1, 74:17, 76:19, 78:15, 80:11, 85:15, 87:18, 94:3, 99:8, 99:9, 112:11, 112:16, 113:3, 114:13 switch 63:7, 91:18, 103:2, 109:22 switched 29:20 sworn 4:4, 119:6 symbolically 70:14, 70:16 symbols 94:13 synchronizations 37:14 synonym 22:6 synonymous 59:12 system 27:8, 32:8,	32:22, 33:9, 33:19, 40:22, 46:9, 46:17, 46:22, 48:13, 49:10, 61:20, 64:3, 71:3, 107:12 systems 33:10, 33:17, 40:20 T take 7:6, 28:14, 29:4, 32:2, 35:3, 43:9, 47:22, 48:7, 49:2, 53:12, 66:20, 75:17, 84:15, 89:6, 110:4, 110:5, 110:8 taken 23:2, 67:7, 78:20, 82:20, 98:20, 119:8 takes 74:12, 74:21 taking 5:6, 92:20 talk 87:21 talking 30:1, 48:11, 93:9, 96:9, 114:20, 115:2, 115:17, 116:18 talks 47:2, 82:22 teach 22:20, 24:7, 24:10 teaches 23:12, 23:15, 23:22, 24:13, 24:22, 25:6, 100:9 telephone 29:20	tell 46:2 telltale 67:15 ten 66:22 term 11:17, 11:19, 17:13, 29:19, 32:9, 32:20, 35:18, 59:11, 80:12, 103:1 termed 94:13 terminal 70:5, 70:11, 70:20, 71:7, 72:16, 74:7, 74:14, 75:2, 75:9, 75:14, 75:16, 75:22, 76:13, 76:21, 77:6, 77:19, 78:4, 80:9, 80:20, 82:13, 83:6, 83:17, 84:8, 86:9, 86:21, 89:5, 89:21, 90:3, 90:12, 90:16 terminals 71:20, 72:4, 74:11, 74:20, 76:9 terms 11:14, 17:7, 18:9, 19:9, 37:4 testified 4:5, 59:10 testify 4:22 testifying 4:17 testimony 118:4, 118:6, 119:9 texas 2:16	text 27:21, 28:2, 28:7 th 21:8 thank 4:12, 10:7, 12:18, 18:12, 35:7, 60:3, 85:1, 110:14, 116:20 theory 114:17 thereafter 65:16, 65:21 thick 30:4, 30:7, 30:19, 33:12 thicker 31:21 thing 59:9, 106:19 things 14:17, 28:13, 39:20, 46:4, 47:21, 107:8 think 12:15, 12:21, 15:3, 15:4, 18:6, 21:18, 21:20, 21:22, 22:1, 22:5, 25:6, 25:7, 26:19, 29:9, 29:16, 30:6, 31:2, 32:18, 33:5, 37:11, 37:12, 37:17, 39:19, 40:18, 40:22, 42:22, 47:9, 53:2, 53:7, 55:9, 55:10, 55:13, 55:16, 55:19, 56:1, 56:5, 56:16, 57:20, 58:16, 58:19, 58:20, 59:10,
--	---	--	--

61:4, 61:17, 62:12, 62:19, 63:3, 63:12, 64:15, 65:11, 65:14, 67:6, 67:9, 68:2, 70:21, 75:6, 76:5, 77:2, 77:15, 77:22, 78:2, 79:14, 81:17, 82:15, 86:11, 87:9, 88:9, 88:22, 89:19, 90:2, 93:19, 95:13, 100:15, 100:19, 102:16, 106:2, 109:10, 110:3, 110:6, 114:10, 114:13, 115:3, 115:4, 115:21, 115:22, 116:19 thinking 64:21 third 28:6, 30:3 thought 8:6 thousands 37:19 three 27:15, 52:20, 94:10, 94:13, 94:18 threshold 23:15 through 5:11, 5:12, 14:9, 17:2, 56:7, 67:12, 67:14, 68:12, 70:9, 71:1, 71:11, 87:7, 96:21, 98:21, 111:19, 112:14, 113:17 throughout 5:14, 71:3,	99:21 time 6:11, 7:8, 11:7, 11:11, 12:3, 13:14, 13:17, 25:21, 28:14, 34:20, 39:6, 42:2, 47:15, 48:7, 51:11, 54:21, 55:4, 62:1, 62:8, 62:17, 62:22, 65:3, 65:13, 65:18, 65:20, 66:5, 66:20, 78:8, 110:3, 116:21, 117:2 times 4:15, 5:12, 16:9, 26:3, 77:13, 114:19 timing 37:3 timings 37:13 today 4:10, 4:18, 5:4, 5:8, 7:20, 9:21, 10:18, 10:21, 10:22, 11:15, 40:14, 42:13, 42:17, 59:11, 63:2, 63:13, 64:12, 103:7 today's 7:17, 10:1, 12:6, 13:3, 13:9, 13:13, 14:17 together 74:3, 105:18 took 20:22 top 62:14, 68:15, 78:17, 97:19,	101:1 top-level 68:12 topic 58:13 topics 63:5 topologies 33:17, 34:3, 40:19, 41:9 topology 32:8, 32:21, 33:19, 33:22, 40:18, 41:2, 47:4, 84:12, 102:1, 102:5, 102:16, 102:20, 103:1, 109:16 total 26:17 touch 63:5 touched 58:14, 63:12 trademark 1:1, 67:6 transceiver 49:14, 49:15, 49:21, 57:17, 63:14, 63:17, 63:20, 104:5, 104:10, 104:15, 104:20, 104:22, 105:8, 105:13, 105:18, 105:20, 106:9, 108:1, 108:6, 108:10, 109:2, 109:6, 109:13, 114:19 transceivers 36:18, 38:18, 49:12, 54:5, 55:21, 56:18, 64:5 transceiving 107:1 transcription 118:5	transfer 99:18 transferred 74:10, 74:19 transmission 71:5, 99:11, 99:15, 99:16, 100:11, 100:12, 100:16, 106:21 transmissions 35:20, 36:7 transmitted 72:11, 72:14, 74:6, 74:22, 75:21, 76:2 transmitter 36:20, 37:1, 37:22, 38:7, 38:11, 38:16, 112:1, 112:5, 114:2, 115:9, 115:10, 115:16, 116:13, 116:14 transmitting 37:1, 38:1, 38:7, 87:21 transparent 87:22 trial 1:3 trombetta 1:21, 119:2 true 70:12, 70:22, 118:4, 119:9 truthful 5:3 truthfully 5:7 try 5:16, 5:19, 7:6, 24:4, 24:20, 115:1 trying 18:4 turn 14:12, 16:21, 18:13, 22:9,
--	---	--	--

26:21, 32:2, 33:11, 34:6, 34:10, 38:20, 43:9, 44:22, 49:3, 51:6, 53:20, 58:13, 65:5, 66:18, 67:20, 78:5, 82:4, 85:15, 90:19, 90:20, 92:13, 95:4, 98:2, 98:9, 100:20, 103:15, 111:8 turning 43:7, 44:1, 44:8, 44:16, 69:17, 107:18, 107:19 two 12:12, 12:20, 12:21, 13:1, 13:5, 13:10, 13:18, 19:18, 27:17, 28:1, 28:5, 29:3, 30:1, 30:15, 30:17, 31:16, 37:5, 37:7, 37:15, 38:18, 39:3, 39:16, 43:8, 49:11, 51:15, 53:18, 64:4, 70:1, 70:5, 94:18, 96:13, 97:3, 97:13, 101:10, 102:6, 115:12 type 43:14, 43:19, 44:5, 44:13, 44:20, 51:16 types 31:20, 39:4, 39:21, 40:2, 40:3, 81:7 typical 82:17	typically 6:20, 30:13, 104:17, 104:18 typist 15:19, 16:1 typo 15:6 typos 15:4, 15:9 U unable 5:3 uncertainty 32:19 unclear 6:2 under 4:18, 4:22, 17:3, 18:14, 72:13, 74:9 understand 4:17, 4:21, 5:22, 6:2, 6:3, 6:6, 7:3, 7:4, 7:14, 11:18, 12:1, 12:4, 18:5, 18:7, 19:6, 22:19, 36:15, 37:1, 37:6, 37:22, 47:11, 56:12, 66:16, 68:9, 70:21, 75:7, 77:5, 97:16, 103:11, 114:16, 114:17, 114:19, 115:1 understanding 18:1, 23:11, 23:14, 24:6, 24:10, 28:20, 29:1, 32:7, 36:9, 39:14, 52:13, 68:4, 68:9, 71:2, 76:6, 95:9, 100:8, 106:17	understandings 23:22, 24:12, 24:21 understood 29:15, 31:9, 31:12, 52:18, 53:19, 77:18, 89:3 undescribed 73:14, 75:12 unfortunately 67:4, 67:8 unit 88:20, 89:1, 116:2 united 1:1 units 89:1 unless 6:22, 11:22 unmarked 73:9, 73:14, 90:6 unpack 56:9 until 16:9 upload 91:19, 110:1 uploading 25:9, 66:6, 103:3, 110:18 upper 73:10 use 11:14, 11:17, 11:19, 21:21, 22:1, 22:3, 22:5, 22:8, 28:18, 36:7, 48:3, 72:13, 73:3, 74:9, 74:18, 75:15, 77:2, 89:8, 90:18, 108:18, 109:21, 115:18 uses 53:8, 97:12,	107:10, 114:2, 115:10 using 26:9, 39:7, 49:22, 63:17, 72:20, 74:12, 94:18, 102:4, 105:21, 106:9, 112:6 utilize 41:11, 41:16, 41:22, 42:5, 42:14, 42:19 V variant 69:18 various 9:21, 38:14, 56:4, 69:2, 92:15 venable 2:6 verizon 1:5, 2:4 verizon's 91:16 version 65:8 versus 89:10 via 9:8, 22:6, 119:16 view 28:17, 68:16, 68:22 virtual 1:15 virtually 6:10, 119:16 W wait 58:22 walk 68:12, 71:1, 71:11
--	--	--	--

wan 39:5, 40:17, 41:1, 41:15, 41:21, 42:4, 42:14, 43:11, 43:14, 43:20, 44:5, 44:13, 44:20, 45:7, 45:14, 47:7, 53:4, 54:3, 63:17, 102:3, 102:18, 102:21, 105:8, 105:15, 105:18, 105:20, 106:8, 106:13, 106:17, 107:10, 107:11, 107:16, 108:1, 108:5, 108:16, 108:18, 109:2, 109:6, 109:7, 109:13 wans 39:5, 39:21, 40:3, 40:4, 40:7, 40:11, 40:12, 40:16, 40:20, 41:5, 41:10, 53:1, 106:12, 106:20, 107:2, 107:6, 108:14 want 10:10, 28:16, 32:22, 34:22, 52:7, 81:1, 81:10, 110:3, 110:4 wanted 8:9, 18:4 washington 2:8 way 31:3, 76:1, 76:3, 90:17, 120:5 ways 61:16, 106:3 we'll 9:21, 29:4,	96:5 we're 6:10, 71:11, 73:3, 87:9 we've 25:12, 30:15, 34:19, 62:13, 74:8, 83:12 week 12:16, 13:1 welcome 35:6, 53:15, 84:22, 85:1, 110:13, 110:14 wer 111:13, 113:20, 115:8, 115:11 whereby 90:11 whereof 120:8 whether 23:12, 23:15, 23:22, 24:13, 24:22, 32:14, 33:7, 38:12, 42:12, 59:14, 59:19, 60:13, 61:8, 61:22, 62:7, 72:2, 82:18, 102:2, 102:17, 106:8, 114:14 whole 59:9, 61:20, 106:19 wi-fi 50:1, 50:4, 50:16, 50:19, 50:20, 51:3, 51:5, 53:3, 58:20, 59:4, 59:11, 61:22, 62:7 wide 31:4, 32:4, 32:11, 32:15, 33:8, 33:14,	39:17, 41:11, 41:16, 41:22, 42:5, 42:14, 42:18, 42:19, 101:16, 102:10, 102:14, 105:21, 106:9 wife 53:18 window 8:2, 8:15 wired 39:4, 73:20, 73:21, 73:22 wireless 1:5, 2:4, 27:8, 39:4, 39:5, 39:17, 39:21, 40:3, 40:4, 40:6, 40:10, 40:12, 40:15, 40:17, 41:4, 41:10, 41:11, 41:15, 41:16, 41:21, 41:22, 42:4, 42:5, 42:13, 42:14, 42:17, 42:19, 43:10, 43:14, 43:19, 44:5, 44:13, 44:20, 46:17, 46:21, 48:12, 49:10, 50:21, 51:4, 51:11, 51:16, 51:19, 52:2, 52:6, 52:21, 53:1, 53:4, 53:9, 57:17, 59:4, 59:16, 59:21, 60:14, 64:3, 70:9, 70:14, 73:12, 73:18, 76:12, 76:13, 76:20, 76:21, 77:2, 77:3, 77:7, 77:12, 77:18,	77:20, 78:1, 80:7, 80:19, 81:13, 82:11, 82:17, 82:21, 83:2, 83:4, 86:9, 86:12, 86:20, 87:11, 87:22, 88:3, 93:5, 96:19, 100:12, 100:16, 102:22, 104:15, 105:20, 105:22, 106:10, 107:6 wirelessly 93:1, 94:8, 94:22, 97:9, 97:20 wireline 73:15, 73:16, 73:17, 74:3 wirelines 73:20 wish 15:1, 15:10, 56:8 within 49:20, 63:20, 64:22, 69:20, 77:1, 102:9, 116:16, 119:3 without 32:7, 52:8 witness 3:2, 4:3, 34:22, 84:19, 110:2, 110:9, 116:20, 119:5, 119:10, 120:8 word 6:20, 22:1, 22:5, 22:6, 28:3, 28:11, 28:18, 50:12, 100:7 wording 86:11 words 16:10, 23:5,
---	--	---	--

36:16, 78:21 work 16:15, 16:18, 42:11, 43:5, 67:18, 87:6, 103:10 worked 40:21 working 8:5, 65:22 world 65:14 wouldn't 75:19 written 28:15, 43:15, 43:21, 44:6, 44:14, 44:21, 48:9, 50:18, 56:2, 58:1, 105:4 wrong 40:1, 115:22 wrote 55:15, 55:16, 86:18 wwan 46:9, 107:16 wwans 39:6 x x ----- -- 3:1 y yam 2:5, 3:6, 4:7, 34:18, 35:2, 35:5, 53:10, 53:14, 84:18, 84:21, 110:5, 110:12, 116:19 yeah 18:6, 19:2, 36:8, 56:9, 73:20, 79:16,	87:19, 88:10, 90:9, 95:15, 104:21, 106:16, 110:5, 112:19, 114:15, 115:20, 116:7 years 61:5, 64:22, 66:1 yesterday 12:12, 12:20 york 119:4, 120:13 z zigzag 93:7 zoom 7:18, 9:7, 9:11, 25:9, 119:17 . .5429 2:9 .6600 2:17 0 00 93:17, 96:6, 96:7, 97:5, 97:10, 97:21, 117:2, 119:18 01147 1:11 01889 19:10, 19:22 02 1:17, 119:18 1 117:2, 119:18 10 13:15, 13:17, 87:20 100 18:21, 97:1,	113:11 1001 3:14, 25:10, 25:17 1004 3:16, 66:7 1005 3:18, 91:22, 92:4 1006 3:20, 39:19, 103:4 1007 3:22, 110:20 102 97:1, 97:14 103 3:20 107 98:2, 98:7 11 96:7, 97:5, 97:10, 97:21, 98:15, 99:9 110 3:22 12 13:16, 13:17, 21:8, 46:15, 88:9, 88:10, 88:20, 90:1, 105:1 120 1:20 122 106:18 124 107:19 13 3:11 131 112:18, 112:20 14 88:8, 108:9 14647 1:22 15 65:12, 98:21	16 65:13, 88:16, 98:10, 98:21 1601 2:15 17 27:5, 65:13, 113:8 18 98:16, 99:9 2 2 86:15 20 4:16, 70:6, 70:11, 70:20, 71:7, 71:20, 72:4, 72:16, 74:7, 74:11, 74:14, 74:20, 75:2, 75:9, 75:14, 75:16, 75:22, 76:9, 76:13, 76:21, 77:6, 77:19, 78:4, 80:9, 80:20, 81:18, 82:13, 83:17, 84:8, 86:9, 86:21, 87:11, 87:20, 88:1, 88:3, 89:6, 89:22, 90:4, 90:12, 90:16 20001 2:8 2001 11:10, 60:1, 60:7, 61:2, 61:22, 62:7, 66:5 2006 21:9 2007 3:11, 13:22, 14:6, 14:15, 14:18, 34:9,
---	--	---	--

35:12 2008 64:20 2009 65:2 2014 90:1 2015 65:13, 65:18, 65:19 2016 65:11 2017 19:10, 19:22, 65:11, 65:18, 65:20 202.721 2:9 2023 1:11 2024 1:16, 21:8, 119:17, 120:9 21 16:21, 17:2, 34:11, 98:21 214.978 2:17 22 12:17, 93:3, 93:6, 93:18, 93:22, 94:9, 94:14, 95:1, 96:2, 96:4, 96:15, 97:2, 97:10, 97:20, 97:21 23 17:2, 18:13, 18:17, 19:1, 19:2, 19:4, 21:3, 21:17, 61:5, 98:16, 99:9 24 98:16, 99:9, 111:11, 113:16, 115:5	25 3:14, 99:11, 99:16, 100:11, 100:17, 111:20, 113:17 26 1:16, 69:14, 70:9, 70:15, 70:16, 75:11, 76:10, 89:4, 113:5, 113:7, 114:2, 119:17 3 30 12:15, 72:18, 74:20, 87:10, 93:15, 93:16 31 120:9 32 29:18, 30:1, 69:5, 69:6, 69:14, 72:12, 72:21, 74:12, 74:22, 76:2 33 22:9, 22:17, 23:4, 23:10, 23:16, 23:18, 23:19, 24:1, 24:5, 24:14, 25:1, 25:8, 68:15, 68:18, 69:4, 69:7, 71:6, 71:15, 72:11, 72:15, 72:19, 74:11, 75:8, 75:17, 76:4, 79:22, 83:11, 83:15, 84:5, 84:10, 85:11, 86:15, 86:20, 88:19, 90:5, 90:13, 90:15 34 69:11, 69:15,	72:21, 73:4, 73:9, 74:13, 75:1, 75:5, 75:12, 76:1, 76:2, 83:17, 83:20 349 46:13 35 113:7, 115:1 36 38:20, 38:22, 39:16, 40:6, 40:15, 41:5, 41:11, 43:7, 44:2, 44:9, 44:17, 68:21, 69:2, 69:10, 69:17, 69:21, 69:22, 71:16, 72:20, 73:10, 73:22, 83:20, 84:6, 84:9, 95:15 37 51:6, 51:10, 51:14, 52:6, 52:20, 59:3 38 73:15, 73:19, 74:1 39 96:21 3g 64:17, 65:3, 65:9, 66:4 4 4 93:15 40 69:20, 70:1, 70:4, 70:10, 70:13, 70:19, 73:7, 73:16, 74:6, 74:13, 75:1, 75:6, 75:13, 75:14,	75:22, 76:8, 76:13, 76:21, 77:6, 77:20, 78:3, 80:8, 80:20, 82:12, 83:5, 86:10, 86:22, 88:16, 92:17, 92:19, 92:21, 93:1, 93:6, 93:21, 94:5, 94:7, 94:14, 94:22, 95:8, 95:9, 95:14, 95:19, 95:20, 96:6, 96:8, 96:14, 96:15, 97:8, 97:19 41 96:21 42 49:5, 49:9, 49:20, 63:8, 63:16, 93:8, 93:14, 94:19, 96:13, 96:18, 97:2, 116:1 43 46:6 4400 2:15 45 34:10, 34:16, 35:14, 35:17, 36:3, 37:9 47 44:22, 45:5, 53:21, 54:1, 54:20, 56:10, 56:12, 57:2, 57:20, 57:21 48 103:15, 103:18, 104:1, 105:7, 105:21, 106:7, 108:2, 108:6 4803 104:6, 104:14,
---	---	--	--

104:21 4805 104:11, 104:15, 104:21, 105:4 4807 105:9, 105:14, 105:17, 108:11 4809 105:10, 105:14, 105:17, 108:11 4g 63:19, 64:8, 64:11, 64:13, 64:15, 64:22 5 5,722,051 3:23, 110:20 5,790,536 3:21, 103:5 5.8 98:15, 99:7, 99:8 51 46:13 546765 1:19 59 18:20 5g 63:19, 64:9, 64:11, 65:5, 65:6, 65:8, 65:11, 65:15, 65:17, 65:19 6 6,556,553 3:17, 66:8 6,816,706 3:19, 92:1 60 69:7 600 2:7 61 57:13, 58:7 66 3:16	68 106:18 69 106:18 7 73 111:7 75 105:1, 105:5, 108:9, 109:1 75201 2:16 794 10:22, 11:8, 17:8, 17:14, 18:9, 19:9, 19:11, 21:6, 23:3, 25:12, 25:17, 25:22, 26:4, 26:16, 26:21, 27:2, 27:5, 31:17, 32:10, 32:13, 33:3, 33:22, 43:13, 43:18, 44:4, 44:12, 44:19, 45:6, 45:14, 45:17, 46:7, 46:13, 46:15, 47:8, 47:9, 47:10, 47:11, 47:16, 49:11, 50:4, 50:16, 50:18, 51:2, 51:5, 51:11, 51:20, 51:22, 54:1, 54:11, 54:16, 55:6, 55:11, 55:17, 55:19, 56:13, 56:17, 56:22, 58:6, 64:4, 64:8, 64:11, 91:3 7: 93:16 8 8 1:17, 119:18	802.11 50:20, 50:21, 51:3, 51:5, 51:15, 52:15, 53:3, 58:14, 58:21, 59:3, 59:4, 59:6, 59:12, 59:14, 59:19, 60:13, 60:18, 60:22, 61:5, 61:8, 61:13, 61:18, 62:8 86 78:6, 78:16, 79:6, 79:9, 79:21, 80:7, 80:14, 80:18, 82:4, 82:7, 83:8, 85:6, 85:9, 85:15, 85:16, 85:19, 86:3, 86:13 88 90:20, 91:1, 91:5 9 9 93:17, 96:6, 97:5, 97:10, 97:21 9,426,794 1:12, 3:15, 10:19, 25:11 91 3:18 94,426,794 10:22 96 100:20, 101:1	
---	---	--	--